NATIONAL REPORT

EXECUTIVE SUMMARY

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1. INTRODUCTION

1.1 BACKGROUND

Transport is a prerequisite, although not a guarantee of the socio-economic development of the Republic of South Africa as a whole.

The Transport Lekgotla held on 08-09 April 2005 resolved that an “Integrated National Transport Plan” should be developed. The Integrated National Transport Plan was later referred to the National Transport Master Plan. In the development of National Transport Master Plan 2005-2050 (NATMAP 2050), it was necessary to identify and crystallise existing perennial problems and those which resulted from alternative socio-economic development strategies and indicated how best these may be tackled.

1.2 PROJECT PROBLEM STATEMENT

- Transportation systems are characterised by and riddled with problems both within transport modes themselves and between these modes.
- Some elements of transport systems are neither demand responsive nor cost effective.
- There is a pronounced poor land use/transport integrated planning in South Africa. Transport is slow and inadequate to respond to the needs of committed and/or proposed land use developments. Transport is also not playing its optimal role in stimulating economic and spatial development.
- Poor land use/transport integrated planning is aggravated by sporadic unplanned land use within major corridors and urban areas.
- There is poor accessibility in rural areas.
- Financing of transportation systems, infrastructure facilities, rolling stock, and equipment is competing with other public services sectors, with transport getting the lowest priority.

1.3 PROJECT GOALS & OBJECTIVES

The NATMAP 2050 goal is to develop a dynamic; long term; and sustainable land use/multi-modal transportation systems framework for the development of networks infrastructure facilities; interchange termini facilities and service delivery that shall be;

- demand responsive to national/provincial/district and/or any socio-economic growth strategy, and/or any sectoral integrated spatial development plan;

Amongst others, the following identified objectives form the basis upon which the national plan was developed.

- Maximize utilization of existing infrastructure facilities;
- Development of future infrastructure facilities and improve operations;
- Development of an up to date and accurate central land use/transportation DATA BANK - Geographic information systems (GIS);
- Promote effectiveness and efficiency of maritime Transport;
- Integrated multimodal public passenger transportation;
- Determine the economic role of transport; and
- Integration of transport and land use development.

1.4 THE PLAN PREPARATION PROCESS

The NATMAP 2050 project is structured in four phases:

- The Status quo, Phase 1, provides an overview of current transportation systems, land use, demographic and socio-economic conditions.
- The Analysis, Phase 2, dissects the status quo information and accordingly this phase represents the quantitative analysis of different land use/transportation integrated scenarios.
- Forward Planning, Phase 3, is not “what is, or what will be, but simply what ought to be”. Given a clear understanding of the current situation and the impacts on society as derived from the previous two phases, this phase is about the alternative strategies that can be followed in the future and consequently also the decisions to be made.
- The Agenda for Action, Phase 4, takes the alternative strategies to its final stage, focusing on an action agenda for implementation.
2. THE STATUS QUO (PHASE 1)

2.1 DEMOGRAPHIC AND SOCIO-ECONOMIC STATUS

The influx of the population from rural to urban areas has been noted in areas where there is high economic activity. Such an influx has partly been due to high unemployment rates and low job creation initiatives in some provinces. This places additional stress on existing transport facilities and infrastructure.

2.2 LAND USE

It is recognised that transport planning and the provision of transport infrastructure does not exist in a “vacuum” – it is essential to take cognisance of how these relate to land use, sectoral activity and settlement patterns. In turn, there is a vast number of legislative and policy and programme initiatives, which will have a major bearing on the nexus between transport and land use and economic activity.

Transport is generally a necessary, but it is not a sufficient condition for economic activity, however transport deficiencies can also present a major constraint. The dispersed nature of settlements in many provinces results in a mismatch in terms of where people live and where they undertake economic activity. Thus, in transport and land use planning it will be vital to pay close attention to passenger travel and freight movement characteristics and volumes.

2.3 PASSENGER TRAVEL PATTERNS AND CHARACTERISTICS

Amongst many, the following observations can be noted under the passenger travel patterns and characteristics:

• The current public transport system lacks effective modal integration at all levels, from pedestrian linkages with bus to linkages between minibus taxis and rail services.

