

KWAZULU-NATAL RURAL MOBILITY PROJECT : FINAL RECOMMENDATIONS

PREPARED FOR THE KZN DEPARTMENT OF TRANSPORT BY V3 CONSULTING ENGINEERS

1. INTRODUCTION

1.1 BACKGROUND

The lack of effective transportation systems is one of the major problems that hinders the full development of rural KwaZulu-Natal. It restricts the mobility of communities which decreases their opportunity to participate in activities necessary for socio-economic development. This lack of opportunity in turn maintains, if not actually produces, many of the social and economic problems characteristic of rural areas.

In July 1998, the KwaZulu-Natal Department of Transport (KZN DOT) initiated a project to identify and address the province's rural mobility problems as a second phase of the Community Access Roads Needs Study (CARNS). The CARNS project examined the infrastructural side of rural transport in the form of community access roads and provided a list of priorities for funding road access. The **KwaZulu-Natal Rural Mobility Project** was the next step. This project was to assist in identifying rural mobility patterns and needs in order to provide input to the development and design of transport modes and services to accommodate these needs. In this way, rural transportation issues could be addressed from an holistic viewpoint, taking account of both infrastructure and operational aspects.

The **KwaZulu-Natal Rural Mobility Project** was also to take cognisance of the policies, transport-related needs and planning activities of other provincial departments, as well as the province's rural development and economic growth policies. Input was to be obtained from all role players on provincial, regional and local level during the project. The project objectives are shown in Box 1 overleaf.

1.2 PURPOSE OF DOCUMENT

The purpose of this document is to outline and discuss the main recommendations emanating from the **KwaZulu-Natal Rural Mobility Project**.

This first introductory chapter provides some background on the role of infrastructure services, such as transport, in addressing poverty and inequality.

Chapters 2, 3 and 4 discuss the recommendations with regard to the public passenger transport network, access to social services and local transport needs respectively.

In Chapter 5 the recommendations are prioritised and an implementation programme is

proposed.

BOX 1: KWAZULU-NATAL RURAL MOBILITY PROJECT OBJECTIVES

- **Collect and analyse supply and demand information on all public transport modes, making optimum usage of existing information**
- **Transfer the information onto a GIS for spatial analysis and updating**
- **Identify mobility needs**
- **Review policies and devise operations and infrastructure strategies to effectively and efficiently address the identified mobility needs**
- **Ensure that these strategies take account of inter-departmental needs such as accessibility to education, health and welfare services**
- **Utilise the findings of the study to improve and rationalise public transport services through:**
 - **the planning and design of subsidised bus contract services and**
 - **assisting the LRTB with information for use in deciding on applications for permissions**
- **Ensure that the transport strategies developed are supportive of the Provincial Spatial Growth and Development Framework and the Integrated Rural Development White Paper for KwaZulu-Natal**
- **Prioritise implementation projects with a view to promoting service delivery and improvement of rural mobility**

1.3 OVERVIEW OF POVERTY AND INEQUALITY

South Africa has the most skewed distribution of income in the world after Brazil. The poorest 40 percent of households receive about 11 percent of total annual household income, whereas the top 10 percent of households receive about 40 percent of income.

The Province of KwaZulu-Natal is estimated to have the highest incidence of poverty in the country after the Eastern Cape and Northern Province, with about 21 percent of all persons considered to be poor in the country living in KwaZulu-Natal.

Further facts about poverty and inequality in South Africa are as follows:

- The poverty rate (*i.e.* percentage of households classified as poor) amongst blacks is about 61 percent. The poverty rate in rural areas is estimated at 71 percent in comparison to the rate in urban areas which is about 29 percent.

- The poverty rate is 15 percent for metropolitan areas, 27 percent for secondary cities and 35 percent for small towns. Due to the decline in agriculture or lack of a substantial economic base, more than two-thirds of small towns recorded real economic decline during the early 1990s.
- The poverty rate of female-headed households is about 60 percent in comparison to male-headed households which is about 31 percent. Male-headed households earn double the income of female-headed households, and urban households earn double that of rural households.
- The unemployment rate of poor females is estimated at 57 percent and that of poor males at about 54 percent. Poor people face the problems both of unemployment and the low quality of the jobs which they otherwise occupy.

1.4 THE ROLE OF INFRASTRUCTURE SERVICES IN ALLEVIATING POVERTY AND INEQUALITY

The 1998 Poverty and Inequality Report (PIR) views poverty and inequality as both:

- Lack of access of households to income and services; and
- The inability of households to generate income.

Two groups of policy prescriptions are distinguished:

- Short-term redistributive policies for income and asset transfers; and
- Medium term growth policies that foster the optimal use of household assets.

In the long term, policies that result in sustainable development and economic growth are seen as the key factors influencing the ability of households to break out of a cycle of poverty.

The RDP and Gear provide the broad policy platform for the reconstruction and development of South African society. Gear starts from the assumption, strongly supported by international evidence, that the most successful strategy for reducing poverty and promoting equity is one that emphasises growth and job creation.

A series of more specific analyses and strategies developed since 1994 further define the role of infrastructure services. These include the National Infrastructure Investment Framework (NIIF), several sectoral White Papers and other policy statements, the programme of SDI

initiatives, the Municipal Infrastructure Investment Fund (MIIF) and the action plan for the Consolidated Municipal Infrastructure Programme (CMIP). Together they articulate four key policy trends:

- Recognising the importance of infrastructure services in national and regional growth;
- Setting basic standards for delivery of services in relation to affordability levels;
- Defining public sector responsibilities; and
- Emphasising the need for private sector involvement in meeting the challenge.

As with the distribution of income, the distribution of infrastructure services in South Africa is very unequal. But the development challenge entails far more than simply removing backlogs. Affordability and technical and operational levels of service need careful attention.

Economic and social infrastructure services can reduce poverty and contribute to job creation by supporting economic activity, human development and wealth creation. Since infrastructure services lower production and transaction costs while also enhancing flexibility in the economy, they can support the kind of structural change that makes sustainable growth possible.

The provision of infrastructure services may not necessarily lead to greater equality in the distribution of wealth, in fact, the opposite may occur. A DBSA econometric analysis suggests that generally public infrastructure investment seems initially to favour rich households over poor ones. In order to help the poor, investment in infrastructure services needs to be specifically managed, financed and priced to do so.

Improved transport services provide access to markets and employment opportunities, social and medical services, education opportunities, and families and acquaintances, thus potentially reducing poverty, vulnerability, isolation and powerlessness. However, this does happen automatically. In order to improve welfare, infrastructure services must be planned, installed, maintained and priced in ways which support economic development, create jobs and support the supposed beneficiaries' needs.

A number of problems are commonly associated with infrastructure services provision in developing countries. Three of these problems which are particularly applicable to the provision of transport services are as follows:

- Setting too high a level of service as the 'standard', which rapidly absorbs all available resources before the basic needs of all inhabitants are met.

- The interlinked issues of low levels of service payments, subsidies and tariffs. Essentially, the issue is that government has committed itself both to universal service delivery and to fiscal restraint and hence cost recovery.
- There is significant evidence to suggest that people respond to failures in public service delivery by creating networks and modes of behaviour outside the state system. It is by no means automatic that they will choose to abandon these if 'official' service delivery becomes available. Many countries worldwide have had to adjust laws and formal institutional practices in order to accommodate social behaviour which did not conform to the formal systems. Infrastructure services investment may founder if it ignores the possibility that citizens may not conform to the expectations of planners. Economic rationality, and social and cultural patterns play an important role. The development of taxis and LDVs seems to fit this pattern.

1.5 SPATIAL ASPECTS

Many South Africans, especially poor ones, choose migration as a means to pursue new opportunities. It is estimated that some 200 000 people are engaged daily in a form of resettlement for some or other reason.

Studies show that as urban unemployment continues to rise, job hunting is still a major, but not the only reason for migration. Infrastructure and the availability of services have assumed greater significance, with land close behind.

It has been found that in KwaZulu-Natal, about 4 million disadvantaged people have migrated from their home communities in search of a better life. Only about a quarter of all recorded moves have been from rural to urban areas. Three-quarters of all moves have been rural to rural and most have been orientated towards areas around small towns and secondary cities.

Infrastructure services can either:

- Support existing economic activity; or
- Direct such activity to new locations.

The policy challenge is to decide on the extent to which particular signals and responses should be pre-empted and encouraged or rather left to create economic effects by themselves.

The demand for the concentration of infrastructure services is quite strong, both for investors

and for individuals. A "package" of services in a well-organised community is generally sought.

At the heart of a spatial policy that assists in reducing poverty must be an improvements of programmes which strengthen the asset of the poor. Nevertheless, in order for asset strengthening programmes to be effective, the geographic dislocation between livelihoods, assets and infrastructure of the poor must be reduced, and a set of policy mechanisms must be provided to encourage people, jobs and infrastructure to be closer together. One must aim to try to prevent a spatial divorce between jobs growing in one area, and houses and infrastructure being built on other areas.

Development in small towns and rural areas requires more consideration. If people are living in these areas, internal and adjacent markets must exist. This may justify transport linkages to enable residents to maximise economic opportunities. However, where resources are scarce, costly investments in deep rural areas and regions without a sound economic base should be approached with caution lest uneconomic settlement patterns are reinforced. In South Africa, providing the same level of service in a rural area is almost always more expensive than in urban areas, but a less expensive level of service may be more acceptable in a rural area. The affordability of infrastructure services must be taken into account when the level of service is planned. User charges may change the demand for services. The current high growth rate of rural towns and surrounding areas may not persist, and it would be unwise to project these growth rates when planning provision of infrastructure services.

The majority of relevant research studies provide a convincing case that many of the distortions and dynamics introduced by apartheid have the potential to become self-perpetuating, and would therefore continue to reproduce poverty and perpetuate inequality. This is evident in the competitive subsidy contracts, and also to a certain extent in the designation of rural service centres where there are existing towns that were originally established to serve (white) farmers and the concentrations of (black) population are elsewhere.

1.6 ACCESSIBILITY AND MOBILITY MODEL

Figure 1 overleaf shows a simple accessibility and mobility model which contains most of the elements considered in this study and its recommendations.

The components of accessibility may be considered within a simple spatial framework: at the point of origin (usually the home), at the destination (the location of the amenity) and en route between origin and destination. Certain factors may act positively or negatively thereby either promoting or inhibiting the use of an amenity.

At the origin accessibility is largely a function of:

- Available income;
- Available time; and
- Ownership of a means of transport (mobility).

At the destination accessibility is largely a function of:

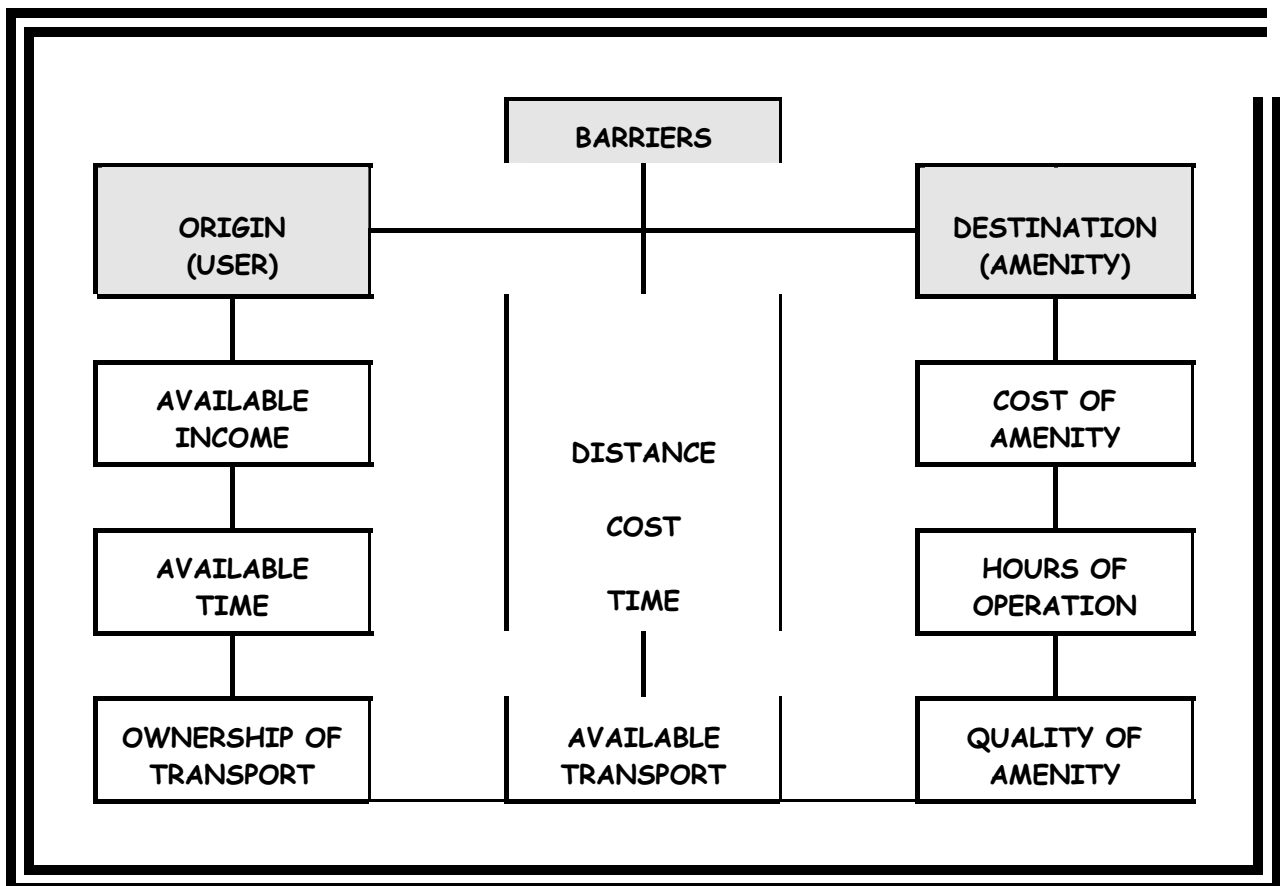
- The cost of using the amenity;
- The hours of operation of the amenity; and
- The quality of the amenity.

The user must overcome the barriers of distance that lies between the user and the amenity.

This will involve:

- A cost;
- A time factor; and
- A means of transport (mobility)

FIGURE 1: ACCESSIBILITY AND MOBILITY MODEL



Adapted from Smout & Naidu (1986)

2. PUBLIC PASSENGER TRANSPORT NETWORK

2.1 INTRODUCTION

The first set of recommendations apply to the public passenger transport network as a whole, dealing with the criteria that are necessary to provide efficient and effective public passenger transport services that:

Meet customer needs;
Operate profitably or minimise the need for subsidy, and
Are viable in the medium to long-term.

There is a natural hierarchy of demand for public transport and therefore the services needed to meet this demand should vary. Higher demand that is more concentrated over time and space, requires a high capacity mode (or vehicles) to accommodate it. Lesser demand require lower capacity modes (or vehicles) to deal with it. Some modes are more suited than others to meet different demands and to provide different levels of service.

The public transport market is not homogenous. It has to be recognised that there are various market segments that should be provided for separately and charged accordingly. This justifies various services with different quality levels running along the same route. This should not be seen as wasteful competition, but as the provision of complementary public transport services. This type of market segmentation is also found in the private transport market, where there is an extremely wide range of vehicles used, ranging from a VW Golf to a Rolls Royce, from a vehicle just off the production line to a 20 year old "banger", from an LDV to a sports car.

In a discussion of an ideal network, certain factors need to be taken into consideration if the results are going to be relevant to the existing circumstances. This means that the "ideal" is not necessarily a theoretical one, but a more practical one which takes notice of present day realities such as the lack of government funds for new investment, and the existence of the minibus-taxi industry and the rail network. For instance, a heavy investment has already been made in rail infrastructure and in most cases this has been written down or written off. This means that there is a case for taking some decisions for existing rail lines that would not be taken if new infrastructure had to be provided. The question of extending rail services falls between the two.

2.2 ROUTE DESIGN RECOMMENDATIONS

2.2.1 THE IDEAL NETWORK

In approaching the design of the ideal network, the first consideration is the hierarchy of routes and, in this case, a top down approach produces a better result. This is because the all higher level routes should be able to operate profitably and therefore it is sensible to identify them so that only the lower level routes are even considered for subsidy. (The terms "higher level" and "lower level" do not refer to importance - the lowest level route in a deep rural area may be essential for the life and well-being of scattered, isolated communities, while the highest level routes may be used by more affluent people travelling for pleasure.) In this two-tier hierarchy of routes, it is necessary to sub-divide each level in order to segment the market more clearly.

The identification of the profitable routes can be likened to providing a transport framework that is free-standing, but which can help to support other less profitable or unprofitable services and in turn is supported by those services. Take for instance the case of a passenger travelling by bus from a rural area into Ladysmith and then catching a long-distance coach to Durban. The bus route may be subsidised while the long-distance route will definitely not be, but it nevertheless benefits from the subsidised part of the journey. In the same way, additional revenue is generated on the rural route by the fact that the passenger can connect on to the long-distance coach.

[i] Higher level routes (1)

In the higher level routes, there are two sub-levels, 1A and 1B.

Level 1A comprises inter-provincial routes that link provincial centres such as Pietermaritzburg - Umtata - East London - Port Elizabeth. The services are provided commercially, and operators and modes are subject to competition. These services meet a wide range of customer requirements such as tourism, recreational, visiting friends and relatives and specialist medical treatment, but not commuter needs.

There is no limitation on mode; it includes minibus-taxi, bus, and rail, and it includes a variety of quality levels, such as luxury coach, standard bus, minibus, and sleeper train. The services themselves are varied. Some can operate as express operating non-stop from end-to-end such as from Durban to Johannesburg, others may make limited stops but still provide a relatively fast journey, and others may make many stops.

It is not possible or necessary to specify a frequency because it will be affected by the demand and the vehicle capacity. In addition, the frequency will not necessarily be uniform over the total route length, because the services will respond to demand

Although these routes are defined as inter-provincial, they may incidentally also perform an intra-provincial function, such as from Durban to Pietermaritzburg, or from Ladysmith to Newcastle.

