RURAL MOBILITY BROKERING AND SUBSIDISATION: OUTLINE OF OPTIONS BASED ON A CONCEPT PLANNING STUDY IN THE CENTRAL KAROO

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ABSTRACT

This paper is focused on the feasibility and potential contributions of several innovative concepts as options for providing for expanded and flexible health and other social transport services in a deep rural context. These include i) a *transport booking office* (or mobility brokering network), ii) a *coordinated brokering and financing mechanism,* and iii) *a basic network of subsidised services* or a combination of these. The paper is largely based on a case study and proposed pilot implementation in the Central Karoo.

The current transport reality is described, as are options available for trip making within and between main centres and from farms to towns. Poor information flows regarding travel timetables and costs are revealed. The current practice with regard to the provision of health and education transport in the District is described and shortcomings and unserviced travel needs are identified.

The potential role of a central booking office / mobility brokering service and the implementation of a co-ordinated brokering and financial mechanism are examined as options for meeting some of the access and mobility needs of the community, along the N1 corridor, between hinterland towns off main routes and also for more local travel needs. Key drivers and implementation hurdles are noted.

1. INTRODUCTION

As in many other rural areas transportation is an acute problem in the Central Karoo, because of *inter alia,* the long distances, sparse population and high incidence of chronic poverty. Trip-making in general is limited, especially motorised and long-distance trips. Minibus taxis are the main means of public transport. The CPTR (2003), OLS (2004) and PTP (2004) of the area show that both demand and supply of public transport is limited.

Various aspects were examined in a move to improve regular access to a broader range of services.

The issues can be classified into the following groups:

- Local mobility issues in small towns / rural service centres;
- The facilitation of pedestrian, bicycle and other non-motorised travel movements;
- Inter-town mobility needs and issues (especially health transport requirements);
- Rural-urban mobility needs and issues (farm worker transport, mobile health services, week-end/ periodic learner transport) (Green, et al 2004).

Due to the low demand for services and the issue of affordability, the transport industry is not well developed and is currently in an oversupply situation.

Consequently:
- taxi operators are fighting an uphill battle for survival;
- the transport needs of people are poorly served, especially those living on farms and in small hamlets;
- most smaller towns do not have any legal operators, nor is there a school bus or other bus for hire; and,
- transport is expensive, to the extent that it is beyond the means of a large proportion of the population.

Options considered for improved mobility included improved infrastructure for non-motorised transport as well as investigating some options for improved public transport operations. This paper will focus on the operational issues of public transport, including the viability of a booking office and subsidised services.

1.1 The Mobility Brokering Service / Booking Office Concept

The concept of a transport brokering service has been conceived as a means of improving transport provision and co-ordination in rural areas and is promoted by the Draft National Rural Transport Strategy (Mashiri, et al., 2002). A brokering service is expected to provide a better, more efficient transport service to the public, while at the same time making it more rewarding for operators.

The service is briefly conceptualised as a centralised information, booking, scheduling and co-ordination service for all public transport, including non-motorised transport and both passenger and freight services where appropriate. A consequence of a more efficient and accessible service could be that new / additional services could be developed and offered. These could include offering trips for rural dwellers and farm employees, taking small volumes of produce to markets for emerging farmers or other small scale producers, acting as a feeder service for passengers embarking from trains or long distance busses, taking tourists to less accessible destinations and even a parcel delivery service. Another possibility is for operators to supplement existing health and school transport services where they exist. The latter services presently must often make trips that could be more economically handled by commercial operators -although funding of such services will need to be addressed.

The motivation for such a service is that transportation in rural areas can be improved - and users assured of better information and predictability of service - through a mobility centre which enhances both access and mobility. Although there are a minimum number of functions which all centres should perform, e.g. information on services and departure times, booking or requesting services, the exact nature of each centre is likely to be context specific.

2. CASE STUDY: CENTRAL KAROO DISTRICT COUNCIL

Transport information in Central Karoo, with the exception of the national rail and bus services, is not coordinated and public transport is in the main unscheduled. There is also currently an oversupply of transport operators especially as it relates to illegal operators. The oversupply is due more to the general inability to pay for services than not wanting to travel. The current supply of transport could potentially be controlled through a booking office which could also be the means for expanding the market for legal operators. In the

short term the market could be expanded through greater outsourcing of the transport function of line departments, such as health and education, or NGOs. In these cases, transport is not a core function but rather the means to make services accessible. The precondition for the success of such a mobility brokering service is the assumption that both passengers and operators will be better off than at present. This will result in better operational efficiency, profitability, improved vehicle utilisation and employment levels over the long-term in the transport industry.

