DEPARTMENT OF TRANSPORT

Interim National Passenger Rail Plan

'Towards a National Passenger Rail Strategy'

June 2005

CONTENTS

PART 1: INTRODUCTION, PURPOSE AND ORIENTATION

Introduction

In November 2004, the South African Rail Commuter Corporation (SARCC) appointed consultants to develop an Interim National Rail Passenger Plan, (referred to throughout this report as the 'Railplan'). Arup SA (Pty) Ltd, the Project Coordinator, has prepared this compendium report, drawing together its own technical work and that of the other members of the consultancy team: Arcus Gibb, Khuthele Projects, and Stewart Scott International.

Parts 1 and 2 of the report cover the principal findings of the Survey stage of the work. Part 3 reports the Analysis of the collected information, and Parts 4 and 5 are the Interim Railplan proposals and implications for industry structure, respectively.

The report represents the collective efforts and findings of the entire consultancy team although Arup has exercised the principal editorial responsibility.

Purpose

The original purpose of the assignment was to prepare a comprehensive internal business plan for the SARCC. In the event the scope has been extended and refocused because the Department of Transport (DOT) needed to align the Railplan process with the proposed merger between SARCC and the commuter rail operator, Metrorail. A review of the long distance rail business, currently offered through Spoornet's Shosholoza Meyl service was also brought into the scope of the Railplan work by DOT.

The project is divided into two phases. The present document reports on Phase 1. This phase was required to provide as much technical analysis as possible within the time available in support of a recommended strategic direction for the passenger rail industry.

Although this Phase 1 report is the '*Interim* National Rail Passenger Plan', its findings at the strategic level, dealing with the general direction to be taken by the passenger rail industry in South Africa, should be regarded as robust. The findings of the report will nevertheless be subjected to a comprehensive consultation process with all stakeholders in Phase 2.

The detailed implications of these conclusions for different operating regions and their emerging Transport Authorities will be consulted and further developed in Phase 2 of the Railplan between June 2005 and December 2005. Details of capital and operating budgets by corridors, routes and lines will also be developed in detail in Phase 2.

Background and Orientation

The following factors are part of the background to the Railplan:

- Long term trends in land uses are resulting in travel patterns that in many circumstances cannot be effectively met by the rail mode;
- Insufficient funding for the recapitalisation of ageing rolling stock and signalling systems has recently necessitated a substantial reduction in passenger rail service levels
- To improve service delivery in these circumstances SARCC requires strategic direction from government. The Railplan aims to provide the basis for this direction.

Long term travel trends

South Africa has particularly low-density patterns of residential and commercial development. This is testimony in part to its geographical endowment of an abundance of space, and also to the socio-political heritage of separate development.

Whilst rail can be, and still is, an effective mode of passenger transport between dense population nodes, less dense patterns of development are less suitable for service by a fixed track mode of transport. The intrinsic flexibility of road-based modes of transport present makes it very difficult for the relatively fixed network rail mode to compete effectively.

Most cities accept the need for densification and restructuring of their land-use developments if public transport is to become more viable. The form-giving characteristics of rail transport can contribute substantially to this. However, low-density land use patterns cannot be easily changed by transport planning policy. If these benefits are to be achieved the rail industry may need focus all its attention in those areas where it has an advantage over other modes.

The Analysis section of this report outlines a method of identifying such areas of advantage.

Funding uncertainties

South Africa is not unique in experiencing a funding crisis in its rail industry. While there is almost always a degree of managerial and structural inefficiency in public utility services, the funding crisis in the railway industry worldwide is partly a result of its technological complexity compared to the more flexible for road-based public transport modes.

Rail transport can play a socio-economic role in providing accessibility to work and other services for lower income population groups and others who do not have access to other modes of transport. This needs to be considered in any assessment of the value of rail.

It is nevertheless a simple public financing reality that road transport generally realises more than sufficient in tax revenues to governments to cover the cost of its infrastructure. Whether governments re-allocate all such revenues to the providing tax constituency is separate issue not addressed here. Rail passenger transport systems rarely if ever generate tax revenues and their operating revenues are often insufficient to cover as much as half of their operating costs let alone major maintenance and development costs. While this fact cannot constitute an excuse for inefficient financial management, it is an important element in any attempt to understand what is an endemic funding problem in the rail industry worldwide.

Need for strategic direction

There are examples in other countries where this endemic funding and efficiency problem has been overcome. This generally occurs where a passenger railway has been able:

- To demonstrate its value to a broad spectrum of the population of an urban area;
- To be visibly efficient in the delivery of its services
- To thus entrench support for the railway in the political expression of the voters, and hence create the political commitment to the necessary public funding.

In summary, a strategic balance is created between the consumers, politicians and railway management in an equilibrium that ensures appropriateness, efficiency and funding.

This document reviews the context, the technical state and the funding situation of the passenger rail industry in South Africa in order to map out a future strategy. It recognises that in order to bring greater funding certainty to the industry it will be essential to identify those circumstance in which the rail mode performs best. Resources may then be concentrated on making these parts of the network as successful as possible.

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PART 2: SURVEY – BUSINESS AND MARKET REVIEW

A. POLICY

1. PASSENGER TRANSPORT POLICY REVIEW

1.1 Introduction

Rail passenger transport in South Africa is facing major challenges, necessitating a total new approach towards the way it is managed and the manner in which it conducts its business. The need is particularly relevant in the light of the proposed merger of SARCC, Metrorail and Shosholoza-Meyl, and also the establishment of the metropolitan Transport Authorities.

This chapter reviews national and other level policies relevant to the passenger rail industry, commenting on their adequacy in the face of current circumstances. In the context of this report, this review is linked to the survey of rail transport usage and user attitudes covered in Chapter 4. Some implications of these reviews for rail transport policy and for the structuring of a future passenger rail industry are then addressed in Part 5 (Chapter 16) of the report.

As with many parts of this report, this chapter is a condensed version of a more detailed analysis of current policy, which is contained in a separate workstream report.

1.2 Rail Policy Issues Internationally

A broad scan of international policy topics dealing with rail passenger transport revealed that similar generic issues are addressed in most instances. Rail passenger transport is generally not financially sustainable without government assistance. Rail transport is, therefore, often viewed as an essential social service and economic enabler that is to the good of society as a whole. This is supported by the lower environmental impact, larger capacities and the spatial form-giving characteristics of an effective and efficient passenger rail transport system.

Government intervention is often motivated by control of the fare levels for political and social purposes. This results in an acceptance that rail services need to be subsidised. Various models of government involvement and intervention are found internationally, and these tend to change over time. In the 1980's and 1990's, a great drive to increase private sector involvement was found in many countries in the world.

1.3 Broad National Policy Framework

The national government's broad economic and social policy context for transport is contained in policy documents such as the Reconstruction and Development Programme, and the ANC Election Manifesto. More recent Government policy advocates job creation, poverty alleviation and economic development and – to some extent - the notion of the involvement of the private sector in what was previously typically the domain of Government.

The concept of user charging and the promotion of public transport above private transport also remains an objective in most of the relevant policy documents.

1.4 Transport Vision And Goals

The transport vision and goals for the country are contained in the Department of Transport's 1996 White Paper on National Transport Policy and also the National Land Transport Transition Act (NLTTA) of year 2000. The earlier White Paper remains as valid today as when the it was drafted. Its main features have been worked out in more detail in a working

document/policy process entitled 'Moving South Africa', (MSA) which was published in 1999. The general policy vision is repeated below, and provides the link between the broad national policy framework and specific transport policy as discussed later.

Provincial and municipal policy guidelines indicate general support of the national vision. The stated national vision for transport in South Africa is to:

"Provide safe, reliable, effective, efficient, and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable."

1.5 Overview Of Policy Related To Passenger Rail Transport

1.5.1 Promotion of Public Transport

The promotion of public transport is considered to be of much greater importance than in the past by all levels of government. This is reflected in current transport policies and legislation. However, not much has changed over the last decade in terms of the upgrading of services or facilities. A number of public transport projects in the Western Cape and Gauteng seem to indicate that, at least at provincial and municipal levels, government are becoming committed to improve and invest in public transport operations and infrastructure / facilities.

1.5.2 The role of rail

All policy sources acknowledge a role for passenger rail within a hierarchy of transport modes. The National White Paper in its transport vision, states that: *"Rail is seen as an essential long-term component of the network for both freight and passenger transport"*.

At the provincial level, it is especially those provinces with large urban areas where rail is seen to play an important role and therefore requiring a special provincial initiative. Metropolitan municipalities, on the other hand, differ in their acknowledgement of the role of rail. This is mainly due to the fact that the rail function still resides with national government. Ekurhuleni, as an example, in its first phase rail commuter plan, refers to rail as the "backbone of its transport system". In contrast, the City of Johannesburg has little reference to the rail passenger system in its Integrated Transport Plan (ITP).

1.5.3 Planning for passenger rail services

Current official policy is for rail passenger planning to be done at the municipal level as part of their ITP. This national requirement has, however, been given varied levels of attention in the ITPs prepared to date. Most ITP's or other planning documents regard rail as an important part of their integrated public transport system. Concerns are expressed that municipalities do not have effective powers in connection with planning of rail. Some municipalities such as Cape Town, Ethekwini and Ekurhuleni have indeed formulated rail strategies for their areas, while Tshwane's ITP expresses the need to develop a Rail Master Plan.

The question can be asked whether it is a practical arrangement to require a municipal authority to do the planning for a service over which it has no control,. Effective integration of rail planning is an issue that needs to be addressed in Phase 2 of the Project. Part 5 gives a strategic framework for such integrated planning.

1.5.4 Land-use developments at stations

There is a growing realisation that poor town planning is one of the most important reasons for ineffective and unsustainable public transport, resulting in high public transport costs. This is also very difficult to turn around. The NLTTA encapsulated the White Paper policy into the legislative framework and is equally strong on land use and transport integration. The answer

to this problem is seen by the MSA: Action Agenda as the densification of transport corridors. It suggests that*: "the densities created by corridor enhancement lower system cost, not just for transport but also for other infrastructure."*

1.5.5 Formalisation, regulation and control

The NLTTA covers the formalisation, regulation and control of public transport. The White Paper and NLTTA allow for competition for a route through tendered contracts, in order to ensure that unnecessary competition is eliminated. For this reason minibus-taxi can be included to compete for the awarding of contracts for public transport services, provided that all tender requirements are met. Many planning authorities are not clear how rail transport is to be treated in this regard.

1.5.6 Funding

The section on funding in the NLTTA is in many quarters considered to be disappointing as there are no specific provisions for the generation of additional moneys over and above the "normal" allowance for the transfer of funds appropriated by Parliament or an applicable provincial legislature. The NLTTA also did not establish a dedicated fund similar to the Urban Transport Fund established by the Urban Transport Act.

Despite the fact that the NLTTA does not bring much financial relief to local government for improving their transport systems, substantial amounts of subsidy money is being appropriated by Parliament for state subsidised bus services and for commuter rail.

A more thorough comparison of the relative costs of rail and road-based public transport modes of transport is needed to give government a rational basis for future funding. This issue is addressed to some extent in Phase 1 (see for example Chapter 2 below and the separate Funding Analysis report). Phase 2 will address the question of financial values and external economic benefits in much greater detail.

1.5.7 Private sector involvement

Private sector involvement in urban transport has been widely used in an international context to enhance the quality of service and the efficiency by which it is provided. MSA as a result made a strong case for greater levels of private sector involvement in many parts of the transport sector and specifically in commuter rail. MSA did not specify exactly what the institutional arrangement for this should be, but emphasized the role of Government in overseeing, planning and co-ordinating private sector involvement, such as through franchises or concessions.

The Business Plan proposals in Chapters 11-14 make some suggestions along these lines.

1.5.8 Public transport subsidies

Currently, public transport subsidies funded from the national budget are paid to support commuter rail and bus services, for the benefit of commuters travelling within or between urban areas. The rationale for payment of such subsidies is mainly equity reasons, i.e. the *relief of the distance burden* to commuters from dislocated communities. However, it could be argued that commuter rail subsidies to some extent also contribute toward poverty alleviation and the promotion of more efficient transport in urban areas.

In terms of the current policy in the White Paper a large number of potential beneficiaries in South Africa are currently not benefiting from the subsidy system. The basic mobility needs of many of these beneficiary groups that often do not travel every day, such as the pensioners, the unemployed, work-seekers or subsistence farmers in rural areas, who have extremely limited financial means to pay for transport, are not met. By implication, this raises a number of issues about the *scope* and *targeting* of transport subsidies.

B. INDUSTRY

2. PASSENGER RAIL FUNDING ANALYSIS

2.1 Introduction

The purpose of this section is to provide an overview of the funding arrangements of the South African Rail Commuter Corporation (SARCC) and Metrorail. It is not intended to be a detailed financial audit of either of these organisations. In the context of the short timescale allocated to Phase 1 of the development of the Interim National Rail Passenger Plan (the Railplan) this was not feasible.

The report specifically covers:

- Some background to public transport funding generally;
- Trends in rail passenger subsidies;
- The institutional basis for the current rail subsidy and investment processes;
- A review of the costs, revenues and the applications of subsidies including a reconciliation of the flow of funds between the Department of Transport (DOT) SARCC and Metrorail;
- Some conclusions based on the information presented.

2.2 Background To Public Transport Funding Generally

Within the overall funding constraints, growing demand on the South African government's annual budget for the provision of goods and services for public consumption make it essential that the best value for money is provided. This includes the bus and rail public transport subsidies provided by government, and particularly in the various metropolitan areas where there are significant commuter volumes.

With growing road congestion in cities, governments around the world find themselves under pressure to increase spending on public transport. At the same time governments need to be able to demonstrate good value for public expenditure by ensuring that politically agreed social objectives are addressed in a cost effective manner. The South African government is therefore not unique in experiencing a predicament of funding with regard to its public transport objectives. This is especially true in regard to the country's commuter railway industry.

There are almost invariably significant elements of managerial and structural inefficiency in public utility services and these are referred to in this report. Yet the global trend, especially in developing countries, away from rail and towards road-based modes of public transport suggests that institutional and structural issues are not the only problem. It is rather a case that rail transport's relatively fixed network does not have the flexibility to respond to rapidly changing patterns of development.

While improved financial and structural efficiency is always possible, the more appropriate response to the position that it frequently finds itself in may be for rail passenger transport to discover the circumstances in which it can still operate relatively efficiently, and concentrate business attention in those areas.

This review of passenger rail funding should be viewed against this broad background. The National Rail Passenger Plan (Railplan) project represents the Department of Transport's (DOT) commitment to set a future direction of passenger rail that a address these concerns.

2.3 Trends In Rail Passenger Subsidies

The aim of this chapter is to make a number of general, but reliable, comments about the value for money obtained through the subsidy paid for commuter rail.

There are two parts to the chapter:

- Trends in rail subsidy levels and trends in rail patronage levels;
- The implications for possibly future rail subsidy levels if government were to address the deficit in funding that would be needed to restore the rail network as it currently stands.

2.3.1 Subsidy performance of commuter rail

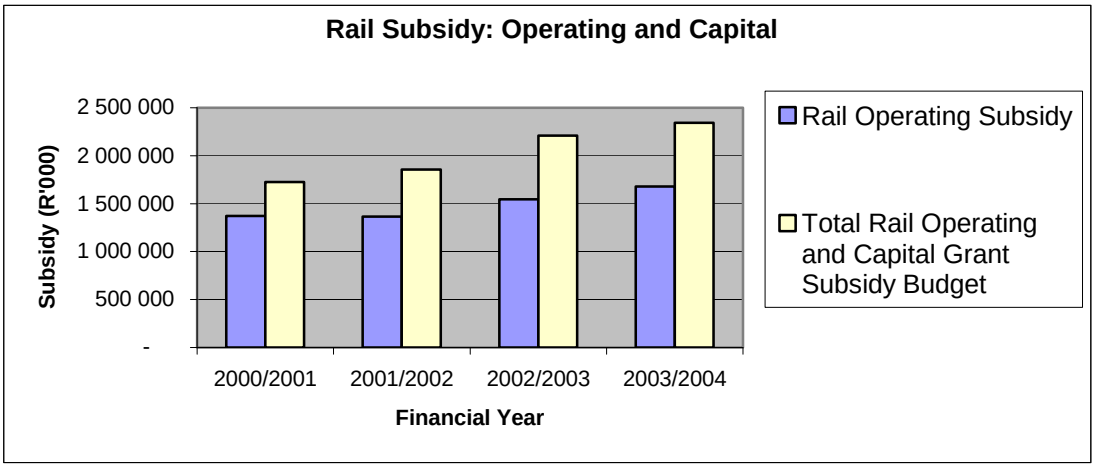
In the year 2002/03 the commuter rail industry received an operating subsidy of R1.5 billion plus capital grants for the heavy maintenance rolling stock and infrastructure of some R700 million, making for a total government contribution of R2.2 billion in that year. The industry was responsible for 465 million passenger trips in 2002/03 at an average trip length of 27km. Table 2.1 indicates this data in terms of subsidy value per trip and per passenger kilometre.

Table 2.1: Subsidy per passenger trip and passenger/km for subsidised rail, 2002/03

Mode	**Rands per …**			
	Passenger trip		***Passenger-km***	
Rail	*Op subsidy only*	*Op + cap subsidy*	*Op subsidy only*	*Op + cap subsidy*
	3.23	4.73	0.12	0.18

Trends in rail commuter subsidies are shown in Figure 2.1 for 2000 to 2004. The rail subsidy includes both the operational subsidy and the capital grants received by the SARCC.

Figure 2.1: Rail Subsidy Trends



The figure shows that:

- There is an increasing trend in rail subsidies;
- The commuter rail operating subsidy reached R1.6bn in the 2003/2004 financial year, while the total rail subsidy was approximately R2.4bn;
- The average annual rail increase is 7.9 % pa for the operational and capital grant subsidies taken together. Compared to the CPIX for the same period of approximately 6.8% per annum this shows a real increase in rail subsidy of 1.1%.

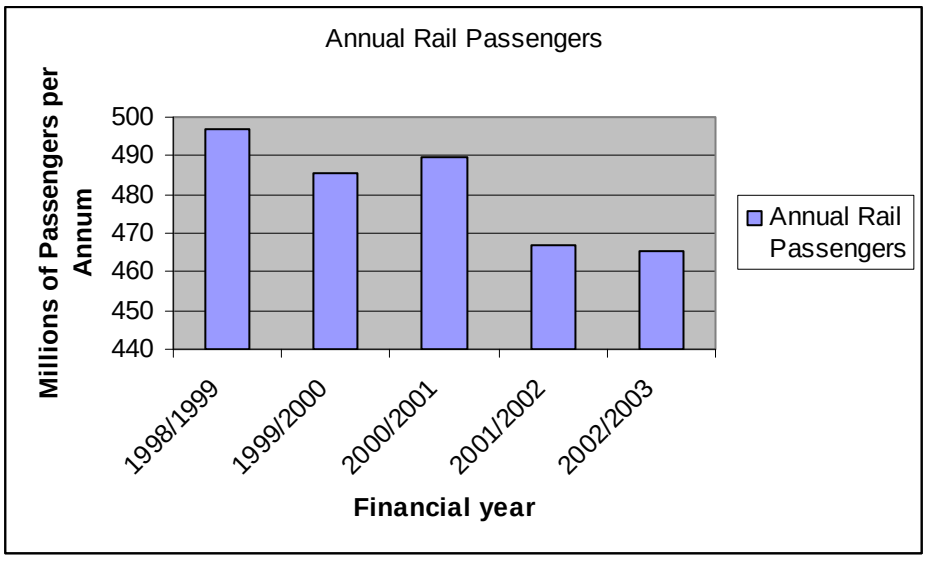
Figure 2.1 does not reveal that within the general increase in the level of the rail subsidy, the capital grant element has grown considerably faster than the CPIX. (Capital spend on rail is discussed in more detail in Chapters 6 and 7 of the main Railplan report).

2.3.2 Rail passenger trends

The increasing subsidy levels for commuter rail should be considered against the trends in commuter rail passengers. Figure 2.2 shows the trend in annual commuter rail passenger volumes over the period 1999 to 2003. The figure clearly shows the decreasing trend in the number of rail passenger trips per annum to the latest available levels of approximately 465m in 2002/2003. (In 1980, there were approximately 680m commuter rail trips, albeit in the absence of the taxi mode at that stage).

This decreasing trend should be seen against the increasing trend in rail subsidy. In strict financial terms at least, this indicates a declining trend in value for money for commuter rail transport. This is one factor, amongst others that is considered in the overall review of passenger rail in the main Railplan report.

Figure 2.2: Annual Rail Passenger Trends



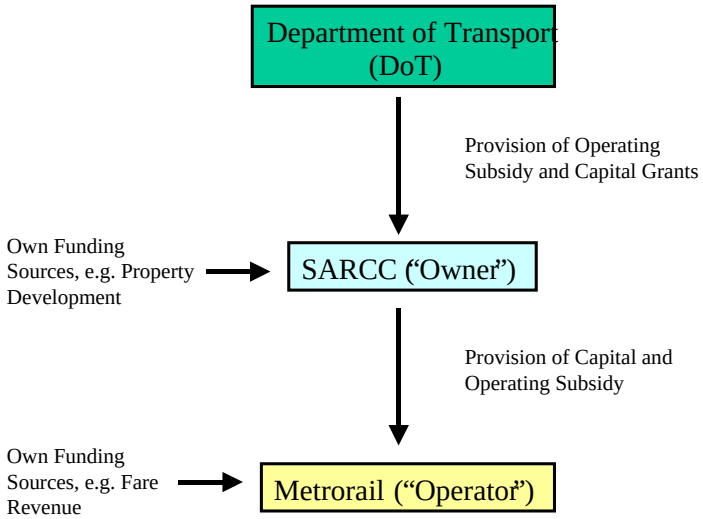
Note: Recently received data for years 2003/04 and 2004/05 shows an increase in passenger numbers back to about the same level as 2000/2001. When compared to the increased operational and capital subsidy levels, (see Figure2.1) the rising trend in unit costs for rail is continuing.

The national mode share for rail is only 4% of all trips (including bus, taxi and private modes) for 2002. As a further insight into the overall mode share for commuter rail, the average morning peak period mode share for the 6 metropolitan regions in which commuter rail services are provided is 20.5% of all public transport trips (i.e. bus, taxi and rail). The much higher proportion of market share (approximately 60%) that commuter rail enjoys in Cape Town bolsters this. If the Cape Town mode share is removed from the average, the rail share for the public transport modes' morning peak drops to 12.6% in the remaining five regions.

2.4 The Current Funding Process

The commuter rail funding process is shown in Figure 2.3.

Figure 2.3: Commuter Rail Funding Process



It is important to note that while both the SARCC and Metrorail depend materially on the operational and capital subsidies from the DOT, both organisations have their own sources of funding that are used to reduce the overall subsidy requirement from the state.

For the SARCC these include revenue sources such as property development and access charges to Spoornet for use and rental of commuter rail facilities. For Metrorail these sources include fare revenue and advertising.

The budgeting process requires both SARCC and Metrorail to prepare detailed separate operating and capital budgets on an annual basis. The budgets are submitted annually to the DoT, where they are evaluated. Based on overall government budgetary constraints, the annual operating and capital grant subsidies are then finalised and approved by central government. The money flow then occurs as per the above flow chart.

It is important to note that the subsidy paid to SARCC and Metrorail are 'supply' budgets, not 'demand' budgets, i.e. they are based on what is affordable to central government, not what is required to optimally plan, manage and provide rail services. This is an important distinction, and explains to some extent the reason for the under funding of commuter rail operations in South Africa.

2.5 Subsidies And The Analysis Of Revenues And Costs

2.5.1 Operating Revenues and Costs

2.5.1.1 SARCC Revenues and Costs

Table 2.2 provides a summary of the annual operating subsidy provided by the DOT to SARCC and the allocation made to Metrorail over the period 2002/2001 to 2003/2004.

Table 2.2: Total Annual Operational Subsidy 2000/2001 to 2003/2004 (R billion)

	2000/2001	2001/2002	2002/2003	2003/2004
Total Operating Subsidy Received by SARCC	1.372	1.366	1.545	1.678
Metrorail Operating Subsidy	1.342	1.326	1.410	1.583

It is important to note that the Metrorail subsidy shown in Table 2.2 includes a management fee paid to Transnet that covers the Transnet support and management costs for Metrorail.

As indicated previously, both the SARCC and Metrorail have other income sources that support day-to-day operations. The following tables reflect these other income sources as well as the operating costs of both organisations.

Table 2.3: SARCC Revenues and Costs 2000/2001 to 2003/2004 (R'000)

Revenues / Expenses (R'000)	**2000/2001**	**2001/2002**	**2002/2003**	**2003/2004**
Total Operating Subsidy	1 372 000	1 366 250	1 545 919	1 678 840
SARCC Other Income	200 806	214 792	231 406	245 174
SARCC Sundry Income	2 890	3 792	52 616	23 639
SARCC Total Income	**1 575 696**	**1 584 834**	**1 829 941**	**1 947 653**
SARCC Operating Expenses*	1 758 219	1 900 014	2 035 175	2 207 286
SARCC Deprecation Charge	226 443	226 443	226 443	204 214
SARCC Net Income	**43 920**	**-88 737**	**21 209**	**-55 419**

***** Includes subsidy and management fee passed to Metrorail

Table 2.3 shows that the received operating subsidy is approximately 86% of the SARCC's total revenue in 2003/2004, although the majority of the received subsidy is passed through to Metrorail.