• Currently the legal dispensation in respect of public transport is characterised by fragmentation of authority, reflecting the lack of integration of the components comprising public transport. The fragmented governance and operational structures in both the public and private domains results in a complex jurisdictional dispensation of regulations and by-laws. Within this context there is a lack of uniform standards in terms of safety or operational compliance.

2.4 FREIGHT MOVEMENT PATTERNS AND CHARACTERISTICS

Some of the more specific problems that have been identified include:

• Since deregulation, the elevated GVM and axle loads allowable have exceeded the engineered load limits of existing roads leading to premature failure of pavements and deterioration of surfaces with consequent increase in need for maintenance. South Africa is one of very few countries that allow unrestricted transit of HGVs over all roads (with the exception of some suburban streets). This has accelerated degradation of rural networks in particular.

• Underinvestment in rail operations, especially locomotives and wagons, has hampered this State Owned Enterprise (SOE) in playing its part in ensuring predictable service and attending to the traffic on offer. A competitive environment between rail and road has been allowed to cloud the national interests of providing the economically efficient logistics service the country needs. Only recently has common sense surfaced between the major players and cooperation in the overland transport arena is now a much discussed agenda item. It should nevertheless be appreciated that remedial investment in railway assets ahead of resolution of the track gauge question is fraught with pitfalls. Investors and other stakeholders will need to plot a careful course through this minefield.

• Rail freight is increasingly limited to bulk commodities, including steel and iron. It is nevertheless appreciated that heavy bulk commodities are the last bastion of narrow gauge railway competitiveness. It should therefore be recognized that rail’s re-entry into higher value freight will depend on restoring its competitiveness vis-à-vis road, which in turn will also depend on resolution of the track gauge question.

2.5 TRANSPORTATION INFRASTRUCTURE

The following observations can be noted with respect to transportation infrastructure:

• The extent of nationally and provincially strategic road network was problematic to quantify owing to different sources of information being presented in a variety of formats.

• The source information for public transport infrastructure (i.e. Current Public Transport Records, Integrated Transport Plans and Provincial Land Transport Framework) is dated and in many respects questionable. The number of facilities recorded differs over the various sources and many of the facility audit fields are incomplete.

• Network coverage of freight rail network had limited availability from any documentation at the time that these reports were compiled.
• The quality and image of public transport has generally deteriorated, particularly because of insufficient re-investment. The majority of public transport users are captive because of their low income levels. The lack of re-investment in the minibus – taxi fleet being older than 14.4 years two years ago – has made it the cheapest mode to operate across all volumes and most distances, with fares generally lower than subsidised bus services, because there is virtually no inherent capital repayment cost in the way taxis are run. However, there are huge consequent social costs of this in terms of safety, quality of service, and cutthroat competition. Formal bus services have lost significant market share to minibus – taxis over the years.

2.6 FINANCING AND TRENDS

Some of the more specific issues related to the financial and funding side of transportation include:

• In some cases there is under spending due to inefficient systems and substantial red tape, especially related to delays and inefficiencies in the procurement processes.
• There are leakages due to corruption and fraud.
• There are weak linkages between functions and fiscal powers.
• There is an absence of direct user charging (use, maintain or replace) mechanisms

2.7 ENERGY

The following observations can be noted with respect to energy:

• The primary sources of all energy used in South Africa are mainly coal (67%) and oil (20%).
• While the transport sector consumes 27% of all final energy forms, it uses up a significant 78 % of liquid fuels and only 1.6% of electricity, to drive its wheels.
• The transport sector is almost absolutely dependent on petroleum fuels (98%) and South Africa depends for 70% of its oil on imports, mainly from the Middle East.
• Road transport consumes 87% of the energy used by the transport sector as a whole, aviation 11% and rail only 2%.

2.8 ENVIRONMENT

Replacing oil with bio-fuels has been identified as a possible solution to the shrinking availability of oil, and the raising cost.

It needs to be stressed that, in terms of liquid fuels, there is no possibility of business as usual, unless a major oil field is discovered in the near future. Even then the necessity to change to cleaner technology will remain.