2.1 Environment / Context

The Central Karoo District Municipality area is a vast, sparsely populated area covering 31% of the total area of the Western Cape Province.

Low productivity of the land means farms tend to be large. Consequently, the population outside of the few main settlements is very remote from main services and difficult to serve by any means except private road transport. Almost 50% of the estimated population of approximately 60 500 (Census, 2001) live in the town of Beaufort West while nearly 70% are located within the immediate vicinity of the four serviced towns. For the rest there are a few isolated population settlements located far from the serviced towns while nearly a quarter of the population live on the farms.

2.2 Current Transport Use and Modes

The distances between towns make the use of motorised transport essential to achieve mobility. The 2001 Census shows limited use of public transport for work and school access, these being the only purposes surveyed. Of those responding (47%), almost 74% moved around on foot, only 21% used motorised transport (car, bus, minibus, train) with only 7% of these using bus or minibus-taxis. A small number (3,5%) of trips were by bicycle. Dropping out of school because of a lack of transport and forgoing trips for medical purposes have been reported by the staff of different line departments.

For economic and social reasons the key potential users of public transport include the employed, as well as the disabled and learners. The high number of learners (24%) and disabled people (10%) who need to be accommodated in the transport system is a concern, especially in a situation of limited affordability, distributed demand and the non existence of modified vehicles.

A key factor to improved public transport is seen in greater co-ordination and scheduling of trips which can achieved through a central booking office.

2.3 Transport Supply

Four national bus operators and the mainline rail service provide scheduled long-distance services to the area. The majority of passengers using these services travel between the main metropolitan centres outside the borders of the District. There remains a limited amount of trip-making by rail between local towns, especially by Laingsburg residents. Other scheduled services are limited to scholar and employee bus contracts as well as a single regular unsubsidised commercial service within the town of Beaufort West. For the rest public transport is unscheduled.

During the CPTR (Dec 2002) the total number of vehicles (short and long distance) observed in the Central Karoo district was only 28 legal and illegal taxis, including both sedans and minibuses. This excludes 6 operators from Prince Albert that were identified later. Based on the observed data, only 66% of vehicles operating in the district are legal.

Illegal operators are located mainly in the smaller settlements such as Murraysburg and Merweville where they provide very necessary ad hoc services, although at a high cost and often with unreliable and unsafe vehicles.

Minibus-taxi services provide unscheduled (but regular) long-distance services to Cape Town, Oudtshoorn, George and Worcester, with limited intra-district travel. Special-hire trips are available to most places in South Africa. Other long-distance services are provided by the health department and vehicles belonging to sports clubs and other non-profit organisations. Routes for inter-provincial and long-distance taxi passenger transport services are illustrated in Figure 1.