The SARCC operating expenses are summarised in Table 2.4 and shows that the Metrorail subsidy and management fee equates to 76% of SARCC's total expenditure.

Table 2.4:SARCC Operating Expenses (R'000)

Expense	2000/2001	2001/2002	2002/2003	2003/2004
Depreciation charge	175 113	237 372	226 443	204 214
Loss on Disposal of Assets	-	153	1 578	9 159
Insurance Claims	64 640	82 847	110 776	111 704
Insurance Premiums	31 371	37 712	52 807	56 424
Metrorail Subsidy & Management fee	1 342 006	1 326 802	1 410 964	1 583 032
Infrastructure Assets Rental	-	37 500	37 500	37 500
Other Expenses	12 888	25 150	22 951	16 671
Property portfolio Expenses	106 218	125 106	138 526	148 020
Personnel Costs	25 983	27 372	33 630	40 562
Total:	**1 758 219**	**1 900 014**	**2 035 175**	**2 207 286**

The breakdown of SARCC operational expenditure is shown in Figure 2.4. It is based on the average expenditure per cost item over the period 2000/2001 to 2003/2004.

Figure 2.4: SARCC Average Expenditure Patterns 2000 – 2004 (%)

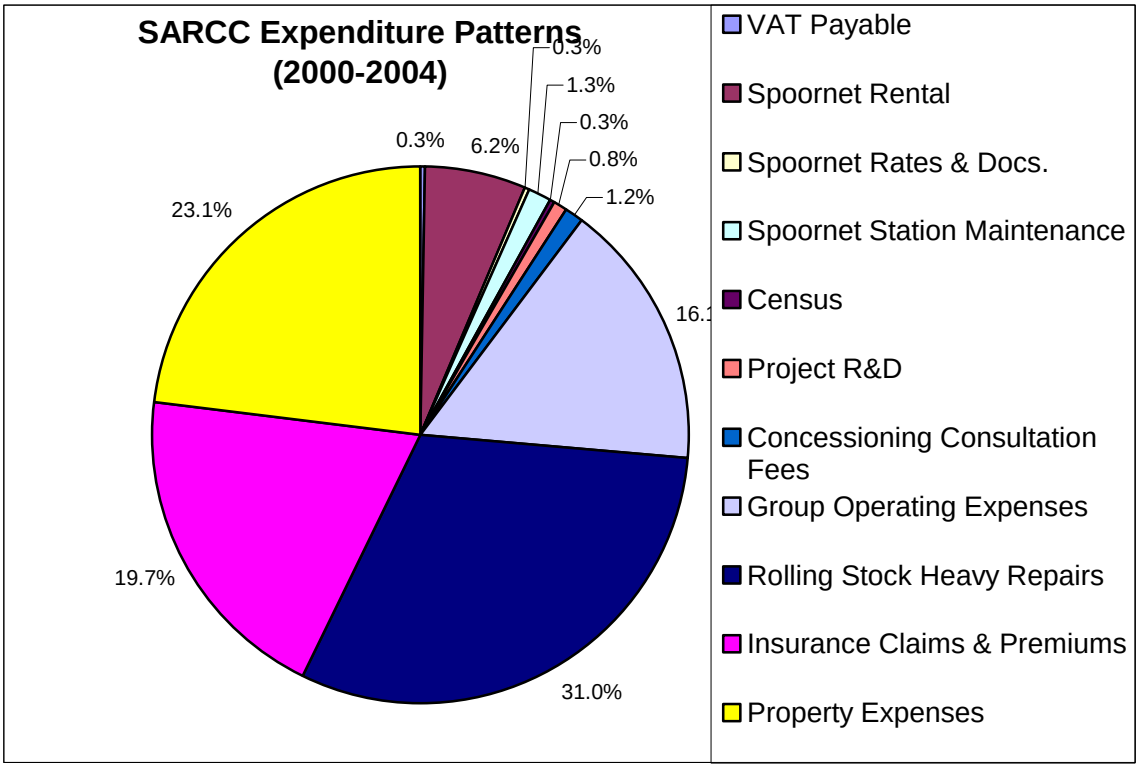


Figure 2.4 shows:

- A significant proportion of expenditure on rolling stock heavy repairs (31%)
- A very high level of expenditure on insurance premiums and claims at 23% of expenditure

- Significant expenditure on maintaining the property portfolio (20%)
- Group operating expenses making up 16% of all costs

2.5.1.2 Metrorail Revenues and Costs

The Metrorail revenues and costs are shown in Table 2.5.

Table 2.5:Metrorail Revenues and Costs 2000/2001 to 2003/2004 (R'000)

Revenues / Expenses (R'000)	2001/2002	2002/2003	2003/2004
Operational Subsidy	1 326 802	1 410 964	1 583 032
Fare Revenue	777 760	866 715	938 561
Other Income	71 897	87 580	53 987
Total Income	**2 176 459**	**2 365 259**	**2 575 580**
Operating Expenses	1 836 656	2 020 762	2 192 962
Metrorail Net Income/(Loss) from Operations	147 446	60 295	22 383
Net Finance Income / (Costs)	13 927	8 064	5 929
Net Profit/(Loss)	161 373	68 359	28 312

Table 2.5 shows that in 2003/04, the operational subsidy is some 60% of total revenue. Fare revenue equals about 60% of the subsidy. Reduction of fare evasion can thus be seen to have an important impact on the total revenue. Operating expenses are shown in Table 2.6.

Table 2.6: Metrorail Expenditure 2000/2001 to 2002/2003 (Rand)

Cost Allocation	2000/2001	2001/2002	2002/2003
Head Office	300 406 760	220 868 793	203 968 312
Regional Overheads	20 132 740	39 333 660	97 118 624
Rolling Stock	218 673 849	259 723 154	252 178 102
BBS Civil	45 721 610	57 219 921	60 887 789
BBS Electrical	14 492 772	20 216 274	20 599 460
Permanent Way	142 218 315	155 568 784	161 990 320
Electrical	209 141 970	213 546 779	203 499 457
Signalling	64 124 615	63 898 452	114 208 641
Train Operations	352 860 462	361 714 755	395 869 149
Stations Operations	267 359 353	268 665 343	275 442 413
Security	141 234 931	182 697 046	179 075 195
Total	**1 776 367 376**	**1 843 452 962**	**1 964 837 461**

Figure 2.5 is an analysis of Metrorail's average expenditure over a period of three years.

Figure 2.5: Metrorail Expenditure Patterns 2000 – 2002 (%)

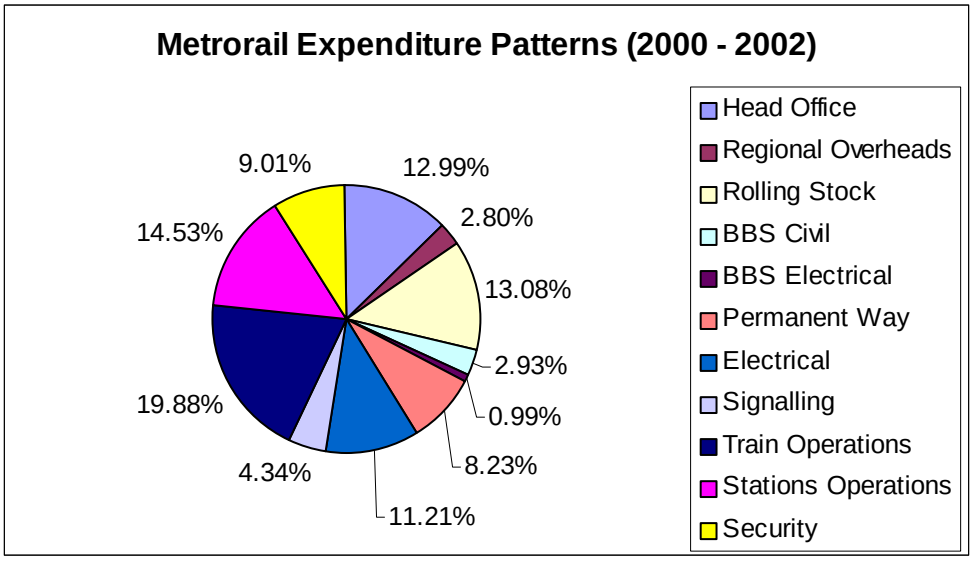


Figure 2.5 shows:

- Approximately 33% of expenditure was on train and station operations
- Regional head office and overheads of approximately 16%
- The sum of civil, electrical, perway and signalling expenditure was 28%
- Rolling stock maintenance of 13%
- Security 9%

Based on the income statement expenditure report, the Metrorail expenses are shown in the following chart, Figure 2.6 This provides a different breakdown of Metrorail expenses; offering further insight into expenditure patterns.

Figure 2.6: Metrorail Income Statement Expenditure Proportions for 2004 (Rand)

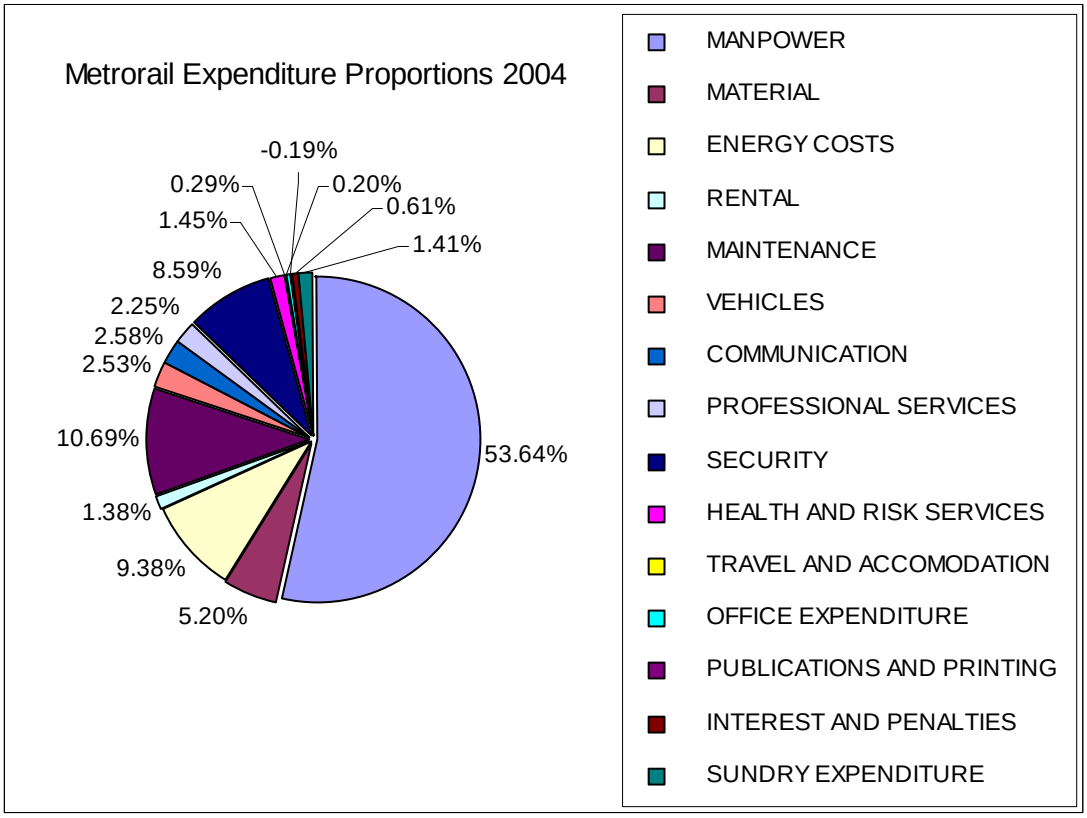


Figure 2.6 shows that manpower costs makes up the most significant proportion of Metrorail costs, albeit that the organisation has significant senior technical manpower shortages. Maintenance and energy costs make up 10.7% and 9% respectively, with security being the last large cost component at approximately 8.6%.

2.5.2 Capital Grants/Subsidies

2.5.2.1 General Analysis

Grants and subsidies relating to capital expenditure are also provided to the SARCC. These grants and subsidies are typically project specific, and relate mainly to new asset planning, purchases, expansion and renewal projects. Associated costs such as professional fees are also included in these subsidies and grants.

The breakdown of capital subsidies and grants received by the SARCC between 2001 and 2003 are shown in Table 2.7.

Table 2.7: Capital Subsidies and Special Grants - 2001/1002 and 2003/2004 (R'000)

Capital Subsidy / Grant	2001/2002	2002/2003	2003/2004
Capital Subsidy	490,200	663,000	665,000
Capital Grant	36,776	60,600	49,414
Total	526,976	723,600	714,414

The capital subsidy for 2004/2005 is in the order of R700m.

The total of the subsidies and grants for capital and operational expenditure purposes provided by the DOT for commuter rail services are thus:

- 2001/2002: R1.893bn
- 2002/2003: R2.269bn
- 2003/2004: R2.393bn

Because the capital grants and subsidies are project specific and the projects typically run over several financial years, the funds for these projects are rolled over the full life of the projects. SARCC raises interest revenues from the unused portion of the funds in a particular year.

A significant proportion of the capital subsidy has been spent on the SARCC's rolling stock renewal program. This program has been designed to renew the rolling stock fleet over a 10-year period, with the objective of having 4,500 reliable coaches at the end of this period.

In 2003/2004 a total of R400m was spent on this program, or 60% of the total capital grant of R665m in that year. In the same financial year, R80m (12%) was spent on infrastructure upgrades, including signalling (R46m), perway (R21m), electrical supply (R12m), and bridges, structures and communication R2m. The balance of the subsidy was allocated to other costs such as professional fees, as well as rolled over into the next financial year.

It is planned that the expenditure on the rolling stock renewal program will accelerate significantly over time, with approximately R780m being spent in 2004/2005.

While the above capital expenditure of R480m is a significant sum of money, it represents only 8% of the book value of the assets, and less than 1% of the asset replacement value.

The levels of investment in new assets, and asset renewal vary significantly as a proportion of asset book value and replacement value, but the above levels are low and based on international standards should be closer to 10% of replacement value, or some R6 billion per annum in order to maintain the asset value effectively.

2.5.2.2 Capital Project Breakdown

As indicated, the capital subsidies and grants are used to fund specific projects, normally over a number of years, depending on the nature of the project. The following table provides a breakdown of the capital investment projects as at March 2004. The table shows a summary of the total project cost, the total spend to March 2004, and the anticipated expenditure for 2005, 2006 and 2007.

Table 2.8 shows a total capital expenditure value budget of R6.7bn, with a total of R1.7bn of this having already been spent by March 2004. The total spend in 2004/2005 is planned to be R1.08bn, with a significant increase in 2005/2006 to R1.8bn.

The most significant projects in this program are:

- The rolling stock renewal program at R4.42bn (R1.22bn spent by March 2004);
- Signaling upgrades at R771m, R221m of which has already been spent.

Table 2.8: SARCC and Metrorail Capital Expenditure Projects and Values (R'000)

Project Description	Total Project Cost	Total Expenditure to March '04	Expenditure 2004/2005	Planned Expenditure 2005/2006	Planned Expenditure 2006/2007
METRORAIL PROGRAMS					
Various Programme Managers - Sub Total	2 000	-	2 000	-	-
IT Support Services - Sub Total	2 557	-	2 557	-	-
Metrorail Regional Projects - Sub Total	103 998	27 998	75 098	-	-
Department: Human Resources - Sub Total	2 035	-	2 035	-	-
Chief Executive Officer - Sub Total	5 000	-	5 000	-	-
Metrorail Projects Total	**115 590**	**27 998**	**86 690**	**-**	**-**
SARCC Asset Management & Development Projects					
Rolling Stock Renewal - Sub Total	4 418 610	1 233 523	779 663	1 110 692	903 633
Bridges & Structures - Sub Total	14 400	-	60	14 340	-
Perway -Sub Total	202 153	34 670	6 655	66 149	81 829
Signals -Sub Total	712 641	220 891	23 906	67 654	254 873
Electrical – Sub Total	211 430	16 706	13 072	52 455	103 297
Telecommunications - Sub Total	91 946	2 197	3 710	45 032	41 006
IT & Systems - Sub Total	145 782	44 590	76 655	19 537	5 000
Infrastructure - Sub Total	207 441	12 475	6 603	137 353	51 009
SARCC Asset Management & Development Projects - Total	**6 004 403**	**1 565 052**	**910 324**	**1 513 212**	**1 440 647**
INTERSITE PROGRAMS					
Intersite Projects - Sub Total	521 186	101 950	62 139	259 797	97 301
INTERSITE - TOTAL	**521 186**	**101 950**	**62 139**	**259 797**	**97 301**
METRORAIL MINOR PROJECTS					
Metrorail Minor Projects	2 750	-	950	1 800	-
IT & Systems -Sub Total	9 200	-	4 000	5 200	-
METRORAIL - TOTAL	**11 950**	**-**	**4 950**	**7 000**	**-**
SARCC RAIL STRATEGY & DEVELOPMENT					
Network Planning & Development - Sub Total	25 373	78	625	16 251	8 419
SARCC Programme Office - Sub Total	20 000	-	20 000	-	-
RAIL STRATEGY & DEVELOPMENT - TOTAL	**45 373**	**78**	**20 625**	**16 251**	**8 419**
GRAND TOTAL	**6 698 502**	**1 695 078**	**1 084 728**	**1 796 260**	**1 546 367**

The extent of the under-funding of the rail assets has been assessed by SARCC. This is shown in Table 2.9. It is important to note that the funding of the rolling stock renewal program has been estimated beyond 2006.

Table 2.9: Asset Renewal Budgets and Requirements (R million)

Asset group	2005/2006	2006/2007	2007/2008	2008/2009
Rolling Stock				
Budget	1 100	903	1 000	1 000
Requirement	1 583	1 833	2 394	2 336
Signaling, Perway, telecoms, Electrical, stations				
Budget	200	216	233	252
Requirement	296	392	411	494

2.5.3 Total Spend on Rail

Table 2.10 provides a summary of the total income for commuter rail every year, including all sources of revenue, i.e. i.e. all internal and external revenue streams. This gives what, in effect, is the full cost of running the existing commuter rail service.

Table 2.10: Total SARCC and Metrorail Income from All Revenue Sources (R billion)

Year	DOT Subsidy	SARCC Other Income	Metrorail Other Income	Capital Subsidies & Grants	Total Income
2001/2002	1.366	0.218	0.849	0.526	2.961
2002/2003	1.545	0.284	0.954	0.723	3.506
2003/2004	1.678	0.268	0.992	0.714	3.654

2.5.4 Asset Values

The book value of the SARCC assets as at the end of the 2003/2004 financial year is R5.79bn. This is significantly less than the estimated replacement costs of these assets of R60bn.

This large discrepancy reflects the low levels investment in new asset procurement, asset renewal and heavy (capital like) maintenance of assets.

2.6 Summary And Conclusions

This review of the funding structure and value for money in the commuter rail sector has highlighted the following issues:

- Past and current levels of operational subsidy and capital grant are insufficient to halt the declining levels of service, decreasing patronage and deteriorating asset conditions.
- The level of capital expenditure as a proportion of the book value of the assets is approximately 15% (i.e. approximately R1bn per annum versus R6bn). This is relatively low, and also explains the deteriorating condition of the assets (particularly rolling stock). Moreover, when considering the replacement value of the assets estimated at R60bn, this level of investment is extremely low (1.7%).
- The under expenditure on commuter rail assets over at least the last decade now means that the commuter passenger railway is being provided at subsidy level far lower than is actually needed to maintain efficient, effective and safe services.
- The skewed expenditure pattern in Metrorail toward manpower costs (53%) is partly a consequence of the underinvestment in rolling stock and infrastructure maintenance. It also reflects the fact that many of the maintenance and operational systems which might be automated in more modern rail networks, are still manual in Metrorail;
- A more typical expenditure pattern based on international rail systems would look like:
    - 35% on infrastructure operations, maintenance and renewal, including security;
    - 30% to rolling stock maintenance and renewals;
    - 25% to operations staff (drivers, conductors, station staff, operators, etc)
    - 10% for head office staff
- From a financial perspective there is an urgent need to develop and apply the Railplan in a way that identifies where best value for money can be obtained for rail transport, and perhaps giving way to other modes in circumstances that are less suited to rail.
- This plan needs to take into account alternative approaches to raising money especially for the very urgent issue of rolling stock refurbishment. Chapters 12-14 of this report take this issue further and Phase 2 of the Railplan will be considering a number of models for bringing private sector funds into the industry.
- In order to improve operational and financial efficiency a more focussed approach to determining service priorities will need to be developed. This will require a much more detailed understanding of rail service costing by route/corridor than has been possible in Phase 1. Phase 2 of the Railplan should focus on preparation of budgets for staffing, rolling stock and infrastructure maintenance by region, and route.
- Phase 2 should also undertake a detailed review of existing capital budgeting in order to assess the extent to which refocusing of expenditure priorities may be able to bring about early efficiency improvements. This analysis should be undertaken in conjunction with the relevant rail industry players in order that conclusions reached are owned and implemented immediately.

3. REVIEW OF COMMUTER TRAVEL DEMAND GENERALLY

3.1 Summary And Introduction

The aim of this chapter is to present an overview of the role of rail in the context of travel patterns generally. The background to the chapter is the recognition that rail forms only a part of the total picture of passenger travel and that optimisation of its role requires an appreciation of the role of the other modes as well.

A comprehensive analysis of the roles of different transport modes would need a modelling approach. In the context of the present project, timescales did not permit this. Moreover, the different municipalities are at different stages of redeveloping their multi-modal transport models and so it would have been very difficult to obtain consistency of approach.

The review of travel patterns and mode use undertaken for this Phase 1 work is therefore based primarily upon the results of home interview surveys and conducted by the various municipalities.

As well as analysing existing travel patterns by mode this chapter also considers a potential future role for rail transport. This is not based on detailed demand forecasting but rather on the expressed intentions of local authorities in their Integrated Development Plans (IDPs) and Integrated Transport Plans (ITPs). These offer a framework within which, in future, it may be possible to once again expand the role of rail transport.

It should be noted that the analysis of rail's potential presented here needs to be viewed in the context of all other parts of this report, especially Chapters 9 and 10 that seek to define a future role for rail based on multi-criteria analysis.

The planning for rail and other transport modes is in the future likely to be in the hands of the emerging Transport Authorities and consequently their potential role is considered. At present planning for the development of the rail network is undertaken by the SARCC and its approach is briefly reviewed here.

Although this chapter focuses primarily on the national picture, it is based upon detailed analysis that has been undertaken for the six metropolitan areas:

- City of Tshwane
- City of Johannesburg
- Ekurhuleni
- City of Cape Town
- Ethekwini
- Nelson Mandela

A less detailed review of the following Major District Municipalities was also covered:

- Buffalo City
- Sedibeng
- West Rand
- Metsweding

3.2 Main Findings

3.2.1 National Overview of Passenger Rail Transport

Historically rail infrastructure in South African was designed to link major cities. Limited suburban services and extensions into townships served the urban community by linking residential areas to the major centres of economic activity – mostly industrial areas and CBD. During this earlier era mobility of the population in terms of private vehicle ownership was low and rail played a very prominent role in the establishment of the urban structure.

At the time most of the cities also developed as single nodal cities with the CBD being the main/only activity centre comprising of retail, office, social and recreational activities. It was convenient to serve these areas with rail as the destinations (activity nodes) were limited in number and spatially well-defined.

The situation has, however, changed dramatically over the past thirty years, for various reasons such as lack of funding for transport and rail, and the decentralisation of CBD's to suburban areas better served by car. As a result the current situation reflects a metropolitan railway network which has been outgrown by rapid urban development. It has become the transport medium for the poor with its main function being to carry large volumes of disadvantaged people to their workplace during the morning peak, and back home during the afternoon peak.

Outside these two peak periods the rail network is significantly under-utilised. It plays virtually no part in serving urban activities for the remainder of the day e.g. school/university trips, shopping trips, social trips to clinic, library, sport etc.

Physically the rail system has also become more isolated from the surrounding urban fabric. Along railway corridors virtually all buildings are orientated away from the railway lines (along freeways competition is very tough to obtain visual exposure to the freeway). Railway stations have become mono-functional precincts within neighbourhoods, industrial areas and business areas. It is merely a modal transfer facility attracting only people who want to make use of the train.

3.2.2 Rail Demand in the Context of Overall Transport Trends

According to national transport statistics provided by the DOT, commuter rail has accounts for 4% of the total annual commuter demand, although 9% of respondents mention rail as the preferred mode. Even in terms of preferred mode the share of rail is the least of all modes. Table 3.1 below gives the modal split for the country as a whole based on a national random sample, as reported in the DOT's Annual Transport Statistics.

TABLE 3.1: NATIONAL MODAL SPLIT FOR VEHICULAR MODES

Main Mode	Preferred Mode (%)	Usage by Main Mode (%)
Taxi	22	43
Bus	31	12
Train	9	4
Private/other	37	41
Total	100	100

Source: Annual Transport Statistics 2002

It is important to note that this data presents the aggregated national picture only. The situation varies considerably by region (see Table 3.2) and also by individual rail route or corridor.

