

DEFINITION OF A TRANSPORT AREA FOR THE TSHWANE METROPOLE

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BACKGROUND

Transformation

Local Government has undergone major legislative and structural transformation since 1994. In the former Greater Pretoria area the Greater Pretoria Metropolitan Negotiating Forum heralded the pre-interim phase (1994 to 1995). The interim phase (1995 to 1999) commenced in November 1995 when the Greater Pretoria Metropolitan Council (GPMC), the City Council of Pretoria (CCP), the Centurion Town Council (CTC) and the Northern Pretoria Metropolitan Sub-Structure (NPMSS) were elected. The interim transition phase ended in December 2000 when local government elections took place and the City of Tshwane Metropolitan Municipality (CTMM) was established.

In terms of current legislation all local authorities have to be transformed into new organisations. Transformation is defined as the total re-organisation and re-structuring of the governance structures, management and administration, as well as how services are delivered. Change is necessitated by the need to deliver better quality and sustainable services to the whole community, especially the need to eradicate previously discriminatory levels of service delivery (Ref 1).

Restructuring of South Africa's land transport system

In parallel with the process of local government transformation, the country's land transport system is to be restructured. The National Land Transport Transition Act (NLTTA) (Ref 2) was recently promulgated. The purpose of this Act is:

- a) To restructure the country's land transport system
- b) To give effect to national policy
- c) Achieve a smooth transition to the new system.

For implementation the Act is structured around the establishment of transport authorities for specific transport areas. The Act also provides guidelines for the determination of boundaries for the transport areas.

The Tshwane Metropole's approach

The CTMM realised the need to integrate the above processes, as to ensure the establishment of a municipal structure that will meet the requirements of both the local government transformation and the land transport transformation processes.

An action plan has been developed in this regard, Ten specific tasks have been defined, and a technical task team has been set up to address each of these tasks. Transport Transformation Technical Task Team 5 (T5) was responsible to determine an appropriate model for the transport area. The T5 defined the following action steps to achieve this objective:

- a) Get information on the existing models in use in order to serve as input towards the functional structuring of the transport authority
- b) Develop alternatives
- c) Develop criteria for selection of the preferred alternative
- d) Develop an appropriate organisational structure
- e) Workshop with the Khoro Transformation Facilitation Committee (the structure that was steering the total process of municipal restructuring in the Tshwane area), labour unions and other role players as to obtain their input/support
- f) Develop a legal framework for the new structure
- g) Workshop the above with role players
- h) Include the above into the founding agreement between the Member of the Executive Council of Gauteng Province responsible for public transport (MEC), and the municipality.

This paper reports on the work that was done to assess the strategic transportation impact of the newly demarcated area.

OBJECTIVES

The objectives of the investigation were:

- a) To define the strategic extent of identified cross-border areas in terms of its transportation significance
- b) To identify other areas within the functional transport area that should be considered for inclusion in the transport authority (TA)
- c) To prepare a proposal on the definition of a transport area for the Tshwane Metropole.

METHODOLOGY

The methodology followed to achieve the above objectives was as follows:

- a) Study the requirements of the NLTTA
- b) Study the progress made to date by the task teams responsible for the ten tasks defined with regard to the establishment of a transport authority
- c) Assess the land use and transportation planning done for the areas bordering to the Tshwane area with the objective of possible inclusion in the transport area
- d) Conduct interviews and/or meetings with stakeholders and consultants responsible for land use and transportation planning in the area
- e) Prepare a report addressing findings and recommendations.

FUNCTION OF THE TRANSPORT AUTHORITY

National Land Transport Transition Act

The National Land Transport Transition Act (NLTTA) discusses the functions of transport authorities in two Chapters:

- Chapter 2: Matters of National Concern
- Chapter 3: Matters of Provincial Concern

Function with regard to matters of national concern

In terms of Clause 10 (13) of Part 5 of Chapter 2 of the NLTTB a transport authority must perform the functions shown below, as well as those assigned to it by provincial laws (Ref 2):

- Prepare transport plans
- Develop land transport policy
- Perform financial planning with regard to land transport
- Manage the movement of persons and goods on land
- Public consultation
- Invite and award tenders for public transport services

Function with regard to matters of provincial concern

With regard to matters of provincial concern a transport authority may, with the agreement of the member of the executive council of a province responsible for public transport (MEC), perform a number of further functions. These functions are described in Clause 68(1) of the NLTTA, and are summarised as follows (Ref 2):