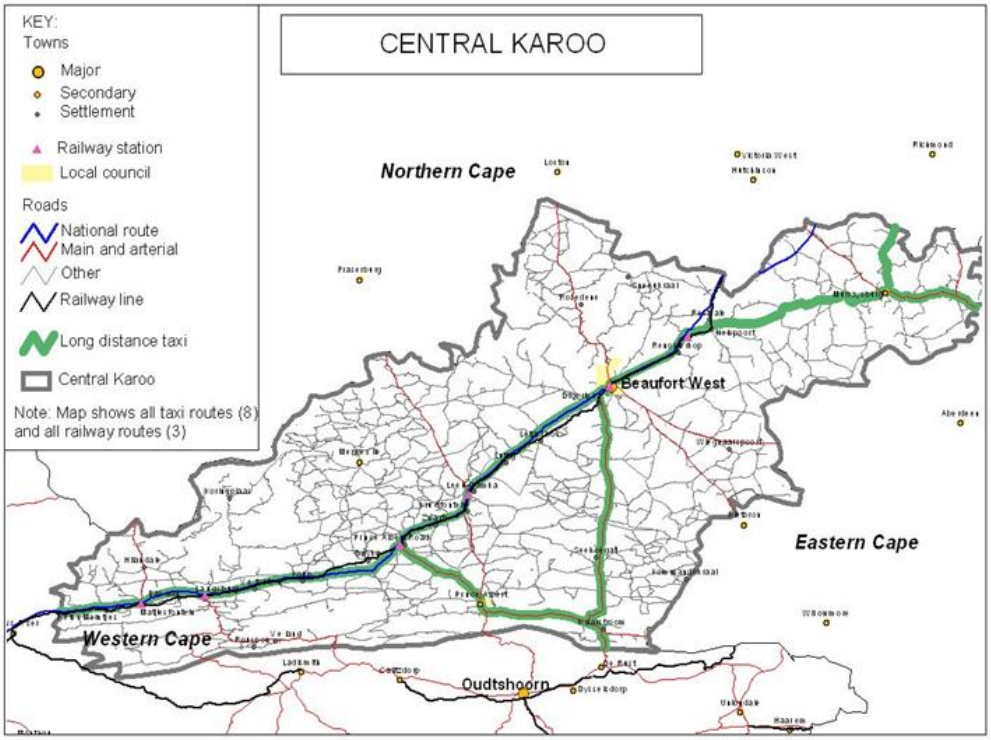

Figure 1. Long-distance taxi routes.

Most short-distance transport occurs only within Beaufort West. A needs analysis of current users shows there is a large difference between monthly peaks and regular daily demand. Monthly peaks occur around “All Pay” days in Beaufort West. Competition from informal sedans operating as public transport vehicles (without permits) impacts on the demand for minibus-taxi services. The situation is unsustainable for the number of vehicles competing for passengers. A proposed booking office would require that all taxi operators be legal and part of the local taxi association in order to operate. There is little other licensed transport in the District. Nelspoort, Murraysburg and Prince Albert have some irregular long-distance transport available as well as limited scholar and employee transport. The rest of the settlements, such as of Leeu Gamka or Laingsburg, are dependent on casual lift taking for a fee or informal vehicle charter.

2.4 Other Transport Services

2.4.1 Health

The task of providing integrated and co-ordinated health care is facilitated through the district health system. The platform for providing primary health care within the district is the clinics and the community health centres, and district hospitals. When a hospital is unable to provide a service, patients are referred to another hospital in the province that can provide the required services.

Patients wanting to *access health facilities* rely on their own means of transport to get to and from such facilities. Patients in towns can use local taxi operators (legal and illegal) or walk. Patients outside the towns mostly rely on farmer transport or the visits of the mobile clinics to access primary health care services. In emergencies, the ambulance unit can be sent to collect a patient from home, if the unit is available. Long waits are common. When *referral medical services* are required that are not provided by medical facilities in the district, patients are transported to larger provincial hospitals.

The extent of the District and the lack of transport to towns and settlements where medical and related health services are available create a need for primary health medical services to extend into the District. A mobile clinic service performs this service and visits each farm along 109 specified routes to attend to farm workers and their families.

2.4.2 Learner Transport

The PGWC Education Department provides a range of assistance to learners in rural areas to enable them to attend school. In addition to the provision of subsidised bus/taxi services though tendered contracts, direct financial support is provided though transport or boarding allowances/ bursaries. Learners may use subsidised services or qualify for either type of bursary, but only qualify for one scheme at a time.

Notwithstanding the availability of schemes, many learners still have problems accessing schools. Two key areas of concern remain access to high schools for small communities as well as weekly transport to and from boarding schools. For many learners the only viable access to school is to live in hostels.

2.4.3 Farm Workers

Farming employment in the Central Karoo generally includes the provision of housing on farms and thus transport to work is not an issue for these farm workers. However, transport for social, educational and medical needs remains of concern. The long distances from the main towns mean the transport connections present a significant problem.

Currently most farm workers are dependent on their employers for all motorised trips relating to shopping, access to school, social trips, medical services not provided by the mobile clinics, as well as access to other government services such as “All Pay” days, grant applications, births, deaths, etc.

2.5 Assessment of Potential Public Transport Users

The number of potential public transport users is related to the total number of people living in the area, but not all persons are likely to make use of public transport. In order to calculate the potential users, the following assumptions were made for short-distance journeys.

The following groups were excluded from being potential public transport users:

- Small children below the age of 6 are unlikely to undertake journeys on their own, although their needs may require their parents to travel, and are excluded from all journeys.
- Children between 6 and 16 were excluded from long distance journeys.
- People earning more than R3 200 per month are more likely to use private motorcars rather than taxis. (R3 200 was chosen because it is the most appropriate income divider used in the Census tables).