Rail passenger numbers have declined from 681 million per annum in 1980 to 491 million in 2004/2005. The steepest decline was during the 1980s. This was followed by a slow increase

through the mid 1990s to 507 million in 1998/99. Since then passenger numbers have fluctuated between 470 and 490 million..

The rapid growth of minibus taxis since the 1980's and its personalised service has been a significant factor in the shift from both the subsidised bus and rail modes to taxi.

The competition between the private car, bus, taxi and train modes in terms of their relative levels of services and costs resulted in a declining mode share for public transport generally, and within the public transport market, the emerging dominance of the mini-bus taxi.

Table 3.2 gives the morning peak period modal split of motorised modes for each of nine municipalities. The share of rail varies between 1% and 33 %. Rail has the highest share in Cape Town, where it is also the dominant mode, and the lowest in Nelson Mandela.

Public transport's mode share varies between 46% and 68%, with the highest share being in Buffalo City and Ethekwini municipalities, and the lowest in the West Rand, Tshwane and Johannesburg.

TABLE 3.2: MODAL SPLIT BY REGION

Authority	% Car	% Train	% Taxi	% Bus	% Public	% Total
City of Johannesburg	54	7	35	5	46	100
City of Tshwane	54	10	23	14	46	100
Ekurhuleni	39	10	49	2	61	100
Metsweding	68	1	22	9	32	100
Sedibeng	39	6	44	11	61	100
West Rand	59	4	32	6	41	100
Gauteng	50	8	36	6	50	100
Ethekwini (2 hours count)	36	13	32	19	64	100
City of Cape Town	44	33	14	8	56	100
Nelson Mandela	46	1	39	14	54	100
Buffalo City	32	4	59	5	68	100

Source: Annual Transport Statistics 2002

3.2.3 Potential Development Role of Rail in the South African Urban Context?

Notwithstanding the declining trend of usage, there are reasons to think that rail may face an opportunity to change this situation, if current land use planning policies were to be backed by higher investment in rail transport.

The new political dispensation in South Africa brought about a total reorientation in the way town planners look at the urban environment and the way it is being planned.

At national level, government promulgated the Development Facilitation Act (DFA) (Act 67 of 1995) which put forward a set of Land Development Principles to guide urban and rural land use processes in South Africa. At the core of the DFA lies the concept of the compact city which focuses on promoting high density, mixed land uses, the optimum utilisation of existing infrastructure rather than creating new; the integration of historically segregated communities, and a general focus towards densification, intensification, infill development and redevelopment within the existing urban fabric. In line with this concept most South African metropolitan areas have now adopted an Urban Edge to contain urban sprawl and to promote the general densification of the urban fabric.

Section 4 of the NLTTA supports this notion and requires that land transport functions be integrated with land use and economic planning through measures such as corridor development, densification and infilling and that transport planning must guide land use and development planning.

Rail has the potential to contribute significantly towards the restructuring and revitalisation of the South African urban environment as envisaged in the legislation highlighted above.

- It is a potentially strong form-giving element to the urban environment associated with permanency, and it also provides for stability (which justifies long term investment in infrastructure).
- It has the potential to promote development of activity nodes across and around railway stations in line with the beads on a string concept.
- Rail reserves occupy strategic locations in all metropolitan areas that is a huge benefit/competitive advantage to start with.
- Railway lines also run through large pockets of vacant land areas that now become ripe for development.
- Stations can act as important commercial development and active community nodes

The development concept that could be applied to functionally link the railway network to the surrounding urban fabric is Transit Orientated Development (TOD). TODs are defined as a unique mix of land uses located at a high density within a walking radius of a railway station. It is purposely designed to facilitate access to the transit stations and so increase the use of the public transportation systems. TODs are therefore designed to achieve land use and transportation integration within corridors.

By utilising this concept rail can become relevant again in the urban context and thereby contribute significantly to the Urban Restructuring and Urban Renewal objectives set for South African cities. More specifically it could:

- Serve as stimulus to promote high density, mixed use development in the urban fabric;
- Promote the development of vacant land in the urban area;
- Provide the backbone for corridor development;
- Provide safe and efficient public transport to surrounding communities;
- Provide an opportunity to establish sustainable pockets of high density subsidised housing within the urban fabric instead of on the outskirts of the city;
- Provide for the establishment of Multi-Purpose Service Delivery Centres (Residential, Economic, Social) at the most accessible points in the urban area.

3.2.4 Rail priorities in Non-metropolitan Areas

If a comprehensive planning approach to rail transport were to be adopted, it would entail detailed land use transport planning in non-metropolitan areas as well and in the course of this project, some preliminary work was done in this regard.

In order to determine the priorities for rail demand assessment outside the metropolitan areas, rural municipalities were ranked in terms of population size. In addition, national development priorities based on spatial development initiatives (SDI's) and Industrial Development Zones (IDZ's) were also reviewed.

In total 45 local municipalities with populations of above 50 000 were identified. These include towns, such as Kimberley, Uitenhage and Brits at the lower end of the scale, (population between 50 000 and 60 000), Welkom, Potchefstroom and Witbank in the middle order (population between 60 000 and 80 000), and Klerksdorp, Rustenburg and Pietermaritzburg at the high end (population above 100 000).

Towns that are served by spatial development initiatives (SDI's) and Industrial Development Zones (IDZ's) are also important. These are the N4 Maputo Corridor, N4 Platinum Corridor, the Gariep Corridor, Coega IDZ, the JIA IDZ and Dube Trade Port.

3.2.5 Overview of SARCC's Approach to Rail Network Planning

Again, if a rail strategy were adopted that entailed comprehensive land use transport planning around this mode, then the large amount of project planning work undertaken by the Network Planning and Development Department of the SARCC would be a valuable resource. The department has identified numerous rail planning proposals in the various metropolitan areas in response to development initiatives. The complete database comprises a total of 195 Planning Proposals (December 2004). Some of the Planning Proposals extend across more than one metropolitan area.

The first stage in the development of a rail response, which follows directly after the initial planning proposal identification, is the development of a Planning Proposal Description (PPD). The Planning Proposal Description describes the circumstances giving rise to the proposal, the rail opportunity arising from the circumstance and provides a possible rail response thereto. The full guideline document for the compilation of Planning Proposal Descriptions is available from the SARCC Network Planning and Development Department.

A course weighting system is used which allocates a weight between 1 and 3 to each planning proposal. The score generally refers to a time frame for implementation with Priority 1 meaning a project should be implemented within the next five years, Priority 2s within ten years and Priority 3s beyond 10 years.

A multi-criteria weighted priority system is used to assess high priority proposals and includes consideration of the following criteria:

- External need
- Impact
- Political need
- Internal need
- Time horizon
- Complexity

A score out of a maximum of 114 is assigned to each proposal with a high score representing a proposal with higher priority. Proposals exist for all the Metropolitan Municipalities as well as for District Municipalities where rail passenger transport is present. These are reviewed in the full report that accompanies this volume. The SARCC proposals were assessed in a strategic way and SARCC priorities were applied as one of a number of criteria to prioritise rail corridors – see Part 3 Chapter 9.

This approach, though comprehensive, would be most relevant in the context of a rail transport strategy that entailed a long-term commitment to substantially greater funding. Alternative future strategies for rail are considered in Chapter 10 of this report

4. ANALYSIS OF COMMUTER RAIL USAGE AND USER ATTITUDES

4.1 Introduction

This chapter summarises current levels of actual usage of the passenger rail commuter services. More detailed analysis by region and service/corridor is available in the accompanying full report on rail usage.

The chapter also reviews information available from customer surveys regarding attitudes towards rail transport and the factors that drive travel by rail. Based on this information, some indications are given of criteria that could be built into a future passenger rail charter.

4.2 Rail Usage Based On Census Data

SARCC and Metrorail carry out periodic passenger censuses. The purpose of these censuses are to determine the actual passenger volumes at stations and trains to determine the rail market size. This census information was also regularly used to verify ticket sales and to determine the level of fare evasion.

The most recent census information was used to determine the passenger volumes in each region. The number of passenger boardings per region per day and morning peak hour are shown below. This data slightly overestimates total individuals using the trains, as the survey method does not filter out double boardings for example in the case of two-leg journeys.

TABLE 4.1 TOTAL NUMBER OF RAIL BOARDINGS PER REGION

Metrorail Region	Census year	Number of Stations	AM Peak Hour	Weekday
Cape Town	2004	101	168 800	621 300
Durban	2004	99	44 100	200 300
East London	2004	18	5 200	18 200
Port Elizabeth	2004	11	2 200	4 900
Tshwane	2002*	55	99 800	471 700
Wits	2002*	153	161 700	888 100
TOTAL		**437**	**481 800**	**2 204 500**

*New Census planned for early 2005

4.3 The Rationale For Improving Service Quality

The White Paper on National Transport Policy committed Government to providing a safe, reliable, effective, efficient, coordinated, integrated and environmentally friendly land passenger transport system in South Africa, managed in a manner that is accountable to ensure that passengers experience improved levels of mobility and accessibility. Based on the state of passenger transport quality, there is a need to put measures in place to improve service quality. The DOT has already started a process of developing a Public Transport Charter. The quality of service is, however, dependent on passenger's perception of public transport performance.

4.4 Rail Customer Profile And Needs

The SARCC and Metrorail conduct regular surveys to test commuter perceptions of rail and other services that are provided. These surveys also profile the users of the service.

Two passenger perception surveys conducted by the SARCC in 2004 (June and November) in the six rail commuter regions (Cape Town, Durban, East London, Port Elizabeth, Pretoria, and Wits) indicated that the overall majority of passengers are Black African (84%) and within the 21 to 50 year old age group (typical working age). The Cape Town and Port Elizabeth regions have higher percentages of Coloured and White passengers. An interpretation of the genders

indicates that rail is used more by male than female passengers, which might again emphasis a tendency towards working trips and possibly security perceptions.

Three issues that stand out as important in both surveys are:

- Safety of trains
- Punctuality of trains
- Security at stations and on trains.

Other factors that stood out as somewhat important include:

- Overcrowding
- Cleanliness of trains and stations, and
- Clarity and frequency of announcements.

It is interesting to note that passengers do not consider price as such an important factor. It would seem that quality of service is now more important to customers.

4.5 Improving The Quality Of Rail Service

4.5.1 A Public Transport Charter (PTC)

The Department of Transport is currently in the process of developing a Public Transport Charter. The PTC is being workshopped with provinces and is planned for completion by April 2005. The PTC is an overarching document referring to all modes of public transport. The draft document also addresses the rights and responsibilities passengers (commuters, long distance passengers, tourists, and passengers with disabilities), operators and government (municipal, provincial, and national spheres). The PTC refers to various elements relating to quality, but does not as yet set any quantifiable standard. The PTC is also silent on the role of mode specific standards and does not address implementation and monitoring issues yet.

A Rail Passenger Service Charter (RPSC) will have to fit into the ultimate PTC. Since the PTC is a overarching charter in terms of all the public transport modes, the levels of standards, rights and responsibilities will have to be honoured in any mode specific charter. However, to create competition between modes in terms of quality, one can expect that the mode-specific charters can adopt higher levels of standards.

Based on recent transport user perceptions surveys, the factors below were identified as important drivers of mode choice in South Africa.

- Total travel time, Walking time, Frequency /Wait time, No of transfers
- Standard of feeder services
- Train security in terms of Guards and CCTV
- Taxi safety
- Crowding
- Fare, Method of payment (Coupons v cash), Use of Smart card
- Express train services
- Passenger resistance to switch between modes
- Income or other proxy, such as car ownership.

These factors are mostly typical of factors found elsewhere in the world. A few variables that may be unique to South Africa are users' attitudes towards to safety from crime on trains, safety from accidents in minibus-taxis, skip-stop train services and the use of smart cards.

From these factors as well as user attitudes surveyed during home interviews, the following criteria for a user service level specification are proposed:

- Train frequencies and time tables
- Level of punctuality of trains
- Integration between rail and other road-based modes
- Levels of access (walking times to stations or feeder modes)
- Maximum transfer times, and number of transfers
- Range and standard of amenities on trains and at stations
- Ticketing and ticket collection systems, through ticketing
- Security of passengers on trains, and at stations
- Train safety from accidents
- Maximum train occupancies
- Passenger information and information systems
- Marketing, promotion and branding
- Management information systems
- Cleaning and level of maintenance of trains and station infrastructure
- Integrated fare structure

4.5.2 Operational service level specification

Another approach to improving the level of service experienced by users would be for the operator to develop 'service level specification' based on output or outcome-based specifications. A desired end-state would be specified, for example, trains should arrive within 'X' minutes of the scheduled time table, 'Y' per cent of the time, or train rolling stock should be clean daily from daily accumulated rubbish. It would then be for the Rail Entity's to decide how best achieve these desired outcomes.

A service level specification could be made in terms of the concept of differential Service Level Categories. For each of a range of criteria, levels of service could be specified, and rail lines and stations allocated to a desired Service Category. Table 4.2 provides an illustrative list of service level criteria, based on travel time and cost aspects.

These service levels would relate not only relate to the train service but the total public transport system and require an integrated approach to service delivery. They would also require a TA and the Rail Entity to co-ordinate their planning, communication and operations.

TABLE 4.2: ILLUSTRATIVE SERVICE LEVEL SPECIFICATION

[DATA IN TABLE ARE FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT PART OF ANY CURRENT SERVICE COMMITMENT]

Service Level Parameter	Service Level A	Service Level B	Service Level C
Frequency Peak (Interval between arrivals)	< 10 mins	10 – 20 mins	30 – 40 mins
Frequency Off- Peak (Interval between arrivals)	60 mins	60 – 120 mins	No trains
Walking time to station or feeder mode	< 15 mins 1-1.5km	20-30 mins 2-3km	< 60 mins 5-6km
Transfer Time between modes	<10 mins	10-30 mins	Not specified
No of transfers	Not more than 1	1 - 2	Not specified
Affordability of fares	Ave Monthly fare < 10 % of income for 70 % of commuters	Ave Monthly fare < 10 % of income for 70 % of commuters	Ave Monthly fare < 10 % of income for 70 % of commuters

DIVIDER PAGE

C. BUSINESS ENTITIES REVIEW

5. THE ROLE OF SARCC IN RAIL PASSENGER TRANSPORT

5.1 Introduction

The SARCC is the statutory body delegated by DOT to provide commuter rail passenger services throughout South Africa. It makes this provision via an operating agreement with Metrorail, a subsidiary company of Transnet. SARCC owns the physical assets such as permanent way and all associated operating systems, as well as the commuter rolling stock.

SARCC was established on 01 April 1990 and registered in terms of Section 22 (1) of the Legal Succession to the South African Transport Services Act No. 9 of 1989, to take over the provision of commuter passenger rail services from the then South African Transport Services (SATS), National Railways.

In addition to taking over commuter rail services the Corporation also inherited the land and buildings in and around commuter stations and corridors with a view to commercialising these assets. In 1992 the corporation formed Intersite Property Management Services ("Intersite"), a 100% owned subsidiary to manage the land and buildings on commercial terms.

A board of Directors governs the overall direction of SARCC. Day to day management is in the hands of a Chief Executive and an Executive committee comprising the Executive Directors of SARCC's various divisions. The following are the main executive functions:

- Planning of the organisation's overall development strategy;
- Ownership and strategic management of the passenger rail assets including infrastructure and rolling stock;
- Monitoring performance of services;
- Promoting rail passenger transport, or marketing.
- Management of the property assets of the Corporation.

There is also an executive group responsible for internal functions including finance, procurement, human resources and information systems.

The purpose of this chapter is to briefly review the organisation's five main functions and comment briefly on the suitability of the structure in the context of a future, consolidated passenger rail entity.

5.2 Strategic Planning

The Strategy and Planning function within SARCC covers two main areas:

- Special projects relating primarily to the strategic direction for SARCC as an organisation and also to issues arising in the course of delivery of commuter passenger rail services generally.
- Planning for the upgrading and development of the existing commuter rail network.

5.2.1 Industry strategy

This function of SARCC is designed to ensure that the organisation remains focused on what it is meant to deliver statutorily and to ensure that the organisation has the appropriate management information and tools to deliver on its mandate. The present Railplan project falls within this category. As such it was initially intended to provide a vehicle for the

delivery of the Board's decision in its 2003/04 Annual Report to radically improve delivery of commuter rail services.

The unit is also responsible for SARCC liaison with local authorities and emerging Transport Authorities in connection with rail planning. The Strategy and Planning function is also called upon to respond to ad hoc requests from government for clarification of various aspects of the passenger rail industry's operation.

5.2.2 Network planning

The role of the network planning function within SARCC is to identify and prioritise investment projects. Criteria that are used for prioritisation are defined mainly with internal network operating efficiency in mind rather than by any prior consideration of whether the rail mode of transport is the appropriate response in a given situation.

Although liaison between SARCC and Provincial and Metropolitan planning authorities does take place this is typically in the nature of an information exchange rather than a determination to discover where rail can best contribute to the overall pattern of public transport service.

As such, the technical quality of the existing approach to network planning is diminished by its limited relevance in overall business planning terms.

The SARCC management's commissioning of the present Business Plan study is evidence that this limitation was recognised.

5.2.3 Overview

If the more strategic, business oriented approach to network planning embodied in the Business Plan project can be sustained, the Strategic Planning function will remain an important part of any new structure.

5.3 Asset Management – Rolling Stock And Infrastructure

5.3.1 Division of responsibilities

As owner of the physical assets of the commuter rail sector, SARCC has the ultimate responsibility for any acquisition, upgrade and disposal of the assets. However, the asset maintenance function is the responsibility of Metrorail as the contracted asset operator.

The division of responsibilities in this regard should be, but in practice is not adequately, spelt out in the operational agreement between SARCC and Metrorail.

A detailed review of Metrorail's approach to asset management and the condition of the assets is contained in Chapter 6. Chapter 2 has already raised some concerns relating to the financial implications of this arrangement.

5.3.2 Implications of the current division of responsibilities

In order to avoid further financial confusion it is important that in any new industry structure, relationships between the functions of infrastructure ownership, infrastructure operation and maintenance, and infrastructure utilisation are much more clearly spelt out.

5.4 Compliance/Performance Monitoring

5.4.1 Compliance/performance monitoring arrangements

The role of the Compliance Executive in SARCC is formally to monitor the performance of the operating agreement between SARCC and Metrorail and ensure that the terms of the agreement are adhered to. The main clause of the operating agreement is simply that

Metrorail provides commuter rail services on behalf of SARCC for a fee. In addition to the management fee Metrorail also receives the state subsidy for its operations that SARCC agrees with DOT on an annual basis, channelling an agreed amount from this through to Metrorail.

The current operating agreement formally expired in June 2003 and is being continued simply by mutual agreement between the parties.

The original intention in the agreement was that the operator could be held to account and penalised in the event of non-performance. In practice the penalty clause has not been able to be implemented and as a consequence SARCC's compliance function is simply an audit and review process.

5.4.2 Comments and implications

The absence of any effective mechanism for holding its operator to account is a major factor to consider when considering the business and asset performance reported in Chapters 6 and 7.

In the absence of effective enforcement of operational performance a future rail industry will be unlikely to deliver improved performance. This is therefore a feature that should be built into a future industry structure. Further discussion of this point is included in Chapter 16 of this report.

5.5 Marketing And Communication

This executive function has responsibility for:

- Maintenance and development of an Information Resource Centre.
- Undertaking censuses and utilisation of this information to develop the business.

This is an area in which this project is undertaking considerable development work in the areas of Geographic Information Systems(GIS) and also a consolidation of available performance monitoring data in SARCC into a purpose-designed Master Stats File (MSF) to support a Key Performance Indicators system.

Separate GIS and MSF reports have been prepared on progress in these two areas.

5.6 Property Management – Intersite

5.6.1 Structure and commercial brief

Intersite is the wholly owned property management agent for SARCC. Intersite's brief is to exploit the SARCC's property asset base with the aim of making a profit and hence a positive contribution to the operating costs of SARCC.

The property portfolio comprises of 374 rail commuter stations, and about 4200 hectares of land in the metropolitan areas of Johannesburg, Pretoria, Durban, Cape Town, Port Elizabeth, and East London. Intersite also manages land at 29 Transnet - Spoornet owned stations. Of the 374 rail commuter stations, 41 stations have current or planned developments, and 77 stations have potential development space.

Current land use at stations includes parking space (free parking and paid parking), inter-modal facilities such as bus ranks and taxi ranks, and commercial/industrial developments on lease to the SARCC. However, the development potential (main value driver) of the property portfolio has been exploited close to saturation, and new opportunities are rare.

5.6.2 Implications

Each station is considered a 'profit centre'. Some land is retained for inter-modal facilities as part of the transportation node for modal integration. Land is also retained for commercial developments in terms of long-term leasehold agreements. All risk and rewards are borne by the lessee, and ownership is only transferred upon termination or cancellation of the lease agreement.

Specifically for inter-modal facilities, the Provincial Department of Transport and/or District Municipality or Metropolitan Municipality is responsible for the inter-modal facility, while the SARCC and Intersite engage on a cooperative role.

Most developments in the station precinct are private sector driven. There is a formal application procedure for developments on SARCC property. The developers' applications are submitted to the SARCC via Intersite. The application is assessed internally, submitted to the SARCC and/or assessed by contracted professional services such as town planners, economists, and transportation and traffic engineers. The application could take up to a year to be processed. Where land is sold off, the Minister of Transport must approve the sale of land.

Intersite receives approximately fifty applications per annum, of which only about 75% of the applications are processed.

In general, Intersite is reactive to the market response for land use development on SARCC property. Only where there is significant interest from the developers then Intersite investigates the actual potential development of that particular property to maximise the return on investment. The turn around time for processing applications is relatively slow and must be addressed. Developments have significant economic impacts such as job creation and access to public transportation, generation of income to both Intersite and SARCC, etc.

5.6.3 Conclusions and considerations for future industry structure

Whilst it is able to utilise funds generated through its commercial activities to fund development, Intersite cannot use the publicly sourced funds available to SARCC for commercial purposes. Ongoing development is therefore funded out of operating profits, but with the majority of the very substantial surpluses being returned to SARCC to help reduce the amount of public subsidy required for operational activities.

A limiting factor on Intersite's ability to make more commercial capital out of SARCC's station assets in particular is the nature of the relationship between Metrorail and SARCC. This relationship does not impose on Metrorail any requirement to make effective commercial use of the stations that it operates. According to Intersite, Metrorail treats stations simply as an overhead expense funded by SARCC as part of the annual operational subsidy bid.

In contrast, there are Transnet stations that are leased from Transnet by SARCC, and managed by Intersite for the relevant operator, Shosholoza Meyl. In these cases, Shosholoza Meyl is in contract with Intersite and is incentivised to minimise costs associated with station operations as well as to seek out opportunities for revenue generating activities to offset costs.

Metrorail's perspective on this situation is that operational priorities must take precedence at stations and that some types of commercial outlet, such as liquor stores, may even add to security problems for rail passenger and train operations.

Nevertheless, Intersite believes that some changes in the contractual arrangements between SARCC and Metrorail could have considerable scope for generating revenues that could further offset the total subsidy requirement.

6. REVIEW OF EXISTING COMMUTER RAIL BUSINESS PERFORMANCE

6.1 Introduction

The aim of this chapter is to present an overview of the performance of Metrorail as an industry entity. The scope of the chapter is the organisation's business performance and the physical performance of the infrastructure and rolling stock assets, for the operation and maintenance of which it is responsible in terms of the operating agreement with SARCC.

This chapter is a distillation of key points from the main project report for this workstream and necessarily contains much less detail than the source report.

6.2 Metrorail Operating Performance

6.2.1 Key network statistics

The following is a summary of basic statistics of the commuter rail network:

- Of a national commuter rail network of 1,150km, the Cape region has the largest share at 33% followed by Wits region at 31%.
- Total passenger journeys in year 2002/2003 were 465 million with 37% in Wits region and 33% in Cape region.
- Total passenger kilometres in the same year were 11.9 billion with Wits having a 38% share and the Cape, 33%.
- There are 478 stations serving the commuter network. 36% of which are in the Wits region, 21% in the Cape and 21% in Durban.

In the light of the passenger data above this indicates that Cape stations are more intensively used than any other part of the network

6.2.2 Train service performance

Key measures of service performance are service availability and punctuality. These are measured against lower and higher (better performing) norms. Figure 6.1 shows that in all four of the main metropolitan regions, Wits, Tshwane, Cape and Durban, service performance falls outside of the lower norm, with Durban region being the worst. The much smaller systems in Nelson Mandela (Port Elizabeth) and Buffalo City (East London) perform above the upper norm.

The main cause of low availability levels is failure in rolling stock and other technical areas, mainly signalling.