- Promote security in public transport
- Promote the optimal use of the available transport modes
- Develop and operate a land transport information system
- Promote publicity associated with public transport
- Provide information to users of public transport
- In the case of subsidised services, determine fare structures
- In the case of unsubsidised public transport services, set minimum fares
- Make payments to public transport operators in the case of subsidised service contracts
- Conduct investigations into the financial circumstances of public transport operators
- Promote integrated ticketing systems
- Exercise control over service delivery
- Develop a strategy to minimise adverse impacts of the land transport system on the environment
- In agreement with the relevant participating municipalities:
 - Take over functions relating to municipal roads
 - Apply measures to limit damage to the road system in that part of the transport area.

Tshwane's proposal

The workgroup of the T5, responsible to obtain technical/political agreement on the functions of the transport authority, defined these functions as follows (Ref 3):

- Promote strategic and integrated transport planning for the transport area
- Promote and manage an effective public transport system
- Address infrastructure provision and management
- Do traffic flow management
- Establish and operate information technology systems
- Provide the necessary administrative and financial support services to the transport authority

Comparison

When the functions of the transport authority prepared by T5 are compared to those defined in the NLTTA it is clear that they are more detailed. Where the functions of the NLTTA is mainly on the field of transport planning and the operation of public transport, the functions defined by T5, also include infrastructure provision, operation and maintenance. The approach followed by Tshwane was to propose the combination of the functions of the transport authority and those of a *city engineering department* or a *roads and transport strategic business unit*, into a single authority (with obvious benefits in terms of efficiency and integration of operational aspects).

This difference in approach has, however, serious implications for the process of defining a transport area as they have different cost and institutional implications. The sustainability of service delivery should stand central to the analysis of alternatives with regard to the transport area.

CRITERIA FOR DEFINING THE TRANSPORT AREA

Founding agreement

The founding agreement must address the boundaries of the transport area: In terms of Clause 10 (6) of the NLTTA the founding agreement between the MEC and municipality should at least provide for the following (Ref 2):

- a) The parties to the agreement
- b) The basis for the establishment of a governing body for the TA and the structure thereof
- c) Operational and procedural arrangements
- d) A cadastral description of the boundaries of the transport area, or, where such boundaries coincide with municipal boundaries, a reference to such municipal boundaries.

Factors relevant to determining boundaries of transport areas

Clause 11 (1) of the NLTTA lists the factors relevant to determining boundaries of transport areas: In the determination of these boundaries cognisance should be taken of (Ref 2):

- a) Dominant passenger movements
- b) Economic interdependency between inhabitants
- c) Integrated land use and transport development potential
- d) The extent to which public transport services are provided and operated effectively and efficiently within the area
- e) Demographic, natural and geographical factors and characteristics
- f) Capacity within the area to perform and carry out any technical or specialised functions or work necessary for or arising from the governance of a transport area
- g) Other criteria as defined by the Minister of Transport or the MEC.

The study area was analysed in terms of the above factors, making use of existing reports and other information.

Options with regard to the transport area

In defining options with regard to the transport area the following two aspects were taken into consideration:

Transport Authority Task Team

The Transport Coordination Committee (TCC) of Gauteng Province established a task team on 27 January 2000 to investigate the possibilities with regard to the implementation of transport authorities in Gauteng. The Transport Authority Task Team (TATT) comprises of representatives from each of the metropolitan/service councils in the province, along with representatives from Gautrans (Ref 4).

The TATT was investigating various options with regard to the number of transport authorities (TA's), and the definition of transport areas, for the province. As far as could be established all the proposals being investigated allows for the Tshwane metropolitan area to be a separate transport authority. (Various options exist, however, with regard to the East Rand-Johannesburg-West Rand area) (Ref 4).

The TATT defined a transport area as an area that should ideally be a functional transport area, which can be described as an area (Ref 4):

- a) Where the majority of movement of people and goods takes place within the area (i.e. minimal cross TA border movements)
- b) Which enables the avoidance of segmentation of services into small and impractical portions
- c) Which allows the maximum devolvement of public transport related functions to the TA level.