The number of potential transport users was thus viewed as being the remainder of the total population (see Table 1). However affordability and the desire to travel has as yet not been taken into account and this will require further clarification at a later stage.

Table 1. Potential public transport users. (Irrespective of affordability or trip generation rates).

	Short journey	Long journey	
	Urban	Urban	Rural
Beaufort West	25 460	19 020	4 020
Prince Albert[1]	4 320	3 230	2 220
Laingsburg[2]	3 960	2 960	1 340
Murraysburg	3 660	2 730	930
Bitterwater	1 050	780	-*
Leeu-Gamka	720	540	-*
Merweville	950	710	-*
Total	**40 120**	**29 970**	**8 510**

[1] Klaarstroom is included in the rural Figure of Prince Albert.
[2] Matjiesfontein is included in the urban Figure for Laingsburg.
* No rural population recorded for these towns (included elsewhere)

In addition to the general demand for travel, specific potential users groups include:

- Non emergency health-related trips;
- Employed in main towns;
- Learners;
- Farm workers;
- Special Needs Passengers make up 10% of the population. Any additional services would be of benefit to this group. Many are able to access conventional vehicles with limited assistance when it is necessary and affordable, however the brokerage would provide an ideal opportunity for providing services to this group.

3. PROPOSAL FOR MOBILITY BROKERING AND NEW OPERATIONAL SERVICES

The following are seen as key issues to be addressed by a mobility brokering service:

- Improved access to information regarding trips and costs of trips, and the regularisation of fares;
- Improved vehicle utilisation together with improved trip reliability regarding departure dates and times;

- Promotion of access to safe legal taxis as only legal taxis would form part of the service. This is likely to reduce the attractiveness of illegal operation;
- The brokerage services could provide a means to outsource the transport of non-emergency patients to local operators. Outsourcing may also provide the solution to meeting the needs of patients who are discharged from hospital and need transport home;
- A mobility brokerage could co-ordinate additional transport for learners if funding were available;
- The transport of small parcels to clinics or individuals in the rural areas could provide additional income to operators;
- Minibus-taxi services could provide a more efficient feeder service between rail stations and settlements if patterns of alighting / boarding passengers are reported and known;
- Access to a central service could simplify information access, avoiding the current cumbersome process that involves the need to approach various operators directly.
- Additional services could be provided to the tourist if the right vehicles were available. This will also expand the market for operators;
- Many of the issues indicated above should potentially expand the market for public transport operators. This should in turn result in an increased profitability of operators and a better and safer service for users.

The situational analysis undertaken up to February 2005 provided a good basis for assessing the general demand and supply of public transport services in the Central Karoo as well as some scope for promoting cycling amongst scholars.

2.6 Mobility Brokering and Related Services

In a low-density, low-travel volume context such as the Central Karoo, the provision of a facility such as a mobility brokering centre can only be viable if it performs a range of functions (i.e. achieves so-called economies of scope). Moreover, to be “developmentally effective”, it should provide sufficient benefits to both operators and users.