FIGURE 6.1 SERVICE AVAILABILITY – TRAIN CANCELLATIONS

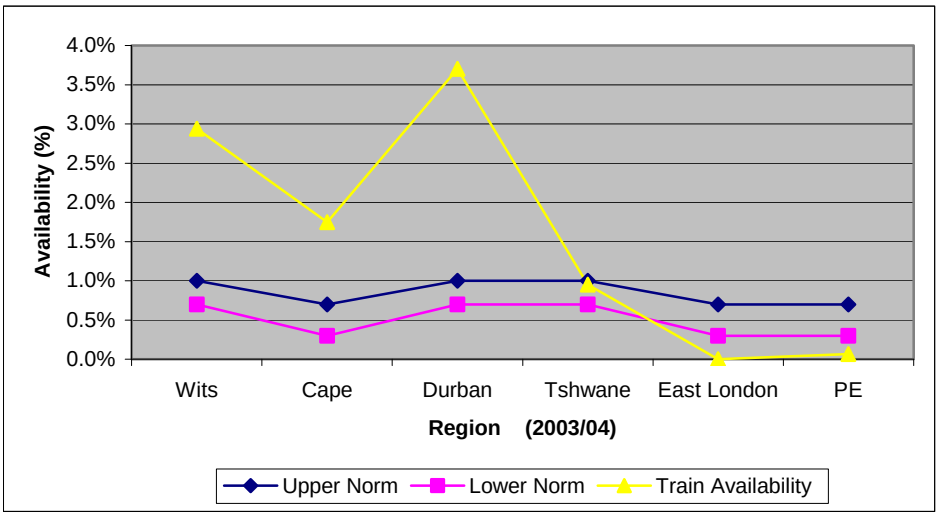
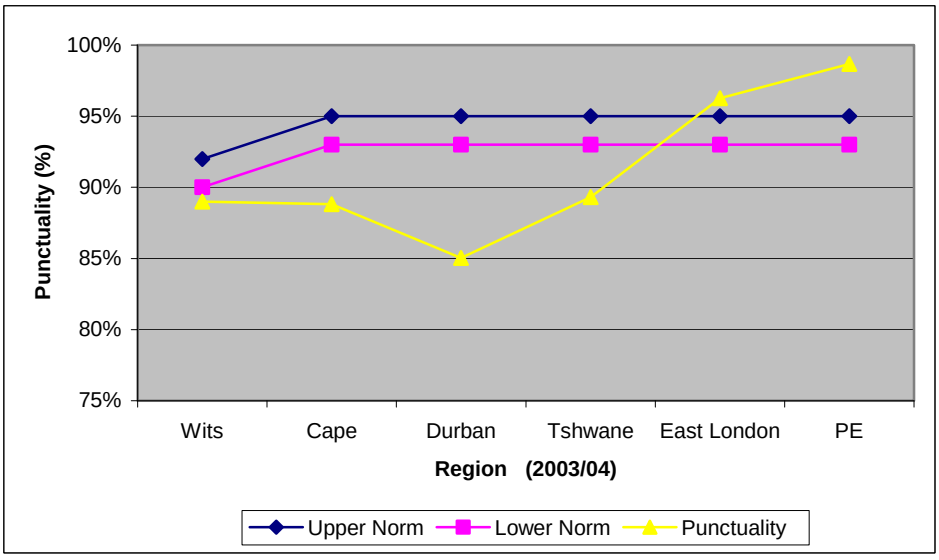


Figure 6.2 shows trends in train punctuality where again the performance of the four larger network regions is outside of the agreed norm.

TABLE 6.2 SERVICE PUNCTUALITY – TRAIN DELAYS



6.2.3 Critical business performance constraints

6.2.3.1 Human resources

A review of the current human capital within the organisation indicates a strong knowledge base. However, when coupled with the age profile of these specialists, there is a concern that this knowledge base will be eroded within the next ten years. This may realistically translate into a window of approximately five years. Some pockets of skill, such as signal engineers and technicians, have already been depleted to below a critical mass level.

It is imperative that an approach to effectively recruit new personnel as well as to effectively transfer skills within this time window is developed and implemented to ensure sustainability of the organisation's operations. An added challenge is that the organisation has to balance the need to achieve its Employment Equity targets with the needs of the business.

Staff losses are experienced to other industries, especially in the telecommunications sector where generally more attractive physical working environments are available and at better wage levels.

6.2.3.2 Rail industry supply chain

The railway engineering industry in South Africa does not have sufficient capacity to facilitate the projects that will in future need to be undertaken to improve the condition of the infrastructure and rolling stock, nor to support growth and expansion. Key factors that have contributed to this include:

- Limited capacity of the railway supply industry due to a depletion of skills
- Lack of investment in the railways poses a risk to a business expecting to provide a service to the railways, particularly with respect to the sustainability and financial security.
- Long lead times between major rail projects further impact on the sustainability of individual businesses in the rail supply industry.

It is important that investment in the railways supports the stabilisation of the railway industry supply chain through using the current skills available, which can then provide a platform for future growth and capacity within the industry.

The ability of the railways to procure any major remedial work in future will depend on having a solid and well-established supply chain.

6.3 Infrastructure Performance

Infrastructure performance is measured in terms of the impact on train availability (as discussed above in terms of train cancellations) and punctuality (discussed in terms of train delays) attributable to a specific infrastructure element. It also entails reports on the operating and capital expenditure for the respective elements and other factors that may be affecting the efficiency of performance.

It should be noted that the East London and Port Elizabeth regions operate on Spoornet infrastructure and are thus not covered by the present review except where specified.

6.3.1 Signals

The general below-standard performance of train availability and punctuality has already been referred to in 6.2.2 above with signalling mentioned as one of the key causes of delay.

6.3.1.1 Cancellations and delays

Signalling problems can cause either the cancellation or delay of a train. Cancellations are in the order of tens of trains per year whilst delays are in the thousands. Figures 6.3 and 6.4 compare the regions' performance.

FIGURE 6.3 TRAIN CANCELLATIONS DUE TO SIGNALS

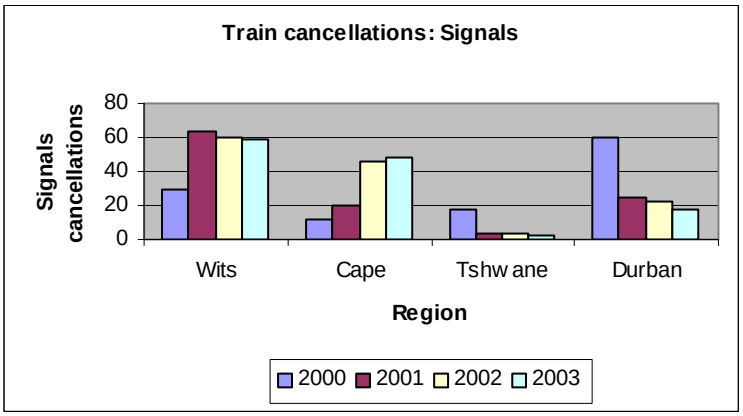
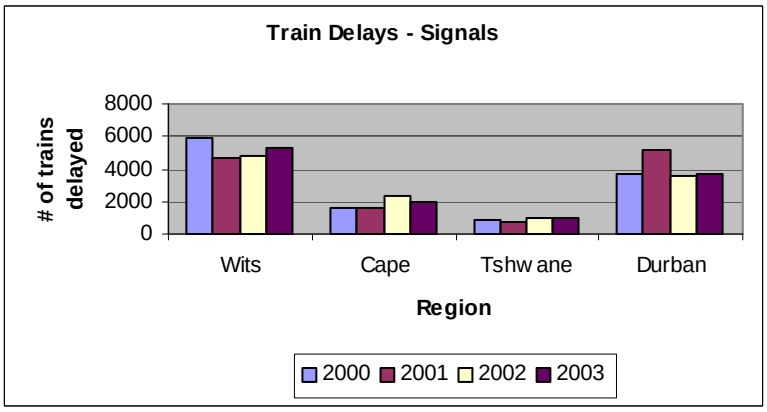


FIGURE 6.4 TRAIN DELAYS DUE TO SIGNALS



6.3.1.2 Operating budget

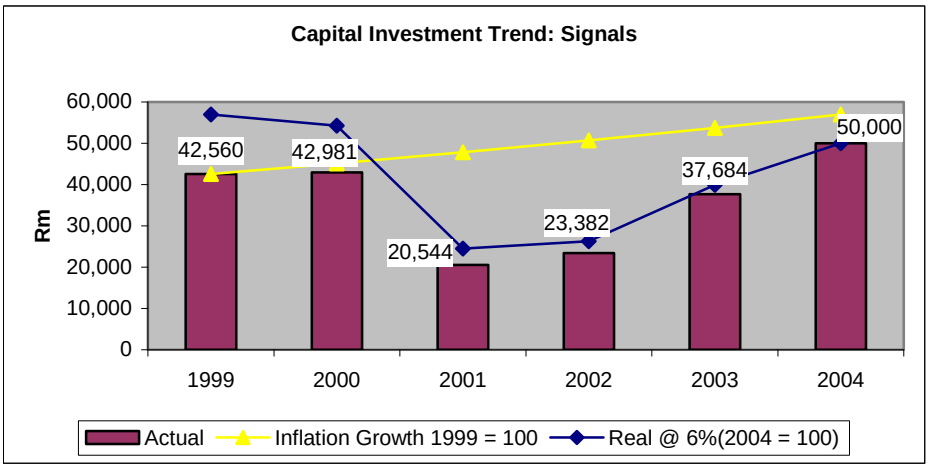
Operating expenditure on signalling was some R75.5 million in 2003/04. This equates to 9% of the total engineering services budget within Metrorail. This amount has remained static in real terms for the past 5 years. The amount required to maintain the signalling system in proper working order has however increased year on year. The static real budget has therefore meant that necessary maintenance expenditure has been deferred and this is one reason that it has not been possible to achieve better operational performance.

The current budget situation results in increase of vacancies due to an inability to appoint staff to critical maintenance posts. This is serious in view of the high age profile of existing skilled staff. Budget limitations are also impacting on the ability to support an effective level of training within the business.

6.3.1.3 Capital investment

The current age profile and condition of the signalling assets require urgent capital investment to renew ageing systems and install newer electronic interlocking systems. Capital investment in signals across the entire commuter network is shown in Figure 6.5.

FIGURE 6.5 CAPITAL INVESTMENT TRENDS - SIGNALS



The reduced amounts in years 2001 and 2002 probably relate to periods when investment was being planned and not necessarily a planned reduction.

The total amount involved needs to be related to the current typical costs of a single improvement scheme in one region, for example the renewal of signalling at Bellville in Cape region cost between R50-R60 million. The current level of annual allocations can clearly not support much improvement work. This in turn has an impact on the supply industry which cannot maintain required skill levels without a steady flow of significant sized projects.

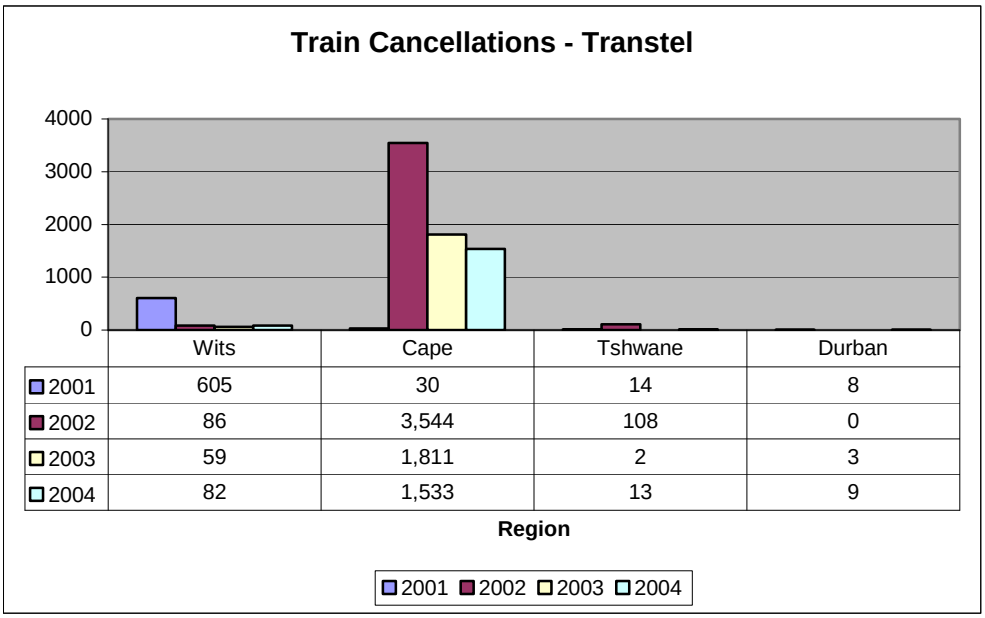
The implication is that signalling related failures may be expected to worsen not improve.

6.3.2 Railbound telecommunications

A telecommunications transmission network dedicated to operational control of trains covers the commuter rail network. The transmission network is largely owned and operated by Transtel. The SARCC itself owns telecommunications equipment that includes interfaces to the transmission network, some optic fibre transmission cables and trunking radios to provide a communication back-up for the signalling system.

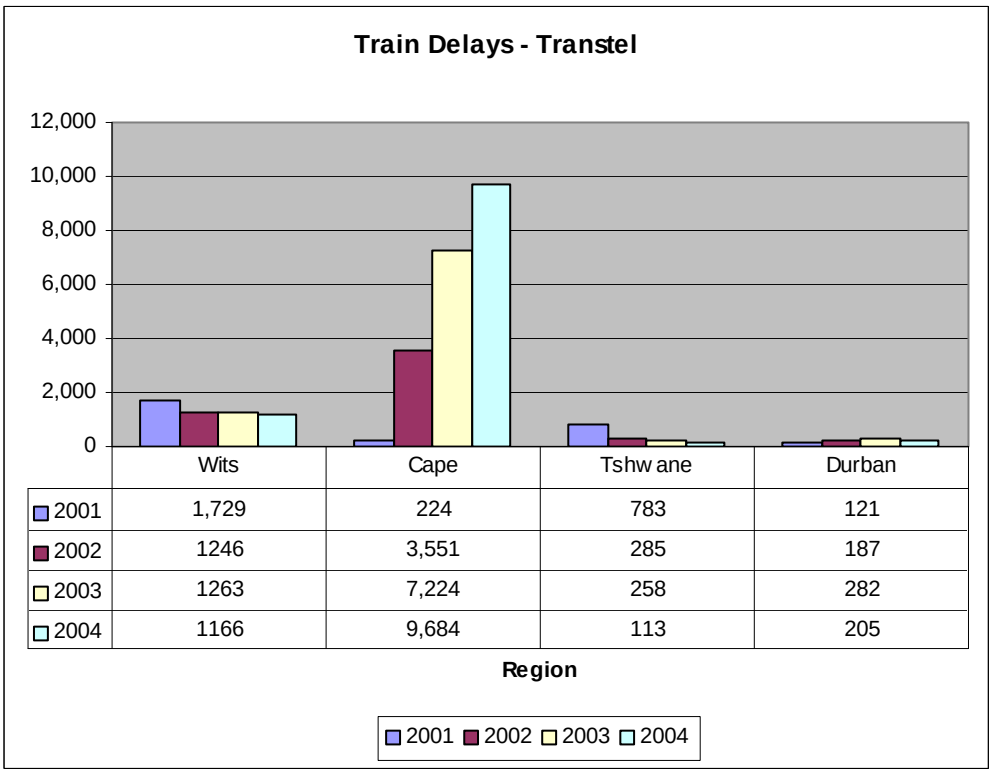
The system is critical to safe train operation. The telecommunication system is responsible for similar levels of failures as the signalling system as shown in Figures 6.6 and 6.7. For reasons not yet established as this Phase 1 report is being prepared, the Cape region has experienced far higher failure levels than other regions as a result of telecommunications problems.

FIGURE 6.6 TRAIN CANCELLATIONS – TRANSTEL EQUIPMENT



	Wits	Cape	Tshwane	Durban
2001	605	30	14	8
2002	86	3,544	108	0
2003	59	1,811	2	3
2004	82	1,533	13	9

FIGURE 6.7 TRAIN DELAYS – TRANSTEL EQUIPMENT



	Wits	Cape	Tshw ane	Durban
2001	1,729	224	783	121
2002	1246	3,551	285	187
2003	1263	7,224	258	282
2004	1166	9,684	113	205

Details of operating expenditure patterns for the telecommunications system have yet to be established as the telecommunications asset is managed within the IT and Signalling departments on the region and not as a separate asset group.

High levels of capital expenditure; some R12 million per year; were maintained between 1997/8 and 2000/01 when the replacement of the copper-based transmission system with a fibre-optic system commenced. The copper-based system is in a very poor condition and this is worsened by the increased theft and vandalism of copper cabling. This installation of the fibre-system has led to improved reliability where it has been installed. Since 2001 average investment has been around R1 million per year - the ability to maintain a significant level of investment since 2001 has been hindered by contractual issues with the service provider, Transtel. Transtel has been party to negotiations over the establishment of a second national telecommunications operator and this process has limited its ability to engage on new contractual commitments.

6.3.3 Permanent way

Cancellations and delays due to permanent way failures have been drastically reduced in recent years indicating a sustained good operational standard of this infrastructure element.

Operational expenditure for system maintenance has been sustained at around the R150 million per year mark for the past 5 years and this appears sufficient to maintain the asset in the short term.

Capital investment is divided into essential works (that are a separate funding allocation from the SARCC to Metrorail and does not form part of the operational budget) and investment capital that is funded directly by capital grants from SARCC. While essential works investment increased from R12 million in 2000 to R24 million in 2004, SARCC investment into earmarked projects has declined from R25 million in 2001 to R6 million in 2004.

The decline in SARCC capital grants expenditure reflects partly a tendency for project funds to be diverted in support of essential maintenance works. It is also linked to the inability of the SARCC's procurement department to resource the required projects. As a consequence there has been a considerable amount of underspend in SARCC's capital budgets.

This could have implications for the future in that the current good condition of the permanent way could follow other technical areas in which inadequate investment is linked to an increase in sector attributable rail service performance problems.

6.3.4 Electrical systems

Electrical power systems to support train operations and other infrastructure elements are part of the infrastructure owned by SARCC and operated by Metrorail.

Similar to permanent way, these systems are in generally good condition and have seen a decreasing trend as the attributable cause of both cancellations and delays.

Operating costs of R6-7 million has been maintained in real terms over the past 5 years.

Essential works investment has also been relatively steady over the past five years at between R4 million and R7 million per annum.

Capital expenditure has been steady over the past four years at around R10 million but over a longer period, from 1995, this amounts to a halving of previous levels of investment.

It is not yet known whether the current reduced level represents simply a reduction in budget allocations or whether earlier investment has yielded some benefit. Although the improved operational performance suggests the former, future enhancements will certainly require increased annual project investment again in due course.

6.3.5 Stations

Station infrastructure does not affect operational performance of the train services as directly as the other infrastructure elements. Stations are nevertheless crucial in terms of passenger rail's competition with other modes. Many stations are in a poor operational condition even where actual buildings may be in reasonable state of repair. Some lack basic amenities and proper access by road. This contributes to both the reality and the perception of poor security at stations that have been shown in surveys to be a significant concern to both rail users and non/potential users.

Metrorail's operating expenditure on stations has been some R50 million per year over the past five years. Capital investment in stations on specific improvement projects varies considerably year by year. Major refurbishment projects for Johannesburg's Park Station and Cape Town's Central station resulted in R20 million being spent in each of years 1999 and 2000. Subsequently expenditure has average R10 million per year. Property development initiatives in and around stations from Intersite add to overall investment in this infrastructure.

It is believed that the need for station upgrading is much greater than current funding levels allow. Better funding for station upgrading would help rail management to integrate their planning and funding with that of the Metropolitan Municipalities with the aim of achieving the benefits of integrating rail with road-based modes.

6.4 Rolling Stock Performance

This section looks directly at the performance of rolling stock as distinct from the impacts on service performance attributable to the different elements of infrastructure as reported above

6.4.1 Rolling stock availability

The past five years have seen a dramatic increase in rolling stock-related service cancellations and delays. Moreover, the share of total service disruptions attributable to rolling stock has seen a steady increase and is now the single most important contributor to disruptions, being responsible for over 35% of all recorded incidents in 2004.

The technical reasons for the unavailability of coaches differ between regions, but the main contributors can be related to the following factors:

- The age of technology used in the equipment and components that affect reliability
- A massive deficit in the general overhaul (GO) programme.
- Vandalism.

During 2004 Metrorail took a management decision to withdraw all coaches with a GO date older than 12 years from service based on safety implications. This followed a decision by SARCC not to certify as safe any coaches of this GO vintage. Although one aim of this was that with the remaining rolling stock a more reliable service could be provided, the reduced rolling stock fleet will not be able to deliver the initially contracted service. The service has had to be redesigned to provide a schedule that can be actually met based on the available Rolling Stock.

6.4.2 Rolling stock capacity

There is a direct relationship between availability and overall capacity. Although in the short term the impact of declining stock availability may be masked by more intensive utilisation of remaining stock, this is not a sustainable position. The reality is that it is now impossible to provide for the contracted service schedule with the existing fleet, let alone for growth.

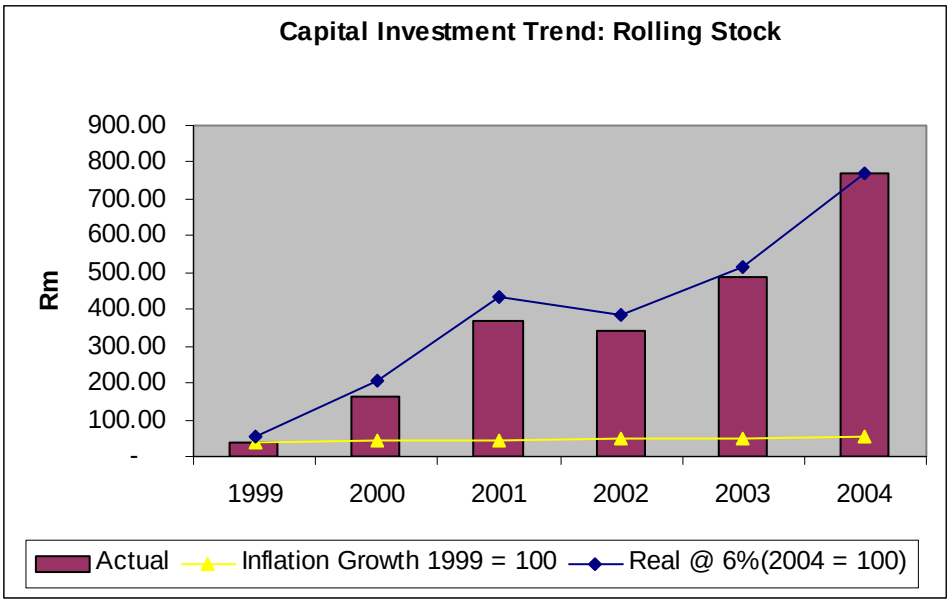
Moreover, any increase in maintenance/improvement actions such as GO's or upgrades will entail withdrawal of further stock from service with a direct negative impact on the short-term fleet availability and therefore capacity to meet service schedules.

With current systems, staffing and skills levels already stressed there is not the capacity to increase investment levels.

6.4.3 Capital investment in rolling stock

Notwithstanding the above comments, rolling stock has been easily the largest component of capital investment in the industry over the past five years. The trend is shown in Figure 6.8.

FIGURE 6.8 CAPITAL INVESTMENT IN ROLLING STOCK



The increase has been well above the inflation level. An inflation only increase allowance would have taken the approximately R35m of 1999 to just R50m in 2004. The main focus of the increased investment has been on the upgrading of certain 5M2A trains to a customized 10M series. The 10M series design went through various development stages, with the ideal standardized design not decided yet.

On the basis of preliminary analysis it seems that this upgrade programme was too ambitious as current systems and structures to implement large scale capital projects are not sufficient and are already under stress to cope with existing budgets. In retrospect, the priority of extending the safe operational life of existing rolling stock would have been a better use of available resources and budgets.

If confirmed, this analysis will go some way to explaining why such a significant increase in capital budget has had so little effect on actual service performance.

The operating budget available for rolling stock maintenance has remained constant in real terms over the past five years at around R220 million per year. However, given the age of the average age of the fleet, 32 years of a design life of 40 years, the budget is insufficient to maintain a constant operational service level.

6.4.4 A future investment plan

The previous analysis calls for a revised strategy of rolling stock maintenance and capital investment priorities. In addition, any investment focus will need to address the full complement of the rolling stock service delivery such as workshops, tools and equipment, people and skills, spares, processes and systems.

Short to medium term measures are of critical importance to stabilise service levels and provide a transition into a new fleet composition. This is caused by the age of the existing fleet, and a long lead time (24 to 48 months) for the procurement of new vehicles.

In the light of the analysis in this section the main components of a proposed investment and rationalisation plan might be:

- To consolidate all rolling stock functions in SARCC and Metrorail into ring-fenced cost structures with effective reporting to a single management function.
- Adopt a 10-year upgrade plan that will phase out general overhauls to 5M2A vehicles and also phase out the 10M4 upgrade program. These will be replaced with an upgrade program that will provide the necessary extension of the fleet life expectancy. A standardised design, with technology improvements (10M5), is visualised.
- Protect the upgraded fleet with focused maintenance programs.
- Establish and implement a long-term (>30years) fleet management strategy that includes replacement, upgrades, GO's and maintenance. Any growth in the service schedule can only be accommodated with new vehicles. This strategy should be developed and implemented immediately in order to deliver for the medium term.
- A commitment to the short, medium and long term maintenance funding, which complements the fleet upgrading and replacement strategies.
- Provide fully manned and skilled staff structure through the provision of appropriate training programs.
- Upgrade the level of facilities, tools and equipment.