Rail services

Within the province rail services are presently managed in two areas, i.e. northern and southern Gauteng. Rail services are difficult to break up into non-functional operational areas due to the need for integration of scheduling of trains, ticketing and fare systems, and the maintenance of infrastructure. The experience to date is that the present fragmented sub-division of Gauteng requires elaborate co-ordination of rail services. From the above the conclusion is reached that the effective management of rail operations can only be properly carried out at TA level if there are not more than two TA's in Gauteng (Ref 4).

Definition of options

From the above discussion follows that the TATT saw the Tshwane metropolitan area as a separate transport area as basic point of departure. This viewpoint is also in agreement with the structure of the rail authority in Gauteng.

Based on the above, and in order to provide structure to the investigation, the following three basic options were identified as possibilities for the transport area for Tshwane:

- a) The former GPMC area (minimum option)
- b) The new Tshwane metropolitan area as defined by the National Demarcation Board (as defined in a later section of the paper)
- c) The Tshwane metropolitan area as defined by the National Demarcation Board with some or all of the following additional areas included (with the motivation that these areas form part of the functional transport area):

- i. The rural areas north-west of the Tshwane metropolitan area
- ii. The Roodeplaat area (the rural area to the north-east of the Tshwane Metropole)
- iii. The Olympus area to the east of the Tshwane metropolitan area which includes high income security residential developments such as Silver Lakes and Mooikloof.

The investigation, therefore, focussed on determining the “functional” transport area of Tshwane. The only exception is the southern border of the Tshwane Metropole (between Centurion and Midrand), where it is not practical to consider the objective of a functional transport area in defining the border, the reason being the formation of a separate transport authority for the Greater Johannesburg.

EXISTING LAND USES AND LAND USE PLANNING

In order to address the definition of a functional transport area data on land use planning, existing land uses, as well as projections on future developments (where available), were studied. The paper does not report in detail on the findings of this investigation, and the reader is referred to the project report in this regard (Ref 5).

TRAVEL PATTERNS

The transport area should per definition be a functional area, seen from a transport perspective. A function transport area is an area where a relative high percentage of trips generated within the area also have destinations in the area, i.e. with relatively little cross-border movements.

All trips

An analysis was done of the origins and destinations of all morning peak period trips (all modes and purposes) recorded during a comprehensive origin-destination survey in 1999. The percentage of internal trips for the three areas analysed are as follows:

Area	Daily person trips	% internal
Former GPMC area:	1 347 868	85,4%
Newly demarcated area, which includes the Cross-border municipal areas	1 537 047	92,3%
Newly demarcated area plus the more extensive NW border areas	1 545 355	92,8%

The morning peak period trips are person trips with either an origin, a destination, or both, within the area. The percentage of internal trips are those trips with both the origin and destination within the area.

The analysis confirmed that the newly demarcated area (CTMM area) meets the requirements of a functional transport area much better than the former GPMC area. The analysis also showed that the inclusion of the bordering areas situated north-west of the newly demarcated area does not result in a significant increase of total number of daily trips (0,5% increase), neither a significant increase in the percentage of internal trips (0,5% increase).

Work trips

The origins and destinations of morning peak period work trips (all modes and purposes) according to the 1999 origin-destination survey have also been analysed. The percentage of internal trips for the three areas analysed are as follows:

Area	Daily person trips	% internal
Former GPMC area:	522 834	78,7%
Newly demarcated Tshwane metropolitan area:	568 887	87,7%
Newly demarcated area plus NW bordering areas	572 388	88,8%

The analysis again confirmed that the newly demarcated area meets the requirements of a functional transport area much better than the former GPMC area. The analysis also showed that the inclusion of the bordering areas situated north-west of the newly demarcated area does not result in a significant increase of total number of daily work trips (0,6% increase), neither a significant increase in the percentage of internal trips (1,1% increase).

Trips to the south

A pragmatic approach, rather than a functional approach, was followed with regard to the definition of the southern boundary of the transport area. The reason is the fact that the provincial perspective is that the Southern Gauteng area/Greater Johannesburg should be a different transport area(s), although significant travel does take place between Tshwane and this area. Table 1 shows the number of person trips per day from the Tshwane metropolitan area towards the south, using either public or private transport. This forms 3,1 percent of the total trip generation in the newly demarcated area, and is about half of the trips not contained in the functional transport area (7,7%).