Level 1B comprises intra-regional routes and, because national travel is made irrespective of administrative boundaries, some of these routes may cross provincial boundaries eg Vryheid - Ladysmith - Harrismith.

In all probability these routes will be operated commercially and be open to some form of competition, although there could be a case for some routes to be exclusive until they are well-established and able to stand alone. In this case the subsidy could be viewed as compensation for taking the risk of establishing a route.

These routes satisfy a wider range of customer requirements than inter-provincial routes, including commuting and travel to hospitals and to some clinics

In the same way as the level 1A, there is no specification as to mode and there will be a variety of quality levels provided, such as semi-luxury bus, standard bus, and minibus-taxi.

Although there will be a variety of service types, there will mainly be limited stop and all stops services, but there may occasionally be end-to-end non-stop services.

As with level 1A, the frequency cannot be prescribed because it will be a response to demand and again will be affected by vehicle capacity. This means that frequency will not necessarily be uniform

over the total route. For example, on a route between Matatiele and Pietermaritzburg, the Matatiele - Kokstad section will probably support a lower frequency than the section between Kokstad and Pietermaritzburg.

[ii] Lower level routes (2)

Important issues in the discussion of the lower level routes are the appropriateness of vehicle capacity for the demand, and vehicle suitability for road conditions.

Level 2A of the lower level services comprises essentially local services that are provided by bus and minibus-taxi. At the moment, commercial services are mainly provided by minibus-taxis and sometimes by buses. However, subsidised services are almost always provided by buses that operate routes to cities and industrial and market towns. All the services are characterised by a concentration of demand in the morning and afternoon peak periods.

These services usually link settlements and residential areas with service centres, hospitals, high schools, towns or cities, and the frequency will depend on the demand/capacity ratio.

It is this at this level that the regulation of the bus industry, de facto deregulation of the minibus-taxi industry, subsidy, and violence has distorted the provision of transport services. User choice has not been allowed to be the deciding factor and attempts by government to regulate the provision and conduct of public transport has failed. Therefore, the circumstances are such that it will be very difficult even to move from the status quo towards a more rational situation, let alone an "ideal" one, especially in the short-term.

One result of this state of affairs and the demands from the minibus-taxi industry for subsidy has been that an identification of commercial routes and services is not receiving sufficient attention. Even those taxi routes that have been operated commercially for many years may be under consideration for subsidy. Under the ideal network, the emphasis is on determining those routes that can be operated profitably (or at least at minimum subsidy) so that the remainder can be identified and evaluated for desirability, utility, and effectiveness and efficiency. It is quite possible that territorial disputes and a lack of adequate transport planning at operator and government levels has produced a system that is performing sub-optimally. Perhaps by using the concepts and criteria given above, the travelling public at this level could be better served and at a lower cost to government. In addition, if operators and government were to take into account marginal costs of operation as opposed to average costs, there could be an improvement in service levels at off-peak times..

Level 2B services cater for low demand mainly over tracks in rural areas. In many instances, these services are provided at this time, perhaps illegally, by LDVs. In this case, the appropriateness of the vehicles in terms of passenger safety and comfort are open to question.

These services tend to link remote or isolated settlements with schools and clinics, and/or higher level public transport routes or rural service centres. The serving of rural centres is probably only appropriate if the distance along another transport route is short enough to make a transfer costly or time-consuming or inconvenient for passengers.

In this study, transport gaps in deep rural were identified and possible candidate routes that could be covered by LDVs or other small capacity vehicles were identified. Such route sketch planning could be a tool in promoting the public passenger (and possibly limited freight) transport provision in these areas.

For broad planning purposes, it is estimated that a population of about 1 000 provides a potential ridership level to sustain one LDV. However, there may be such populations where no service is currently provided, and it is likely that poor (or lack of) road infrastructure is the main inhibiting factor. When the road is up-graded, if no entrepreneur takes advantage of the opportunity to provide a service, it is recommended that the planned route should be pointedly advertised to potential operators.

2.2.2 ROUTE DESIGN CRITERIA

In order for a transport undertaking to meet its financial goals, costs need to be kept as low as possible (while still meeting passenger needs) and income must be maximised. To a large extent, costs are not determined by the route design, although there are certain factors that may have an impact on both capital and operating costs and the most important of these relate to the directness of the route and minimising the time taken to cover the route. This is because the number of vehicles (buses, taxis, trains) required to operate a given frequency or timetable will reduce as the journey time reduces. For example, the number of vehicles needed to operate a 15 minute frequency over a route with a round journey time of 120 minutes is 8 (120 divided by 15 = 8), but if the journey time is increased by five minutes to accommodate a short diversion, the number of vehicles becomes 9 (125 divided by 15 = 8.33 = 9), as it is not possible to have less than a whole vehicle.

The criteria to be taken into account in the design of public transport routes and networks are discussed below.

[i] Criterion 1: Directness and minimum in-vehicle time

The first aim in planning a public transport route should be to follow the route private cars would take between the same points (provided the roads are suitable). This ideal can then be modified by using a less direct route or by deviating from the direct one, only to serve significant attractors and generators. Therefore, there can be a trade-off between directness and accessibility.

Traditionally, bus operators have tended to favour accessibility at the expense of directness and will readily deviate from the direct route. A look at the route map of many transport operators will clearly illustrate this. In their terms, they do this to "meet the demand", in other words, where there are people wanting transport services they must be provided. It cannot be denied that there are passengers on these indirect route portions, but it can be argued that the needs of existing passengers who are travelling on either side of the diversions and deviations are not fully considered. For these people, there is both a travelling time "penalty" - a longer journey time - and perhaps a cost "penalty" - a higher fare - because fares are based on distance travelled in the mode. A significant diversion to serve a small demand at the expense of the time and fare costs of the bulk of the demand needs very careful consideration, as does the implication for vehicle requirements.

[ii] Criterion 2: Maximisation of income

As far as the effect of route selection on income is concerned, it has to be considered that a passenger transport route ought to maximise its fare income, and this will occur if:

- Each vehicle operating on the route has as high a load factor as possible over the whole length of the route;

- The same seats are "re-sold" on the same trip, i.e. passengers are boarding and alighting at many stops; and
- The normal fare level and any special fare offers support the achievement of the first two factors.

A high load factor infers that the passenger demand must be high at the beginning, at the middle, and at the end of the route. The load factor is affected by vehicle capacity. A sixty-seat bus should not be starting and/or ending on a route where the number of passengers is small - those areas would be better served by a lower capacity vehicle which feed into the bus terminals. Smaller capacity vehicles can achieve better penetration (or accessibility) and still maintain a high load factor.

Because of the high level of investment needed for rail infrastructure, rail services are a good example of this type of route planning. Careful consideration is given to the location of terminals (and intermediate stops) so that the terminals are located in areas of high demand and the load factor will thus be high enough to justify both the capital investment and the operating costs. Bus service planning does not always recognise this.

Re-selling the same seat more than once on the same trip is also important, particularly if the alternative is a reducing passenger load. Because there is always a minimum fare irrespective of the distance travelled, or sometimes just a flat fare, one seat which is occupied by more than one passenger on a trip will generate more income than one person travelling from end-to-end. However, it has to be borne in mind that there has to be a balance between the impact on journey times with constant stopping and starting, and the requirements of the longer-distance passengers for a reasonable journey time. Also to be taken into consideration is the probability of a long-distance traveller being unable to board because all the seats are occupied by short-distance travellers.

[iii] Criterion 3: Link appropriate generators and attractors

Land uses that generate or attract people over distances beyond normal walking distances, rely on private and public transport to link them. The generating and attracting power of the land uses will effect the mode which is used to link them and how that linkage is made. For instance, it would usually be inappropriate for a luxury inter-city service between two major metropolitan centres to serve small villages and settlements en route, but this would be appropriate for a service provided by standard buses. In an urban area, it would be sensible for a commuter bus service to link densely populated residential areas with high schools, tertiary educational establishments, industrial areas, and shopping complexes and ribbon shopping areas. However, if the service were to be provided by a commuter rail service, some of the land uses attracting lower passenger demand would not be served as a primary aim. In the same way, in the case of the bus service, less dense residential areas and primary schools may be served because they are on line of route. (Because primary schools tend to have small catchment areas and access to them is mainly by walking, deviations by bus routes to serve them is not usually appropriate, bearing in mind among other things the effect on other passengers and the limited time school traffic offers itself.)

An examination of the above criteria leads to the conclusion that in order to best meet passenger needs and to be profitable (or to minimise subsidy), a public transport route should have a beginning, a middle and an end. The ability to capture a high load factor at the both ends of the route justifies the careful selection of a beginning and an end, and re-selling the same seat justifies the selection of the middle. The selection process should take into account the land uses that will create the levels of demand that are appropriate to the mode concerned. Therefore, in designing public transport routes and networks, the design criteria and concepts remain the same, although the scale changes.

An example to illustrate this concept is that of two routes starting from nearby small rural settlements but terminating in different towns. This type of route does not have a proper beginning. The passenger load builds up slowly along the length of the route and most passengers alight at one or two stops in the town. However, if the two routes are combined, there is immediately a beginning and an end (the two towns). The intermediate settlements become a middle, because their residents then have a choice of major attractors - the two towns - and their choice of intermediate destinations is also increased. The extent to which passenger trips are generated over the previously unserved portion of route will give an indication of the success of the new routing.

2.2.3 RECOMMENDATIONS

The recommendations on route design are as follows:

Recommendation 2a: Demonstrate the advantages of intra-provincial services (Level 2 Ideal Network) through a pilot project, involving one route with taxis and another with buses. The following should be taken into consideration:

The routes between Pietermaritzburg and Kokstad could be considered for the pilots;
One service can be provided by more than one operator;
Existing operators on the route should be involved; and
The pilot should be monitored and assistance provided to operators.

Recommendation 2b: Once the results of the pilot project are available and benefits have been demonstrated, a programme should be developed to extend such routes to the rest of the province.

2.3 RECOMMENDATIONS ON LDVs

2.3.1 LDVs AS A PUBLIC TRANSPORT MODE

It is recognised that LDVs are now playing a role in the public passenger transport system, particularly in the rural areas. But a legitimate concern has been expressed about the safety aspects of the vehicles, which has given rise for some calls to ban them. However, if they are filling a niche and their removal would cause hardship or inconvenience to passengers, perhaps consideration should be given to their deficiencies being remedied so that they could operate safely. If this statement is accepted, then it is recommended that official involvement should relate only to safety aspects and not to issues concerned with passenger comfort, otherwise the operation of LDVs could be made too costly for operators and passengers alike.

However, logic dictates that there should also be a basic safety concern applied to all LDVs, regardless of the user or owner or the use to which they are being put. In this case, the first objective should be to improve the safety of people being carried in the load area as quickly as possible while minimising inconvenience and cost to owners, operators and passengers.

On the understanding that it is usual and desirable to impose higher standards on operators of vehicles that are used by people who pay a fare or a hire charge, a second objective is to provide additional protection measures for LDVs that operate for hire or reward.

It would be unrealistic to expect to achieve results overnight, therefore the progressive introduction of more stringent standards should be considered. A possible phased programme of safety measures is outlined below. This is a tentative programme and the measures themselves need to be discussed

and agreed with interested parties such as vehicle manufacturers, the South African Bureau of Standards (SABS), operators, users and regulators.

These new standards should be phased in, as deemed appropriate, for existing vehicles being used for public transport while minimising inconvenience and cost to owners, operators and passengers. Existing vehicles not being used for public transport should have to conform to the regulations applying to new vehicles if their use is changed to include carriage for public transport.

It should be a condition of a permit or a permission that a LDV must conform to the appropriate Construction and Use Regulations before the permit or permission can be granted.

[i] Safety improvements to apply to all LDVs

The first measure to be introduced is a specific ban on the carriage standing passengers in LDVs irrespective of the purpose for which the vehicles are being used. It is probably illegal to carry standing passengers at the moment but the regulations are not specific and are not enforced. Such a simple step aimed at improving safety on the road should not arouse too much opposition.

Allied to the first measure, a ban could be introduced within a fixed time period on the carriage of passengers in the load area of LDVs unless it is covered by a canopy so that all the sides and the top are enclosed. This measure is suggested in an attempt to reduce the chances of passengers being thrown out of the vehicle in an accident or during heavy braking or when the vehicle makes a sharp change of direction. It is realised that fibre-glass sides do not provide adequate security, but they would at least give better protection than an open-sided vehicle.

The next step would involve getting the agreement of vehicle makers to progressively introduce more stringent roll-over and side impact standards for new vehicles.

[ii] Safety measures to apply to LDVs used for public transport

The first measure to apply specifically to vehicles used for hire or reward would be to determine their maximum passenger carrying capacity, mark the limit on the outside of the vehicle, and enforce it.

At the same time that roll-over and side impact improvements are being introduced for new vehicles, consideration should be given to the feasibility and advisability of implementing as many of these standards as possible, in part or in full, to existing vehicles that are used for public transport. The next step would be to amend the Construction and Use Regulations for seating safety standards (specifically relating to anchorage, strength, material and centre of gravity) to be approved by vehicle manufacturers and SABS and to be applied to new vehicles that are sold for use as public transport vehicles.

2.3.2 RECOMMENDATIONS

The recommendations on LDVs are as follows:

Recommendation 2c: Address safety concerns so that passenger safety is improved and LDV vehicles can continue to operate, especially in deep rural areas. The following should be taken into consideration:

The role of LDVs should be to meet low passenger demand in remote areas and/or in areas with poor roads;

- A limit should be placed on LDVs running on higher speed roads by allocating them a feeder role to other modes;
- If the nearest transfer point is close to an attractor and/or a more suitable transfer point, then permission can be given for the LDV to run to that point, perhaps with a restriction on picking up passengers on that section.

Recommendation 2d: A programme of improvements to LDVs should be instituted as follows:

For all LDVs regardless of use:

Phase I : load area to be covered when carrying passengers

Phase II: progressively introduce more stringent roll-over and side impact standards for new vehicles.

For public transport LDVs only:

Phase I: no standing passengers to be permitted; a maximum passenger carrying capacity to be determined, marked on the vehicle and enforced

Phase II: seating safety standards to be introduced.

No permission should be granted to an LDV unless it conforms to these standards.

2.4 TIMETABLE DESIGN RECOMMENDATIONS

2.4.1 TIMETABLE DESIGN CRITERIA

The criteria that should be taken into account in the design of public transport timetables are discussed below.

The first consideration in the design of timetables is to minimise the number of vehicles required to carry passengers at the time they would like to travel. However, once the number of vehicles has been minimised, there are measures that can be taken to improve the quality of service provided and to make public transport more user-friendly. Some of these measures are explained below.

[i] Running times

The running times allocated to bus trips should vary to reflect differences in road and passenger traffic so that they reflect, as closely as possible, the actual times achieved under normal conditions.

[ii] Intermediate timing points

Another common omission by bus operators is to put intermediate timing points in the timetable. In the past, some operators have only shown the departure time from the terminus and not even the planned arrival time at the other terminus. More common is to give only the times at the two termini. Intermediate timings are an important aid for passengers in determining the time they should arrive at the bus stop in order to be sure of catching the bus and minimising their waiting time. Another benefit is that intermediate running times assist the driver in running to time. It has been argued by operators that variable traffic conditions make it impossible to predict accurately point to point times. This has been demonstrated to be not true when bus drivers are trained to adjust their speed to traffic conditions and are monitored on their timekeeping performance. Inevitably, abnormal

circumstances will cause buses to run late on some days, but on the majority of days passengers will see the bus arrive at their stop at the expected time.

[iii] Headways

Wherever possible, even-headways should be planned on each route, particularly outside of the peak periods. In other words, if there are four trips an hour, the gap between departures should be 15 minutes. The bus times are then easy to remember and therefore the longest wait is 15 minutes if the passenger just misses a bus.

Where routes come together and operate along important common sections, an even headway will be more attractive to passengers because the waiting time is minimised. There is no technical difficulty in designing even-headways or minimising the gap between buses, it is often a case that the designer fails to recognise the advantages of doing so.

[iv] Clock-face departures

A simple improvement to public transport is to design "clock-face" departures so that departure times are easier to remember. "Clock-face" means on the hour, 5 minutes past, 10 minutes past, 15 minutes past, etc. Taken together with even-headways, it produces departures such as at 10, 25, 40 and 55 minutes past the hour. These times are easier to remember than say, 7, 22, 37, and 52 minutes past the hour. However, there has been a tendency to "spoil" even-headways where they do exist in an attempt to "save costs" or where a specific trip fails to meet the particular criterion for passenger loading. There is a benefit, albeit unquantified, to easy to remember timetables. Compare a timetable with departures "every 30 minutes on the hour and the half-hour" to one with departures "every 25 and 35 minutes from 09:08 except there is no 10:33 departure".

There is evidence to support the fact that people will opt to use public transport not simply because there is a bus or train that is convenient to take them to work and another to return them home. They look at the whole timetable and perhaps, subconsciously, review it to decide whether it will cater for unexpected trip. Will there be transport if I have to work late? What happens if I need to return home during the day? This means that the commitment is made on the basis of the whole timetable and not just on two specific trips. Therefore, deletions to trips in the off-peak can result in loss of ridership at other times of the day.

Finally, attention should be given to making use of the available vehicle resources that are not needed between the peaks, i.e. those not scheduled for repair, maintenance, or preparation for Certificate of Fitness inspection. The criterion here is that whatever use is made of them, vehicles must at least cover their marginal costs of operation. But as the cost of the bus itself should be allocated to the peaks, and use can be made of drivers who are not otherwise fully used, the marginal cost tend to be quite low, and relatively small passenger loads will produce enough revenue. This means that there may be an opportunity to improve the off-peak services significantly at no additional nett cost. The provision of trips just before and just after peak periods can help to reduce loading on peak buses. Where there are timetables that are mainly or entirely geared to carry workers, people with other journey purposes are then forced to travel in the peak.