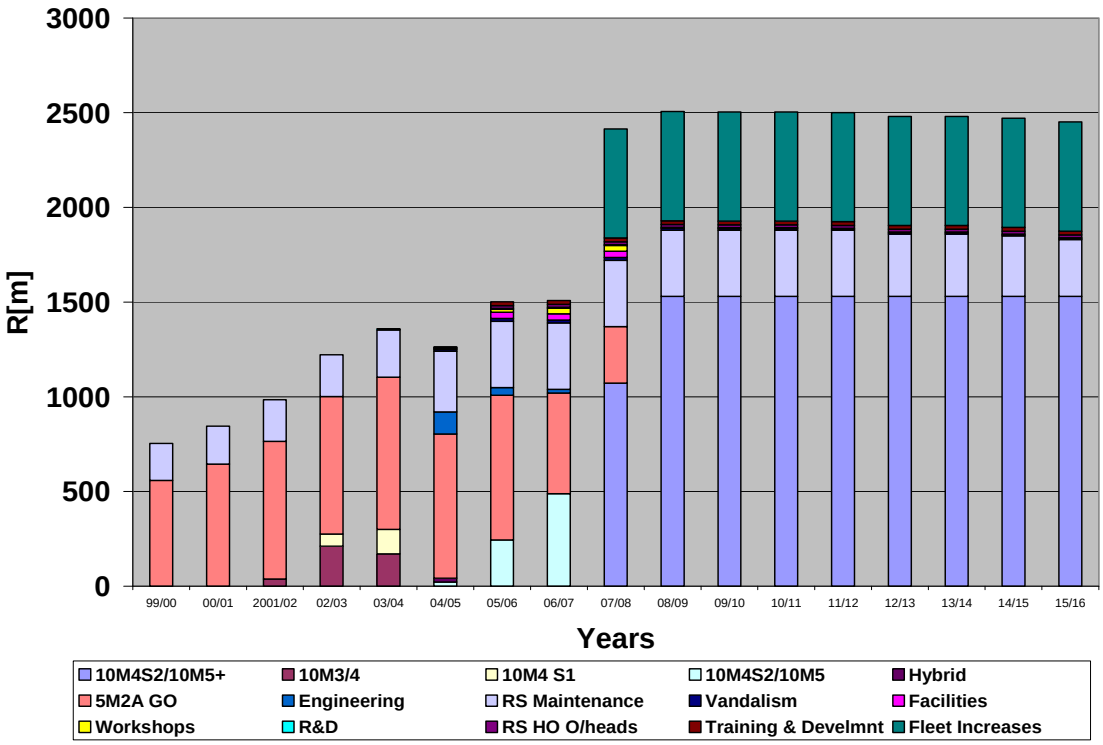
Figure 6.9 below indicates the proposed total rolling stock spending to date as well the implications of the above proposals for the first 10 years of a new rolling stock recovery investment plan. The aim of the programme would be to achieve an operationally and financially sustainable rolling stock fleet. This would not allow for any growth in demand.

The scale of the programme demonstrates the complete inadequacy of current levels of investment to improve the current operational performance situation. At existing levels of investment rolling stock performance will certainly continue to decline. A five-fold increase in investment levels over the present situation is required in order to restore a fully sustainable rolling stock complement and this to serve existing levels of service.

This conclusion is without reference to additional spend on signaling or telecommunications, which also need attention if decline is to be arrested.

The magnitude of the backlog suggests that it may not be feasible to achieve recovery across the entire network. Instead, some sort of prioritisation perhaps by focusing investment only on the busiest rail corridors may be necessary. The implications of such an approach are addressed in the Part 3 – Analysis section of this report.

FIGURE 6.9 POSSIBLE ROLLLING STOCK RECOVERY PROGRAMME



7. REVIEW OF COMMUTER RAIL ASSET DEPLOYMENT, CONDITION AND PERFORMANCE

7.1 Introduction

In contrast with Chapter 6 where the focus was on the affect of asset condition on operational performance, the purpose of this chapter is simply to record the physical condition of each element of the infrastructure. In the case of the rolling stock, details of the available fleet and its deployment across the Metrorail regions are also given.

Because this reporting entails quite technical measures, a general picture only for each infrastructure element is presented here. The accompanying detailed workstream report should be referred to for the detail. The conclusions presented are based on preliminary analysis of available data and are subject to possible review in Phase 2 of this project.

7.2 Rolling Stock

Table 7.1 summarises the rolling stock deployment in the six Metrorail regions. No trainset data is given for East London and Port Elizabeth because they use Spoornet locos for traction.

TABLE 7.1 ROLLING STOCK DEPLOYMENT PER REGION

Region	Number of sets	Coaches per set	5M2A coaches				New Generation		
			Metroplus M/C	Metroplus P/T	Metro M/C	Metro P/T	7M	8M	10M
Wits	96	12	194	287	297	883			
Tshwane	50	12	86	93	143	476			
W Cape	90	8-14	107	187	141	473		96	
Durban					238	629			
E- L						88			
PE						46			
TOTAL	236		387	567	819	2595	0	96	0

Note: This table is not complete owing to unavailability of all the data at the time of reporting.

The total replacement value of the fleet is approximately R54bn, with the current book value at R2.14bn. The low book value reflects the high average age of the fleet, 32 years out of a life of 40 years. It also reflects the severe backlog in General Overhaul maintenance that typically results in a 10-12 year addition to life as well as enhancing the asset value.

7.3 Permanent Way

The condition of the permanent way is measured against the Track Quality Index (TQI). The lower the TQI the better the performance level. Basing of the Index differs per region as a result of differences in inherent track quality imbedded during construction and as a result of the number of turnouts, level crossings and other irregularities.

TQI's are declining in all regions indicating generally improving condition of the permanent way. That this has brought real performance improvements is evidenced by the steep decline in derailments attributable to track infrastructure since 1999.

7.4 Electrical Systems

The electrical infrastructure includes power supply systems for:

- Overhead track equipment and transmission lines
- Traction power substations
- The signalling systems
- EL & P substations
- High voltage cables
- Yard lighting

The overall performance of the electrical assets has improved in recent years. This is a result of investment in mechanised maintenance and the introduction of the EMPAC computerised maintenance management system.

Electrical systems condition is good in the Wits region. It is just short of the 'good' benchmark in Tshwane region. Physical condition is 'fair' in the coastal regions of Cape and Durban/Kwa-Zulu Natal partly because of the corrosive effects of the maritime climates.

7.5 Signals

Several different signalling technologies are deployed across the commuter rail network. These are of different vintages. The older, less sophisticated systems are generally more robust and have longer physical lives. Newer systems may be more reliable and permit safer operation at higher service intensities but typically have shorter lives. As with electrical supply infrastructure, climate has a significant effect on rates of deterioration and consequent maintenance effort.

Compared to rolling stock, signalling infrastructure has a much higher ratio of book value to asset value. This partly reflects the shorter average asset life but also the fact that the safety implications of signalling mean that deferral of maintenance cannot be so readily tolerated as has seen to be the case with the rolling stock.

For this reason backlogs in signalling infrastructure maintenance become acute more rapidly than in other infrastructure elements. The fact that maintenance levels are indeed too low is shown in the rising level of signalling faults in all regions. The impact of this on service performance was recorded in section 6.3.1.

7.6 Telecommunications

Railbound telecommunications assets largely consists of:

- Interface equipment to access Transtel's railbound telecommunications network (e.g. via flexmux's owned by the SARCC)
- Trunking and handheld radios to facilitate wireless transmission over the Transtel network
- Some fibre optic streams that have been installed by the SARCC
- Integrated Communication System (ICS) for provision of passenger information at stations.

The communication services that these systems support are:

7.6.1 Public Address (PA) Systems

While these systems are relatively new (average age: 4-5years), there are several PA systems that are currently not operational.

7.6.2 Display boards

There are several display boards nationally, which are not functioning, as well. This is largely due to problems experienced with the transmission medium and interface modules.

7.6.3 Trunking radios

These trunking radios are a critical issue nationally. Due to their age and the rapidly changing trunking radio technology, the investment in the replacement of the old devices is not effective in maintaining a fully effective system. While funding has been made available for the replacement of the trunking radios, the replacement of these devices was subject to the signing of a Memorandum of Understanding with Transtel. This has finally been signed, thus allowing the project to proceed. The new trunking system will provide medium-term reliability with cellular technology being applied as a back-up to this system.

Due to the poor performance of the trunking radios, several departments nationally have had to replace these devices with the use of cellular phones to ensure that the impact on operations is minimal. Apart from this alternative being very expensive, it is illegal when applied to the safety-critical operations within the railway operating tunnel.

All trunking radio communication is recorded through the voice recorders provided. Cellular conversations are not recorded. There is thus no evidence of the communication/authorisations given when investigating an incident/accident for instance. This is particularly critical since the trunking radio serves as a back-up for providing safe train movements when the signalling system fails.

7.6.4 Voice loggers

Several voice loggers are not working at present – some due to obsolescence and others are just not operational. Further, it is found that those that are operational are not decipherable. A budget allocation of R7M has been confirmed to upgrade the voice loggers nationally.

7.6.5 Back-up system

There is no back-up system for the current network and no or limited redundancy built into the railbound telecommunications system. This has critical operational and safety implications.

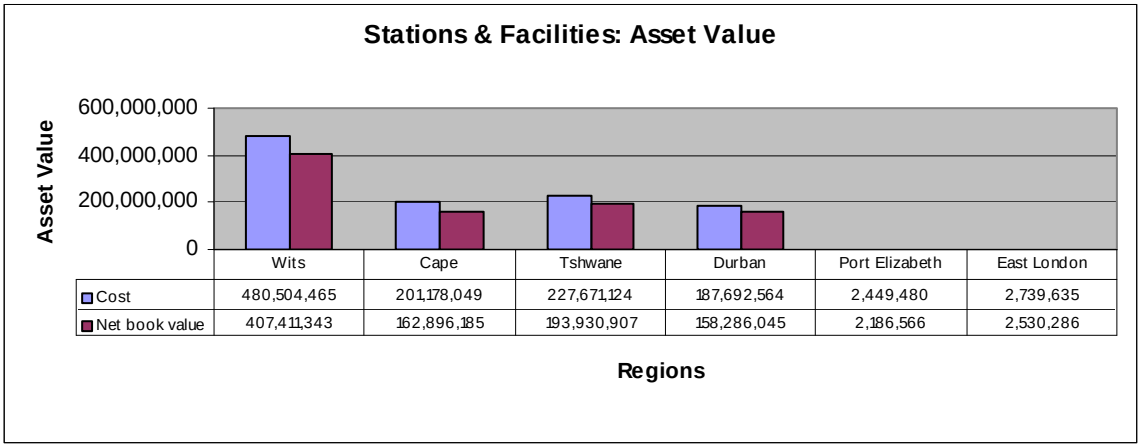
7.6.6 Impact of asset condition on performance

As reported in section 6.3.2, telecommunication failures are responsible for a similar level of operational disruptions as signalling failures; these two elements being the two main infrastructure-attributable causes of such disruption.

7.7 Station And Station-Related Facilities

Of SARCC's 478 stations about 30% represent a well-maintained physical asset with the rest in varying states of repair. Overall these assets have high book value compared to the cost. A problem faced by Metrorail is that a significant number of the stations to which they operate commuter services in all regions are Spoornet owned and maintained and Metrorail is not able to guarantee that safe levels of asset maintenance are being applied. All the Port Elizabeth and East London commuter line stations are Spoornet, not SARCC properties.

FIGURE 7.1 ASSET VALUE AND COST OF SARCC STATION PROPERTIES



Wits region accounts for 36% of all stations and 43% of passenger throughput at stations. The four larger regions account for 94% of stations and 98% of passenger throughput.

8. REVIEW OF LONG DISTANCE PASSENGER RAIL BUSINESS

8.1 Introduction

This chapter presents information that has been received from Shosholoza Meyl (SM). The data is presented as received and without critical analysis as yet. The project team's preliminary view is that the business plan of SM does not accord well with the realities of the market sector which this business currently serves.

The level of subsidy is more likely to increase substantially rather than decrease, as is forecast by SM, if the anticipated growth in patronage (see Table 8.5 below) is to be achieved.

8.2 Business Focus Of Shosholoza Meyl

SM is an operating unit within Spoornet. When the SARCC was created in 1990, the main line inter-city services were left within Transnet in what at the time was a business decision to retain non-loss making services.

However SM's primary mandate is currently to operate social passenger services in the national interest. These services are loss making and require an operating subsidy, the cost of which is currently carried directly by Spoornet. There is therefore no direct subsidy from government.

SM's current strategic focus is to move towards a situation in which operating losses are covered by operating revenues. The strategy to achieve this is to target market segments, specifically the tourist sector, which may require lower levels of subsidy whilst still maintaining a social service offering.

8.3 Market Share

Table 8.1 represents the relative small share that rail currently has of the overall national transport industry.

TABLE 8.1 RAIL MARKET SHARE: APRIL 2004

SA TOURISM NATIONAL TRANSPORT	**%**
TAXI	42
CAR	33
BUS	10
COMBINED MODE JOURNEYS	8
TRAIN	4
AEROPLANE	3
TOTAL	100

Source: SA Tourism

Initiatives to promote growth in tourism and leisure markets, has resulted in growth in the following products:

- Charter Trains (For events; school groups; sports groups; etc.)
- Contract trains (Operate tour package services for / on behalf of Tour operator)
- Group travel on scheduled trains

SM is currently positioned as a provider of basic transport with approximately 87% of passengers travelling sitter class. The business competes in a highly competitive transport market with buses, taxi's, private cars and low cost airlines as major competitors. The revised market positioning focuses not only on transport but also on the experience of travelling by rail with the advantages of on board services, space and ablution facilities. Other product enhancements include the transportation of cars and baggage.

Passenger numbers are forecast by SM to grow from 3.4m in 2003/04 to 3.5m in 2004/05.

8.4 Delivery Structure

At present Shosholoza Meyl has 1 307 vehicles in service including approximately 326 coaches that are used mainly during the peak periods when there is a significant increase in the passenger numbers and 207 coaches used on Charter trains. The rolling stock technology is regarded as obsolete. The total book value of SM assets on Spoornet books is approximately R182m.

The employee compliment for 2003/04 was 896, to be reduced to 775 during 2004/05. The following functions are outsourced on a permanent basis:

- Locomotives – Service Level Agreement with Spoornet
- Train Drivers - Service Level Agreement with Spoornet
- Train scheduling – Service Level Agreement with Spoornet
- Maintenance of the coach fleet – Service Level Agreement with Spoornet
- Station maintenance – Done by Spoornet, Intersite, Propnet
- Telecommunications – Outsourced
- Security – Outsourced
- Cleaning Services – Outsourced
- Sales Agents – Work on commission basis – no employee/employer relationship
- Call Centre
- Tour Operators/Travel Agents – Work on commission basis.

The following staff is not on the SM payroll, but work on SM specific functions and has an annual cost to Spoornet of R75m:

- Rolling stock engineering staff – 13 people
- Rolling stock day-to-day maintenance – 285 people plus 40 vacancies
- Yard officials – 12 people

SM is doing the following in-house functions as part of their business model:

- Booking and ticketing
- On board services

The total passenger coach fleet is on the SM balance sheet. Details of fleet size and recent years' passenger numbers are shown in Table 8.2.

TABLE 8.2 PASSENGER NOs AND SERVICE DELIVERY – 2001/02 – 2003/04

Item	2001/02	2002/03	2003/04
Passengers[1]	3 601 722	3 370 164	3 409 180[2]
Trains operated	8010	6828	6577[3]
Fleet Size	1450	1408	1307
Routes served	12	11	11
Average Occupancy[4]	50%	55%	58%

Notes: 1. Passenger numbers exclude Contract and Charter trains passengers

2. Year to date passenger volumes indicate a 3% growth against 2002/03. This excludes charter trains that reflect growth of 30% in the same period

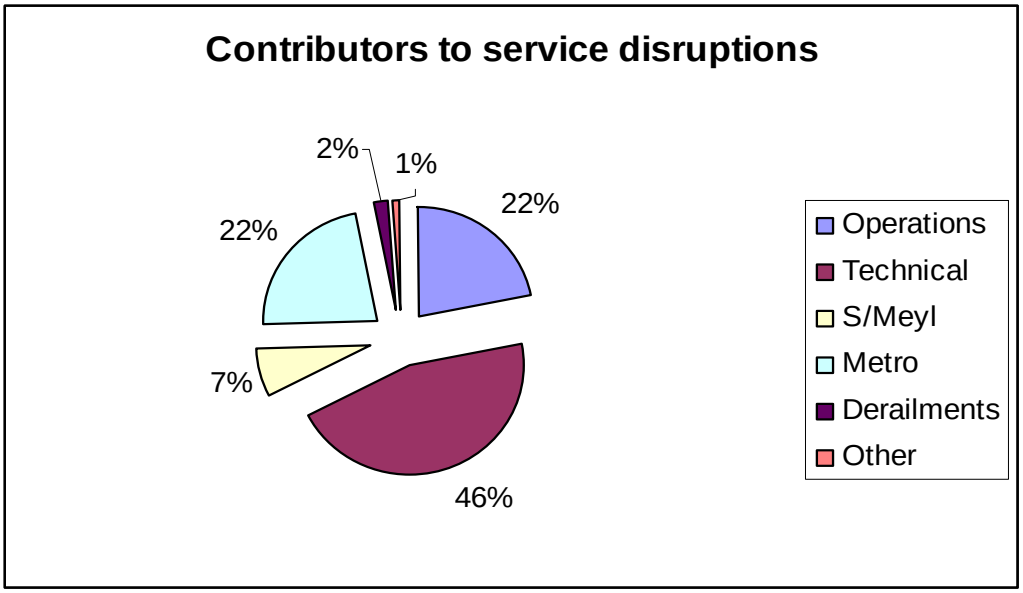
3. New schedules implemented as an efficiency project, resulted in a reduction in number of services operated and a saving of R25m in 2002/03. The Southern Cross service was terminated as part of this project

4. An average capacity of 900 seats per train was assumed

8.5 Operational Performance

Train performance is measured in terms of train punctuality at departure, en-route and arrival. Service punctuality is currently below acceptable standards. The main causes of delays are grouped under "Technical" in Figure 8.1. Speed restrictions on infrastructure primarily maintained for freight purposes are an important contributor.

FIGURE 8.1 SHOSHOLOZA MEYL – CAUSE OF DELAY



8.6 Financial

Details the income statement for financial year 03/04 and budget for 04/05 are given in Table 8.3. The business plan for 04/05 indicates a subsidy need, including Capex as summarised in Table 8.4.

TABLE 8.3 SM INCOME STATEMENT 2003/04 AND 2004/05

ITEM	**Forecast 2003/04 (Rm)**	**Budget 2004/05 (Rm)**
Total operating income	**(288.2)**	**(326.4)**
Personnel costs	104.8	76.4
Energy	1.3	4.1
Materials	4.1	4.4
Depreciation	16.5	14.4
Repairs and maintenance	55.6	67.1
Leases	26.3	33.5
Intra haulage charges	149.5	165.2
Telecom and data costs	5.2	5.4
Other operating costs	69.3	85.0
Total operating costs	**432.7**	**455.4**
Operating (surplus) loss	144.5	129.0
LESS: non-operating surplus items: Incentive bonus Mutual consent package	 0.0 0.0	 0.0 0.0
Finance costs	(0.1)	
Net (surplus) shortfall after finance charges	144.4	129.0
Secondary costs	52.8	67.2
Net (surplus) shortfall after secondary costs	197.2	196.2

TABLE 8.4 TOTAL SUBSIDY REQUIREMENTS

Item	**Year 0 2003/04**	**Year 1 2004/05**
Annual Operating Loss	(197.2)	(196.2)
Capex Requirement per Annum	31.15	100.31
Total Subsidy Requirement	228.35	296.51

A service level agreement (SLA) between Spoornet and SM exists for the line item "Intra Haulage Charges". The following services provided by Spoornet are included in the SLA:

- Provision of Traction with drivers and assistants
- Track access
- Yard officials

Spoornet is claiming that the current haulage charge does not reflect full cost, but costing practises do not allow a more accurate calculation.

The longer-term strategy is to reduce the operating loss before capital expenditure by providing specialist services, such as charter trains with a more favourable pricing structure.

8.7 Capital Requirement

The SM business plan indicates a short, medium and long-term capital requirement as listed in Table 8.5. The capital expenditure requirement is mainly for the refurbishment/replacement of the passenger coach fleet. A comprehensive business case for this investment was presented to the Spoornet board for consideration.

TABLE 8.5 SHORT, MEDIUM AND LONG TERM INVESTMENT PLAN

Item	**Year 0 2003/04**	**Year 1 2004/05**	**Year 2 2005/06**	**Year 3 2006/07**	**Year 4 2007/08**	**Year 5 2008/09**
Annual Operating Loss	(194.7)	(187.2)	(168.2)	(167.0)	(161.9)	(156.1)
Capex Requirement per Annum	31.15	100.31	80.04	81.43	86.04	10.09
Total Subsidy Requirement	225.85	287.51	248.24	248.43	247.94	166.19

DIVIDER PAGE

PART 3: ANALYSIS OF BUSINESS PROSPECTS

Having reviewed the past and current performance of passenger rail transport in South Africa, this part of the report takes stock of the situation and, in preparation for preparing a Business Plan, asks - and answers - the following questions:

- Where does the rail mode perform best in overall passenger transport requirements?
- What strategy for the rail industry is most feasible in financial and socio-economic terms?
- What are the key business requirements for passenger rail to deliver an optimum product?

The purpose of Chapter 9 is to analyse the role played by passenger rail in the various operational regions of the country. The method used is to compare the different routes and corridors that are served by rail in terms of the current and likely future effectiveness of rail as a passenger transport mode.

By establishing in what areas passenger rail performs relatively better, it is hoped that a foundation will be laid for a refocusing of resources. This will contribute to the development, in Chapter 10, of a clear strategic direction for the rail industry; one in which there is clarity about where rail performs effectively and, by implication, where it does not.

Chapter 12 will then establish the basic inputs to a Business Plan designed to deliver an optimised passenger rail product to the country. Eventually, in Phase 2 of this study, this will be tailored to the differing regional circumstances in the country.

9. ANALYSIS OF THE ROLE OF RAIL IN MEETING NATIONAL AND REGIONAL PASSENGER MOVEMENT REQUIREMENTS

9.1 Introduction

Based on the information presented so far in the report, this chapter describes the method used to determine where rail performs best in meeting current and future passenger movement requirements. The approach considers a wide range of factors that affect the present use of the passenger network and which are likely to influence future use. The approach needed to be applicable particularly to the four main commuter rail regions of:

- Tshwane
- Witwatersrand
- Cape
- Kwa-Zulu Natal.

9.2 Multi-criteria Matrix Method Of Analysis

Given the time available in Phase 1, a method was devised whereby the implications of all the information collected could be analysed rapidly in order to arrive at a technically substantiated view on the most appropriate role to be performed by the passenger rail sector in South Africa.

It was not possible to undertake separate analytical studies of the implications of each of the technical disciplines reviewed in Chapters 1-8. Instead, an intensive workshopping approach was devised which allowed for a very concentrated form of technical assessment. This used consultants' professional judgements based on all the information reported in this document together with the collective industry experience that is embodied in the Consultancy team.

Phase 2 of the Railplan project will apply more formal appraisal methods to test and confirm (or otherwise) the findings of the approach used here. The inputs and attitudes of various Stakeholder groups will also be elicited in Phase 2 and incorporated in the Multi-Criteria Methodology.

9.2.1 Appraisal criteria

The workshops applied a detailed matrix analysis to assess all rail corridors in each of the four main commuter regions. For each region, each rail route or corridor was rated on a set of six technical criteria, on a scale of 1-10, the aim being to distil all the important factors that should influence decisions about the future role of rail. By doing this all routes/corridors in a network region can be compared in a transparent manner, showing clearly those corridors on which rail transport most effective as a transport mode. The six criteria used are:

- National and local transport policies
- Rail usage and user attitudes
- All mode travel demand
- Future spatial policies – used as a proxy for future travel demand
- Technical feasibility of maintaining and further developing rail services by route
- Priority in terms of SARCC's own project planning process.

The financial implications of the funding review, from Chapter 2, are considered further in Chapter 10.

9.2.2 Matrix criterion 1 - National and local transport policy

Transport policy as embodied in the Transport White Paper and the subsequent consultation process on MSA is generally supportive of a greater role for rail subject to efficiency improvements for which some form of route concessioning is proposed as a possible way forward. The problem is that this approach has not to date not been fully tested.

Additionally, national rail policy is not consistently reflected in provincial and local transport planning, in particular in the emerging ITPs and IDPs. ITPs do nevertheless have a strong emphasis on a future role for public transport generally as well as for rail in particular.

The Consultancy team believes that, notwithstanding identified concerns, that the available national and local transport policy statements should be given full consideration in analysing what the future role of the passenger rail mode should be.

Socio-economic considerations in relation to the value of rail transport are encapsulated in the national and local policy section. In Phase 2 this is a particular aspect that will need further development, both to test whether stated policies do indeed capture general socio-economic policy priorities, and also to provide better quantification of this dimension.