Table 1: Morning peak period person trips to the south

Home region	Number of trips per mode	
	Public transport	Car
New additions to Tshwane in the North	2 976	442
Former Northern Sub-structure	2 475	1 293
Former City Council of Pretoria	8 649	17 477
Former Centurion	1 147	9 167
External sub-regions	3 620	81
Total	18 867	28 459

Source: GPMC O-D Survey

SOCIO-ECONOMIC CHARACTERISTICS

The socio-economic characteristics of the areas being considered for inclusion into the transport area have been analysed in order to determine:

- Population
- Number of households
- Income levels
- Vehicle ownership levels
- Employment.

Number of households in the Pretoria Administrative Unit

The former GPMC area had 91 924 households in the former Northern Administrative Area, 234 535 in the Pretoria Administrative Unit and 36 931 in the Centurion Administrative Unit. A total number of 88 757 households, an increase of 24,4%, have been added to the area with the new demarcation proposals, bringing the total number of households to 452 147. The areas adjacent to the newly demarcated area in the north-west have 55 014 households, which is 12,2 % of the number of households in the newly demarcated area. Inclusion of these areas would lead to a significant increase in the number of households in the area, and therefore the total extent of transport needs.

Household income

The average monthly household income of the areas added in the demarcation proposals is R 2 407, compared to the R 3 118 of the Northern Administrative Area, R 7 173 of the Pretoria Administrative Unit and R 10 924 of the Centurion Administrative Unit. The average monthly income of the areas to the north-west is R 1 749, which is lower than any of the other. The implication of this analysis is that the areas added to the former GPMC area will not be able to make a significant contribution to the income base of the new city, while the demand for the supply of services will be high due to the large backlogs encountered in the area. This statement is even more true for the adjacent areas to the north-west, where the monthly income is even lower.

Vehicle ownership

Vehicle ownership figures reflect the same pattern as income levels. Clearly the areas with low vehicle ownership levels depend largely on public transport. It is in these areas where the emphasis of future public transport planning will be.

Population

The former GPMC area had a population of 140 606 persons in the Northern Administrative Area, 1 370 329 in the Pretoria Administrative Unit and 127 150 in the Centurion Administrative Unit. A total population of 366 830 persons, an increase of 22,4%, have been added to the area with the new demarcation proposals, bringing the total population to 2 004 915 persons. The areas adjacent to the newly demarcated area in the north-west have a population of 269 625 persons, which is 13,5 % of the population of the newly demarcated area. Inclusion of these areas would lead to a significant increase in the population inside the area, and therefore the total extent of transport needs.

Employment

The full-time employment level in the areas added in the demarcation proposals is 46,8%, compared to the 49,3% of the Northern sub-structure, 63,3% of the Pretoria Administrative Unit and 87,7% of the Centurion Administrative Unit. The average level of employment in the areas to the north-west is 37,6%, which is lower than any of the other. Again the implication of the analysis is that the areas added to the former GPMC area will not be able to make a significant contribution to the income base of the new city, while the demand for the supply of services will be high due to the large backlogs encountered in the area. This is even more the case for the areas adjacent to the newly demarcated area.

Trip purpose

The analysis also addressed the trip purposes of trips made in the morning peak period for the areas under consideration. Significant variations occur from one sub-region to the other. The average figures for the study area are:

To go home:	3%
To go to work:	36%
Trips made as part of work:	1%
To go to school:	43%
To serve a passenger:	7%
Other:	10%

Mode of transport

The main modes of transport used were also studied. Again there is a significant variation in the patterns for the areas referred to above. The main modes of transport are summarised below for the study area. The variation in mode between the five sub-areas are also shown:

Train:	7%, varies from 0 to 9%
Bus:	10%, varies from 1 to 14%
Taxi:	15%, varies from 2 to 22%
Car:	33%, varies from 3 to 84%
Walk:	33%, varies from 8 to 60%
Other:	2%

EMME/2 MODEL

The Tshwane area has an EMME/2 strategic transportation model covering the area defined by the demarcation proposals, as well as the areas adjacent to the Tshwane metropolitan area in the north-west.

The following desire lines and public transport volumes as produced by the model (Ref 5) were studied:

- Desire lines for private vehicle demand – AM peak hour
- Desire lines for public passenger demand – AM peak hour
- Bus passenger volumes – AM peak
- Train passenger volumes – AM peak.