2.4.2 RECOMMENDATIONS

The recommendations on timetable design and their cost implications are as follows:

Recommendation 2e: The following criteria should be used in the design of timetables for competitive contracts and should be promoted by the KZN Department of Transport as part of a campaign to improve public transport and to encourage its use:

- Attempt to flatten peaks (peak vehicles are major source of high cost) by using the price mechanism to depress "excessive" demand or the difference between the economical number of peak vehicles in relation to off-peak service, and those needed to meet normal peak demand;
- Schedule the timetable in terms of clock-face departures;
- Show intermediate running times;
- Variable running times should reflect the differences in road and passenger traffic; and
- Maintain even-headways.

2.5 PRICING POLICY RECOMMENDATIONS

2.5.1 PRICING DESIGN CRITERIA

Criteria which should be taken into account in the design of a pricing policy for public transport services are discussed below.

[i] Variable pricing structure

In terms of the user pays principle, transport fares should reflect the cost of operation at the time of travel. The result of applying this would mean that peak fares would be higher and off-peak fares would be lower.

Peak vehicles are a major source of the high cost of public transport provision and anything that can be done to flatten the peak should be investigated. Peak fares should reflect the high cost of the provision of peak services and the price mechanism can be used as an effective tool in moving the "excessive" demand to the shoulders of the peak, but at a lower cost to the passenger. Excessive demand is defined as the difference between the economical number of peak vehicles in relation to off-peak requirements and those needed to meet normal peak demand.

Similarly, off-peak fares should reflect the marginal (much lower) costs of operation.

[ii] Tapering fare scale

Fares are usually calculated on a fixed rate per kilometre. However, the user pays principle states that this an incorrect method because the fare should reflect the reduction in the cost of provision with distance and recognise that the passenger should receive a discount for buying kilometres of travel "in bulk". In other words, a passenger should pay less per kilometre for last ten kilometres than for the first ten. A faretable produced by using this method of calculation is known as a tapering scale.

[iii] Payment for quality

Fares should also reflect the quality of the service provided. Quality covers items such as the type of vehicle, vehicle specification and equipment, comfort, and convenience. Increasing comfort or

convenience levels, for instance, without increasing fares to cover the additional cost cannot be justified, especially when subsidy funds are limited.

[iv] Discounts

The user pays principle does not mean that there cannot be discounts, but non-commercially justified discounts, such as for special categories of passenger, should not be offered unless full compensation is received from some other source. Discounts should be available for travel which stimulates demand at times of the day, on days of the month, by season, and by direction of travel when and where demand is low. It is also valid to offer financial incentives to maximise pre-payment or "bulk buying" of tickets. The reasons are that purchases made off the vehicle speed up boarding times, improve cash flow, stimulate travel and reduce losses through driver inefficiency and corruption.

[v] Multi-trip tickets

Most multi-trip tickets expire at the end of the period which relates to the number of trips. In other words, a 10-trip ticket expires at the end of the specific week, and a 44-trip ticket expires at the end of the specific month. Any trips not made are therefore forfeited. Passengers lose the money they have paid, but, under the interim contract subsidy system, the operator still claims the full subsidy. This is obviously unfair. When there is a public holiday in the week, or when the passenger is ill, or even when the bus does not operate and the passenger has to find alternative transport, the passenger loses. One way around this problem would be for multi-trip tickets to have an extended validity. However, operators have usually resisted this mainly on the stated grounds that if drivers fail to cancel the trip segment when the journey is made, the ticket can be re-used and they will lose income. This cannot be accepted as a reason for not allowing an extended period of validity, because it is in the operator's own hands to train and supervise drivers to carry out their duties correctly. Multi-trip tickets should have an extended validity of at least twice the normal period and there are arguments to support an almost indefinite validity.

[vi] Fixed fare

Although fares are based on distance travelled, normally, there should be only one fare from one stop to another irrespective of the route taken by the vehicle. Charging passenger more for a trip that is longer and results in a longer journey time is illogical, and creates confusion and mistrust, and so the fare should be standardised. In order to avoid distortions in the fares from other stops, it may be necessary to make a compromise between the "short" fare and the "long" one.

2.5.2 RECOMMENDATIONS

The recommendations on pricing policy are as follows:

Recommendation 2f: The following criteria should be used in the design of competitive contract faretables and should be promoted by the KZN Department of Transport as part of a campaign to improve public transport and to encourage its use:

- Fares should reflect cost of operation (highest in peaks);
- Off-peak fares should reflect marginal cost of operation;
- Fares should generally to reflect quality of service and value given;

- No discounts should be provided for special categories of passenger, particularly in peaks, unless the operator is directly compensated or it is commercially justified;
- Tapering fare scales should be introduced;
- Only one fare should be charged between the same points on a route;
- Financial incentives should be introduced to passenger for pre-payment of fares; and
- Expiry of multi-trip tickets should be extended or be (almost) indefinite.

2.6 RECOMMENDATIONS ON PERMISSIONS

2.6.1 STATUS QUO

[i] White Paper on National Transport Policy

The White Paper on National Transport Policy proposes that operator permits will be replaced with permissions (authorities) issued in terms of approved passenger transport plans. A "permission" is the authority to operate a public transport route or network that can be rendered as a profitable commercial services, that is, without subsidy." (p.23) This is one plank in the national government's objective to promote and implement a system of regulated competition for public transport routes or networks, supported by strict law enforcement in order that transport is provided efficiently and public resources are used optimally. (p.20)

To that end, Provincial Permission Boards will be established and will become responsible for the issuing of permissions at the request of the provincial passenger transport department or metropolitan passenger transport authorities, and services or local councils. In this case, on-the-road competition will be encouraged as opposed to the competitive tenders for subsidised routes where off-the-road competition takes place. The competition will be regulated through the issuing of permissions based on capacity management in terms of the supply policies of the provincial or local passenger transport plans. (p.24)

In the case of domestic inter-provincial operations, it is proposed that a single permission will be issued by the Board in the area in which the application is lodged, and that the onus will be on that Board to obtain the consent of the other Boards affected. (p.23)

[ii] Provincial Transport Green Paper

The Provincial Transport Green Paper states that the Provincial Department of Transport sees its main functions as including inter alia the establishment of a Provincial Permissions Board; adjudicating on appeals for permissions of an intra-Provincial nature through the Provincial Permissions Board; and administering inter-Provincial permissions." (p.24)

The Green Paper follows the national policy by saying that services which can be rendered on a commercial basis will be open to competition, and that, in this case, regulation will take the form of capacity management. It continues that capacity management will not be aimed at economic regulation of market entry. (p.33) However, it also states that it is envisaged that permissions issued to operators, in accordance with public transport plans, will provide the basis for regulation of market entry.(p.34)

In order to carry out this policy, the Province "... will establish empowering legislation aimed at the regulation of public transport within the parameters of the policy framework and guidelines set out in overarching national legislation." (p.33) The Provincial policy "... will be inclined towards a system which

grants transport authorities the rights to the relevant operating permissions and not to operators as has been the practice in the past." (p.34)

[iii] Transitional National Land Transport Draft Bill

The Transitional National Land Transport Draft Bill states that in disposing of an application, the Board must take into account Transport Plans, and recommendations and representations. Where there is a Public Transport Plan (PTP) or an Integrated Transport Plan (ITP), a permission cannot be granted contrary to those plans. If there is no plan, or at least a current public transport record and a permissions strategy, the Board must grant or refuse the application after having considered:

- The suitability of the vehicle;
- The availability of a rank or terminal or other stops or holding or parking areas;
- The applicant's ability to provide the service in a manner satisfactory to the public;
- The existence of relevant municipal by-laws, etc;
- Previous convictions and their seriousness for land transport, road traffic, road safety, and driving of a vehicle;
- Any previous failure as a public transport operator;
- Representations submitted by the applicant or any interested party; and
- Any other relevant factors.

In the case of an application for a long-distance permission (long-distance is defined as not catering for daily commuting), the Board must also take into consideration:

- The extent to which the service is necessary or desirable in the public interest (not defined);
- The requirements of the public along the route;
- Existing transport facilities over the route;
- The need to ensure co-ordination by all forms of transport including rail, with due regard to the public interest; and
- (For a minibus-taxi service) the recommendations of any taxi association.

In the case of a long-distance application, the onus is on the applicant to prove that:

- Existing services are neither satisfactory nor sufficient to meet transport requirements;
- He has the ability to provide the service in a manner satisfactory to the public; and
- It is necessary or desirable in the public interest to grant the permission.

The Board must determine: routes, ranks, terminals, and stops, and may specify days of operation, and time of departure.

A permission relating to a service in the area of a planning authority may not be granted if existing transport adequately serves public transport requirements by a service of a similar nature, standard or quality, that is provided in terms of a commercial service contract or subsidised contract.

2.6.2 GAP ANALYSIS

There is an acceptance that some routes are, or could become, profitable, and that other routes require and will continue to require subsidy. This seems to show a transport system that is relatively static or fixed, or optimal. (See 2.1 and 2.2 for comments on fundamental re-appraisal of the system, and the Ideal Network.) Unless the PTPs bring about fundamental change, this type of regulation will tend to preserve the status quo.

A permission is not an end in itself; the under-lying purpose of the system must be well thought out and well understood for it to be successful. In other words, specific objectives must be clearly spelt out, and they must be achievable.

The White Paper motivation is that regulated competition will ensure that commercially viable public transport services are provided efficiently and that public resources are used optimally. In many areas of trade and commerce, this is normally the role left to market forces. The questions here are, can regulatory bodies efficiently carry out this task, do the benefits out-weigh the costs, and does the permission system cause conflict with other policy statements?

Any regulatory body, public or private, will find it very difficult to achieve the delicate task of balancing supply and demand. This policy of regulation does not differ too much in the general direction from that in the 1977 Road Transportation Act, and most people will admit that the resultant passenger transport system arising from that Act did not meet the needs nor the requirements of the country.

Conformity with any transport plan will be a major factor in any evaluation (or at the very least it will be the first hurdle to overcome). This will probably mean that many applications will founder at this stage making any related data collection redundant. In fact, data collection is far more relevant to the planning process than to the permission process, though all the problems associated with it will apply equally to the planning process - the cost of collection, the time taken to collect it, and the data will quickly become out of date. This will mean that elements of the plan will be subject to the need for regular change.

Furthermore, the system will probably impose high administration costs on the provincial budget. In addition, there will inevitably be delays caused by the quasi-legal process. For instance, the Transitional National Land Transport Draft Bill proposes that before capacity improvements can be actually implemented there is an obligation on the Board to follow the following process:

- Publish applications in the *Gazette* inviting comment and representations;
- Inform the planning authority, with a period of not less than 21 days in which to respond; and
- Hold public hearings.

The *Green Paper* itself recognises a significant problem in the implementation of the policy:

"Institutional responsibility for the planning of services is required and will bring with it the need to develop sophisticated information systems capable of generating management information covering all modes of transport."

"In the absence of meaningful and reliable information the competent permissions bodies are left with no objective means of assessing user needs and the justification for granting additional permissions when approached by service providers. "(p.36)

It then suggests that performance indicators are needed to measure the overall system's ability to satisfy passenger demand on levels of service and suggests a solution.(p.37)

These data are extremely difficult and costly to collect, particularly in the detailed form that could be required to give information on any and all applications. And, they date quickly on the demand side. The use by a Board of dated data could be a valid reason for an applicant or an objector to submit an appeal. Also, it is almost impossible to accurately determine suppressed or unrevealed demand. The task appears to be almost impossible to carry out satisfactorily.

A major problem faced by the Provincial Department of Transport in carrying out its planning function is the lack information on social services or unsubsidised bus routes. These routes play an important role in public passenger transport in the province, particularly in the rural areas. Therefore it is important that where these routes operate, their route descriptions, timetables and fares are known so that they can be taken into consideration in the planning process.

There is no existing database on the unsubsidised routes and when information is required even only the names of a few operators concerned are known. This deficiency must be remedied so that the Province can carry out its function taking into consideration all public transport operations.

When transport projects are carried out, data on unsubsidised routes may be collected on an ad hoc basis. This may involve considerable time and effort in identifying the relevant operators and then getting in touch with them. (This problem is aggravated by the fact many small businesses are involved and often they cannot be found in telephone directories.)

Because of its function in issuing permits for the operation of services, the Permissions Board is in the best position to collect data. Perhaps it will hold a database for its own purposes and would be willing to share it with the Department of Transport. There is a question as to whether the Board would agree to do this. However, the two bodies are already closely linked although the Board is independent.

Agreement is also required on the content of the operator database but it is suggested that it should include:

- Operator: association, legal name, trading name, physical address, postal address, contact person, telephone number, fax number, e-mail address.
- Route: terminals, route number (if applicable), area of operation, route description, timetables, cppk, type of service, contract number (if applicable), conditions to permit/permission.
- Permit/permission: number, date issued, duration, other Boards involved.

Unfortunately, performance and quality of service, or level of service, are not specified as criteria but other criteria are implied elsewhere. The White Paper states: "To enable customers requiring transport ... to access the transport system in ways which best satisfy their chosen criteria." "The transport system will aim to minimise the constraints to the mobility of passengers ... maximising speed and service, while allowing customers the choice of transport mode or combination of modes where it is economically and financially viable to offer a choice of modes." "To improve the safety, security, reliability, quality, and speed of transporting ... people."(p.4)

In the past, regulators have been very reluctant to permit competing services - services which must be in place if there is to be user choice. It is suggested that the old arguments of wasteful competition will in fact stifle most applications to provide competitive services.

Despite years of planning exercises, there are currently gaps in our knowledge of the supply-side of transport - in any case available data cover only legal operations, and illegal operations can affect the supply/demand equation.

Placing the onus of proof of need on the applicant can be construed as giving the objectors a distinct advantage. They have most of the relevant information in their hands and, in any case, they will be more skilled in coping with the process and can easily employ delaying tactics. Unless the onus is placed on the objectors, the proposed system could bring about very little real change and prejudice the entry of new SMMEs.

2.6.3 RECOMMENDATIONS

The recommendations on permissions are as follows:

Recommendation 2g: The objectives of the provincial permissions policy should be clearly communicated through guidelines which should be prepared for applicants and objectors. The following should be taken into consideration:

- It is proposed that the onus of proof should be placed on existing operators;
- The term "public interest" should be defined so that applicants and objectors understand the full implications of its use;
- Ad hoc demand data should be provided by existing operators for the purposes of deciding on a permission application; and
- Applications should include the following supporting evidence:
 - timetables
 - list of stops
 - details of vehicles used/to be used including seating and standing capacity
 - point to point loading surveys for different days of the week
 - passenger statistics for say three months to compare survey results and past performance
 - letters of complaint
 - letters of support from users, communities, etc.
 - evidence of support from the Passenger Transport Plan.

2.7 RECOMMENDATIONS ON SUBSIDY CONTRACTS

2.7.1 STATUS QUO OF PUBLIC TRANSPORT SUBSIDY

[i] Previous subsidy policy

Bus commuter subsidies are paid to assist those commuters who cannot afford to pay the full economic fare and who cannot, due to past government settlement policies, relocate closer to major employment and commercial centres in the short term. Three types of bus commuter subsidy systems are currently in operation in South Africa, namely:

- Fare subsidy system;
- Tendered contract system; and
- Deficit subsidy system.

The first two systems were administered by national government, and now by provincial government, while the deficit subsidy system is applicable to municipal bus operators whose deficits are made good by their councils at the end of each financial year. On 1 April 1997, the responsibility for passenger transport was devolved to the provinces, including the function of the provision and subsidisation of bus passenger transport. With effect from the year 2000, all subsidised bus services will be rendered in terms of the contract system.

Municipal deficit funding can be ignored because it applies only to Durban Transport that operates within the Metro Area which falls outside the scope of this study. In any case, national policy requires significant changes to be made to municipal bus undertakings so that they are "ring-fenced" from funding by the council. The 1996 White Paper on National Transport Policy states, "Contracts will be awarded only to bus companies which operate on business principles with ring-fencing of finances and no unfair access to financial resources except on a commercial basis, operate as independent legal entities, and are liable for taxation." (p.24)

[ii] New subsidy policy

Although a new subsidy policy has not yet been formalised at provincial level, the 1998 draft Green Paper on Transport Policy for KwaZulu-Natal has been taken as a firm indication of probable changes in subsidy policy. Furthermore, the Green Paper states that its provincial policy needs to be developed within the broad framework of national policy, and that framework is to be found in the 1996 White Paper. More recently, the Moving South Africa 1998 draft document for discussion, "Towards a Transport Strategy for 2020: Report and Strategic Recommendations" has been published and this gives further insight into current thinking.

The first two documents are fundamental to the development and evaluation of recommendations to address the problems of public transport in the province. Therefore, relevant policy goals and statements from these documents are listed below. Read in conjunction with the section above dealing with the present policy, they reveal the differences between that policy and the new one. The recommendations that follow will show if and how that policy can be implemented and the probable implications on current beneficiaries of subsidies, both providers and users of transport services. For completeness and to detect possible changes in thinking at national level, some relevant quotations from the Moving South Africa document are also given below.

The statements quoted do not solely refer to subsidy because subsidy may be used as a tool to achieve other objectives and it is useful to know the context in which it is intended to be used.

Statements that appear in the national White Paper are referenced with "N" plus a number, and those that appear in the provincial Green Paper are referenced with "P" plus a number. These references are used later in the report to show which policy statement or goal is relevant to any recommendation. Where national and provincial statements are broadly in line, they are references "N& P", but if there are minor differences in scope or emphasis, the national policy quotation is shown in italics.