9.2.3 Matrix criterion 2 - Current usage of the rail network

Current use trends is one indicator of the potential future role of rail. Use of the rail mode has declined very substantially since a peak in the early 1980s. After a slow rise during the 1990s trends are again on the decline although the general trend masks high levels of usage by some communities living very close to rail corridors. Use of course varies greatly according to route and corridor and this has been taken into account in the matrix analysis.

In the matrices latest available daily use figures based on census results are included, together with a technical comment based on knowledge of, for example, intermodal competition on a route, historical use patterns for the route, changing social structure of demand etc.

9.2.4 Matrix criterion 3 - Overall travel demand patterns

In terms of overall patterns of travel demand, it has been shown that rail now has a relatively small share of the total based on household interview surveys. Even on the highest rail usage corridors such as Mabopane-Pretoria and the Soweto-Johannesburg lines, rail's share of public transport demand is considerably less than that of minibus taxis.

The aim of this element of the matrix analysis is to demonstrate that the role of rail transport needs to be seen relative to a much wider picture of transport demand. Patterns of both residential and commercial land use have changed dramatically over the past 20 years in response to sweeping social change and more recently the acceleration in incomes growth. Private cars together with minibus-taxis and buses are able to respond rapidly to these changes with the resultant swing away from rail transport to these other modes.

Figure 9.1 illustrates the outcome of these trends for the Wits region of Gauteng Province. It shows that whilst the Soweto-Jo'burg CBD and Katlehong-Germiston corridors still coincide with rail routes, there are now major routes such as Soweto to Rosebank, Randburg, Sandton City and Midrand that do not coincide with any segment of the existing rail network.

9.2.5 Matrix Criterion 4 - Spatial development frameworks

Revisions to the way in which town planning is carried out in South Africa since the advent of the democratic era mean that higher density development and more compact urban areas are to be sought. Metropolitan authorities seek to give expression to the new approach in their Integrated Development Plans and Spatial Development Frameworks (SDF).

These documents provide a forward-looking statement of preferred nodes and corridors for future development and hence a better framework than previously existed for the planning of future public transport networks. These SDFs have been used to guide the project's assessment of which parts of the rail network are best placed to meet likely future demand.

Figure 9.2 shows graphically the SDF analysis for the Tshwane region. Clearly discernible elements are the 'urban edge', that area within which it is hoped to contain all new development; key development nodes and also some proposed development corridors. The analytical method seeks to identify areas where currently strong rail corridors coincide with areas for planned future development. An area where such coincidence clearly occurs is that to the north and north east of Mabopane/Soshunguve.

Given that the Mabopane-Pretoria North rail route is one of the busiest in the country, this SDF analysis suggests that this is indeed a corridor with potential for future rail development. The matrix result for this corridor reflects this conclusion (see Figure 9.3 – at end of chapter).

9.2.6 Matrix criterion 5 – Technical feasibility of infrastructure enhancement

The Consultants' detailed knowledge of network conditions based on both current data extraction and previous knowledge, have been used to rank rail routes according to the technical difficulty or ease with which they could accommodate sustained or increased levels of passenger rail traffic. This is not a feasibility assessment but a judgement that balanced whether the route has any serious constraints to capacity enhancement with the amount of capital investment that would be needed to improve the condition of the infrastructure.

9.2.7 Matrix criterion 6 – The SARCC's internal network planning

In Chapter 3 the SARCC's internal project planning processes were briefly reviewed. This is a comprehensive process in which projects go through a series of preparation stages before being brought forward for implementation. The SARCC's main criterion for approving new network investments may be summarised as 'the technical and financial efficiency with which a scheme is expected to add new patronage to the network. Typically, incremental extensions to already busy sections of the network are likely to feature highly.

GAUTENG PROVINCE: CITY OF JOHANNESBURG

Metro Council Perspective

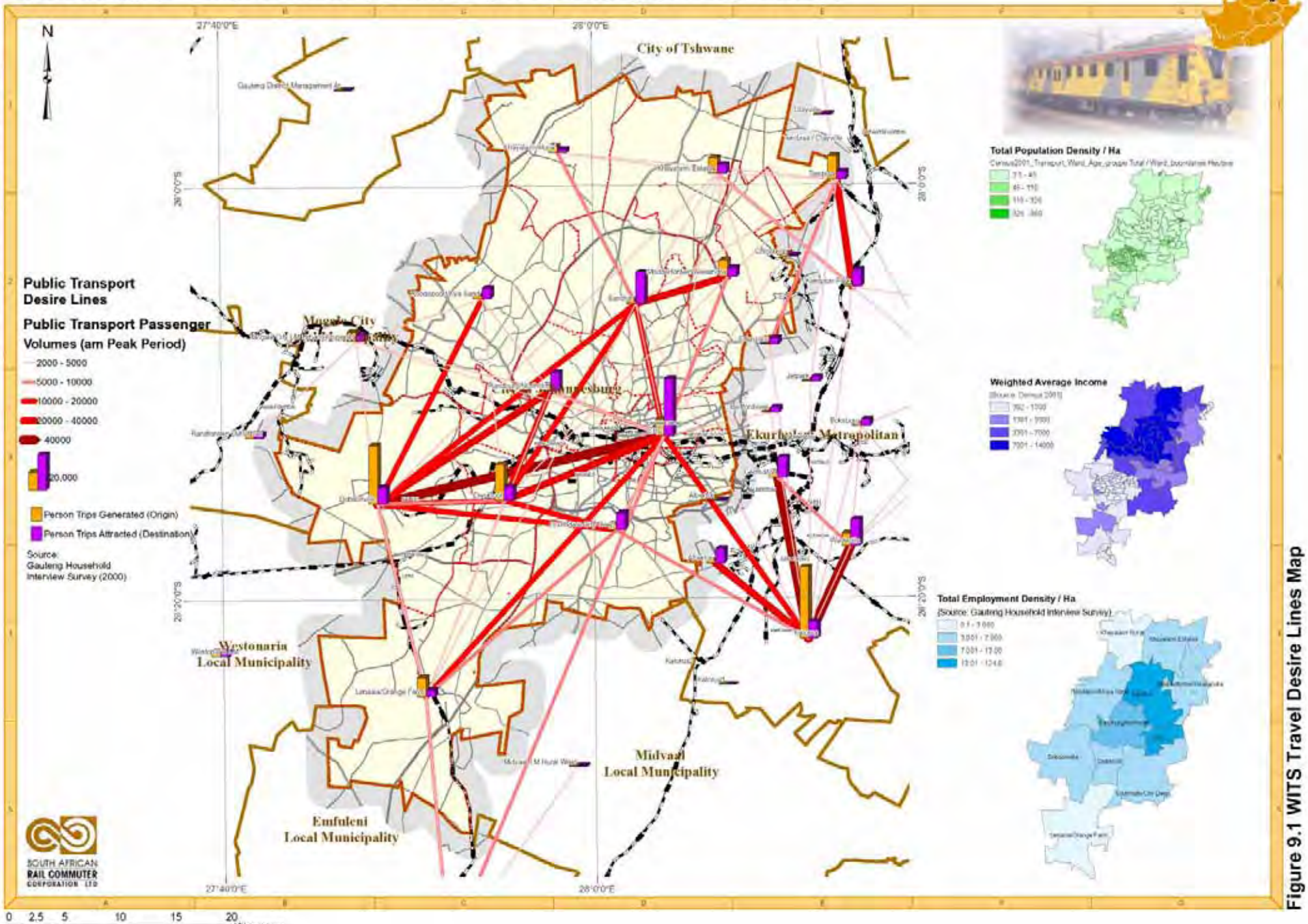
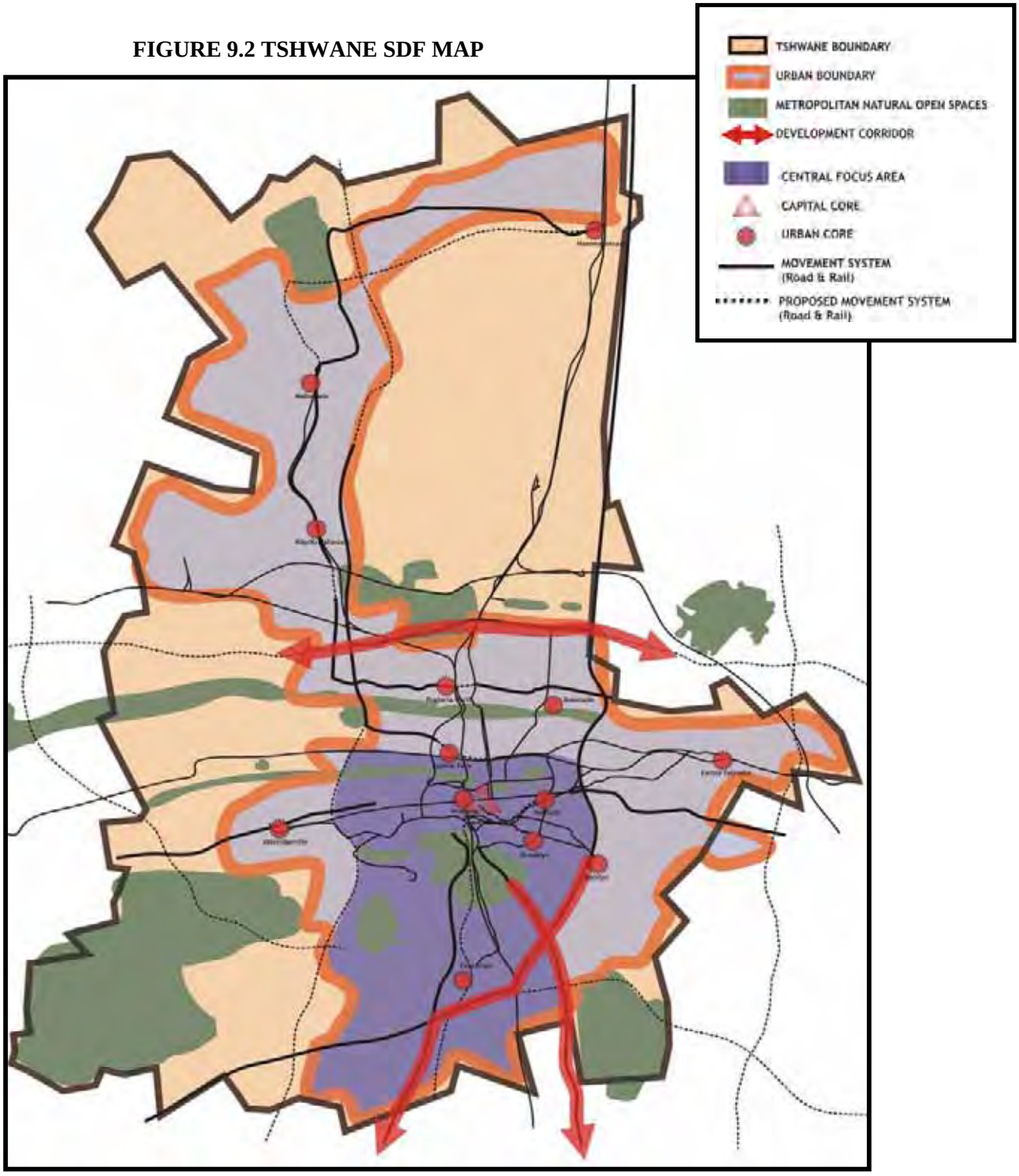


Figure 9.1 WITS Travel Desire Lines Map

FIGURE 9.2 TSHWANE SDF MAP



In the context of the present study, the SARCC approach is regarded as very sound when viewed from within the confines of the rail industry. However, in the context of a study that is asking broader questions about the strategic direction that passenger rail as a whole should be taking, this project-based methodology is best treated as one of the various criteria of analysis.

Consequently, the matrix attempts to reflect, in this criterion, the priority that any enhancement work on a given route would be likely to be accorded by the SARCC itself. An example of where the SARCC planning method coincides with the matrix analysis would be the Mabopane-Pretoria North route. This is rated as the top priority rail corridor in Tshwane by the matrix. It is also known that a northwards extension of this line is a high priority SARCC development.

On the other hand, the project rated third highest in Tshwane region by the matrix is the Pretoria 'Ring Rail' project. Yet this scores relatively low on the SARCC criterion. The reason it is a high priority is that the overall travel demand inside the central area is very high. In addition, the ring rail encompasses a large number of the Tshwane Spatial development Framework's key development nodes. There is therefore a very strong need for this project despite the fact that it does not rate highly in terms of internal rail industry priorities.

9.3 Results Of Analysis – Priority Corridors Identified

9.3.1 Route/corridor prioritisation

Given the evidence of passenger rail performance presented in this report, it may well be necessary for the rail industry to focus its available resources on those routes or corridors where rail transport has a clear comparative advantage. These will be routes on which high volume movement coincides with corridors of preferred future development in line with long term Spatial Development Frameworks, and where there are no serious engineering obstacles.

Figures 9.3-6 summarise the matrix analysis process for the four main rail regions. They show clearly that it is possible to provide a rationally based prioritisation of rail transport routes. The three highest ranked routes for each region are highlighted in the matrices:

Tshwane region priority rail routes/corridors

1. Mabopane-Pretoria North
2. Eerste Fabrieke/Mamelodi Gardens-City
3. Pretoria Ring Rail System

Wits region priority rail routes/corridors

1. Naledi-Johannesburg via Langlaagte, jointly with Tshwane-Olifantsfontein-Johannesburg (incorporating the Tembisa link)
2. Kwesine-Katlehong-Germiston

Cape region priority rail routes/corridors

1. Khayelitsha-Cape Town
2. Kraaifontein-Belville-Cape Town
3. Simonstown-Cape Town

KZN region priority rail routes

1. Kwa Mashu-Durban
2. Umlazi-Durban
3. Kelso-Amanzimtoti-Durban

The results also make clear that there are certain corridors in most of the regions where rail is clearly not offering a service that makes best use of the rail as a commuter transport mode. Examples are: Wellington-Worcester-Bellville in Cape region; Dersley-Dunswart and Springs-Nigel in Wits region or the Stanger-Tongaat section of the KZN coastal rail route.

In between the good and poor routes are routes/corridors that demonstrate varying degrees of suitability as rail passenger corridors.

The Business Plan in Chapters 11-14 takes these considerations into account in setting future development priorities.

9.3.2 Matrix weightings

The matrix tables presented in Figures 9.3-9.6 are base assessments reflecting the separate technical analyses of the various sectoral specialists. This analysis assumes an equal weighting to each of the criteria. In the final analysis decisions based on such analysis may reflect democratic political judgements as to the relative importance of the criteria.

In order to test the sensitivity of the conclusions to weightings, all consultants were asked to weight the six assessment criteria as a share of 100%. The estimates were then averaged, with different weightings produced to reflect short and longer-term considerations. The assessment was then repeated taking the weightings into account.

The result was fairly minor variations in the ranking produced in the base case. No routes corridors that were indicated as being low priority in the base case emerged as high priority, and vice versa. In a number of cases, ordering amongst the top three corridors was changed. In others a fourth ranked came forward into the top three.

An example of a change is in KZN region where the base case indicated the longer distance south coast route of Kelso-Amanzimtoti-Durban as priority three, but in the weighted analysis, this was supplanted by another short distance commuter route, Crossmoor-Westcliff-Durban.

9.4 Implications Of The Analysis For The Railplan

The ability to clearly identify and rank rail corridors according to their suitability for rail passenger operations suggests a possible approach to optimising investment in passenger rail. It is evident that the high-ranking corridors in the matrices are ones where rail transport is more suited. As such, a greater concentration of resources on these routes may be a way to secure better value for money from limited funds available to the rail industry. This line of thought is developed further in Chapter 10.

9.5 Consultation on Matrix Outcomes

Although the matrices do show that priority corridors can be identified in each region, this analysis should not yet be regarded as definitive for policy purposes. In Phase 2 of the Railplan project, this work will be subject to detailed consultation with relevant regional authorities and also checked against latest available traffic data for the various routes.

FRAMEWORK FOR SECOND CONSULTANTS' WORKSHOPPING SESSION, WEDNESDAY 02 FEBRUARY 2005

ANALYSING THE 'ROLE OF RAIL': TSHWANE - NORTHERN GAUTENG NETWORK REGION

	ANALYTICAL FACTORS IN DETERMINING SUITABILITY OF CORRIDORS/ROUTES FOR SUSTAINING AND ENHANCING A RAIL PASSENGER SERVICE - (# = score 1-10)													
TRAVEL CORRIDORS	**National /Provincial/ITP policies**		**Current use and user requirements**		**Overall travel demand patterns**		**Spatial planning perspective on future travel demand**		**Feasibility of enhancing service specification**		**SARCC network planning approach**		**TOTAL**	**RANK**
	Comment	**#**	***Comment***	**#**	***TOT PEAK PERIOD AM PASS (6H00-9H00)***	**#**	***Comment***	**#**	***Comment***	**#**	***Comment***	**#**		
Existing rail routes														
De Wildt - Wintersnest	Nothing specific at national & provincial level. Integration and corridor approach. ITP issue	6	2nd lowest usage of the 5 legs into ring rail - 8000 pph (AM).Service capacity is low	4	4800 (Excl external zones to west of CTMM boundary - will update)	1	- Corridor is narrow, all falls outside urban edge. Akasia spreading north into corridor.	5	Current service is 1% of all services in Tshwane (incl. Mabopane). Line utlisation is 31% (AM Peak hour?) so there is more potential for service capacity increase. Service level, fare evasion etc not considered. Some consideration of previous infrastructure upgrades.	7	Not rated highly from as network expansion perspective. Planned new station on line at Rosslyn	4	27	
Mabopane - Pretoria North	As above but within urban edge - included in ITP and in the Provincial Strategic Public Transport Network	8	By far largest commuter corridor in North Gauteng - 18,000 pph at peaks	10	40000	5	Within urban edge - rapid development occuring with densification. Scope for increase in no. of users	10	Current service is 44% of all services in Tshwane (incl. Mabopane). Line utlisation is 31% (AM Peak hour?) so there is more potential for service capacity increase. Service level, fare evasion etc not considered. Some consideration of previous infrastructure upgrades.	6	Signifcant no of initiatives (5 new stations and line extension and possible new link to Babalegi). Possible network requirement between Akasia Boom and Pta North	10	49	1
Saulsville/Attridgeville - city	As above, within urban edge and included as a primary route in the provincial and municipal networks	7	**Number of passengers lower than anticipated**	4	29300	4	High priority - infill development within urban edge and near CBD.	10	Currently contributes to 24% of Tshwane train service. Capital required to upgrade/replace signalling cables. Supply failure alarms and alternate supply feeds required to improve reliability	5.8	Proposal to extend existing line. Prelim design required to integrate with development planning	5	35.8	
Germiston/Olifantsfontein - city	As above, within urban edge. Important provincial inter-municipality corridor. Included as a primary route in the provincial and municipal networks	7	Low number of passengers. Market not captured.	5	7100	1	Regional commuter link - no intensive land use adjacent. Limited potential for intensification of land use.	5	Additional 44kV line needed. Signal cable replacement required	6.4	Proposals for additional stations to serve loca developments	4	28.4	
Eerste Fabrieke /Mamelodi Gardens - City	As above, within urban edge, within short-distance travel.Within urban edge and included as a primary route in the provincial and municipal networks	8	Low service levels may result in low patronage	5	40300	5	High priority - infill development within urban edge and linking with ring rail.	10	Current service 14%.Additional 44kV line needed.	7	Additional stations extension of service to serve Mamelodi to the east and north of Mamelodi Gardens	10	45	2
Pietersburg/Hammanskraal* - Pretoria North/city	Long-distance not adequately dealt with in policies and PLTF. However, policy to uplift rural areas.	4		3	**Need to check external zones**		Medium priority - limited short term land use development immediately around rail.	5	Current service 14%.Additional 44kV line needed.	6	Re-instatement of Hammanskraal service	6	24	
Pretoria Ring Rail System	Accentuated in ITP and in Provincial PLTF	10	Current use low due to low patronage numbers. High potential	4	99000	10	High priority - within urban edge around CBD.	10	No Metro Service. No SARCC Infrastructure. Pretoria North to City rated	6.5	Proposals aimed at improved operations	4	44.5	3
Rainbow Junction Development	Not in PLTF or national policies, but supported by 2010 Soccer Bid. Being included in ITP.	5	Demand not known	5			Medium priority.	7	Fairly good condition	8	No specific proposals as area is well served by rail. Input made to Rainbow Junction initiative to	0	25	

FIGURE 9.3 TSHWANE BASE MATRIX

FRAMEWORK FOR SECOND CONSULTANTS' WORKSHOPPING SESSION, WEDNESDAY 02 FEBRUARY 2005

ANALYSING THE 'ROLE OF RAIL': WITS COMMUTER RAIL REGION

	ANALYTICAL FACTORS IN DETERMINING SUITABILITY OF CORRIDORS/ROUTES FOR SUSTAINING AND ENHANCING A RAIL PASSENGER SERVICE - (# = score 1-10)													
TRAVEL CORRIDORS	**National /Provincial/ITP policies**		**Current use and user requirements**		**Overall travel demand patterns**		**Spatial planning perspective on future travel demand**		**Feasibility of enhancing service specification**		**SARCC networkp lanning app roach**		**TOTAL**	**RANK**
	Comment	#	***Comment***	#	***Comment***	#	***Comment***	#	***Comment***	#	***Comment***	#		
Existing rail services														
Naledi - JHB (via New Canada - Langlaagte) [SOWETO 1]	The Naledi - JHB Service is known as the Soweto Service and is politically well accepted as important. Also in JHB ITP	8	93000 Passengers per day, second highest in the Wits Region	8	68600	7	Within edge - main desire line - high priority	10	JHB station to be resignalled. Replace traction equipment and rebuild JHB substation. Rectify platform heights and clearances	5.6	Initiatives include linking of Naledi to New Canada via Durban Roodepoort Deep	8	46	=1
Naledi - JHB (via Booysens - George Goch) [SOWETO 1A]	Remainder of the Soweto Line	8	12000 Possibly not as prominent as Soweto Naledi via Langlaagte line	4	68600	7	Within edge - main desire line - high priority	10	New Canada to be resignalled. Lawley to be reisgnalled	6	Same evaluation as above	8	43	
Vereeniging - Lenz - JHB [SOWETO 2]	Second line running through Soweto, linking to Vereniging. Soweto has priority, but the Vereniging - Joburg Service with lower priority	5	66000 One of the highest longer-distance services	7	75000	7	Medium Term Corridor busy developing	5	Replace 6.6kV line	5.4	Proposals to provide additional commuter stations	9	38	
Randfontein - Langlaagte - Joburg	Well established corridor, included in PLTF and prominent in West Rand and Jhb ITPs	6	27000 Used to carry much more passengers, and has potential to be successful again.	6	4000	1	High priority - within east-west corridor	10	Germiston needs to be resignalled	5.4	Links to serve Kagiso etc.	3	32	
Oberholzer - Waterworks - New Canada - Joburg (minor service)	Basic only peak service, not really supported by current policy or planning	3	5000 Very limited service, which could possibly be operated by other mode of transport	3	Not Available - Assume Trips<4000	1	Low Priority	3		5.6	Proposal for additional stations	3	19	
Alberton - Germiston (minor service)	Policy would support this type of service in urban area, However would not work as low-frequency service where alternatives exist	7	1000 Could possibly be served by other mode of transport	1	5500	1	Short distance - no spatial function	4	Germiston needs to be resignalled	5.4	Proposal to link to Wattles station	2	21	
Vereeniging - Meyerton -Germiston (via Kliprivier - Natalspruit)*	Supported in policy, although not strongly supported	5	21000 Relatively low patronage for this type of service	5	1800	1	Long term ±30 Years Low Priority	3		5.6	Proposals for additional stations as well as link to Kwesine	4	24	
Kwesine - Katlehong - Kutalo - Germiston	This service is supported in policy, but this was a target of disruption during the time before the 1994 elections	6	22000 Lower than expected patronage on route with strong taxi competition	5	110600	10	High priority - disadvantaged community within edge	10		5.8	Numerous proposals to extent rail southwards to serve Katorus area	8	45	3
Tshwane - Olifantsfontein - (Thembisa) - Germiston	This is one of the main Gauteng corridors, and has been included as a strategic corridor supported by Ekurhuleni Metropolitan Municipality	9	102000 The corridor with most patronage in Metrorail Wits area. (Combination of two services	10	37000	4	Long distance strategic link within edge	8		5.6	Proposals for additional stations as well as Ivory Park loop line	9	46	=1
Daveyton - Germiston (via Dunswart)	Forms part of important corridor, selected by Ekurhuleni as important	7	27000 Relatively high patronage, although lower than expected. Competes with taxis.	6	33000	4	High priority - disadvantaged community within edge	10	Suspended cable run to be replaced. Replace interlocking and NFG panels	5.6	Proposals to extend Daveyton line into Etwatwa	9	41	
Dersley - Dunswart*			n/a			1	Low intensity development area: medium term	6		5.4	No proposals	0	12	
Springs- Germiston - Joburg	One of the main corridors in Gauteng, underutilised but promoted in ITP and in PLTF	8	57000 High patronage on service that lost most of its first class patronage. Important future corridor with potential to expand again.	8	13600	2	Strategic east-west link - important	10		5.6	No proposals	1	35	
Springs - Nigel - Jameson Park* (minor service)	Not strongly supported in PLTF or ITP	3	4000 This is a low frequency service, and competes unfavourably with other modes	2	3700	1	Low intensity use - medium term	5		5.4	No proposals	0	17	