Figures showing these desire lines are shown in the project report (Ref 6).

The analysis confirmed that:

- Most of the travel movements in the areas added to the former GPMC area to form the newly demarcated area are public transport travel
- There is some bus travel in the north-western areas outside the demarcated area. The volumes are, however, not large
- Train volumes are relatively high, but use of this mode is restricted to the areas served by rail. The areas being added to the former Greater Pretoria area, and the areas to the north-west, are not served by rail.

DEMARCATIION PROPOSALS

As basic point of departure it has been accepted that the boundaries of the transport area to be proposed should follow existing/future institutional boundaries. In the previous dispensation local authority and magisterial boundaries were of importance, but will disappear now that the proposals of the National Demarcation Board are being implemented. The emphasis in this report is, therefore, placed on the new demarcation boundaries.

The demarcation proposals for the area east and south of the Tshwane Metropole, and the area north and east of the Tshwane Metropole, were studied. The Tshwane Metropole will be surrounded by the following local authorities:

North-east:	GT02b1	(Gauteng province)
East:	Metsweding	(Gauteng province)
South-east:	Ekurhuleni	(Gauteng province)
South:	Johannesburg	(Gauteng province)
South-west:	GT411	(Gauteng province)
West:	NW372	(North-West province)
North:	NW371	(North-West province)

It is not recommended that any one (or more) of these be included in the transport area, the reasons being:

- a) The Ekurhuleni and Greater Johannesburg area will be a different transport area (in terms of the approach being followed on provincial level)
- b) The other areas are relatively large, and no one forms part of the functional area of the The Tshwane Metropole if considered in its entirety
- c) Two of the areas are in a different province, which can be expected to complicate the effective functioning of a transport area.

The next institutional level will be wards. Wards are, however, not “wall-to-wall”, as is the case with local authorities, and is therefore not suitable to used for purposes of defining a geographic area.

INFRASTRUCTURE

For the successful operation of a transport area the properties, extent and spatial position of the following infrastructure within the area should be known:

- a) Road network
- b) Rail network
- c) Public transport termini
- d) Public transport loading and off-loading points/bays
- e) Train stations
- f) Modal transfer facilities
- g) Public transport routes.

This information was available for the former GPMC area, but has as far as could be established, not yet been integrated. In the new areas to be included in the Tshwane metropolitan area not all of this information were available, as far as could be established.

TRANSPORT AREA PROPOSAL

From the above it is recommended that the transport area for Tshwane be taken as the same area as demarcated for the CTMM. The motivation is as follows:

- A very high percentage of trips (92,3%) being generated in the area also have their destination in the area
- It is not practical to define an area not coinciding with existing/future institutional boundaries – no suitable boundaries for an area bigger than the new Tshwane metropolitan area could be found.

CONCLUSION AND RECOMMENDATIONS

Local government transformation is currently receiving considerable attention in South Africa. At the same time the country's land transport system is to be restructured. The National Land Transport Transition Act is structured around the establishment of transport authorities for specific transport areas. The Act also provides guidelines for the determination of boundaries for the transport areas. The objective of the investigation was to investigate the establishment of a transport area for the Tshwane Metropole.

The investigation addressed the following issues:

- Land use development plans and transportation strategies for the areas surrounding the Tshwane area in order to define the nature of current and future interaction
- Travel patterns to and from the Tshwane Metropole
- Demarcation proposals.

Based on the above it is recommended that the transport area for the Tshwane Metropole be defined as the same area demarcated for the City of Tshwane Metropolitan Municipality. This recommendation is motivated as follows:

- It has been shown that although the “functional area” for the Tshwane metropolitan area is, in fact, somewhat bigger than the new demarcation area, the transportation significance and contribution of areas outside the demarcated area is limited
- The extent of infrastructure to be maintained and operated, and to be provided where it does not yet exist, was an important consideration. The reason for this is the strategy being followed to combine the functions of the transport authority as defined in the National Land Transportation Transition Act, and that of the “City Engineer”. The inclusion of additional areas adjacent to the City of Tshwane Metropolitan Municipality (over and above the cross boundary areas already included) will significantly increase the maintenance, operations and infrastructure provision burden, but will not make a significant contribution to income
- It is important to superimpose the boundaries of the transport area on other institutional boundaries. The demarcation proposals have been studied, and no alternative institutional boundaries could be identified.

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