[a] National White Paper

General statement

N1. "The South African transportation system is inadequate to meet the basic accessibility needs (to work, health care, schools, shops) in many developing rural and urban areas." (p.3)

Goals and policies

N2. "To enable customers requiring transport for people or goods to access the transport system in ways which best satisfy their chosen criteria." "A key focus of the policy will be on meeting customer needs." (p.4)

N3. "Scarce resources will be mobilised to best meet the needs of those passengers and industries who need them most, and which are in the best interests of society. In order to meet basic accessibility needs, the transport services offered must be affordable to the user, and this will be a goal of transport planning, subject to the constraints of the financial affordability of the provision of the services." (p.4)

N4. "To improve the safety, security, reliability, quality, and speed of transporting goods and people." (p.4)

N5. "To achieve the above objectives in a manner which is economically and environmentally sustainable, and minimises negative side effects." (p.5)

N6. "To promote rural development that will improve access to opportunities by ensuring that rural workers are housed in close proximity to their work locations and services, thereby reducing the need to travel." (p.20)

N7. "To provide an appropriate and affordable standard of accessibility to work, commercial and social services in rural areas." (p.20)

N8 "... and reducing travel distances and times for commuting to a limit of about 40 km or one hour in each direction." (p.19.)

N9. "To ensure that operations become economically viable, requiring the minimum financial support." (p.20)

N10. Reasons for subsidy:

"To promote public transport." (p25)

"Welfare considerations" (affordability)

"Provision of transport" (mobility).

[b] Provincial Green Paper

General Statement

P1. In the Green Paper, a number of broad public transport policy goals are identified as "critical for the attainment of a provincial vision which recognises that there is a social responsibility to the provision of basic levels of mobility and accessibility". (p.21)

Goals and Policies

P & N1. "Where subsidisation is needed to sustain basic services identified in passenger transport plans as being socially desirable, a system of competitive bidding for tendered contracts will be applied. Operators will, however, be expected to assume a more commercial orientation in the operation of their services, as dependence on government subsidies should always be kept to a minimum." (p.32)

"Where public transport services require government funding support, for example for welfare, or traffic management, or strategic reasons, competition will take the form of tendered contracts ..." (p.23)

P & N2. "The reshaping of funding policy will thus be focused towards the following primary objectives:
"the broadening of the subsidy beneficiary base so as to cater not only for commuters but also scholars, pensioners (aged) and the disabled." (p.32) Also
" ... by opening up the system to a wider cross-section of potential users and service providers."

"The approach to passenger transport should shift priority from private to public transport and within the latter sector from the provision of primarily peak period commuter services to a fully-fledged public transport system catering for a wide range of passengers. The needs of special categories of passengers should be identified ... and these should be addressed in their passenger transport plans." (p.26)

"To ensure that passenger transport services address user needs, including those of commuters, pensioners, the aged, the disabled, tourists, and long-distance passengers." (p.20)

P & N3. "The limiting of dependence on subsidisation by requiring end users to pay for services, as far as possible, within reasonable limits of affordability". "To contain and ultimately reduce the dependence on subsidies." (p.22)

"To ensure that public transport is affordable, with commuters spending less than about 10% of disposable income on transport." (p.20)

P & N4 "To integrate land use and transport planning." "To ensure that planning of public transport services is done in an integrated fashion with other developmental initiatives ... " (p.21)

"To transform the passenger transport system by promoting modal co-ordination and integration." (This is taken to mean both intra- and inter-modal co-ordination and integration.) (p.22)

P & N5. "To satisfy passenger needs in terms of accessibility, mobility and affordability within the constraints of available resources, whether financial or otherwise." (p.21)

P & N6. "To bring about a marked improvement in the level of efficiency and effectiveness of the current system." (p.22)

"the creation of incentives for efficiency, particularly where subsidised service contracts are involved". (p.32)

P & N7. "To promote safe and secure, reliable and sustainable passenger transport." (p.20)

P & N8. "The following is the envisaged basis of regulation:

Basic and essential forms of passenger transport will be provided in terms of subsidy contracts offered under a competitive bidding process. Where such contracts are applicable competition on routes will be precluded. This means that the franchise of a contracted operator will be protected through strict enforcement.

Services which can be rendered on a commercial basis will be open to competition. In this case, regulation will take the form of capacity management and will not be aimed at economic regulation of market entry." (p.33)

The Moving South Africa draft report states that in its customer research process, rural passengers uniformly declared a high level of satisfaction with travel times, regardless of the purpose of the trip, although it must be borne in mind that the results came from a very limited survey. (p.66) "Rural customers were most sensitive to - and most dissatisfied with - the cost of travel, although even in this realm, the most dissatisfied customers rated their satisfaction level as average (level 3 on a scale of 1 to 5). ... But when asked what level of cost decrease they would ideally like to see, the same dense rural customers (sic) suggested a figure only 8% below the cost of current monthly fares." (p.67)

"... many of the customer concerns, like cost, could be addressed with improved level 4 road connections to the main network. Road addition or improvements would reduce the cost and time for vehicles to serve rural areas, which could have a salutary knock-on effect on users costs." (p.67)

The report also identified key strategic challenges for financial sustainability.

"Among the causes of the sustainability problem, four stand out: insufficient financing; escalating externality costs; low skill levels to address the problems; and failures in feedback mechanisms. The challenges, therefore, entail addressing these causes systematically, as well as making choices and setting priorities.

"One of the most important challenges to address is that of feedback mechanisms, those elements like pricing and capacity planning that either signal value to customers or enable the system to expand in response to increases in demand. Feedback mechanisms are the single most critical way in which a dynamic system can regulate and upgrade itself - only if clear signals are sent and received can entities adjust their services to improve customer satisfaction, raise quality, or, if necessary, reduce service."

Moving South Africa identified five types of feedback loops that were currently, in some fashion, malfunctioning:

Desired Outcome of Feedback	Examples of Broken Feedback Links
Add capacity in response to demand growth where demand exists	Commuter rail line extensions not funded even
Effectively use existing system capacity commuter rail	No incentive to travel off-peak on buses or
Improve provider efficiencies. to improve operating efficiencies	Historic bus permits did not provide feedback
Offer types and levels of service demanded by customers	Public transport service terms (eg. quality, routeing, price) are dictated by government, not the customers
Pricing that signals actual value. that create them	Externality costs not fully borne by the users

"Thus, a paramount challenge for the strategy is to effectively repair the feedback loops so that the system can restore proper signalling. More than any other change, this is the most essential, for it enables the transport system to modify itself over time in response to conditions that will inevitably change between now and 2020."

It is noted that there are some potential internal conflicts and inconsistencies in the above policy statements, such as the emphasis on affordability with the consequent impact on subsidy levels, and the aim to reduce dependence on subsidy.

2.7.2 GAP ANALYSIS

During the mid-1990s, operators of bus services which had been subsidised by the national Department of Transport (NDOT) were given authority to continue operating and receiving subsidy under individual interim contracts until such time that those services were put out to tender. Initially the NDOT and later the provinces were responsible for deciding which routes would be put out for competitive tenders, the timetables and fares to be operated, and how routes were to be amalgamated into contracts of varying sizes. (It is policy to encourage small business enterprises in the transport industry by advertising contracts suitable for small and emerging operators.)

The policy does not follow the British model of allowing operators to identify commercial routes which then leaves the public authority to decide which routes it deems necessary to be operated as subsidised social services. In Great Britain the thrust is towards making as many routes as possible commercial. South African policy implicitly assumes that all commuter routes require subsidy. Whether the British system actually reduces the total subsidy bill is not known, but it does clearly target the subsidy to specific trips or routes, operating at specific times, on specific days. For instance, very early trips in the morning and trips in the early evening and late at night are often put out to subsidy.

Is it possible, for instance, that some South African operators would identify (or would have identified) some of their interim contract routes as profitable routes? (See N9, P&N1, and P&N3). (A greater freedom to set fares would be very important in this regard.) One major problem would be that profitable routes are open to competition, subject only to capacity licensing, whereas subsidised routes are fully protected. There is some illogicality in this policy particularly if a degree of protection from competition could reduce the demand on subsidy. As a safety precaution to guard against abuse, permits for unsubsidised commercial routes (but not for charter or inter-city) could be made renewable so that poorly performing operators could be removed or subject to a degree of competition.

With the change from interim to competitive contracts, very little has changed in terms of areas of route coverage, beneficiaries (workers), modes, and timetables. In other words, there has been no fundamental re-appraisal to reflect new policies, new thinking, or even best practices. The "new subsidy beneficiaries" mentioned in the White Paper and the Green Paper have not been specifically included. There is no new provincial context in which real change is being effected.

The competitive contracts are simply perpetuating the previous route coverage which itself is a legacy of planning from the apartheid era. Essentially the same people who were benefiting under the interim contracts (and before) are still benefiting now under the competitive contracts, and these may or may not be those in most need. The implication for rural areas is probably that those most in need are worst served.

This need can be either affordable transport or the provision of public transport, or both. This means that there is potential for inequity across the province in who benefits from subsidised fares

(affordability) and who has access to subsidised public transport (service provision). Those living closer to cities and the larger towns tend to be best served. Even so, there can still be inequality for those living in these areas, because some settlements that are equi-distant from the same destinations may not be served at all.

Another issue relating to affordability is that even within a single contract route, affordability is not uniform. In addition, the ability to pay will vary from place to place depending on local wage rates, and from passenger to passenger. It is dependent upon disposable income and family commitments, and it is influenced by the fare rate, the distance travelled and the frequency of travel. Therefore, on any route, the ability to pay will vary amongst the passengers; some will be able to afford to pay more and others would be finding it difficult to pay even the existing fare. But if real wages rise for the lower paid, there may be more and more passengers who are able to afford to pay a higher portion of the economic fare. However, it is not a simple matter to charge differential fares within the same category of passenger. Normally, there is a defined fare between any two points for the same category of user. (However, it is normal to have different fares for different categories of user, such as scholars, the elderly, and the disabled, because they are relatively easy to identify.)

One mechanism for discriminating between the same category of user is some form of user-side subsidy. There are different types of user-side schemes, and usually, individuals and their families are assessed to determine their level of poverty, and they are given cash or, more likely, vouchers to supplement their income. Cash would be preferable because it would allow individuals to maximise their utility, as it recognises that they are poor, not just "food" poor or "transport" poor. Unfortunately, experience in the United States shows that cash is sometimes diverted from expenditure on family essentials to individual abuses such as alcohol, drugs, or gambling. Therefore, vouchers are provided which, in theory, can be redeemed only for approved purchases, such as food or transport.

One condition of the tender system is that when competitive contract services begin, passenger fares are kept at the same level as the interim contract fares until 12 months after the last increase. They are then increased according to a formula laid down in the contract; any anomalies between routes and operators are thereby perpetuated and "affordability" is not specifically examined. In the past, affordability was taken into consideration in determining the portion of the economic fare that workers in any area could afford to pay. Because there was a only one, fixed fare, the subsidy had to be set at a high level so that only a minority of passengers would find the cost unaffordable. However, these decisions on affordability were affected by the quality of data available on wage rates, family size, and living expenses, and sometimes the lack of precise data.

In the change-over to competitive contracts, there has been an attempt to accommodate *SMMEs*, including minibus-taxis, through designing smaller contracts. But this does not necessarily contribute towards better transport; only the service supplier changes. Even so, perhaps more could have been done to attract *SMMEs* so that there was a more balanced distribution of established and emerging firms operating contract routes.

A major omission is that there is no single document in which the relevant guidelines for the design of tender routes and timetables are brought together. The guidelines have to be derived from the tender documentation and other documents. (These guidelines should, by implication, also assist in deciding on the validity of applications for route extensions, new routes, and additional journeys during the currency of the contract.)

In the tender documentation, under the heading "Scheduling and Timetables" it is stated, "The timetables provided in this document represent most of the trips currently provided, however some of

the existing trips have been omitted where passenger numbers were observed to be less than 45% of the seated capacity of the bus." 1

There is also a clause headed "Scholars" which states, "Scholars may use scheduled buses. Dedicated school buses have been omitted [from the timetables]. A trip is deemed to be a dedicated school trip if more than 50% of the passengers are scholars."

There is an obvious conflict here with the new policy statements which say that scholars are to be one of the groups that benefit from subsidy (see P & N2).

There does not appear to be any obligation on the tendering authority to motivate or explain why trips have been omitted. This lack of information could be confusing to tenderers, particularly where the survey shows that there were many passengers, ie. more than the 45 percent guideline. In most cases, it could be as a result of deleting trips carrying high numbers of schoolchildren. The tenderer then has to consider what action these passengers will take. Will they still travel? If they do, the tenderer will want to take their revenue into consideration. But then they could overload the timetabled trips so much so that an additional trip has to be introduced, which could be costly if it involves the use of an additional peak bus. Prospective tenderers will also have to consider if there will be pressure on the operator from the local community to re-instate the trip for which they may not be allowed to claim revenue kilometres? The answers that tenderers arrive at to these questions could make a difference to their tender rates.

There is a further guideline. The Green Paper on Transport Policy for KwaZulu-Natal has a policy statement, "Modal choice will, however, be exercised with great caution and will be influenced by the overriding objective of containing the need for subsidisation through the elimination of unnecessary parallel subsidised services." (p.28) However, due to the limited extent of subsidised commuter rail services outside of the Metro Area, this statement has a very limited impact on the design of bus services in the remainder of the province.

There is a tendency for subsidy contracts not to be adequately controlled during the currency of the contract in respect of changes to routes and timetables, mainly because there is no clear and written policy, nor guideline a document to ensure that certain desired objectives are achieved, or that undesired results do not occur.

This leads to the addition of new routes, route extensions, and extra trips that cannot always be fully justified. This process tends to be driven by the operators who see an "expansionist" policy as beneficial to themselves. It also supports their in-built desire to "meet the demand". (Bus operators in South Africa have traditionally incurred additional costs to carry passengers to new destinations or to meet increases in demand even when it is not in their own best, financial interests to do so. The reasons for this are not clear but one could be that the concept of "territory" within a highly regulated system is highly prized.)

Working in a vacuum leaves the Representatives and their Deputies, and the DOT officials not knowing what it is the use of subsidy is trying to achieve and, therefore, what they are supposed to be doing and how they are supposed to be doing it. Therefore, administrative decisions taken at a relatively low level can, by default, be setting policy and establishing precedents which can make a significant detrimental impact on the subsidy budget.

This all leads to a growth in subsidy payments. If a policy of redistribution is to be achieved, or even if subsidy levels are to be capped at present levels (see P & N3), this tendency must be controlled.

The contracts themselves address the provision of transport but they do not address the problem of the very poor in the contract areas, namely, affordability (see N3 and P & N3). There is a basic premise that every potential passenger is able to afford the fare. However, as most of the passengers are expected to be workers (this is a throw-back to the apartheid transport policy which specifically ignored the needs of non-work trips), the level of fares is set accordingly. Therefore, those without jobs or those working part-time will be disadvantaged (see P & N2).

The emphasis on the needs of the worker also leads to the pressure to bring about subsidy savings falling on the more lightly-loaded trips, which tend to be those in the off-peaks, at weekends, and at the beginning and ends of the peaks. This approach ignores the needs of the passengers concerned and, importantly, the economics of bus operations. Deleting trips which do not make a saving in peak buses (the major cost component of bus operations) but which make a contribution to overhead costs, i.e. they more than cover their marginal cost of operation, simply increases the costs of the remaining trips.

2.7.3 THE NEW SUBSIDY POLICY AND THE POTENTIAL FOR REDISTRIBUTION

The phrase redistribution of subsidy is used to mean the opportunity to use subsidy for the benefit of different categories of people or to people in different areas to those benefiting under the interim contracts

An examination of some of the KwaZulu-Natal tender documents indicates that the guidelines were not always followed and, therefore, there was potential for some "re-distribution" of subsidy funds at the time the routes were put out for tender. In other instances, it was not possible to make an assessment of individual bus trips because the necessary data were not available in the documentation.

In addition, experience has shown that during the currency of contracts there can be a tendency for either the timetables or the route network or both to expand gradually. Because this expansion is dealt with on an ad hoc basis, it tends to introduce inefficiencies that may not meet the usual design norms. This issue is dealt with in more detail below.

In both these cases, the KZN DOT has the authority to influence or even dictate the decisions taken. But at present, both the design of contracts and decisions on amendments to them are made in almost a policy vacuum, perhaps with only two guidelines being considered, but, on the evidence, not being strictly enforced. A decision to introduce redistribution would make it imperative to define policy and it would present the opportunity to remedy current deficiencies. This new policy should then be implemented within a well-defined framework that guides and monitors its implementation.

The opportunity to make significant, let alone fundamental, changes to the networks has not been taken and can probably be rectified only in a few years time when contracts come up for renewal. The failure to make significant changes probably happened for a variety of reasons. First, there is a lack of appreciation of the weaknesses and inefficiencies of a transport network that had been allowed to grow in an unco-ordinated and unstructured way (despite the fact that the fares were subsidised for many years by the NDOT). Pressure from the operators to maintain the status quo will have been another factor. Perhaps more importantly was the failure of the planning process and the planners to recognise the inherent deficiencies in the system and also to take policy changes into account. It was not realised that there was a problem, therefore, no appropriate corrective action was taken. This action would have included allowing sufficient time to carry out the necessary basic surveys and investigations that would have provided the data necessary for a re-design. It would be better to

delay the process and implement designs that are in-line with policies and are appropriate to users needs.

A fundamental review would in all probability bring about more effective and efficient public transport. It would then be possible to bring about improvements in public transport without some of the detrimental side-effects of redistribution, such as reducing service levels in one area to increase services or provide new services in others.

The preferred programme for implementing a policy of redistribution of subsidy would be to :

Develop an immediate action plan;
Develop a new subsidy policy; and then
Prepare an implementation and monitoring strategy.

[a] Develop an immediate action plan

If it is agreed that there is a current problem, then an action plan needs to be developed and implemented as soon as possible to prevent the situation deteriorating further. This would entail action in two areas - new tenders and the administration of existing contracts.

It would be preferable to postpone putting any more interim contact routes out to tender, even those which are well-advanced in their preparation. Allowing further routes to go out to tender would simply extend the scope of the present problem. It is recommended that the interim arrangements should be extended until the routes and timetables can be analysed and redesigned in accordance with the revised policy.