FIGURE 9.4 WITS BASE MATRIX

FRAMEWORK FOR SECOND CONSULTANTS' WORKSHOPPING SESSION, WEDNESDAY 02 FEBRUARY 2005

ANALYSING THE 'ROLE OF RAIL': WESTERN CAPE COMMUTER RAIL REGION

	ANALYTICAL FACTORS IN DETERMINING SUITABILITY OF CORRIDORS/ROUTES FOR SUSTAINING AND ENHANCING A RAIL PASSENGER SERVICE - (# = score 1-10)													
TRAVEL CORRIDORS	**National /Provincial/ITP policies**		**Current use and user requirements**		**Overall travel demand patterns**		**Spatial planning perspective on future travel demand**		**Feasibility of enhancing service specification**		**SARCC network planning approach**		TOTAL	RANK
	Comment	#	***Comment***	#	***Comment***	#	***Comment***	#	***Comment***	#	***Comment***	#		
Existing rail travel routes														
Khayelitsha - Cape Town (incl Kapteinsklip - Philippi)	Included in provincial PLTF and in terms of national policy. Being extended	7	177000 This is the combined patronage of more than one service. However it does show how large this is in comparison with the others.	9	60600	10	Very high priority - within corridor - disadvantaged communities	10	25% of service. Peak hour: 67 % of signalling capacity used	6.8	Extension of line and links to other lines	9	**52**	**1**
Kraaifontein - Bellville - Cape Town (via Thornton and Monte Vista)	Provincial corridor of importance, included in ITP	6	32000 Relatively high passenger numbers for this type of service	6	19000	4	Part of Belville-Strand Corridor: Very important	8	Cape Station to be refurbished. Windermere signalling to be replaced. Belville and Woodstock need to be refurbished	6.4	Various proposals including additional lines and stations	8	**38**	**=2**
Simonstown - Cape Town	Corridor of importance in provincial documents	7	51000 Relatively high patronage for this type of service	8	7900	2	Declared corridor up to Retreat - very important	8		7	Additional capacity requirements	6	**38**	**=2**
Retreat - Cape Town	Metropolitan corridor	5	26000 Relatively large number of passengers	6	11100	2	Not part of corridor system	6		7		3	**29**	
Bellville - Sarepta - Langa - Cape Town (including Pinelands link)	Provincial corridor	6	26000 One of the larger passenger volumes	6	18200	3	Serves industrial areas - not a corridor	6		7	No proposals	0	**28**	
Worcester - Wellington - Bellville	Long-distance service mainly for Shosaloza-Meyl	6	n/a	4	n/a	1	Outside urban edge - low priority	4		5.2		1	**21**	
Muldersvlei - Stellenbosch - Eerste Rivier - Bellville	Long-distance commuter	6	15000 Relatively large numbers for this type of service	5	n/a	1	Outside urban edge - low priority	4		5.6	No proposals	0	**22**	
Strand - Bellville	Service under-utilised, but has potential for growth in terms of planning	6	18000 Relatively high number of passengers for this type of service.	5	5700	2	Part of Belville-Strand Corridor: Very important	8	Mechanical signalling to be replaced	5.6	New stations proposals, etc	6	**32**	
Malmesbury - Bellville	Not high priority in local planning and policy	5	n/a	5		1	Outside urban edge - low priority	4		6.2		2	**23**	
Other routes - currently non - (pax) rail														
'Blue Downs link' (new rail link to Khayelitsha line to Belville - Strand line)	High importance in terms of previous planning	5		0	15800	3	Important link - also highlighted in SDF	7			New link to Belville - Strand line	7	**22**	
Philippi - Southfield new rail link	Not much emphasis in local planning	3		0	34000	6	Low priority i.t.o. SDF	5				6	**20**	
Atlantis - Mutual - Langa (new connection + introduction of pax service on existing Atlantis freight only line)	Not much emphasis in local planning	3		0	9100	2	Declared metropolitan corridor - low intensity land use surrounding - long term	7				7	**19**	
Khyal/Nyanga/Gug-Belv/Airp/DbnV					25200	5						7	**12**	

FIGURE 9.5 CAPE BASE MATRIX

FRAMEWORK FOR SECOND CONSULTANTS' WORKSHOPPING SESSION, WEDNESDAY 02 FEBRUARY 2005

ANALYSING THE 'ROLE OF RAIL': KWAZULU-NATAL COMMUTER RAIL REGION

	ANALYTICAL FACTORS IN DETERMINING SUITABILITY OF CORRIDORS/ROUTES FOR SUSTAINING AND ENHANCING A RAIL PASSENGER SERVICE - (# = score 1-10)													
TRAVEL CORRIDORS	National /Provincial/ITP policies		Current use and user requirements		Overall travel demand patterns		Spatial planning perspective on future travel demand		Feasibility of enhancing service specification		SARCC network planning approach		TOTAL	RANK
	Comment	#	*Comment*	#	*Comment*	#	*Comment*	#	*Comment*	#	*Comment*	#		
Proposed weightings														
Existing rail services/routes														
Kwa Mashu - Durban	Commuter Service, which has the opportunity to be improved.	6	36 900	5	24900	7	High Priority Corridor within edge	10	Poor track quality on the North Coast section. Umgeni signalling needs to be recabled.	5.8		10	44	1
Stanger - Tongaat - Durban*	Somewhat of an inter-city service	5	45 400	5	6600	2	Long distance high priority: Outside edge	8	Poor track quality on the North Coast section. Umgeni signalling needs to be recabled.	6		0	26	
Durban - Amanzimtoti - Kelso	This is a long-distance inter-city service	5	99 200	9	8200	3	Long distance high priority: Outside edge	8	Fibre mast poles to be replaced.	6.6		6	37	=3
Pinetown - Durban	Longer-distance service	6	58 000	7	8000	3	High Priority Corridor within edge	10	Mechanical signalling to be replaced. Mast poles to be replaced.	5.2		0	31	
Cato Ridge - Durban*	Inter-city service	6	69 600	7	?? Arup est. rating for now	3	Long distance outside edge: Low Priority	6	Mechanical signalling to be replaced. Mast poles to be replaced. Spoornet track quality	6.2		2	30	
Crossmoor - Westcliff - Durban	Commuter Service	7	77 100	7	16900	5	High priority corridor within edge	10		6.8		0	36	
Umlazi - Durban	Typical Commuter Services	8	108 900	9	?? Arup est. rating for now	5	High Priority Corridor within edge	10		7.2		0	39	2

FIGURE 9.6 KZN BASE MATRIX

10. THE CASE FOR RAIL – A PROPOSED STRATEGY

10.1 Introduction – Strengths And Weaknesses Of Rail

An important function of a Business Plan is to make the case for commuter rail in the context of other, competing calls on national resources. The fact that it is actually necessary to make such a case is amply supported by what has been reported thus far. Key facts to consider are:

- Rail accounts for a relatively small and declining proportion of passenger movements;
- Rail fare revenues cover, on average, 40% of total operating expenditure;
- The taxi re-capitalisation project may further reduce the market share of other modes;
- There are many routes on the network where the role played by rail is very limited;
- The institutional structure of the industry makes for inefficient rail service management;
- Rail is less efficient financially than the other subsidised transport mode namely buses;
- The huge backlog of maintenance of the infrastructure is severely hampering operations;
- Recent increases in capital investment are insufficient to improve service efficiency.

It is clear from this that unless prompt, focused and urgent action is taken, commuter rail could become increasingly unattractive for government to support, despite its aim of making commuter rail the "preferred mass mode of public transport in South Africa" (SARCC Annual Report 2002).

There are nevertheless a number of positive factors that could help in making a case for rail:

- Some national and local policies are strongly in favour of public transport including rail;
- Rail can have a strong, long term stabilising effect on land use patterns;
- Subsidised urban public transport is the norm in most countries of the world;
- Some communities close to rail corridors are highly dependent upon rail transport;
- Rail is still the dominant mode of public transport in the Cape network region;
- It is possible to identify corridors in all regions where rail does still play a major role.
- On high volume corridors (>30,000 pax/day) rail should be the most efficient mode.

All of these factors need to be balanced in order to arrive at the overall strategy that will give direction to a Passenger Rail Business Plan. In the rest of this chapter three such options are described. The likely costs and benefits of each are drawn out. One strategy is then proposed as being the recommended basis for the Passenger Rail Business Plan.

10.2 Criteria For Developing Strategy Options

Because of the conflicting nature of some of the factors, a number of strategic options have been developed to reflect responses to different aspects of the above conclusions. The key parameters that have been used to inform the choice of options are:

- National socio-economic priorities;
- Network expansion in support of land use densification policies;
- Public finance value for money;

- Technical capacity/resource availability;
- Business and operational efficiency.

10.2.1 National socio-economic priorities

As well as having to meet normal public finance efficiency tests and minimum cost-benefit criteria, all major public sector investment projects should be tested for their contribution to nationally agreed social objectives such as poverty alleviation, social equalities, and benefit to previously disadvantaged communities.

The subsidised passenger rail network does provide a lower cost alternative means of transport to large numbers of people, notwithstanding the fact that the majority of people on most routes, have opted to use other transport modes. The general picture of a low market share for rail masks the fact that there are many communities located close to the rail network for whom rail transport is the mode of choice, and in some cases the only available transport option.

A further consideration from the social perspective is that the retention of as many rail services as possible meets a consumer demand for a range of options. Dependency on only one mode of transport can sometimes constitute a significant degree of social risk.

10.2.2 Network expansion in support of land use densification policies

Densification of land use is an explicit objective of the Development Facilitation Act and also the NLTTA. This objective is now being embodied in local policies in terms of IDPs, ITPs and regional Spatial Development Frameworks. The main aims of densification policies are to reduce unit costs of bulk service provision and to make public transport systems more viable.

As was pointed out in Chapter 3, (section 3.2.3) rail transport has the potential to contribute significantly towards the restructuring and revitalisation of the South African urban environment as envisaged in the legislation mentioned. Amongst the ways mentioned in Chapter 3 that rail could contribute are that it could:

- Serve as stimulus to promote high density, mixed use development in the urban fabric;
- Promote the development of vacant land along rail routes in the urban area;
- Support the development of new more sustainable, higher density residential communities.

These factors would require serious consideration prior to any major change in the existing rail network being contemplated. Even parts of the network that are presently underutilised could form part of the means of providing access links to new communities. Such opportunities could well be lost if precipitate action were taken for example to close parts of the network.

10.2.3 Public finance value for money

Even where a public sector investment objective is clearly in line with stated socio-economic and development policies, it is still part of the statutory duty of government to seek good value for money.

Government may feel that they do not achieve sufficient value for money for rail given current funding levels and the use thereof. Capital spend on heavy maintenance of rolling stock is now so far behind schedule that the operating entity is hard pressed to support even the recently reduced level of services. Recovery from this position has been shown to require a four to five fold increase in spend, sustained over a period of about 10 years (Figure 6.5).

Questions have to be raised over the amount of public expenditure that this mode of transport warrants and this is part of the purpose of the National Rail Passenger Plan.

10.2.4 Technical capacity/resource availability

Both within the rail business entities themselves and the external rail supply industry this report has recorded that there are serious shortages of several key skills needed to sustain a railway industry. Part of the reason for this is that good staff have been attracted to employment that is higher paying and which offers better working conditions than can be offered in the rail industry. Many qualified signalling staff have taken up posts in the railway industries of other countries in Europe or Australia.

Any strategic option that may envision significant short term growth in the passenger rail sector will need to face up to this important constraint.

10.2.5 Business and operational efficiency

It has been argued in this report that the existing operating agreement between Metrorail and the SARCC does not promote prudent business management or operational efficiency. If this problem is not addressed, then even unlimited investment funds would not save rail from continued decline in efficiency relative to competing modes of transport.

The Consultancy team is aware of the institutional changes that are proceeding to bring Metrorail under the umbrella of the national DOT and, initially at least, into a corporate union with the SARCC. Any future rail strategy will require effective, efficient business management. Further comment is made on these matters in Chapter 16. For now, it is important simply to note any improvement in delivery of services will be hindered if organisational reform is unsuccessful.

10.3 Defining The Options

In the light of the parameters considered, three strategic options for the future of passenger rail have been developed. The selected options are designed to optimise on one or more of the above criteria:

- 'Full Recovery' – optimising on operational integrity and socio-economic objectives;
- 'Limited System' – optimising on public finance efficiency;
- 'Priority Rail Corridors' – seeking to build on rail's strengths, by optimising on the business and operational efficiency criterion, as well as spatial development policy objectives, while recognising resource constraints.

10.4 'Full Recovery' - restore the whole network to full efficiency

This option would make the case that from a social development point of view it is essential to restore the whole existing passenger rail infrastructure to properly benchmarked operational levels, as soon as possible. The point of departure is thus that rail has an obligation to serve all urban communities – even in those areas where it is not economically viable.

The option is by far the most expensive of the three. The overall cost is estimated to be in the order of R10 billion per year for at least 10 years. A comprehensive programme of rolling stock renovation as described in Chapter 6 would dominate the cost profile. In addition there would need to be investment to fully restore signalling performance and upgrade systems where necessary. The rail telecommunications systems also requires considerable investment to achieve at least minimum modern technological benchmarks.

Table 10.1 provides an estimate of the make up of the annual costs.

TABLE 10.1 'FULL RECOVERY' – ESTIMATED ANNUAL COSTS (OVER 10 YEARS)

Item	Annual Cost
Recovery programme – existing rolling stock	R2.5 billion
Procurement of additional rolling stock to ensure full service coverage during renovation period and to provide for some patronage growth	R2.0 billion
Signalling and telecommunications systems repairs and upgrade	R0.5 billion
Operating costs including sufficient maintenance spend to keep infrastructure in benchmark condition	R3.5 billion
Network extensions in support of higher density new settlements	R1.5 billion
TOTAL	R10.0 billion

10.5 'Limited System' – retain only near-commercial services

This option responds most directly to public sector financial value for money concerns. By carefully comparing rail's operational performance with that of other transport sectors this option would involve advising government how much it is worth investing in the rail sector.

A crucial consideration would be whether there is any prospect of improving on current value for money ratios in the rail sector. In arriving at a conclusion on this it would be important to note that the relative inefficiency of the rail transport mode is not simply the product of poor management or inappropriate institutional structures. It is rather that the technology of the rail mode is intrinsically capital intensive. Even if management and institutional arrangements were optimised rail will remain a very expensive, technologically complex, mode of transport.

To highlight this last point it would be noted that, in contrast with road-based public transport modes, rail operations are dependent upon at least six technical systems working in concert:

- Permanent way – including civil structures and the track;
- Power supply – usually electrical systems;
- Signalling – in which modern technologies have shorter not longer life than older systems;
- Dedicated/Railbound telecommunication systems;
- Rolling stock;
- Stations.

In addition to all this there are the operational and management staff issues, and organisational and planning functions that are a much more significant consideration in the rail industry than they are in the road-based sectors of public transport provision.

An option that optimised on public finance value for money would ask the question: 'what sort of passenger rail network could offer acceptable levels of public investment when compared to other modes of transport?' An answer would probably include the following elements:

- Only routes that recover above an agreed high proportion of operating costs should be retained;

- Rail services should not be offered on routes where other modes of transport already offer significantly better value for money than rail;
- Rail services should be supported on social grounds only when the cost (including external costs) of making alternative transport provision to rail would be prohibitive.

Strict application of these principles would involve closure of a substantial proportion of the existing passenger rail network. Although the necessary detailed work has not been undertaken in Phase 1, it is possible that this option would result in a network comprising no more than the following lines:

- Three or four of the Western Cape network routes;
- The Soweto-Johannesburg lines;
- The Tembisa-Germiston line;
- The Kwesine-Katlehong-Germiston line;
- The Mabopane-Pretoria line;
- The Mamelodi Gardens-Pretoria line;
- The KZN coastal commuter line only.

As well as the many line and service closures, this option would also necessarily involve a large number of retrenchments. On the other hand, a network comprising only the above services would offer the opportunity for reduced government support to the sector, possibly limiting the subsidy level to around two thirds of the existing level, say R1.5 billion per year.

Services on the retained lines could be capable of interesting private investors on a concession basis with the scope for reducing subsidy even further. Given the already high and potentially higher patronage on these routes, there might also be scope for raising private funds for rolling stock refurbishments via PPP deals, in conjunction with operating concession agreements.

A risk associated with this strategy is that it would permanently foreclose, or at least make very expensive, any subsequent decision to reinstate closed lines or otherwise extend the network in the future.

10.6 'Priority Rail Corridors' – focus resources where rail performs best

10.6.1 The 'comparative advantage' of passenger rail

This option would apply the economic theory of comparative advantage to argue that each mode of transport will offer best value for money when it confines its business offer to services for which its technology is most suited. The implication of this approach is that a better overall transport industry product can be achieved even if rail is still running services where, in absolute terms, taxis or buses might be able to offer a less expensive alternative.

It will involve identifying the routes/circumstances to which each mode of transport is best suited. This has been done in some detail for rail using the matrix approach in Chapter 9. There it was shown that rail routes could be quite readily, and robustly, ranked according to the effectiveness on a range of criteria.

The Priority Rail Corridor Strategy could also support urban restructuring and urban regeneration initiatives in the selected priority corridors. The integration of land use and transportation would therefore be an essential element to this approach.

10.6.2 Priority Rail Corridor strategy depends on integrated transport planning

This strategy would add most value in the context of a fully integrated approach to passenger transport planning. A similar form of analysis would need to be undertaken for the other transport modes in order to identify routes that suit the bus mode relatively better than other modes and the same for the minibus-taxi mode.

A very basic approximation to a network served on the basis of this approach would be a division of passenger transport tasks by distance, with minibus taxis handling, for example trips of 5-15km; local buses 10-25km and commuter trains 20-60km. In reality, historical and geographical factors would influence which corridors are better suited to a particular mode

The policy document, 'MSA' pointed in a similar direction to this in its advocating that transport services should be offered by the most appropriate mode for each transport corridor.

This option would involve acknowledging that there are different categories of rail corridor:

- Ones on which rail services should no longer be provided because demand is unrealistically low given the high fixed cost of even a minimum service level;
- Others on which it is not reasonable to maintain more than a very basic level and quality of service;
- Still others where considerable demand exists but where competition from other modes means that rail will never be the mode of choice; and finally
- Routes where rail ought to be able to win market share back from other modes, given appropriate improvement in service levels and reliability.

10.6.3 Differential maintenance intensities and service level specifications

Implementation of this approach will require careful analysis of all routes in each region and their categorisation into ones to which different levels of service and different intensities of maintenance would be applied. In order to this there will need to be a higher level of sophistication in both operational and route specific financial performance monitoring than is possible at present.

There would also need to be sufficient business independence within the industry for decisions to be taken about the investment implications of such categorisation. Unless industry management is in position to rapidly implement decisions and make changes as necessary, this approach will remain theoretical. This would include reduction or termination of services on the routes or corridors where it is clearly inefficient for rail to offer a service/service level.

A mechanism would need to be developed for tailoring the maintenance effort to the proposed operational intensity. This would need to be supported by prioritisation in operational planning. Figure 10.1 outlines what such operational prioritisation would look like in practice.

The approach would require similar analyses to be undertaken of other modes so that an integrated, economics-based perspective is applied to all of public transport service provision.

10.6.4 Cost of a Priority Rail Corridor Strategy

The cost of this option would be significant with considerably increased capital investment. This would be focused primarily on the corridors where it is judged that rail should be able to regain market share in the short term and proven estimated demand in the longer term.

If adopted as the proposed strategy, Phase 2 of this work would work out the cost and allocation of cost by corridor/route in considerable detail – in consultation with appropriate authorities. Table 10.2 is a first approximation of a cost estimate over a 10-year period.

FIGURE 10.1 A/B/C SERVICE LEVEL SPECIFICATION TABLE

[DATA IN TABLE ARE FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT PART OF ANY CURRENT SERVICE COMMITMENT]

ILLUSTRATIVE SERVICE SPECIFICATION

SERVICE LEVEL PARAMETER	SERVICE CORRIDOR PRIORITY		
	A **> X AM Peak Hr PAX**	**B** **Between X and Y AM Peak Hr PAX**	**C** < Y AM Peak Hr PAX
Operations			
Train Service Punctuality	>97%	>95%	>95%
Train Service Availability	>95%	>93%	>93%
Train Over Crowding			
Peak Period Sevice	<10% of Peak period Capacity	<5% of Peak Period Capacity	<5% of Peak Period Capacity
Off Peak Service	No Crowding	No Crowding	No Crowding
Real Time Information Availability			
Stations	>98%	>95%	>90%
Train Sets	>98%	>95%	No Real Time Info
Access Control Technology	AFCC	Full Height Turnstyles with staff support	Limited Control
Access Control Availability	>98%	>95%	>90%
Fare Evasion Thresholds	<3%	5%	No Threshold
Special Needs Pax Access			
Rolling Stock	Wheel Chair Access with no Assistance	Wheel Chair Access with Staff Assistance	Limited Access
Station Access	Key Stations fully Accessible	Key Stations Partially Accessible	Limited Access
Information	Fully available at Key Stations	Partially Available at Key Stations	Limited Availability
Gap between Platform and Coach	Fully Compliant at Key Stations	Partially Compliant at Key Stations	Limited Compliance
Maintenance and Cleaning			
Train Cleaning	Daily	Daily	Weekly
Train Damage Repair	95% of repairs done within 24 Hours	95% of repairs done within 24 Hours	95% of repairs done within 48 Hours
Station Cleaning	Key Stations Daily All Stations Weekly	Key Stations Daily All Stations Weekly	All Stations Weekly
Key Station Damage Repair	95% of repairs done within 24 Hours	95% of repairs done within 48 Hours	95% of repairs done within 1 Week
Availability of Ticket Sales Points	>98%	>98%	>95%
System Infrastructure Minor Maintenance and Repairs	95% of Minor Incidents within 24 Hours	95% of Minor Incidents within 48 Hours	95% of Minor Incidents within 72 Hours
Safety and Security Incidents	95% of response time < 1 Hour	95% of response time < 2 Hour	95% of response time < 4 Hour

The cost indicated should be regarded as the level to which the strategy would build up over a period of 3-4 years, starting from a base of around the present annual commitment to passenger rail, inclusive of capital grants, of about R2.5 billion.

TABLE 10.2 'PRIORITY RAIL CORRIDORS' – ESTIMATED ANNUAL COSTS

Item	**Cost**
Rolling stock recovery programme	R2.0 billion
Operating costs plus an effective level of maintenance costs	R2.5 billion
Signalling and telecommunication upgrades	R0.2 billion
Selected network enhancements	R0.3 billion
TOTAL	**R5.0 billion**

Although this option will require more government investment it has the potential to lead to major efficiency improvements. With more resources concentrated on routes where rail can perform to its strengths, there will be a real prospect of a reduction in costs per passenger trip.

10.7 Recommended Strategy

This 'Priority Rail Corridors' strategy provides the best balance amongst the policy objectives discussed in 10.2 above. This is because it is the only strategy that offers the prospect of real efficiency improvements without foregoing the option of future extensions to the network.

The 'Limited System' network prejudges the ability to make efficiency improvements and would pay a high opportunity cost in terms of foreclosing any future network development options. The 'Full Recovery' option would involve the commitment of huge amounts of resources without any prospect of achieving real operational efficiency improvements.

The success of the 'Priority Rail Corridors' strategy would be dependent upon the emergence of an institutional structure with an independent, business orientated management style within the rail industry. Further comment on this important matter is made in Chapter 16.

It would also require an up to date and accurate operational and financial performance monitoring data. The Master Statistics File and Key Performance Indicators being developed in the course of the Railplan would need to be integral to management of the business. (Details of these projects are contained in separate reports to SARCC).

10.8 Key Decisions/Interventions To Secure The Priority Rail Corridors Strategy

The following are the key areas in which decisions would be needed in order to adopt the proposed passenger rail strategy and set in motion the consultation processes that would be required in order to work it out in detail and commence implementation:

- Strategic – government decision on and institutional buy-in to the recommended strategy
- Operator/regions – need to decide on meaning of Priority Corridor strategy in each region
- Financial – need to focus immediately on budget priorities
- Institutional – merger issues and need to maintain operational focus (refer also to Part 5)
- Operational – technical prioritisation method needed A/B/C
- Information management and KPI/MSF systems – implement as soon as possible.