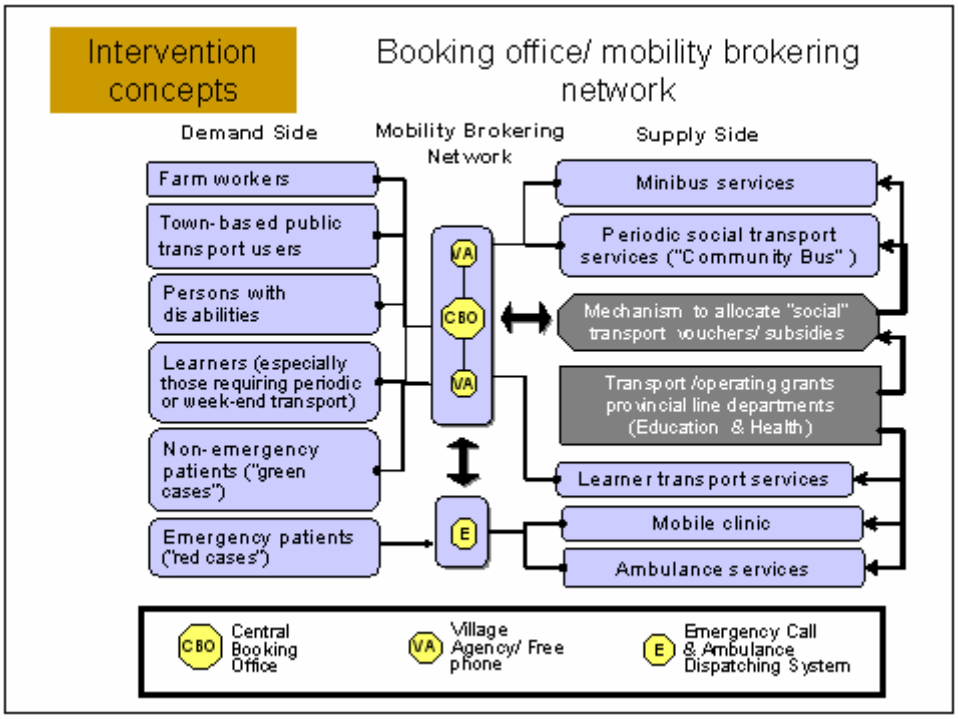

Figure 2. Demand and supply variables for the mobility brokering service (Naudé, 2004).

A number of options are being investigated. The following diagram illustrates one of these, which is a comprehensive Mobility Centre, linked to a Multi-Purpose Community Centre (MPCC).

In this case, the range of functions includes:

- A call centre and booking facility (accessible via telephone, at the MPCC and taxi rank, and via village agencies);
- A range of demand-responsive and scheduled periodic services serving: a) learners (e.g. to return from hostels over week-ends or to attend special courses at a central facility); b) non-emergency patients; c) farm workers and families (e.g. to go to town on all pay day); and / or d) tourists.
- A bicycle, parcel and mini-container store, linked to: a) the distribution of subsidised bicycles to schools (e.g. for allocation to learners in terms of a community service / points-earning scheme); b) the empowerment of existing passenger transport SMMEs to provide parcel and "small" freight services.

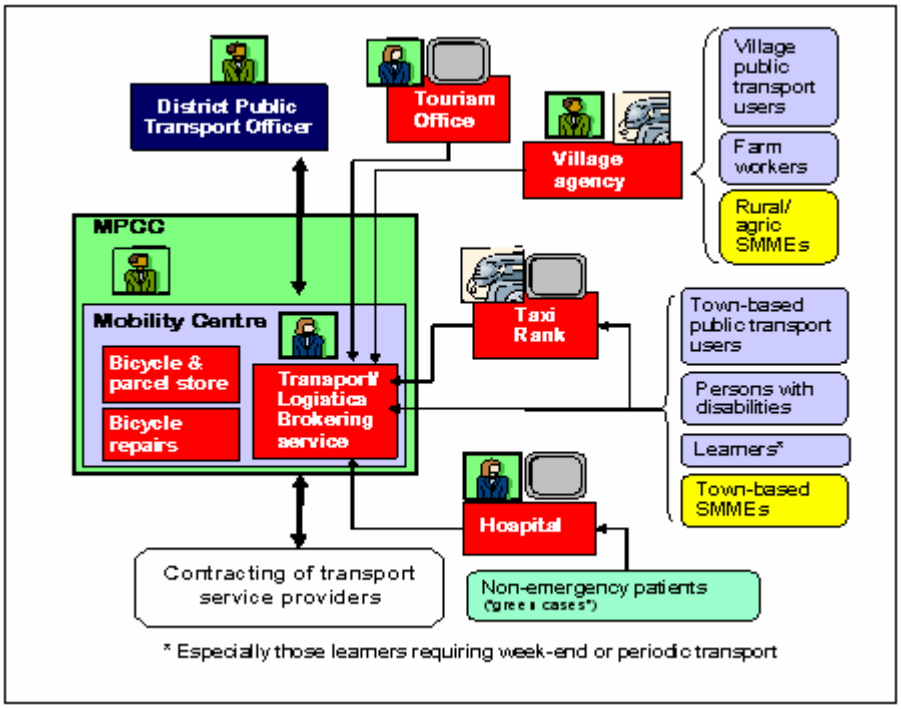

Figure 3. Operational configuration of mobility brokering service (Naudé, 2004).

On its own the brokering service might not be feasible in this extremely low density context of the Central Karoo. Thus, the other major focus is being placed on designing and costing a system of subsidised transport services to link to the brokerage.