In addition, it would be prudent to place an immediate moratorium on permitting changes to routes and timetables in order to prevent the small-scale growth of existing contracts.

These two measures would act as interim arrangements until the new policy and the final guidelines have been accepted and implemented. They would provide the time required to complete the total process without making the existing situation more difficult to correct later.

However, a possible partial solution to redressing current problems which could be implemented very early on in the process would be to enter into discussions with existing contract operators to ascertain if some (probably small-scale) redistribution could be achieved on a voluntary and mutually beneficial basis. This process should be started as soon as possible once the new policy is agreed.

At the same time, it could be advantageous to make a reappraisal of the technical specifications of the contracts and to examine the monitoring procedures. This would be particularly relevant in the light of the demands on funding as it may be considered that some requirements are over-specified or are inappropriate. There could, for instance, be specifications that add to the cost of the tenders without adding commensurate benefits to passengers or the subsidising authority. It could be argued that the monitoring effort is also over-specified and it imposes too high a cost for only marginal improvements in enforcement. In both these cases, savings should be reflected in slightly lower tendered rates and in a reduction in monitoring tender prices.

[b] Develop a new subsidy policy

The development of a new subsidy policy will follow the normal political process and will involve the usual participative and consultative processes.

Once the new policy has been finalised, it will be important to establish guidelines to direct its implementation and ensure that it is understood by all the role-players.

It is very important that all the organisations and groups who are directly affected by the revised policy are made aware of the changes and the reasons for them. Also, if the policy is to be successful, it is critical that all those who are involved in its implementation and working should know what is expected of them and how they should act. The critical factor here is to produce guidelines so that those who are a part of the process and those who are controlling it are left in doubt what is expected of them to support the policy. In the past, policies may have changed but in the absence of guidelines, decisions have been taken innocently at different levels that thwart the objectives of the policy.

A further advantage of issuing guidelines is that the operators would be constrained from pressing for changes to routes and timetables that are blatantly contrary to the new policy objectives.

Guidelines should be prepared to cover the design of tenders and the administration of the contracts. For the design of tenders they should address the aims of the policy and identify the target beneficiaries. They should also establish norms and standards in respect of route length, minimum loads (differentiating between peak and off-peak trips), journey times, social travel requirements, and journey purposes to be accommodated. It is also recommended that the guidelines emphasise the need for a thorough investigation of the demand for and supply of transport in each area; this should be a fundamental review ignoring present constraints and inhibitions. In order to achieve this, it will be essential to carry out on-vehicle surveys, supplemented as necessary by cordon counts at strategic points on other days. (The on-bus surveys provide accurate of passenger loadings from the beginning to the end of the route, the point of maximum loading, the route taken, and point to point timing points which are essential for the design of realistic timings.) Because of the extra effort involved, this will mean that the contracting and implementation costs are somewhat higher and the time taken to let tenders will be longer than at present. Depending on the requirement of the new policy, some research could be needed to estimate latent demand.

[c] Prepare an implementation and monitoring strategy

The next stage would be to prepare an implementation and monitoring strategy which would include communication with all the role-players and education, if necessary, to those people or bodies responsible for implementing and monitoring the new policy, especially in those areas where significant changes are involved.

Someone should be given the task of managing the implementation and the monitoring process. Monitoring will be very important to measure the areas of success and to initiate remedial measures if there are indications of failure in any area.

There are three funding scenarios that can apply in the implementation of the new policy. The first is that budgets and funding will be increased totally to meet the additional needs, the second is that budgets and funding will be increased partially, and the third is that funding will not be increased. The latter two scenarios imply that there would have to be either a partial redistribution or a complete redistribution of the existing subsidy funds if the policy changes are to be implemented.

Because it is unlikely that additional funding will be found, at least in the short term, it is important to know how redistribution can be achieved and what its implications will be. Redistribution automatically infers that there have to be changes in other areas of subsidy policy, for instance in the planning and funding of public transport

In basic terms, redistribution within a fixed budget means that the existing beneficiaries will receive less subsidy (or none at all) and the savings made at their expense will be re-allocated to other categories of people, or to different communities in other areas, and/or to a different mode. This process should be defined, implemented and monitored so as to achieve the desired objectives while minimising the impact on existing beneficiaries and ensuring that maximum utility is obtained from the diverted funding.

Any changes made to an existing contract as a result of redistribution which have a significant impact on the number of revenue kilometres, passenger income or vehicle utilisation could be challenged by the operator. If that challenge were successful, it could cause the employer to pay some form of compensation. The operator could argue that the changes were not brought about by legitimate "market" fluctuations, but as a direct result of a subsequent policy change made by the Province. Tenderers are expected to take account of market fluctuations, but a policy change would be outside the expectations of the operator (and the employer) at the time of calculating the tender price.

The detailed reasons for claiming compensation would include:

A reduction in revenue kilometres means that overhead (standing) costs are now spread over the remaining kilometres (and therefore should be recouped from them);

Some bus drivers may become surplus to requirements and it is not possible to dismiss them in the short-term. Their costs will continue even though they are unproductive (the duration of that cost and the total financial impact will be influenced by the prevailing agreement with the drivers' trade union);

Some peak buses may become surplus to requirements and it is not possible to dispose of them in the short-term. Also, there may be a loss incurred on their disposal;

- A reduction in revenue kilometre income;
- A reduction in passenger revenue; and
- The operator may feel obliged to operate some or all of the deleted trips at his own cost (this is likely in order to maintain goodwill of the existing passengers and from the local community,

The operator could further argue that the most logical and reasonable time to have made such changes would have been prior to advertising the contract.

Any compensation payments would diminish the funds available for redistribution.

Another factor to be aware of is that certain efficiency measures could very well decline as a result of implementing redistribution. For instance, the number of passenger kilometres per unit of subsidy could fall. This would occur if :

- Operating costs on the new routes are higher than in areas served by existing contracts;
- Passenger numbers per trip or per kilometre are lower; or
- The affordable passenger fare per kilometre is lower, thereby requiring a higher subsidy per passenger.

Another factor to be considered is that taking away existing facilities can cause political and community ill-will and resentment which may not be balanced by the benefits of the provision of new facilities.

2.7.4 RECOMMENDATIONS

The recommendations on subsidy contracts are as follows:

Recommendation 2h: Guidelines should be produced to bring the design and operation of competitive contracts into line with national and provincial subsidy policy. The intended beneficiaries of subsidy and their needs should be identified. The following should be taken into account:

1. Norms and standards should be established for:
 - Route length
 - Minimum loads
 - Social trip requirements
 - Journey purposes to be accommodated.
2. The tender documentation should be reviewed to simplify language and structure, and to reduce complexity. All specifications should be evaluated in terms of their value and cost-effectiveness.
3. The design of contracts should be based on peak and off-peak passenger numbers, taking consideration of marginal costing and subsidy policy objectives;
4. On-board surveys be obligatory to determine passenger loads and running times, and to verify routes and stops;
5. Fares should be reviewed at the time the service is put out to tender and steps taken to eliminate distortions and inequities;
6. If it is necessary to adjust fares scales and rates, the following should be taken into consideration:
7. Consider increasing worker fares at a higher rate than other fares
8. More differentiated fare structures
9. Make upward transition gradual
10. Never adjust actual fares down, rather hold constant until correct
11. always round fares up on increase
12. introduce a tapered fare scale.
13. Multi-trip tickets should not expire;
14. Multi-trip tickets for off-peak travel should be at lower fare levels to reflect marginal costs and peak travel should be at higher fares;
15. Consideration could be given to paying additional remuneration to operators who encourage SMMEs to be part of larger contracts, eg. by marginally increasing the revenue kilometre rate;

16. Subsidised long-distance routes should be reduced and gradually withdrawn, possibly by registering existing passengers on long-distance routes as the only people allowed to travel at low fares. Positive steps should also be taken to encourage relocation or job swaps; and
17. Pricing should better reflect travel distance.

Recommendation 2i: A pilot project should be implemented to determine the subsidy savings that can be made by applying the above guidelines to competitive contracts. The Ladysmith contract service is proposed.

Recommendation 2j: A co-ordinator should be appointed to oversee the design and implementation of all the competitive contracts, to integrate the competitive contract routes with the design of the provincial "ideal" transport network (see recommendation 2b) and to provide support to the metropolitan and regional transport authorities in integrating the "ideal" network concept on micro level.

Unfortunately, there is no differentiation between a peak trip, where logically a load of 45% of the seated capacity can be considered far too low, and an off-peak trip, where 45% is a reasonable load and probably more than covers the marginal cost of operating the trip. In addition, because a percentage of a variable - seating capacity - is considered and not the actual number of passengers, it could produce illogical results. For instance, a trip operated by a bus with 60 seats carrying 28 passengers would qualify for inclusion in the timetable, but a bus with 70 seats carrying 31 passengers would not.

3. ACCESS TO SOCIAL SERVICES

3.1 INTRODUCTION

The second set of recommendations apply to accessing social services. The study targeted schools, clinics and pension points, since it was felt that scholars, the sick and the elderly were among the most vulnerable groups of people.

3.2 SCHOLAR TRANSPORT RECOMMENDATIONS

3.2.1 INTRODUCTION

There are an estimated 1,1 million black scholars in rural KwaZulu-Natal, of whom about 70 percent are primary school pupils and 30 percent are secondary school pupils. The 1995 October Household Survey found that about 120 000 pupils in KwaZulu-Natal between the ages of 6 and 14 are not attending school. An estimated 50 000 rural pupils between the ages of 6 and 14 may not be attending school because of accessibility problems.

The school and household surveys carried out in seven pilot areas in KwaZulu-Natal, together with the GIS data, provide an indication of scholar travel patterns, particularly in the deeper rural settlements which predominated in the survey areas. These are discussed below.

3.2.2 SCHOLAR TRAVEL PATTERNS AND PROBLEMS

Table S1 below shows the modal split for travel to school. It can be seen from the table that by far the majority of scholars walk to school (98% of primary school and 89% of secondary school pupils). The remaining 11 percent of secondary school pupils (36 700) and 2 percent of primary school pupils (15 600) use public transport. This is fairly evenly divided between buses, taxis and LDVs.

TABLE S1: MODAL SPLIT FOR TRAVEL TO SCHOOL

SCHOOL	MEANS OF TRANSPORT (%)								TOTAL	
	BUS		TAXI		LDV		WALK			
	%	n	%	n	%	n	%	n	%	n
Secondary Schools	5	321	2	175	4	298	89	6 260	100	7 054
Primary Schools	0	0	2	233	0	0	98	11 049	100	11 282
TOTAL	2	321	2	408	2	298	94	17 309	100	18 336

Table S2 below shows the average travel distance to school by mode. It can be seen from the table that secondary school pupils walk on average 3,5 km to school and travel on average 5,4 km by public transport. Primary school pupils walk on average 1,8 km to school and travel on average 3,7 km by public transport. This is largely a function of the distribution of primary and secondary schools.

TABLE S2: AVERAGE DISTANCE TO SCHOOL BY MODE

SCHOOL	AVERAGE ONE-WAY STRAIGHT LINE DISTANCE (km)	
	Walk	Public Transport
Secondary Schools	3,5	5,4
Primary Schools	1,8	3,7
AVERAGE SS × 1,5	5,3	8,1
AVERAGE PS × 1,5	2,7	5,6

Table S3 below shows the actual walking distance to school for primary and secondary school pupils. It can be seen that 37 percent of secondary school pupils walk further than the average distance of 5,5 km, with 11 percent walking more than 7,5 km to school. As far as primary school pupils are concerned, 43 percent walk further than the average distance of 3 km to school, with 15 percent walking further than 4,5 km to school.

TABLE S3: ACTUAL WALKING DISTANCE TO SCHOOL

SCHOOL	ACTUAL WALKING DISTANCE FOR PUPILS (%)								
	1,5 km or less	1,51 - 3 km	3,1 - 4,5 km	4,51 - 6 km	6,1 - 7,5 km	7,51 - 9 km	9,1 - 10,5 km	10,51 km or more	
SS	4	21	17	21	10	16	5	4	2
	63%				37%				
	190 000 pupils				110 000 pupils				
PS	26	31	28	2	9	4	-	-	
	57%		43%						
	435 000 pupils		330 000 pupils						

Table S4 below shows the average cost of travel to school by public transport mode for a 7km trip. The fare structures of the different modes are generally fairly coarse, so the fares for 7km are not that different for those for 5 km or 10 km. It can be seen that the one-way scholar fare ranges from about R1,50 on buses to R2,50 on LDVs. This translates into an annual cost of between R600 and R1 000 per scholar. This equates to an amount per scholar of between 6 percent and 9 percent of an average annual rural household income of R10 800.

TABLE S4: AVERAGE COST OF TRAVEL TO SCHOOL BY MODE FOR A 7 KM TRIP

LDV FARE (R)		TAXI FARE (R)		BUS FARE (R)	
ONE-WAY	ANNUAL ¹	ONE-WAY	ANNUAL ¹	ONE-WAY	ANNUAL ¹
2,50	1 000,00	2,00	800,00	1,50	600,00

¹ Annual fare = (one-way fare x 2) x 200 days

Table S5 below shows the problems that the school principals experience from the predominant mode of transport used by scholars to travel to school, namely walking. It can be seen from the table that 70 percent of pupils are seen to be often tired at school, 60 percent of pupils are often late in the morning and 58 percent of pupils are sometimes absent from school.

TABLE S5: PROBLEMS RESULTING FROM WALKING TO SCHOOL

PROBLEM	PROBLEM EXPERIENCED (%)				TOTAL (%)
	OFTEN	SOMETIMES	RARELY	NEVER	
Pupils late in the morning	60	32	4	4	100
Pupils tired at school	70	18	8	4	100
Pupils absent from school	19	58	14	9	100

The tables above clearly show that a significant number of scholars are walking unacceptably long distances to school, resulting in tiredness, lateness and even absence from school. Furthermore, because of the frequency with which scholars travel, the public transport costs are largely unaffordable to most rural households, even though many public transport operators already offer some form of discounted fare to scholars. Currently, no scholar transport services are organised or subsidised by the Department of Education.

3.2.3 DISCUSSION

There are various options which can be considered to address the scholar transport issue. These are discussed below.

[i] Bringing schools to the scholars

Ideally, measures should be taken by the Department of Education to ensure adequate access to schools. These could include:

- Optimising the location and utilisation of schools;
- Building more schools where necessary; or
- Providing boarding facilities at schools.

These solutions are probably of a more medium to long term nature. Furthermore, there will be cases where it is simply uneconomical to provide more schools because of the dispersed population and the low numbers in a school catchment area. If the settlement patterns do not change, these pupils will almost inevitably have to travel some distance to a school.

Nevertheless, any transport interventions should be undertaken in consultation with the education authorities to ensure integration between transport and education planning.

[ii] Targeted subsidies

The following calculations illustrate the possible monetary implications of subsidising rural scholars currently walking unacceptably long distances or already using public transport.

Say a taxi fare of R2,00 per one-way trip is subsidised to the tune of 50% (R1,00) for:

- Secondary school pupils walking further than 5,5 km actual one-way to school
= 110 000 pupils x R2,00 per day (return trip) x 200 days a year = R44 million
- Secondary school pupils currently using public transport
= 37 000 pupils x R2,00 per day x 200 days = R15 million
- Primary school pupils walking further than 3 km actual one-way to school
= 328 000 pupils x R2,00 per day (return) x 200 days a year = R131 million
- Primary school pupils currently using public transport
= 16 000 x R2,00 per day x 200 days = R6 million
- Pupils age 6-14 not currently attending school
= 50 000 pupils x R2,00 per day (return trip) x 200 days a year = R20 million

Total scholar subsidy = R216 million pa

The current total subsidy bill for KwaZulu-Natal is about R240 million. A rural scholar subsidy of R216 million pa is thus equivalent to about 90 percent of the existing subsidy bill. This would mean that either the total subsidy bill would have to almost double or else the existing subsidies would have to be almost entirely redirected to scholar services. Neither of these options seem feasible, at least in the short to medium term.

One way of reducing the above scholar subsidy estimate would be to further target the subsidies in terms of household income levels, *i.e.* only subsidise scholars from the poorest households. However, in rural areas incomes as a whole are low, and it may be difficult to motivate a particular cut-off point.

Another way of reducing the above scholar subsidy estimate would be to ensure that the subsidies were only applied to carry pupils to the nearest appropriate school, since some choice is currently being exercised in choice of school. It is unlikely that this would make much of a difference to the overall subsidy bill.

In any of the above cases, a primary difficulty is in identifying the scholars who should be receiving a subsidy. Those areas where scholars travel the longest distances can be identified using the GIS data. A contract could be entered into with specific operators to carry scholars in the identified areas with a sufficient concentration to merit public transport. Alternatively, targeted scholars could be given a voucher to use on any or certain identified services. However, scholars who live in areas of low population concentrations with poor infrastructure would be excluded from the subsidy.

Further problems with subsidy include the following:

- Once a subsidy is introduced, it is difficult to contain or stop; and
- Those who fall outside the subsidy 'cut-off' e.g. closer than 3 km to a primary school may regard it as unfair that those just further than 3 km are being subsidised. They may walk a short distance to utilise the transport picking up pupils before the cut-off point, thereby increasing the subsidy requirements.

[iv] Intermediate transport modes

Probably the most economic form of intervention would be in the form of supplying an intermediate transport mode to assist scholars in travelling to school. Bicycles may be the most appropriate, other than in areas where the topography is such that it is impossible to use a bicycle.

The cost of providing bicycles to an estimated 540 000 pupils would be in the region of R270 million. If the bicycles last for a period of five years, then this equivalent to an investment of R54 million per year, which is clearly considerably less than the estimated subsidy for the same number of pupils of R216 million per year.

At an initial capital cost of R500 per bicycle, the cost of subsidising scholar transport (at an average of R400 per scholar per year) could be recouped in about one and a quarter years. There is also the possibility of obtaining second-hand bicycles, both locally and from overseas, which would reduce the initial capital cost, but would decrease the lifetime of the bicycle.