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PART 4: THE PASSENGER RAIL BUSINESS PLAN

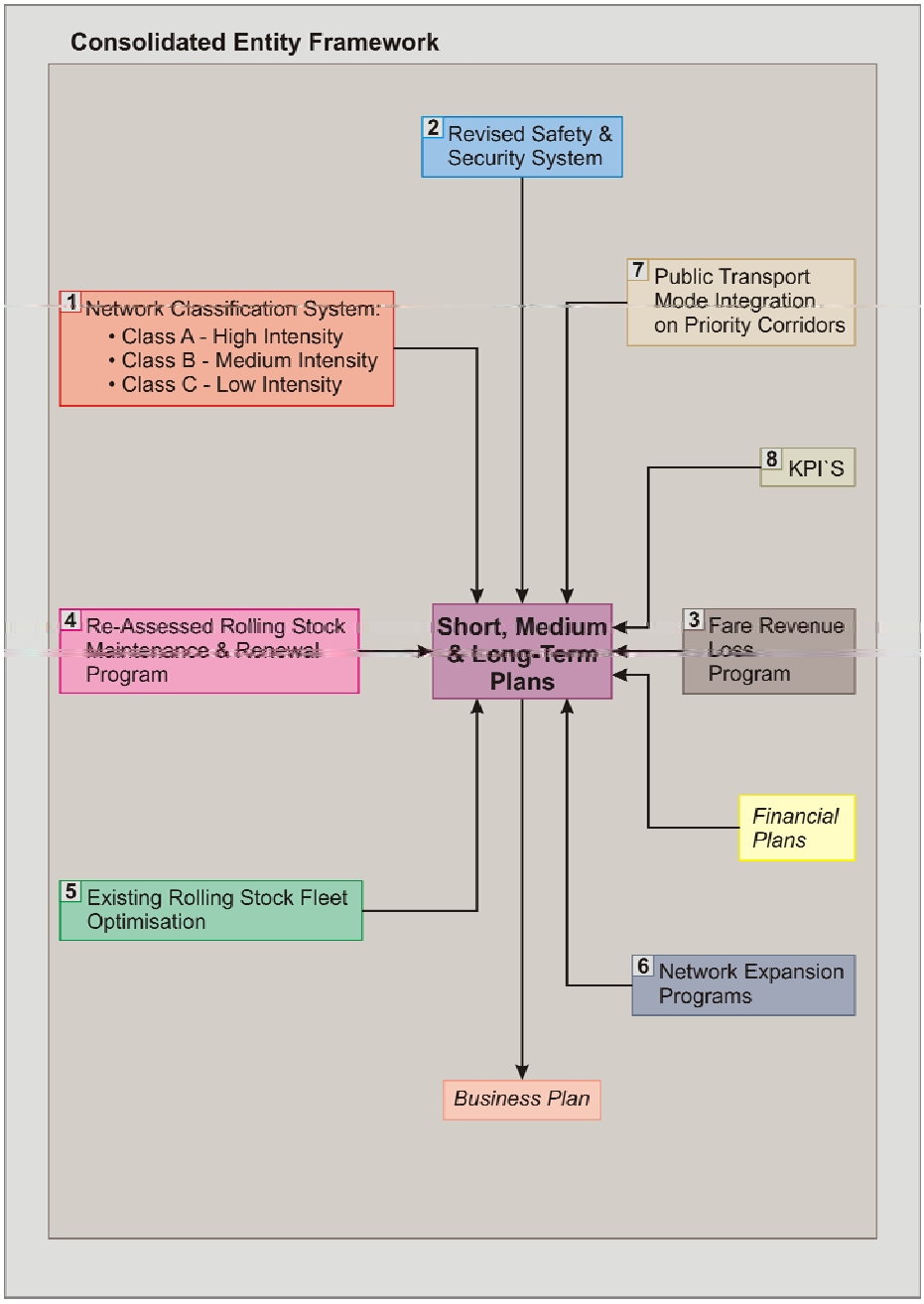
A. COMMUTER (URBAN) RAIL BUSINESS

11. OVERALL FRAMEWORK OF THE PASSENGER RAIL BUSINESS PLAN

11.1 Structure

Figure 11.1 shows the overall framework of the proposed Business Plan and the activities associated with its development.

FIGURE 11.1 MAIN ELEMENTS OF A PASSENGER RAIL BUSINESS PLAN



The Business Plan is made up of essentially three strategic plans:

- The short-term Stabilisation Plan – 0 to 5 years
- The medium-term Sustaining Plan – 3 to 8 years
- The long-term Expansion Plan – 6 to 10 years

The differences between the three plans are not only in their timing, but also in their scope and cost. However, it is important to note that the plans are seen as being integrated and overlapping.

It is inevitable and necessary that the SARCC / Metrorail consolidation process be integrated with these plans, as the efficiency improvements required by the plans will only be achieved with the creation of an appropriately structured consolidated entity. The specific issues to be addressed in the consolidation process in this regard are:

- The creation of a customer focussed business that ensures that the interests of all stakeholders are met, including the commuting public, the DOT, and Provincial and local authorities.
- The creation of efficient and effective financial and management costing systems that accurately reflect the cost of running the business, management performance to agreed performance indicators (KPI's), and ensure reporting transparency to GAAP standards for financial and management accounting.
- The creation of a suitable "Owner – Operator" model within the context of the merged business entity to ensure effective planning, operations and compliance monitoring.
- The implementation and/or consolidation of the operational systems to improve the overall efficiency of the organisation, such as full life cycle asset management systems.
- Appropriate human resource policies, including staff and management remuneration and incentive structures to ensure that best interests of the customers and the business are met.
- The urgent need to interface with the metropolitan transport authorities to ensure that all rail planning and implementation is undertaken jointly to ensure fully integrated public transport solutions, as part of their ITP's as part of their involvement in the implementation of the National Passenger Rail Plan.

The Plans have been developed assuming that the issues described above will be adequately addressed in the consolidation process. It is appreciated that the consolidation process will take time to fully implement, and that this will affect the rate at which the Railplan objectives can be achieved.

Notwithstanding the organisational efficiency issues relating to the consolidation process, the primary focus of the Business Plan should be on the financial and rail operations concerns.

This is not to say that the Plan would neglect other functional areas that are the standard concern in any business plan. These would include, but not be limited to:

- Technical feasibility
- Demand and User Needs
- Socio-economic and financial feasibility in relation to motivation of funding.

It is also important to note that the Business Plan will be regionally disaggregated. This is partly in recognition of the strong national policy emphasis on devolution of transport functions but also the fact the role currently played by the rail mode varies considerably among the different network regions.

11.1.1 Operational Aspects

From an operational perspective, the plans will need to focus on:

- The need to increase operational efficiencies, including levels of service, reliability and safety by focussing of these operational efforts on the main commuter corridors identified in each region in order to ensure that the significant level of service improvements on these corridors are achieved
- The provision of rail services with the existing rolling stock and infrastructure constraints to best meet the current demand levels in the identified corridors, i.e. ensuring that services can be reliably sustained with the rolling stock available in each corridor
- A re-assessment of the rolling stock maintenance and renewal plan in the light of the analysis and recommendations in section 6.4.4.
- The need to increase levels of passenger personal safety and security at station precincts and on trains, a concern highlighted in successive passenger attitudinal surveys
- The expansion of the network in specific areas only if there is a strong business case, and in particular supported by attractive financial and economic analysis results
- The recruitment and training of operational staff with the necessary skills to efficiently and effectively run the services

11.1.2 Financial Aspects

From a financial perspective, the Plans should focus on:

- Ensuring that financial efficiencies are brought into the business, including improvement of the fare yield and the reduction of fare evasion in areas where this is a problem
- The structuring of operations to ensure that operational expenditure patterns are appropriate to the services being provided, including manpower, maintenance and security
- The refocusing of capital expenditure into the main corridors mentioned to ensure that the operational goals can be achieved
- The financial implications of the re-assessment of the rolling stock maintenance and renewal program

12. STABILISATION PLAN – ACTIONS TO SECURE FEASIBLE SHORT TERM GOALS, BY REGION AND CORRIDOR

12.1 Introduction And Context

The short-term stabilisation of the commuter rail business is critical for the creation of a stable foundation for the commuter rail business now, and into the future. This stabilisation is needed to stem the loss of rail commuters to other modes, refocus operating and capital expenditure, increase the fare yield, and to ensure that the rail services provided can be sustained in a safe and efficient manner.

In addition to the operation and financial elements of Business Plan which are the main focus in this chapter, there is also the need to ensure that SARCC/Metrorail consolidation process proceeds on schedule. A separate chapter of this report, Chapter 16, sets out the Railplan consultants' comments on the industry structure, regulatory and institutional matters that will need to be addressed if the Railplan as such is to have a chance of successful implementation.

It will be the principal responsibility of the merged SARCC/Metrorail entity to ensure that the rail commuter business is turned around in as short a time as possible. The new management team will be under pressure to ensure that this occurs. The Stabilisation Plan will therefore need to become the new management team's principal management tool. To this end, the Stabilisation Plan focuses on aspects of the business where 'quick wins' can be achieved.

12.2 Structure Of The Stabilisation Plan

The Stabilisation Plan will focus on those areas of the business where there are material shortfalls in the current business structure, operational procedures, and financial focus.

Infrastructure development will be limited and will focus mainly on the requirements of the 2010 Soccer Cup. The Soccer Cup will be a test case whether the rail industry can live up to expectations and it can give a major boost to the turn around of the rail industry.

From a business perspective, there is an urgent need to align the ability of the business to provide safe, reliable services, the supply, with the current passenger demand.

The Stabilisation Plan recognises the resource constraints to rolling out the Railplan, and suggests an incremental approach to this that will involve:

- Focusing financial resources into programs where the impact of investments can make an early and material difference to levels of service, safety and reliability;
- Providing time to consult with all stakeholders and consider their input, especially the various stakeholders in the emerging Transport Authorities;
- Implementing, monitoring and adjusting the Plan as seen and unforeseen issues arise.

The Stabilisation Plan will therefore require the early identification of a sub-set of the better performing rail corridors as identified in the Chapter 9 regional matrices for in each region. These would be those corridors that may be expected to provide the largest operational, economic and financial benefits in the short term.

The main operational and financial activities to be focussed on the Stabilisation Plan are considered in the following sections.

12.3 Operational Issues

Once the high performing corridors for each region are identified the Railplan would focus on the key activity areas as follows:

12.3.1 Network classification system

The 'A/B/C' network classification system will need to be developed. This will provide guidance in regard to the high level of service and commensurate maintenance and capital expenditure framework that is required for the Priority Corridors. The regional emphasis will be retained in the development of the classification system.

Lower service levels with appropriately lower maintenance and capital expenditure priorities will need to be agreed for lower priority corridors.

12.3.2 Revised safety and security system

The introduction of increased levels of safety and security on the Priority Corridors to be identified as part of the Stabilisation Plan at both station precincts as well as on trains.

12.3.3 Fare revenue loss programme

Together with the safety and security plan, the introduction of appropriate fare recovery measures on the Priority Corridors to reduce the level of fare evasion in areas where this is a significant problem

12.3.4 Re-assessed rolling stock maintenance and renewals programme

To revise the current rolling stock maintenance and renewal program to ensure that a more sustainable and robust plan is developed.

12.3.5 Existing rolling stock fleet optimisation

The existing rolling stock fleet needs to be assessed from an availability, condition and safety perspective to ensure that the planned levels of service can be sustained, i.e. to ensure that supply and demand balance on the Priority Corridors is achieved.

12.3.6 Network expansion programmes

Any network expansion projects that deliver substantial financial and economic benefits to the system, particularly in terms of additional fare revenue.

12.3.7 Public transport mode integration on Priority Rail corridors

Item 7: Integration of public transport modes on corridors identified as being part of the Stabilisation plan together with the relevant Transport Authorities.

The stabilisation plan focuses on fare revenue systems, access control systems and rolling stock. During the stabilisation stage, attention should be given to other assets and areas of the business, such as signalling and telecomms.

12.4 Financial Issues:

The financial aspects of the Stabilisation Plan relate to:

- The financial planning of the operations, maintenance and capital expenditure required to implement the network classification system developed for the Stabilisation plan. This will have to be undertaken within the overall budgetary constraints of the DOT
- The cost implications in regard the revision of the rolling stock maintenance and renewal program

- The financial and economic assessment of any network expansion proposals
- The financial planning in regard to the implementation of the upgraded safety and security system on the Priority Corridors
- The cost implications in regard to the implementation of the fare revenue recovery program on the Priority Corridors to be identified
- The refocusing of the operating expenditure to the proportions indicated in Chapter 2. This issue also needs to be addressed as part of the consolidation process
- The feasibility assessment, and if viable, the participation of the private sector in rail infrastructure operations, maintenance and funding in the form of Private Public Partnerships (PPP's). This could include rolling stock, permanent way and station financing as well as corridor performance-based contracts, corridor and perhaps even regional operating concessions.

It will be critical that implementation of the Stabilisation Plan and the overall consolidation process are monitored using the key performance indicators (KPI's) described in Chapter 10 and in other specialist documents produced in conjunction with this report.

A first task in Phase 2 will be to develop detailed cost budgets nationally, regionally and by route/corridor.

13. SUSTAINING THE BUSINESS – ACTIONS TO CONSOLIDATE FEASIBLE BUSINESSES, BY REGION AND CORRIDOR

The Sustaining Plan follows on from and is integrated with the Stabilisation Plan. It therefore involves the rolling out of the network classification program to the full rail network. The timing of the implementation of the Sustaining Plan will depend on the implementation and success of the Stabilisation Plan, and will in some instances merely mean the continuation of the Stabilisation Plan.

The Sustaining plan therefore needs to:

- Build on lessons learned from development and implementation of the Stabilisation Plan
- Develop in more detail the actual costs of implementation of the Stabilisation Plan, as well as the measured financial and economic implications
- Place more emphasis on opportunities for integrating rail infrastructure and operations with road-based modes in support of Spatial Development Framework objectives.

From an operational perspective, the Sustaining Plan will therefore focus on:

- The further roll out of the network classification and operations plan to additional corridors (Activity 1 in Figure 12.1)
- The implementation of the necessary safety and security measures on these corridors (Activity 2)
- The implementation of the revenue loss measures on these corridors (Activity 3)
- The continuance of the implementation of the revised rolling stock maintenance and renewal program (Activity 4)
- The assessment of any network expansion proposals (Activity 6)

From a financial perspective, the focus will be on:

- The continued assessment of the costs and benefits of the corridor based approach
- The opportunities for PPP projects, based on the degree of success achieved in the Stabilisation Plan
- The financial planning of the operations, maintenance and capital expenditure to further expand the network classification system
- The financial and economic assessment of any network expansion proposals
- The assessment of the cost implications of broadening the safety and security measures into the additional corridors included in the Sustaining Plan
- The cost implications of the fare revenue recovery program on the corridors identified
- The continued refocusing of the operating expenditure to the proportions indicated in Chapter 2.

14. GROWING THE BUSINESS – ACTIONS WHERE FUTURE DEVELOPMENT MAY BE BUILT UPON A STABILISED AND SECURED RAIL BUSINESS

14.1 Introduction

Having stabilised the rail commuter business and ensured that the business is sustainable, the expansion of the business can be considered. The Expansion Plan is considered to be long-term, and will largely have to be developed based on circumstances and issues relevant at the time.

This expansion would include:

- The rolling out of the network classification system to the full network from an operations, maintenance and capital expenditure point of view
- The expansion of the safety and security and fare revenue loss control systems
- The continuance of the rolling stock maintenance and renewal program
- The expansion of the rail network as required, subject to stringent financial and economic justification

14.2 The use Of PPP's

For the longer term greater use of PPPs may be warranted and further comments on the approach are included here.

The use of Public – Private Partnerships (PPP's) should be considered as a means of:

- Introducing private sector efficiencies into the rail business
- Utilising private sector funding for capital projects and asset maintenance, as well private sector involvement in rail operations

PPP's can be introduced in a number of ways to achieve the above objectives. Some of these techniques involve outsourcing of the non-core (and possibly core) functions, while others involve more direct participation in the day-to-day business operations. The leverage of private sector finance into the industry is also possible through concession contracts for asset provision, operations and maintenance.

The use of PPP procurement approaches requires the clear definition of policies to ensure that the organisation achieves the best value for money by using this approach, as well as ensuring that the approach is in the overall best interest of the business. The development of public sector comparator models is recommended to ensure that this value is being achieved. Examples that could be considered are as follows:

14.2.1 **Asset Maintenance**:

The outsourcing of maintenance (rolling stock, perway, stations, signals, etc), can be achieved through performance based maintenance contracts. These contracts are very common in the roads industry, and are procured through a tendering process. A medium to long-term contract requires the contractor to carry out the specified functions according to agreed specifications, and at an agreed price. Penalties are imposed where required performance is not achieved.

14.2.2 **Capital Projects**:

Private sector can be used to supplement the capital requirements for network and infrastructure expansion. For example, the value-capture potential of existing and new station

and mode interchange sites can be used for commercial developments and rail infrastructure enhancements that the private sector can finance.

14.2.3 Concessioning:

The use of concessions to introduce private sector participation is a common procurement approach in public transport. It has not always been successful however, and the structuring of the concession contract has to be carefully considered in the given circumstances.

Operations concessions for networks of specific corridors in networks require the selected operator to undertake the service operations according to a service specification. This specification will include the service levels (e.g. routes and headways), capacities and type of vehicle. The concession should also specify whether the concessionaire is required to supply the rolling stock, as well as drivers and operators.

B. LONG DISTANCE PASSENGER RAIL BUSINESS

15. SHORT, MEDIUM AND LONG TERM PROPOSALS FOR THE LONG DISTANCE PASSENGER RAIL BUSINESS

15.1 Introduction

The long distance passenger rail business currently operated by Shosholoza Meyl has not been studied in the same depth as the commuter rail business in Phase 1 of this work. The following represents some early thoughts on a future strategy for SM but must be treated as preliminary only.

15.2 Short Term Issues

Based on material presented in Chapter 8, SM's already has its own proposals for making financial efficiency improvements.

These include reducing the overall staff complement and focusing the business on potentially higher revenue earning, tourism sectors. This approach will go ahead whatever decision may be taken about the future corporate structure and departmental location of the business.

The Consultancy team for the present project has been asked to comment on the government's proposal that SM be relocated from Transet/Spoornet to the national DOT, with the possibility of being merged with a consolidated Metrorail/SARCC entity.

It is the consensus view of the Railplan consultants that the SM business is completely different to that of the commuter rail sector and that the synergies of a corporate merger with a commuter rail entity would be minimal. A more appropriate strategy would be to house SM under DOT but keep it as a ring-fenced entity.

If SM is to come across to DOT, then the most important element in a business plan will be to identify the costs currently borne indirectly by Transnet and not shown in the cost tables presented in Chapter 8. It is understood that the Merger Due Diligence study is quantifying these costs.

This would include at minimum a track access charging arrangement from Transnet to SARCC. Other items, probably to be identified in the current due diligence process, would be the shared costs of human resource management, IT systems and perhaps also financial management systems. All these would need to be handled separately in a new DOT housed SM and would entail costs not currently included in SM accounts.

This means that despite SM's forecast of a reduction in operating subsidy requirement the aggregate costs, and hence subsidy, may be higher than at present, at least for the short term.

15.3 Sustaining The Business

This will require continued investment focus on the requirements of tourism market products.

15.4 Growing The Business

Develop only where long distance rail can sustain growing, revenue earning traffics.

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PART 5: INDUSTRY STRUCTURE PROPOSALS

Because the present project coincided in time with national government's decision to bring about a merger between Metrorail and the SARCC, the Railplan project team was asked to draw out any implications of this project's conclusions for the emerging rail industry.

16. IMPLICATIONS FOR INDUSTRY STRUCTURE

16.1 Business Consolidation And Industry Structure

For purposes of the present, Phase 1, Passenger Railplan report the options for an industry structure are limited to ones that will fit within continued public sector ownership.

Having said this, this report has noted that national transport policy as originally set out on the national White Paper and the MSA consultation process, namely that there is merit in focusing each public transport mode on the areas in which it clearly does its job best. The policy has also acknowledged that commercial concessioning of transport services within this general framework is to be desired.

This report very clearly endorses the principle of concentrating the rail transport mode in those areas or corridors where it clearly offers better value when compared with other areas or corridors where travel demand is less suited. Views on business consolidation are therefore geared towards a solution that will be more likely to successfully implement this approach.

Moving Metrorail out of Transnet/DPE into DOT is a correct move. It will improve the efficiency with which policy decisions can be communicated and applied and it will also remove ambiguities in lines of accountability as between the two bodies.

However the current separation between the two entities in terms of their functional responsibilities is not in itself a bad thing. To the extent that a merger reduces this functional separation, confusion in the industry could be worsened rather than improved.

In general, for the business consolidation to be effective and efficient it will be necessary to build a degree of separation between 'Owner' and 'Operator' units within the consolidated business entity. The two units will need to have contractually defined and clearly demarcated functions, accountabilities and responsibilities.

Without this functional and contractual separation, albeit within a single corporate entity, it will be extremely difficult to create the necessary system of incentives and sanctions to ensure delivery of agreed service level specifications. Put more simply, effective rail industry regulation will not work in the absence of such separation.

The concept of having separation between rail operator and rail infrastructure ownership and management is consistent with international best practice. In the European Union it is a legal requirement. It also agrees with still unchanged South African national transport policy which does encourage separation between ownership/policy and operation of transport functions.

In regional transport planning terms there is a need for Provinces and eventually TAs to have a regionally functional rail planning capability with which to engage. The regional focus of rail *operations* could become the forum within which greater integration of planning functions with Provinces/LAs and TAs could be built.

16.2 Institutional/Regulatory Structure

To allow effective regulation, industry will need to be structured such that responsiveness to regulation is actually feasible. This will require at least the following:

- Separate contractual functions for the 'Owner' and 'Operator' roles with separate legal accountabilities
- A clear operating agreement between the two entities with appropriate incentives and sanctions.

A further condition of effective rail regulation is that the regulator/regulatory function should be independent of the bodies that it will regulate. As far as possible it should also be independent government.

Government will of course set the framework and parameters for the regulatory function but, once these have been agreed, it should be the regulator, and not government, that enforces implementation of the agreed level of rail services.

A useful analogy is the relative independence of government interference that is enjoyed by the South African Reserve Bank. While government indicates what parameters it wants the Bank to target, it does not dictate how the Bank uses interest rates and other policy tools to achieve the agreed objectives.

16.3 Relationship Between A New Rail Entity And Transport Authorities

Currently national government is responsible for passenger rail services, although in terms of the NLTTA, local government must develop integrated transport plans, inclusive of rail. This must be done in full consultation with the rail entities. However, approval of the plans remains the responsibility of the Minister of Transport. Although metropolitan municipalities attempted to address rail plans to various levels of detail, they feel that they are not in control and therefore not in a position to influence rail services. Metropolitan authorities would at most attempt to upgrade road-based infrastructure situated at train stations. Co-ordination of SARCC planning and that of the metropolitan authorities, communication, and co-operation between the rail entities and the metropolitan authorities leave much to be desired.

In support of the national government's policy to devolve public transport to the lowest competent sphere of government, and the NLTTA's provision of Transport Authorities at either provincial or local spheres taking full responsibility for public transport, the following strategy is proposed.

It is proposed that provincial / metropolitan authorities only take responsibility for rail once they have declared a Transport Authority in terms of the NLTTA. This will require a proper structure, human and financial resources, which will ensure that the authority has the basic capacity to take responsibility for rail. Both the province and the Transport Authority will share responsibilities – it is even possible that the province becomes the TA.

Various rail responsibilities can subsequently be transferred to the formal Transport Authority, subject to approval by the Minister of Transport, who must be satisfied that the TA has the capacity to take over these responsibilities. These include aspects such as planning, marketing, passenger information, modal integration, user specification of service levels, etc. The critical issues relate to the division of financial responsibilities, risks and ownership, for which various possibilities exist. A final plan with regard to these issues can only be determined in Phase 2 after proper research and consultation.

In the interim period where none of the metropolitan authorities are possibly in a position to take responsibility for rail, it is proposed that the TA, or metropolitan authority, and Rail Entity co-operate very closely to utilise the strengths of each organisation to the maximum. The following interim strategy is proposed.

- The TA and the Rail Entity to develop one plan for rail, which is incorporated in the ITP. The current separate planning processes need to be phased out. It is crucial that the National Passenger Rail Plan to be developed in Phase 2 is done in full co-operation with the emerging TA functions. The Rail Plan can then be able to be taken up into the ITP without any further planning by the TA.
- The TA and Rail Entity to jointly develop the Service Level Specifications and Service Level Agreement.
- The TA and Rail Entity to jointly develop policy, strategy, and the Rail Plan in the ITP.
- The TA to be fully responsible for the road-based modes and operations, while the Rail Entity to be fully responsible for the rail operations.
- A Rail Planning and Working Steering Committee (SC) to be established in each region, which will direct all work in the region. The DOT, Province, Rail Entity and Transport Authority to have representation on the SC.

16.4 Long Term Sustainability Of The Railplan

The sustainability of the Passenger Rail Business Plan as outlined in this report will be dependent upon the following main factors:

- Agreement from government and all industry entities that only radical action will spare the rail industry from further loss of market share and further technical deterioration
- Agreement from government and all industry entities to the prioritisation of corridors in which rail really has a comparative advantage as potential mode of first choice
- Agreement from government and all industry entities to the service level specification approach to the operational implementation of this corridor focused business strategy
- Agreement from national government to the level of funding needed to underwrite the corridor focused business strategy
- The earliest possible refocusing by a merged industry board on the priorities as outlined in the Passenger Rail Business Plan
- The earliest possible attention to be given to the creation of a corporate structure in which an operating entity is separated from an infrastructure owning entity
- Agreement that provincial and/or metropolitan authorities will take over strategic and eventually technical responsibility for rail investment planning, starting with the full co-operation of the TA’s in developing the National Passenger Rail Plan.
- Agreement that TAs should eventually have the authority to decide on which routes it is appropriate to support the rail mode of transport
- Agreement that the funding and pricing strategy of public transport, including rail, should eventually become a provincial and or metropolitan function.