A situational analysis has dealt with some of the demand-side issues, but additional pre-feasibility investigations are needed to assess some of the institutional and policy implications, explore the market for additional or cheaper parcel and small freight services, assess inter-sectoral alignment or conflicts, produce concept service designs, and assess the cost effectiveness of the alternative options.

Although the exact nature of the service has yet to be defined, the minimum improvement that a booking office / brokerage service should achieve is the direction and co-ordination of trips and the provision of information. Improved organisation of operators should also be achieved.

The viability of the transport market requires control being maintained over the number of operators in the market. This could be achieved through a booking office to reduce the current oversupply of operators many of whom are unregistered operators. These operators undermine (present and future) efforts to organise the taxi industry for more efficient service delivery. However, the value added by ensuring only legal operators provide services without an expansion in the market, is limited given the unaffordability of travel in Central Karoo except for essential trips. It would also do little in the way of expanding mobility for the communities most in need.

On the other hand, the improved internal efficiency in the public transport industry, in conjunction with the cooperation between operators and line departments such as health and education, will add value not only to the local taxi industry but also to the whole transportation scene in the Central Karoo.

The concept includes two sets of mutually complementary interventions namely the development of a mobility-brokering network, including a central booking office or “mobility management centre and, secondly, the development of a subsidised transport network in the Central Karoo.

Given the nature of the area as described, any proposed public transport routes will operate on the rural road network excluding the private access roads between the farmstead and the rural road. It is these rural road conditions (surface condition, width of road, number of gates, etc) that will heavily influence the choice of vehicle and the average speeds that can be reasonably attained. The services proposed are not to be seen as a door-to-door facility, instead they provide a link between the rural areas in general and the centres where medical, government and shopping facilities are available.

At the time of preparing this paper no decisions have been taken as to who will provide the service or what type of vehicle is considered most suitable. Any reference made to buses or taxis is purely illustrative and not indicative of a chosen mode.

Based on the Current Public Transport Record and the Public Transport Plan and with substantial inputs from the Department of Health and local schools an area of acute need has been defined. Five rural villages have thus been proposed as centres for the rural public transport system. These villages are Murraysburg in the far east of the region, Prince Albert to the south of the region, Merweville to the north-west, Laingsburg to the far west of the Central Karoo and lastly Restvale/Nelspoort to the north-east corner and almost 55 kilometres from Beaufort West.

It is conceptualised that services will link each core village to Beaufort West via a variety of routes in order to maximise the number of rural settlements and farms that can benefit from the service. Also, the level of service provided will not be allowed to undermine any infrastructure, such as a general store, that already exists in these villages.

The village of Murraysburg will be discussed in more detail to illustrate the way in which such services may generate. The four Murraysburg routes will serve some thirty-one farms and settlements, approximately fourteen per route as some points will be on two routes. The route lengths will vary between 145 and 202 kilometres and an estimated journey time of between three and four hours will apply. Only 50 kilometres of these routes are on good quality road surface; the remainder have surfaces varying between average rural gravel road and very poor rural gravel road surfaces.

As for passenger numbers, they are obviously not going to be very high. The pension and grant pay-days will undoubtedly place a great burden on the system but it is expected that the farm manager / employer will continue to provide a large part of this need. The above services will essentially be for the adult population that have been identified by the CPTR, PTP and other studies.

The school-children that need transport to the Murraysburg School will have to be catered for on Mondays and Fridays; although there is some evidence that these children may require transport only at the beginning and end of each term.

Designing services to meet these needs within the bounds of affordability is not a simple task. A delicate balancing act has to be undertaken to ensure rural mobility is for all rather than the very few. The introduction of the brokerage service is seen to be an integral part of establishing and promoting the services. It will also act as the monitor to ensure that the services are operated in a proper fashion and that the operator claims a subsidy only for the authorised services that have been operated in a proper manner.

All proposed services are to be subsidised but not all are to be operated on a strict timetable and therefore the subsidy will be linked to actual operations. It is envisaged that from the area of Murraysburg each of the main routes will operate two round trips per month on Mondays to Fridays and once per month on Saturdays and Sundays. These services form the basic timetable, will be subsidised and also monitored by the brokerage office. En-route monitoring will be undertaken by the passengers and an on-board vehicle location system if one can function in these remote areas at an acceptable cost and level of reliability.