A study in Kenya found that the annual cost of repairs to bicycles varied between 10 percent and 30 percent of the initial cost of the bicycle for a usage of about 2000 to 3000 km per year over rough tracks, and in a number of instances with the bicycle being used for carrying loads. With improved infrastructure and no loads on the bicycle, the repair costs would be lower. If a scholar uses a bicycle over an average distance of 7 km one-way per school day, this would equate to about 2 800 km per year. Therefore, repair costs should not be higher than 10

percent of the initial cost of the bicycle or R50 per year in comparison to about R800 per year for public transport.

Bicycles could be distributed through the schools. Because the use of bicycles is not dependent on the concentration of pupils (which is needed to make public transport viable), those pupils living furthest from the nearest school could be more accurately targeted. Furthermore, if it necessary to improve the infrastructure, a bicycle path is far cheaper than road construction.

The provision of spare parts and maintenance is crucial. This affords opportunities for small businesses to travel from school to school supplying spare parts, or to locate in a central place to provide maintenance services.

A local initiative promoting bicycles is the Afri-Bike project, which operates under the umbrella of the Afrika Cultural Centre in Johannesburg. The project received 600 bicycles from donors in the United States and United Kingdom, where discarded bicycles simply create landfill problems. The old cargo containers used to ship the bicycles to South Africa were also donated to the project. The bicycles were repaired where necessary and some bicycles, referred to as 'work bikes', have been fitted with frames to enable them to be used to fetch water or other items. Three courses are offered by Afri-Bike to teach participants basic mechanics and well as tips for low-cost bicycle maintenance. The project co-ordinators are hoping to set up satellite workshops in rural areas.

3.2.4 RECOMMENDATIONS

The recommendations on scholar transport are as follows:

Recommendation 3a: Any transport interventions should be undertaken in consultation with the education authorities and integrated planning should as far as possible be institutionalised.

Recommendation 3b: Pilot projects should be implemented to determine the effects of supplying bicycles to assist scholars in travelling to school. It is proposed that these pilots be carried out in the Vukuzithathe Sub-Region of the Ugu Regional Council and in the Msinga Sub-Region of the Umzinyathi Regional Council. The following should be taken into account:

- The projects should be carried out in close co-operation with the Regional Councils and communities involved;
- A proportion of the cost of the bicycle and the full repair costs

should be carried by the scholar's parents;

- Since bicycles are not dependent on scholar concentration, those living furthest from school could be more accurately targeted e.g. through greater subsidisation of the initial capital cost;
- Bicycle paths may need to be constructed in certain areas; and
- The provision of spare parts and maintenance is crucial, and also affords opportunities for small businesses

3.3 CLINIC TRANSPORT RECOMMENDATIONS

3.3.1 INTRODUCTION

In 1997, there were 60 hospitals, 375 clinics and 162 mobile clinical units in KwaZulu-Natal. In the same year there was a shortage of 338 doctors, 4 438 nurses, 81 pharmacists and 307 other medical professionals. In the 1999 Budget Review by the Treasury of KwaZulu-Natal it is stated that the majority of people have inadequate access to basic health services, with urban areas more serviced than the rural areas. It also states that the lack of adequate health services is partly due to the pattern of distribution of the existing facilities and health personnel, and partly due to the non-availability of medical facilities. The Department of Health budget for the year 1999/2000 is R4,9 billion, and increase of 10 percent over the 1998/99 allocation. Expenditure on education, health and social welfare will make up nearly 87 percent of the provincial budget in 1999/2000.

In a 1995 study, CASE found that 19 percent of rural Africans countrywide needed health care but failed or delayed to seek treatment. The reasons given are shown in Table C1 below.

TABLE C1: REASON FOR FAILING TO OR DELAYING SEEKING TREATMENT IN THE PAST YEAR FOR RURAL AFRICANS COUNTRYWIDE (CASE, 1995)

REASON (%)				TOTAL (%)
Could not afford health care	Could not afford transport	No time off	Other	
75	15	5	5	100

The total population of KwaZulu-Natal is estimated at 8,4 million, with a rural population of about 4,8 million (57%). Applying the CASE findings to KwaZulu-Natal rural areas, it is evident

that:

- About 912 000 people needed health care, but did not visit a clinic; and
- Of these, about 137 000 did not visit a clinic because they could not afford the transport.

However, the majority of people do not visit clinics because they cannot afford the cost of the health care.

3.3.2 TRAVEL PATTERNS TO CLINICS AND PROBLEMS

The clinic and household surveys carried out in seven pilot areas in KwaZulu-Natal, together with the GIS data, provide an indication of travel patterns to clinics and problems experienced in some of the deeper rural areas. It was found that an average number of 2,6 visits to a clinic are made annually by each person. Table C2 below shows the average travel time to clinics by mode.

TABLE C2: AVERAGE TRAVEL TIME TO CLINICS BY MODE

MODE	TRAVEL TIME ONE-WAY (MINUTES)
Walk only	70 minutes
Walk to/from public transport	36 minutes OR about 3 km (most at start of journey if clinic on a public transport route)
Wait for public transport	20 minutes
Bus	70 minutes
Taxi	30 minutes
LDV	55 minutes
Car (as public transport)	45 minutes

It can be seen from Table C2 that those who walk to clinics take on average 70 minutes to reach their destination. The average total travel time by public transport is 97 minutes, of which 41 minutes are on-vehicle travel time, and the remainder is walking and waiting time (an average of 36 minutes and 20 minutes respectively). The walking and waiting time is thus 58 percent of the total travel time by public transport.

Table C3 below shows the average distance to clinics by mode. It can be seen from Table C3

that those who walk to clinics travel an average of just over 6km one-way, while those who use public transport travel between about 9km and 16 km one-way.

TABLE C3 : AVERAGE DISTANCE TO CLINIC BY MODE

	AVERAGE STRAIGHT LINE DISTANCE (km)			
	Walk	LDV	Taxi/Car	Bus
AVERAGE	4,2	5,8	10,3	7,8
AVERAGE x 1,5	6,3	8,7	15,5	11,7

Table C4 below shows the modal split for travel to clinics. It can be seen from Table C4 that most people walk to clinics (62%), followed by the use of taxis (22%)

TABLE C4 : MODAL SPLIT FOR TRAVEL TO CLINICS

MAIN MODE OF TRANSPORT TO CLINIC (%)							TOTAL (%)
Walk	Bus	Taxi	LDV	Car	Private car	Horse	
62	7	22	3	3	1	2	100

Table C5 below shows the estimated number of people who walk further than 6 km and travel further than 15 km by public transport if the survey results are generalised to other rural areas in the province. It can be seen from Table C5 that about 370 000 people walk further than 6km to a clinic and over 250 000 people travel further than 15km by public transport.

TABLE C5: DISTANCE TRAVELLED TO CLINIC

MODE	DISTANCE (%)	
	6 km or less	6,1 km or more
Walk	71%	29%
	909 000 people*	370 000 people*
	15 km or less	15,1 km or more
Public	68%	32%

transport		
	533 000 people*	251 000 people*

* Rural population estimated at 4,8 million, about 80% of which are over the age of 6 years (i.e. must pay for travel) = 3,84 million - 1,776 million who do not attend clinics = 2,06 million, 62% of whom walk to clinics (1,28 million)

Table C6 below shows the average cost of travel to a clinic for a 15km trip. It can be seen that it would cost a person between R18,00 and R31,00 per year for an average of 2,6 trips to a clinic.

TABLE C6: AVERAGE COST OF TRAVEL TO CLINICS BY MODE FOR A 15 KM TRIP

BUS FARE (R)		TAXI FARE (R)		LDV FARE (R)	
ONE-WAY	ANNUAL*	ONE-WAY	ANNUAL*	ONE-WAY	ANNUAL*
3,50	18,00	5,00	26,00	6,00	31,00

* Annual = (one-way fare x 2) x 2,6 trips pa (assumes young children travel free of charge)

Table C7 below shows the satisfaction levels with various aspects of the journey to clinics. It can be seen from the table that public transport users express the highest level of dissatisfaction with the cost of the trip and those walking to clinics express the highest level of dissatisfaction with the time it takes to walk to the clinic (60%). Both walkers and public transport users express dissatisfaction with the comfort of the journey (62%). Those walking are more concerned for their safety than are those using public transport.

TABLE C7: SATISFACTION LEVELS WITH JOURNEY TO CLINICS

ASPECT OF JOURNEY	SATISFACTION LEVEL (%)			TOTAL (%)
	Satisfied	Neutral	Dissatisfied	
Safety while walking/waiting	31	17	52	100
Safety while on vehicle	30	33	37	100
Walking time	22	18	60	100
Waiting time for transport	20	26	54	100

Total travel time	16	25	59	100
Comfort of journey	16	22	62	100
Cost of journey	2	17	81	100

The survey showed that up to about a third of the rural population who attend clinics could be walking more than 6km or travelling more than 15km to access a clinic. While there is an element of choice in the clinics visited, a significant number nevertheless have no choice but to travel these distances to access primary health care facilities. Although the cost of travel is not high in total because of the relatively infrequent trips that are made, households may not have the available money at the time of needing the health care, and affordability is more of a problem the greater the distance that has to be travelled. The cost factor is reflected in the high dissatisfaction level with the cost of the journey to clinics. Nevertheless, it seems that the cost of health care itself is a problem to more people than the cost of travel to the health care facility. While pregnant women and children under six years of age receive free health care, and children under six may in many cases travel free of charge on public transport, a parent (usually the mother) has to accompany a child under six years and pay the transport cost, and walking distances of over 6km will be particularly onerous for pregnant women and young children.

3.3.3 DISCUSSION

There are various options which can be considered to address transport to clinics. These are discussed below.

[i] Bringing clinics to the people

Ideally, measures should be taken by the Department of Health to ensure adequate access to clinics. These could include:

- Optimising the location and utilisation of clinics;
- Building more clinics where necessary; or
- Providing more mobile clinic facilities.

It should be noted that 162 mobile clinics are already provided in KwaZulu-Natal. The locations of these mobile clinics are not shown on the GIS. Nevertheless, in the settlements surveyed for this study, very few people stated that a mobile clinic came to their settlement.

These solutions are probably of a more medium to long term nature. Furthermore, there will be

cases where it is simply uneconomical to provide more clinics because of the dispersed population and the low numbers in a clinic catchment area. If the settlement patterns do not change, these people will almost inevitably have to travel some distance to a clinic.

Nevertheless, any transport interventions should be undertaken in consultation with the health authorities to ensure integration between health and education planning.

[ii] Targeted subsidies

The following calculations illustrate the possible monetary implications of subsidising transport to rural clinics for those walking further than 6km or travelling further than 15km by public transport.

Say the taxi fare of R5,00 is subsidised to the tune of 50% (R2,50) for those who walk 6,1 km or more:

$$= 370\ 000 \text{ people} \times R5,00 \text{ per trip (return trip)} \times 2,6 \text{ trips per year} = R5 \text{ million}$$

Say a taxi fare of R8,00 is subsidised to the tune of 50% (R4,00) for those who travel more than 15 km by public transport:

$$= 250\ 900 \text{ people} \times R8,00 \text{ per trip (return trip)} \times 2,6 \text{ trips per year} = R5 \text{ million}$$

Say a taxi fare of R5,00 is subsidised to the tune of 50% (R2,50) for those who needed health care but did not visit a health facility (all):

$$= 912\ 000 \text{ people} \times R5,00 \text{ per trip (return trip)} \times 2,6 \text{ trips a year} = R12 \text{ million}$$

OR Say a taxi fare of R8,00 per trip (return) is subsidised to the tune of 50% (R4,00) for those who needed health care, did not visit a health facility and say their reason was that they could not afford the transport:

$$= 136\ 800 \text{ people} \times R8,00 \text{ per trip (return)} \times 2,6 \text{ trips a year} = R3 \text{ million}$$

Total subsidy = R13 to R22 million

In iNdllovu Sub-Region 4 it was estimated that it costs R360 000 to build a clinic. Other sources would suggest that this figure should be in the region of R1 million to R1,5 million. There was an estimated backlog of 11 clinics in iNdllovu Sub-Region 4 sub-region. If there is a similar backlog in all the regions, then about 385 clinics are needed in the province. However, of the 11 clinics

needed in iNdllovu Sub-Region 4, about 3 well-placed clinics would solve most of the accessibility problems. If this is the case throughout the province, then about 90 clinics would address most accessibility problems (not necessarily capacity problems). A transport subsidy of R22 million per year could build 22 clinics at a cost of R1 million/clinic. The R22 million a year transport subsidy thereafter could provide each of the 22 clinics with R1 million in operating costs or build a further 22 clinics. It would thus take about four years to address the clinic infrastructure accessibility backlog (90 clinics) with the transport subsidy amount.

Although the subsidy amount is not that large (at most 9% of the existing subsidy bill), a primary difficulty is in identifying those people who should be receiving a subsidy. Those areas where people travel the longest distances to clinics can be identified using the GIS data. A contract could be entered into with specific operators to carry people to clinics in the identified areas with a sufficient concentration to merit public transport. However, people who live in areas of low population concentrations with poor infrastructure would be excluded from the subsidy. Furthermore there are difficulties involved in entering into contracts to transport such a specific target market - the contract could become expensive due to the need for over-provision to ensure that the entire target market was served (it would be almost impossible to determine who would want to travel to a clinic on what day, even if the clinic service was scheduled to run at a specific time of day). It would be better to enter into public transport contracts for an area as a whole.

Another option is to target subsidies directly at those attending clinics by using a voucher. The first group of people to be targeted could be pregnant women and children under six who qualify for free health care, but may not be able to make use of it due to accessibility problems or the cost of public transport. Income level would not be directly taken into account, but if clinics in specific areas (lowest income, highest need) were targeted first, this may in part address the income issue. This type of transport subsidy could actually assist in increasing the utilisation of clinics (as opposed to hospitals and private doctors), thereby supporting the health policy.

There are a number of issues with the voucher system. Firstly, it is against subsidy policy (competitive tenders) as it currently stands. Secondly, a voucher that cannot be easily forged and replicated has to be designed. Thirdly, operators have to accept the voucher in lieu of direct payment, and claim the subsidy back from the authority at a later date.

Further problems with subsidy include the following:

- Once a subsidy is introduced, it is difficult to contain or stop; and
- The subsidy could well result in an increased number of people visiting clinics and/or visiting them more frequently, leading to an increase in the subsidy bill.

[iii] Intermediate transport modes

The use of intermediate modes specifically for access to clinics is not recommended, but if intermediate modes were introduced for other reasons (see Chapter 4 of this report) they may also be used to access clinics, particularly in areas inaccessible to public transport modes.

3.3.4 RECOMMENDATIONS

The recommendations on transport to clinics are as follows:

Recommendation 3c: Any transport interventions should be undertaken in consultation with the health authorities and integrated planning should as far as possible be institutionalised.

Recommendation 3d: Subsidised public transport should be made available to those who receive free health care but may not be able to take advantage of this because of transport costs, *i.e.* initially pregnant women and then the parents of children under six, through a voucher system. It is proposed that pilot projects be carried out in Sub-Region 4 of the iNdllovu Regional Council and in the Usuthu Sub-Region of the Zululand Regional Council. The following should be taken into account:

- The projects should be carried out in close co-operation with the Regional Councils and communities involved;
- Income levels would not be directly taken into account, but clinics in specific areas (lowest income, serving those travelling furthest) could be targeted first; and
- The vouchers could be handed out at clinics.

3.4 PENSIONER TRANSPORT RECOMMENDATIONS

3.4.1 INTRODUCTION

Welfare and safety nets form an integral part of the government's strategy for responding to poverty and inequality, and the primary focus of the Department of Welfare is on poverty alleviation. Close on 90 percent of the welfare budget is allocated to social security, in the form of old age pensions, pensions for the disabled, child and family benefits and social relief. The old age pension programme is generally considered to reach a high proportion of those eligible and to be well-targeted. However, it was estimated that fraud, theft and inefficiencies absorb

about around 10 percent of the welfare budget. In 1996 the government recommended that the system should be overhauled and reorganised nationally rather than provincially.

In 1998/99, 67 percent (R2,3 billion) of the KwaZulu-Natal Department of Social Welfare's total expenditure on social grants of R3,5 billion was spent on old age pensions. The social welfare budget for 1999/2000 will amount to R3,8 billion. Expenditure on education, health and social welfare will make up nearly 87 percent of the provincial budget in 1999/2000.

3.4.2 TRAVEL PATTERNS TO PENSION POINTS AND PROBLEMS

The pension point and household surveys carried out in seven pilot areas in KwaZulu-Natal, together with the GIS data, provide an indication of travel patterns to pension points and problems experienced in some of the deeper rural areas. Table P1 below shows the average travel time to pension points by mode.

TABLE P1: AVERAGE TRAVEL TIME TO PENSION POINTS BY MODE

MODE	TRAVEL TIME ONE-WAY (MINUTES)
Walk only	90 minutes
Walk to/from public transport	36 minutes OR 2 km (most at start of journey if pension point on a public transport route)
Wait for public transport	33 minutes
Bus	84 minutes
Taxi	46 minutes
LDV	49 minutes

It can be seen from Table P1 that those who walk to pension points take on average 90 minutes to reach their destination. The average total travel time by public transport is 126 minutes, of which 57 minutes are on-vehicle travel time, and the remainder is walking and waiting time (an average of 36 minutes and 33 minutes respectively). The walking and waiting time is thus 55 percent of the total travel time by public transport. The average waiting time at the pension point itself is about 3 hours, although it differs quite considerably between points.

Table P2 below shows the average distance to pension points by mode. It can be seen from Table P2 that those who walk to pension points travel an average of just over 5km one-way, while those who use public transport travel between about 13km and 23km one-way.

TABLE P2 : AVERAGE DISTANCE TO PENSION POINT BY MODE

	AVERAGE STRAIGHT LINE DISTANCE (km)			
	Walk	LDV	Taxi	Bus
AVERAGE	3,4	10,1	15,4	8,9
AVERAGE x 1,5	5,1	15,2	23,1	13,4

Table P3 below shows the modal split for travel to pension points. It can be seen from Table P3 that over half of pensioners walk to pension points (55%), followed by the use of taxis (25%)

TABLE P3 : MODAL SPLIT FOR TRAVEL TO PENSION POINTS

MAIN MODE OF TRANSPORT TO CLINIC (%)					TOTAL (%)
Walk	Bus	Taxi	LDV	Car	
55	6	25	12	2	100

Table P4 below shows the estimated number of pensioners who walk further than 5 km and travel further than 20km by public transport if the survey results are generalised to other rural areas in the province. It can be seen from Table P4 that about 43 000 pensioners walk further than 5km to a pension point and about 23 000 pensioners travel further than 20km by public transport.

TABLE P4: DISTANCE TRAVELLED TO CLINIC

MODE	DISTANCE (%)	
	5 km or less	5,1 km or more
Walk	60%	40%
	64 000 pensioners*	43 000 pensioners*
	20 km or less	20,1 km or more
Public transport	74%	26%
	65 000 pensioners*	23 000 pensioners*

* Rural population estimated at 4,8 million, about 4% of whom are over the age of 65 years (195 000 in total)

Table P5 below shows the average cost of travel to a pension point for a 20km trip. It can be seen that it would cost a pensioner between R96,00 and R144,00 per year to travel to the pension point to collect their pensions. Currently pensions are R510 per month or R6 120 per year. The cost of public transport would therefore on average be about 2 percent of the annual pension. This is a reasonable amount, although it must be remembered that pensions are one of the main sources of household income in rural areas.

TABLE P5: AVERAGE COST OF TRAVEL TO PENSION POINTS BY MODE FOR A 20 KM TRIP

BUS FARE (R)		TAXI FARE (R)		LDV FARE (R)	
ONE-WAY	ANNUAL*	ONE-WAY	ANNUAL*	ONE-WAY	ANNUAL*
4,00	96,00	5,00	120,00	6,00	144,00

* Annual = (one-way fare x 2) x 12 trips pa

Table P6 below shows the satisfaction levels with various aspects of the journey to pension points. It can be seen from the table that public transport users express the highest level of dissatisfaction with the cost of the trip (72%) and those walking to pension points express the

highest level of dissatisfaction with the time it takes to travel to the clinic (69%). Public transport users also express dissatisfaction with the waiting time for transport (62%). Those walking are more concerned for their safety than are those using public transport.

TABLE P6: SATISFACTION LEVELS WITH JOURNEY TO PENSION POINTS

ASPECT OF JOURNEY	SATISFACTION LEVEL (%)			TOTAL (%)
	Satisfied	Neutral	Dissatisfied	
Safety while walking/waiting	35	13	52	100
Safety while on vehicle	29	32	39	100
Walking time	18	13	69	100
Waiting time for transport	19	19	62	100
Total travel time	11	24	65	100
Comfort of journey	9	36	55	100
Cost of journey	9	19	72	100

The survey showed that up to about a third of rural pensioners could be walking more than 5km or travelling more than 20km to access a pension point. The existing travel patterns exhibit an unusually high element of what appears to be choice, but this may in certain instances reflect the system rather than actual choice. Although the cost of travel is not high in total or as a percentage of the monthly pension, it must be remembered that pensions are a major source of income in most rural households. A lower percentage of pensioners were dissatisfied with the cost of transport in comparison to those travelling to clinics (72% as opposed to 81%), but a higher percentage were dissatisfied with the walking time (69% as opposed to 60%), which is very understandable for elderly people. The waiting time for public transport was also a greater source of dissatisfaction for pensioners than for those travelling to clinics (62% as opposed to 54%). Pensioners waited on average 33 minutes for public transport, whereas those travelling to clinics waited about 20 minutes. This is probably due to the fact that most pensioners start their journey earlier in the morning (when transport is likely to be less available) than those travelling to clinics.

3.4.3 DISCUSSION

There are various options which can be considered to address transport to pension points. These are discussed below.

[i] Bringing pension points to the people

Ideally, measures should be taken by the Department of Welfare to ensure adequate access to pension points. These could include:

- Optimising the location and utilisation of pension points; or
- Providing more mobile pension facilities.

These solutions are probably of a more medium to long term nature. Furthermore, there will be cases where it is simply uneconomical to provide more pension points because of the dispersed population and the low numbers in a pension point catchment area. If the settlement patterns do not change, these people will almost inevitably have to travel some distance to a pension point.

The surveys conducted for this study showed certain irregular travel patterns for journeys to pension points. The incidence of pensioners travelling long distances to pension points other than those closest to where they live was higher than is usually case with most travel patterns. This could also not be explained by pensioners travelling to points located in a town where they could carry out other activities such as shopping.

A more efficient pension system (e.g. less waiting time at the pension points) could assist the transport system in that pensioners would not feel the need to travel to pension points so early in the morning (when fewer vehicles are available and waiting times are longer) or in the morning peak.

Nevertheless, any transport interventions should be undertaken in consultation with the welfare authorities to ensure integration between health and education planning.

[ii] Targeted subsidies

The following calculations illustrate the possible monetary implications of subsidising transport to pension points for those walking further than 5km or travelling further than 20km by public transport.

Say a taxi fare of R4,00 is subsidised to the tune of 50% (R2,00) for those who walk 5,1 km or more:

$$= 43\ 000 \text{ people} \times R4,00 \text{ per trip (return trip)} \times 12 \text{ trips per year} = R2 \text{ million}$$

Say a taxi fare of R8,00 is subsidised to the tune of 50% (R4,00) for those who travel more than 20 km by public transport:

$$= 23\ 000 \text{ people} \times R8,00 \text{ per trip (return trip)} \times 12 \text{ trips per year} = R2 \text{ million}$$

On the other hand, the subsidy could simply be extended to all pensioners:

Say a taxi fare of R6,00 is subsidised to the tune of 50% (R3,00) for all pensioners:

$$= 195\ 000 \text{ people} \times R6,00 \text{ per trip (return trip)} \times 12 \text{ trips a year} = R14 \text{ million}$$

OR Say a taxi fare of R6,00 per trip (return) is subsidised to the tune of 100% for all pensioners:

$$= 195\ 000 \text{ people} \times R12,00 \text{ per trip (return)} \times 12 \text{ trips a year} = R28 \text{ million}$$

Total subsidy = R2 to R28 million

The subsidy amount is not that large (at most 12% of the existing subsidy bill), and identifying those people who should be receiving a subsidy should be possible through the welfare system.

Those areas where pensioners travel the longest distances to pension points can be identified using the GIS data. A contract could be entered into with specific operators to carry pensioners to pension points in the identified areas with a sufficient concentration to merit public transport. However, pensioners who live in areas of low population concentrations with poor infrastructure would be excluded from the subsidy. The same comments as for clinics apply.

Alternatively, pensioners could be given either cash or transport vouchers at the pension points. Cash would be more versatile, but there is no guarantee that it would be spent on transport. Transport vouchers would be of no assistance to pensioners in areas where there are no public transport services. The same comments as for clinics apply.

[iii] Intermediate transport modes

The use of intermediate modes specifically for access to pension points is not recommended, but if intermediate modes were introduced for other reasons (see Chapter 4 of this report) they may also be used to access pension points, particularly in areas inaccessible to public transport modes.

3.4.4 RECOMMENDATIONS

The recommendations on transport to pension points for the elderly are as follows:

Recommendation 3e: Any transport interventions should be undertaken in consultation with the welfare authorities and integrated planning should as far as possible be institutionalised.

Recommendation 3f: Subsidised public transport should be made available to the elderly for travel to pension points through a voucher system. It is proposed that a pilot project be carried out in the Umbumbulu Sub-Region 4 of the Ilembe Regional Council. The following should be taken into account:

- The project should be carried out in close co-operation with the Regional Council and communities involved;
- Income levels would not be directly taken into account, since all pensioners would be eligible; and
- The vouchers could be handed out at pension points.

4. LOCAL TRANSPORT

4.1 INTRODUCTION

The third set of recommendations apply to local transport needs within rural settlements. The study focused on collecting water and fuel, and subsistence agricultural, since these are the most time-consuming basic daily activities in most rural areas.

4.2 LOCAL TRANSPORT NEEDS

Time is an important cost associated with many of the livelihood plans constructed by the poor, especially women, who are often singly responsible for child-care, cleaning the house, fetching and heating water, washing, shopping, collecting firewood and cooking. The long and arduous work hours experienced in many households are exacerbated by seasonal demands in rural communities.

4.2.1 FETCHING WATER

It is estimated that only 21 percent of South African households have piped water and that 74 percent of rural households need to fetch water on a daily basis. The national assessment of water supply and sanitation report published by DWAF in November 1996, indicated that 18 million people were without a basic water supply, the great majority of whom reside in rural areas.

The *1994 White Paper on Water Supply and Sanitation Policy* stated that the national Department of Water Affairs and Forestry (DWAF) aimed to provide a minimum of 25 litres of potable water per person per day within 200m of each home before the end of 2001. More recently, the Community Water Supply and Sanitation Programme (CWSS) of the DWAF aimed to provide water supplies to 90 percent of the currently non-serviced population by 2004. In the 1999 Budget Speech, Minister of Finance Trevor Manuel stated that the DWAF has, since 1994, provided a basic water supply to over 3 million people.

Although the rate of provision of basic water supply has most probably increased over the four year period 1994 to 1998, and may increase still further in future, the figures would nevertheless suggest that neither the original target date of 2001 nor even the latter date of 2004 are likely to be met. If 2 million people a year are provided with a basic water supply from the year 1999 onwards, then it will take seven to eight years to address the remaining backlog of 15 million people (*i.e.* up to the year 2005 to 2006). This is probably an optimistic scenario.

Another factor that must be taken into account is that of payment for water provision. Water

from rivers and springs is free of charge. In order to meet the basic water supply criterion of 25 litres per person per day within 200m of each home, a standpipe has to be erected. This is usually accompanied by a pre-paid water meter where residents buy tokens of a certain value and can draw water from the standpipe up to the value of the token. Water tariffs are differentiated, from a "lifeline tariff" for the very poor that essentially covers only operational and maintenance costs, to higher tariffs that also cover part or all of the capital costs. Nevertheless, in many cases, water that was previously obtained free of charge, now has to be paid for. There are examples of trade-offs being made by poor communities, where the time and effort of fetching water from a river or spring is seen to be economically preferable to paying for water from a nearby standpipe.

A recent evaluation of several RDP water projects showed that the uniform application of a standard of 25 litres per capita per day, within a walking distance of 200m, was causing serious problems. In many areas it has been rejected as too low a level of service, with residents adamant that they are willing to pay for a more convenient service. In areas where settlements are sparse, affordability is limited and unimproved water sources are plentiful, residents purchase an average of only 8 litres per day. This shows that local socio-economic conditions may render standards too high in some areas and too low in others.

In the KwaZulu-Natal rural areas surveyed during the course of this study, it was found that water is usually collected from the source:

- By women and female children;
- By headloading containers that can hold 20 to 25 litres of water; or
- In some instances, by using a wheelbarrow to carry two or three containers holding 20 to 25 litres of water each;
- On average three times a day;
- Taking 25 minutes per return trip or 75 minutes per day; and
- Over an average distance of about 1,7km per return trip (at a speed of 15 minutes per km).

In most cases it is unlikely that 25 litres of water per person per day is collected in this manner.

When the water source is not available eg. in the case of drought, or when it is situated at an unreasonably long distance away from the settlement, water vendors collect water and sell it to the community. These vendors usually use LDVs or animal carts and either swop empty 20 to 25 litre containers for full ones, or else fill up the containers from a large water drum on the back of their bakkie or cart. However, the water vendor's prices are usually demand related. Examples are known of vendors charging between 25 cents and 60 cents per 20 to 25 litres of water. For a household of six people using 150 litres of water a day, this amounts to between

R45,00 and R108,00 a month. Looking at it another way, this costs between R10,00 and R24,00 per kilolitre.

Provision of dependable water supplies can have a strong positive effect on food security and income generation for rural women. Substantial livelihood gains are likely to be made by releasing labour time spent on obtaining water, and providing water for small farming and other enterprises.

It is estimated that women can use up to a third of their calorie intake in tasks associated with fetching water and wood. Reducing the time women spend on such tasks will allow them more time to function in the private commodity economy or to access services from the public service economy. It will also enable them to participate in community activities where development decisions are taken.

However, it cannot be assumed that the time and energy women save through improved access to services will necessarily be to their benefit. Evidence from India suggests that men may transfer some of their responsibilities to women once the latter have more free time. In rural areas, where women are closely tied to their homes due to child-care responsibilities and where few opportunities or support services are available for income-generating activities, women may not be able to use the time to enter the private commodity market. Nevertheless, given their heavy workloads, the increased leisure time of women (if not eroded through new tasks) in itself has important benefits for women's quality of life.

4.2.2 FETCHING FUEL

Energy is divided into three sub-sectors – electricity, hydro-carbon (including coal, gas and paraffin) and biomass (wood, dung and crop waste). In South Africa, most of the poor meet their energy needs using biomass fuels, or a combination of biomass and hydro-carbon fuels, and sometimes electricity. This multiple fuel use or fuel-switching is peculiar to low-income households.

The RDP set the target of electrifying 2,5 million households, 72% of the total, by the year 2000. In 1998, Eskom's Accelerated Electrification Programme was on schedule to meet this target, but was running into crisis around cost. Continuing non-payment of electricity accounts by consumers had accumulated arrears owed to Eskom of R1,2 billion, while low take-up rates restricted its ability to cross-subsidise. Eskom is delivering electricity only to where the grid currently reaches or is planned to be extended to during the next five years. Those not within these areas, generally the most disadvantaged and isolated, are not likely to receive electricity in the next five years.

An important flaw in the focus on electrification is that most of the poor continue to meet their energy needs using multiple-fuel or fuel-switching strategies. Consequently, at the household level electricity is not necessarily a solution to energy poverty. The 1998 Poverty and Inequality Report (PIR) suggested that:

- Subsidisation of the cost of paraffin be investigated; and
- Alternative energy sources be given greater attention by existing programmes.

In the KwaZulu-Natal rural areas surveyed during the course of this study, it was found that wood fuel is normally collected from the source:

- By women;
- By headloading; or
- In some instances, by using a pack animal or animal cart;
- On average three times a week;
- Taking about 60 minutes per return trip or 180 minutes per week; and
- Over an average distance of about 3km per return trip (at an average speed of 20 minutes per km).

4.2.3 SUBSISTENCE AGRICULTURE

There are a limited number of interventions that seem well-suited to assist the rural poor, and particularly women. Land reform has the potential to address the situation of the rural poor directly. About 68 percent of black rural households desire farmland, and it can be assumed that some of the 32 percent who do not desire agricultural land do indeed want land for residential or other purposes. Most people want small amounts of land, with 48 percent of those wanting farmland wanting 1ha or less.

There are three elements to the land reform programme:

- Redistribution to provide the poor and disadvantaged with land for residential and productive purposes;
- Land claims and restitution; and
- Tenure reforms to improve tenure security of all South Africans.

Tenure reform is arguably the branch of the land reform programme that will have the most far-reaching effects because of the number of people involved (about 6 million households). By contrast, land redistribution is unlikely to affect more than 1,5 million households over the next 10 years, while land restitution is unlikely to affect more than 500 000 households.

Only 3 percent (4 million ha) of South Africa is considered high-potential agricultural land. About 26 percent of African rural households currently have access to a plot of land for crop cultivation, while some 24 percent of African rural households own livestock. Ownership of agricultural and other productive equipment is limited to 18 percent and 8 percent of rural African households respectively. Although agricultural production makes a small contribution to household income, over one third of rural households continue to engage in agricultural production, making it the third most important livelihood tactic used in rural areas after remittances and wages from low-skilled jobs.

Agriculture should be an important economic sector in KwaZulu-Natal, since a large part of the province can be classified as having high agricultural potential, yet the agricultural sector contributes only about 5 percent towards the gross geographic product.

In the KwaZulu-Natal rural areas surveyed during the course of this study, it was found that subsistence agriculture is normally:

- The responsibility of women;
- With produce generally being carried by hand or headloaded; and
- Involving an average of 5 trips a week to the place where produce is grown, at an average of about 10 minutes per return trip.

The time and energy burdens involved in off-road transport represent one of the major constraints to any efforts by small farmers to move from subsistence agriculture to produce more marketable surpluses. The carrying of small loads over short distances (most produce is grown in small □fields□ close to home) mean that the return to labour, and the surplus it generates, is small.

4.3 INTERMEDIATE MODES OF TRANSPORT (IMTs)

Table L1 below shows the household ownership of transport modes in the rural areas surveyed during the course of the study. It can be seen from the table that nearly 40 percent of respondents own wheelbarrows, but otherwise the ownership of transport modes is fairly low. Animal carts and bicycles are each owned by 7 percent of respondents respectively.

TABLE L1: HOUSEHOLD OWNERSHIP OF MEANS OF TRANSPORT

MEANS OF TRANSPORT	% OWNERSHIP
Taxi	3

LDV	4
Truck	0,5
Car	6
Bicycle	7
Animal cart	7
Wheelbarrow	39

Intermediate Modes of Transport (IMTs) can be used to serve as a bridge between rural fields and villages and nearby road networks or small towns. These human and animal-powered vehicles provide low-cost and widely affordable means of transport, and their capacity and speed - though limited compared to motorised transport - is far beyond that of headloading. More widespread introduction of IMTs, with appropriate infrastructure aimed at improving access, would provide a valuable complement to road improvements. Improving off-road transport and relieving its onerous burden on rural people - particularly women - can be expected to raise production and speed transport to rural roads, thus increasing the volume of goods on roads and improving the economic impact of the roads themselves. IMTs complement, rather than replace, existing motorised transport systems. IMTs are in significant use both in Asia and South America.

IMTs can be used for:

- Crop harvesting;
- Transporting surplus crops to a local market;
- Collection of fertilizer, seed and farm implements from depots;
- Fetching water;
- Fetching wood;
- Transporting building materials; and
- Transport for small enterprises.