These services will accommodate both school children and those needing to get to the main referral hospitals that are currently using dedicated Department of Health vehicles. These timetabled services will bring the vehicles into Beaufort West between 0700 and 0800 and will return at 1800, meaning very early trip starts and late arrivals. A very long day, but it can be as much as 24 hours quicker than current arrangements for medical trips. Another factor guiding the arrival and departure times is the departure of the local services to Cape Town and to George. Although any intending passenger, whether medical or not, may use all of the services the services are timed around “institutional operating hours”. Obviously a large degree of cooperation with the administrations of both hospitals is required.

The non-timetable services will operate from Beaufort West between 0800 and 0900, returning from Murraysburg at 1300 or 1400. (A similar situation would apply to the other core villages). These services although classified as non-timetabled will operate on a fixed route and timetable but only on demand and through bookings with the booking office. Services will attract a subsidy payment only when operated, otherwise a standing charge will be paid - a practice that is already in place in the subsidised bus contract system. Whether or not an operator would be allowed to provide the trip at its own risk is an issue that has not yet been considered.

Other issues facing such operations include the location of the vehicle’s home base. At first glance the five selected core villages should be selected. However, not all villages will sustain an operation over 20 or more days per month. In the case of Murraysburg it is likely that only 10 days of operation per month may be sustainable for some considerable time. Naturally the vehicle cost component of the operating costs will be very high in this instance. An operator could perhaps be allowed to use the vehicle on its own account and operate services to Graaff-Reinet or some other centre outside of the Central Karoo.

Other areas have similar possibilities of links to settlements and villages immediately over the provincial boundaries. Towns such as Sutherland, Fraserburgh, Loxton and Victoria West are much closer to facilities in Beaufort West's than to facilities in their own province.

The nearest other village centre for the Murraysburg services is at Restvale/Nelspoort some 80 kilometres away. Here, there is evidence that some six services may be operated and that eighteen days a month of operation may be practicable. Indeed, one of the services could operate daily for senior school-children travelling to Beaufort West and this in turn may reduce demand for school hostels or boarding out places.

In the case of Murraysburg it may be better, in an economic sense, to base the vehicles at Restvale/Nelspoort and operate dead kilometres on the days the Murraysburg services are due to operate. The social and economic considerations in areas such as these still have to be evaluated and discussions concluded. Drivers' hours are also a limiting factor in the provision of these services.

With the right type of vehicle the collection and delivery of small parcels, grocery deliveries from principal shops to farmsteads on the defined route may be practicable. Insurance considerations and payment for these alternative services are issues that still have to be investigated.

The CPTR shows that 73% of the population is unemployed and grant dependent. It is not foreseen that the government would provide these services for free nor is it expected that 100% of the cost will be recovered. As previously mentioned a delicate balancing act has to be performed to allow government to provide reasonable access at an affordable cost for all stakeholders.

The Murraysburg operation of four main routes may cost between R360,000 and R400,000 per annum to provide, with a potential income of between R17,000 and R25,000. With a kilometre distance of almost 100,000 per year the average cost rate is under R4.00 per kilometre. It is very unlikely that operating costs will ever be covered by fare income as passenger growth forecasts are very low given the nature of the area being served. Cost increases will be at least the annual CPI rates and possibly higher. It should be noted that comparisons with urban bus systems are misleading and irrelevant. The values indicated are basic operating costs excluding establishment charges, brokerage costs and also exclude all alternative sources of income.

4. CONCLUSION

Critical success factors to rural mobility brokering and subsidisation that are the subject of ongoing investigation / negotiation are:

- Funding and subsidisation options;
- Alignment with national and provincial policies;
- Cooperation by taxi operators;
- Management of transport supply, including illegal operators;
- The appropriate business / organisational model for brokerage;
- Appointment of a 'transport planner / mobility manager';
- Expansion of the passenger transport demand; and,
- Expansion into other non-passenger mobility fields such as logistics.

A key factor would be to ensure that the mobility brokering service will have a critical mass of functions to allow it to be sustainable in the longer term.

It is hoped that the concept planning study in the Central Karoo can act as a forerunner in promoting the concept of rural mobility brokering and subsidisation throughout South Africa's rural areas. The establishment of critical success factors that will be applicable in other similar rural environments will be supportive of a range of strategic activities to promote rural mobility.

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