It is recommended that efforts directed at the promotion of IMTs should be co-ordinated with the promotion of agriculture as well as rural small enterprise development activities, and this collaboration should be institutionalised.

Some of the more appropriate IMTs are discussed below. Bicycles were discussed in Chapter 3 of this report.

4.3.1 DONKEYS

As transport animals, donkeys come into their own when back-packed, carrying loads over mountains and rough terrain. Donkeys can also be used to plough because, although much smaller than an ox, a donkey is nearly as strong. The donkey holds additional advantages for women. Women's use of donkeys rarely poses the same cultural or social barrier as women's use of other animals. It is small enough so that lifting loads onto its back is an easy matter. Among the more intelligent of animals, the donkey responds better to reasoning than to force and requires a minimum of training.

Donkeys are used to carry water and other loads in many other parts of Africa. Donkeys can carry 25 to 50 kg loads over distances of up to 20km at a rate of 3 to 4km/h. A woman can carry about 20 l of water on her head, while a donkey can easily carry more than twice as much on its back - and one woman can easily manage five donkeys.

There are also some disadvantages. Donkeys eat poor food and little of it, but they are very selective and will go remarkably long distances to find what they like. They drink little water, but do not like it muddy.

Little work has yet been done to develop the appropriate equipment for loading donkeys. The introduction of donkeys to an area requires careful extension support, particularly training about donkey care and health. One South African organisation carrying out work with donkeys in rural areas is the Donkey Power Teaching and Consultancy, based in Louis Trichardt.

4.3.2 SLEDGES AND CARTS

Animal-drawn sledges can be used to drag loads of up to 350 kg at speeds of 2 to 4km/h, depending on the terrain. However, sledges are hard to pull and have a low capacity, range and efficiency compared to carts. They have a limited clearance and in erosion-sensitive areas they tend to accelerate erosion by leaving rutted tracks which become water courses during heavy rains. The load is also unprotected from vibration and dust.

On the other hand, sledges are cheap and can be easily made available because they can be made by rural carpenters. They have a low centre of gravity and they are narrow, enabling them to be used on tracks too narrow or steep for carts. They can also be used in sandy, muddy or rutted conditions where a cart might get stuck. In sandy areas they cause hardly any erosion. On the whole their promotion is not recommended.

Two-wheeled carts have a high efficiency and capacity relative to pack animals and sledges. An ox cart can carry 600 to 1 000 kg, carts are easier to pull and have greater range (up to 25km per day). Drawbacks are their high cost in comparison to pack and sledge technologies and they

can only be used on relatively wide tracks/roads.

Four-wheeled carts generally cost more than double that of two-wheeled carts. In addition, these carts are heavy, complex and have poor manoeuvrability. They tend to be restricted to very high load applications.

4.4 RECOMMENDATIONS

The recommendations on local transport are as follows:

Recommendation 4a: Efforts directed at the promotion of rural transport should be co-ordinated with the promotion of agriculture and rural small enterprise development activities, and this collaboration should as far as possible be institutionalised.

Recommendation 4b: The KZN DOT should establish an initiative to promote and co-ordinate the use of Intermediate Modes of Transport (IMTs) in deep rural areas, including:

- Researching, packaging and disseminating information on IMTs and their infrastructural requirements from around the world;
- Providing this information through local transport authorities, NGOs and CBOs;
- Encouraging and supporting local IMT initiatives; and
- Funding pilot projects and disseminating the findings.

Recommendation 4c: Pilot projects should be implemented to determine the effects of IMTs on local rural transport. It is proposed that these pilots be carried out in the Umtshezi Sub-Region of the uThukela Regional Council and in the Upongolo Sub-Region of the uThungulu Regional Council. The following should be taken into account:

- IMTs that should be given specific attention are donkeys and two and four-wheeled carts, as well as any other modes that predominate in the pilot area.

5. PRIORITISATION AND IMPLEMENTATION

A summary of the recommendations of the **KwaZulu-Natal Rural Mobility Study**, together with the proposed prioritisation of these recommendations, is given below.

RECOMMENDATION	PRIORITY
PUBLIC TRANSPORT NETWORK	
2a. Level 2 ideal network pilot	Medium
2b. Programme to extend Level 2 routes	Medium
2c. Address LDV role and safety concerns	High
2d. Programme of improvements to LDVs	High
2e. Timetable design	High
2f. Pricing policy	High
2g. Guidelines on permissions	Low
2h. Guidelines on competitive contracts	Very High
2i. Competitive contract savings pilot	Medium
2j. Contract and route network co-ordination	High
ACCESS TO SOCIAL SERVICES	
3a. Integrated planning with education authorities	Very High
3b. Scholar bicycle pilot projects	High
3c. Integrated planning with health authorities	Very High
3d. Clinic transport voucher pilots	Medium
3e. Integrated planning with welfare authorities	Very High
3f. Pensioner transport voucher pilot	Medium
LOCAL TRANSPORT	
4a. Integrated planning with agriculture and rural small enterprise development	Very High
4b. Provincial unit to promote IMTs	High
4c. Pilot projects on IMTs	High

A proposed five year implementation programme for the above recommendations is shown below according to the priority given to the recommendations.

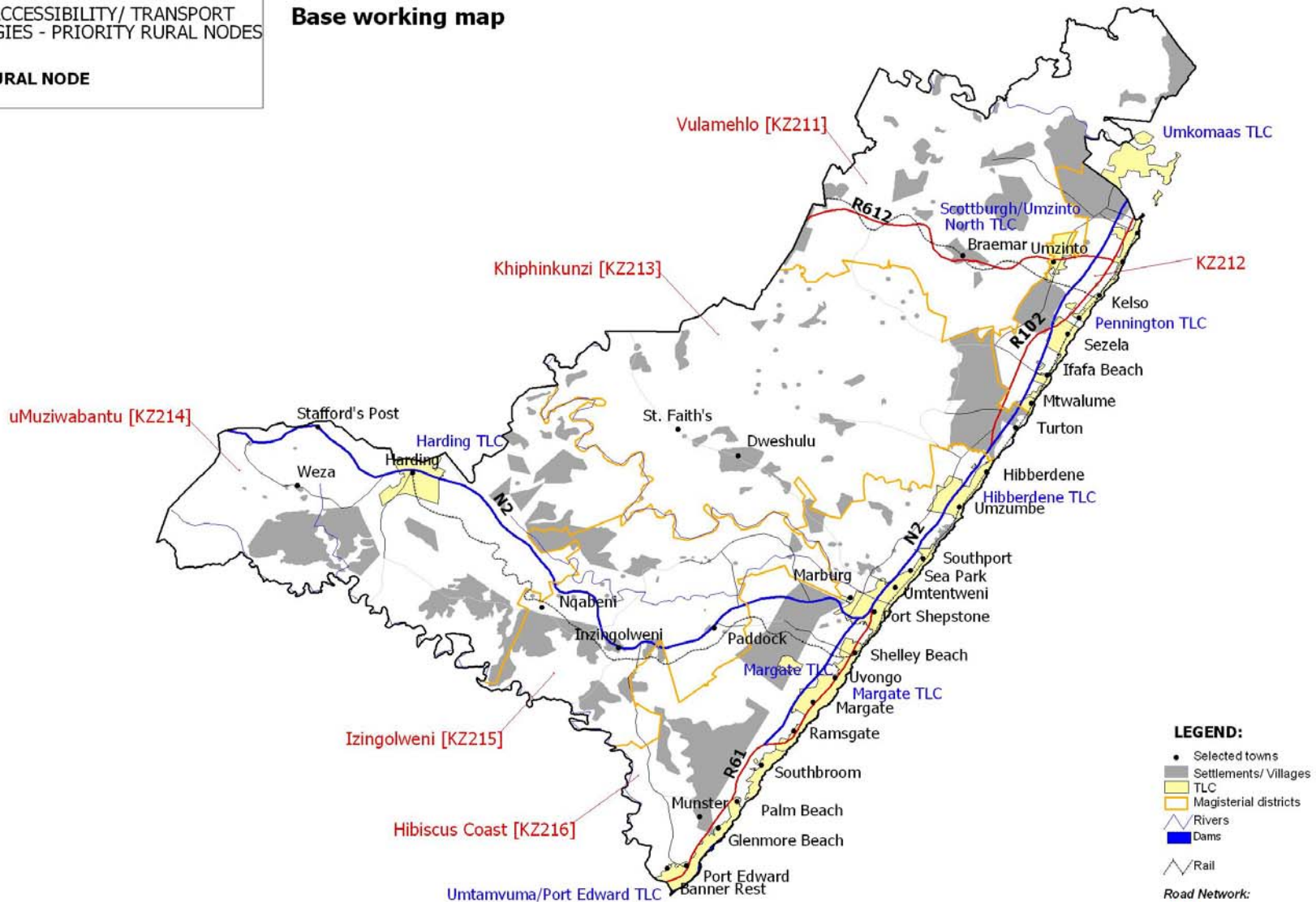
**PROPOSED IMPLEMENTATION PROGRAMME:
KWAZULU-NATAL RURAL MOBILITY PROJECT RECOMMENDATIONS**

RECOMMENDATION	PRIORITY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
2a	Medium					
2b	Medium					
2c	High					
2d	High					
2e	High					
2f	High					
2g	Low					
2h	Very High					
2i	Medium					
2j	High					
3a	Very High	on-going				
3b (1)	High					
3c	Very High	on-going				
3d (1)	Medium					
3e	Very High	on-going				
3f (1)	Medium					
4a	Very High	on-going				
4b	High					
4c (1)	High					

(1) Pilots projects spread over 2 years

Base working map

UGU RURAL NODE



LEGEND:

- Selected towns
- Settlements/ Villages
- TLC
- Magisterial districts
- Rivers
- Dams
- Rail

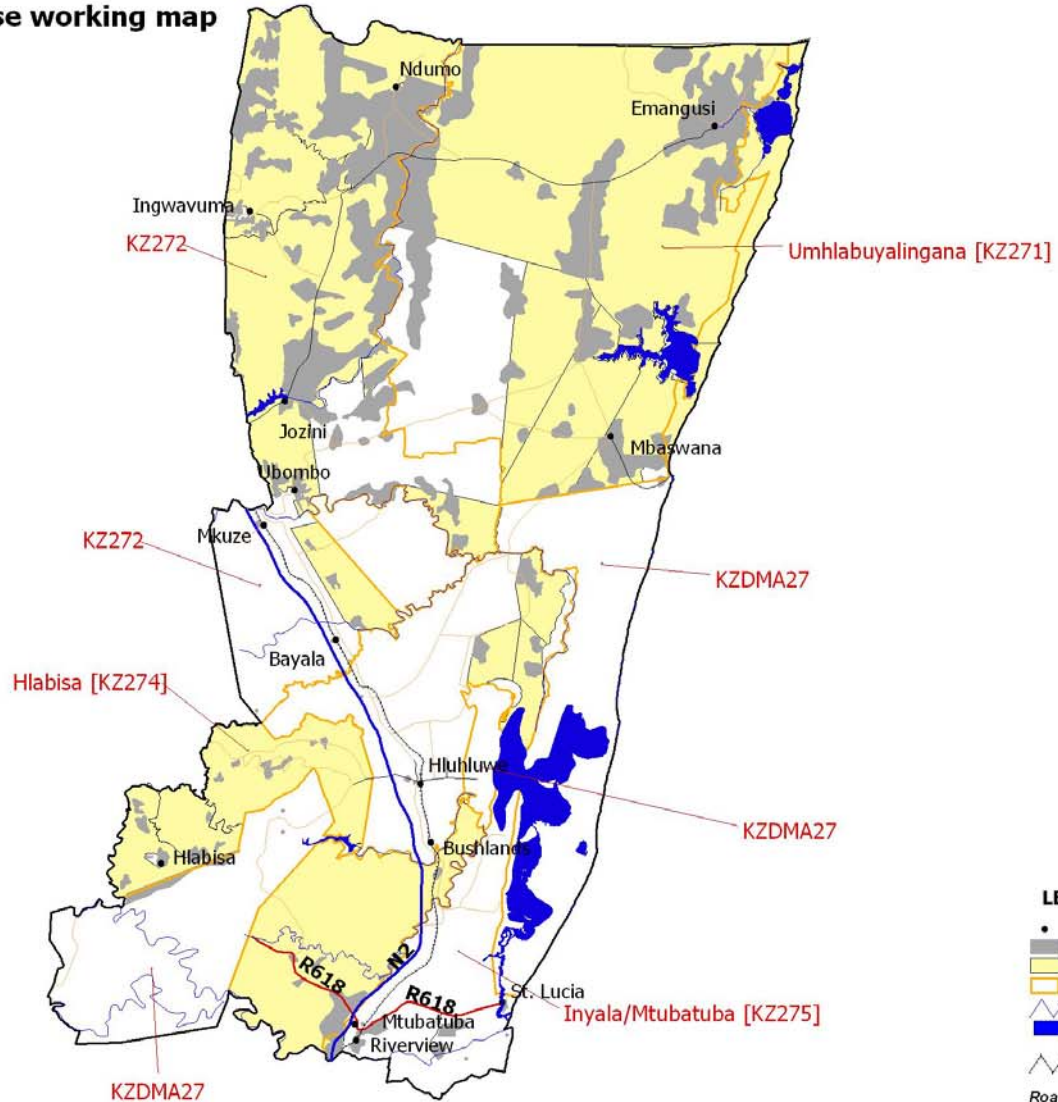
Road Network:

- Main tar
- National
- Secondary tar
- Secondary untar

UMKHANYAKUDE RURAL NODE



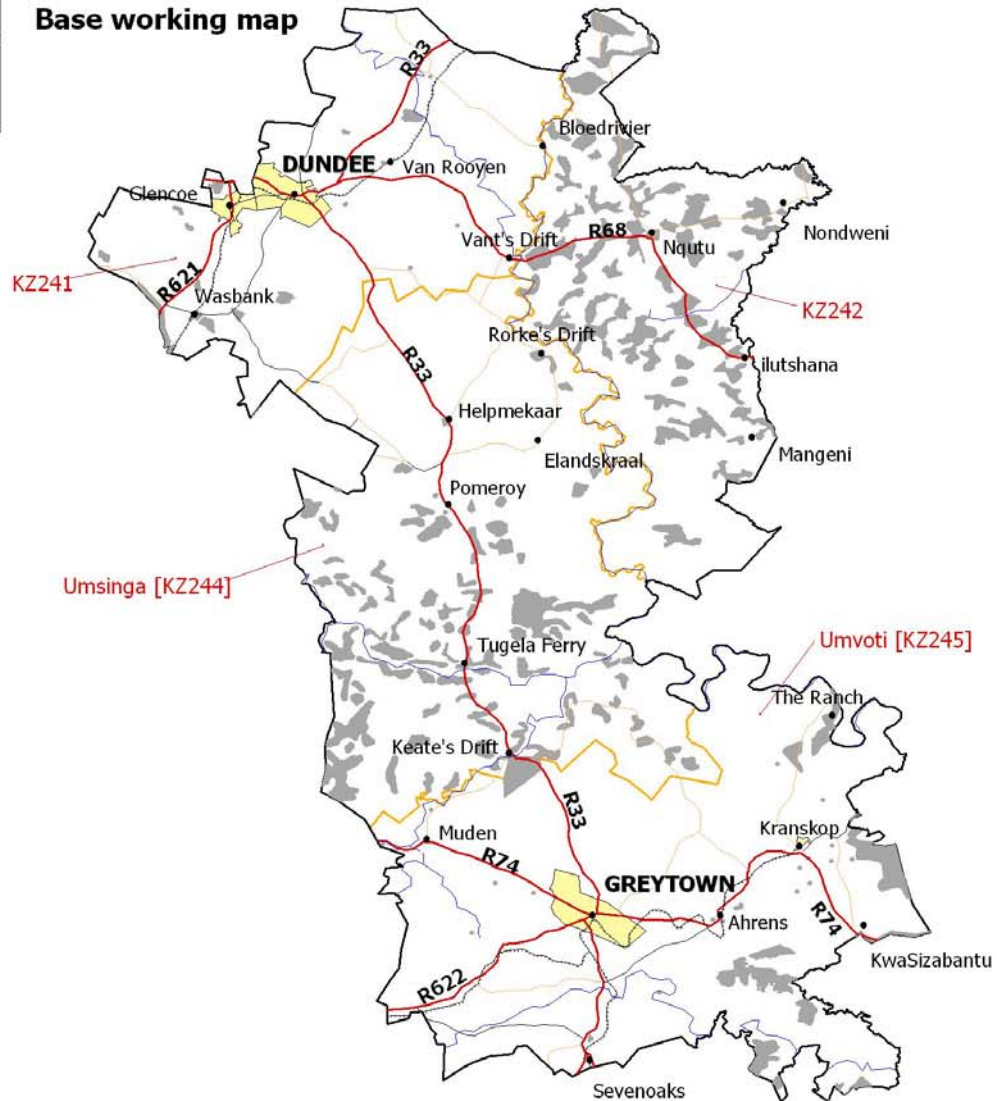
Base working map



- LEGEND:**
- Selected towns
 - Settlements/ Villages
 - TLC
 - Magisterial districts
 - ~ Rivers
 - Dams
 - ~ Rail
- Road Network:**
- ~ Main tar
 - ~ National
 - ~ Secondary tar
 - ~ Secondary untar

UMZINYATI RURAL NODE

Base working map



- LEGEND:**
- Selected towns
 - Settlements/ Villages
 - TLC
 - Magisterial districts
 - ~ Rivers
 - Dams
 - ~ Rail
- Road Network:**
- ~ Main tar
 - ~ National
 - ~ Secondary tar
 - ~ Secondary untar



Base working map

ZULULAND RURAL NODE



LEGEND:

- Selected towns
- Settlements/ Villages
- TLC
- Magisterial districts
- △ Rivers
- Dams
- Rail

Road Network:

- Main tar
- National
- Secondary tar
- Secondary untar