2.9 INFORMATION SYSTEMS AND DATABANKS

The following observations can be noted with respect to the geographic information systems and databanks:

• A major concern with the data for modelling purposes is the lack of origin – destination (O-D) flows between different areas of the country, especially in terms of road freight. The Freight Databank does not yet contain any O-D data, and it will require major effort, time and cost to collect such data. A number of cost proposals have been provided to the DoT ranging from deriving O-Ds from link volumes and knowledge of demand and supply areas, to limited road O-D surveys, and ultimately, a comprehensive road O-D survey.
• In terms of the national GIS and planning data, a major problem is the lack of proper coordination and integration between national departments.

2.10 INSTITUTIONAL ASPECTS OF TRANSPORTATION

Some fundamental reasons why institutional issues arise are:

• Concern with autonomy - creating linkages among organisations and potentially creating new organisations (be they virtual or real) can lead to a loss of autonomy for the participating organisations. Those organisations may feel they are unable to discharge the responsibilities they were chartered to do if that autonomy loss occurs.
• Funding sources - institutional issues will occur if funding sources are not consistent with the organisation’s mission. If traditional funding sources are directed to, say, capital spending and an additional mission focuses on operations, that disconnect generates an important institutional issue between funders and funded.
2.11 LEGISLATION

Some of the more specific issues related to the legal side of transportation include:

- There is a poor track record of policy formulation and implementation that is consistent with the set legal parameters; for example, what are the best tools to implement concepts of multi-modalism, the public transport priority and the division of functions between the spheres of government in accordance with their most appropriate functional parameters?
- Ineffuctual regulatory enforcement for issues such as overloading, vehicle roadworthiness and licensing.

3. ANALYSIS OF STATUS QUO (PHASE 2)

3.1 ECONOMIC AND DEMOGRAPHIC ANALYSIS

3.1.1 Economic Analysis

- Economic activity has been found to be dominantly in the primary industries and the lack of conversion of the primary goods produced in those industries to secondary goods (or processed goods) requires careful planning of transport services as it implies long distances of goods haulage to processing centres. Primary industries are declining in some provinces, causing uncertainty in planning in keeping up with the dynamics of economic activity resulting from further dispersion of settlements.
- Also, higher levels of economic activity in those areas that will be favoured by development will give rise to more employment, resulting in higher incomes, more vehicles and therefore more pressure on existing road infrastructure, leading to traffic congestion that in turn becomes a threat to the realisation of higher levels of economic growth. The changing level needs of export/import activities necessitate better road and rail infrastructure to ensure alternative means for manufactured goods to reach harbours.

3.1.2 Demographic Analysis

- The uneven distribution of the population, ranging from very low density in the deep rural areas to high densely populated metropolitan area is one of the main constraints in future transport planning. Such a scenario is also associated with economic activity which is concentrated at the metropolitan areas.
- The pressures arising from both immigration from outside and in-migration within the borders of South Africa have created a complex settlement challenge. Skills related migration is seen internally when people as the killed and educated population move to other provinces for better jobs and economic prospects. The Immigration Act of 2002 has made accommodation of the import of skilled labour.

3.2 LAND USE

The following conclusions are drawn from the Land Use Analysis:

- Land use and transportation integration nexus is extremely complicated and has major developmental impacts at both the micro and the macro levels. Transportation can serve as both a structuring element and as an expression of derived demand.
- The interface between land use and transportation planning is not static, but is highly dynamic and that it is subject to influences from both the public and the private spheres.
- It has become clear that there are a number of issues to be considered if the interface between land use and transport integration is to be managed.

3.3 PASSENGER TRANSPORT

3.3.1 Passenger Transport Analysis Process

Underneath is a list of of generic transport issues and problems that is common to all provinces:

- Urban Problems:-
  
  With rising car ownership and use, pressure on the road network can be expected to mount considerably in the coming decades. The poor quality of public transport services influences this rise in car ownership.
• Inter-Regional Problems:-
Long-distance rail suffers from old rolling stock, low demand and hence low profitability. Many services have been discontinued, and only the core services are remaining. Similarly long-distance stations and termini are in poor condition and generally not integrated with other supporting land-uses, such as shopping and employment centers.

• Role of Passenger Transport Modes:-
Any commuter corridor in South Africa with a one direction peak period volumes in excess of 20 000 passengers and for any travel distance starting at 25-30kms, would prefer metro rail technology. High speed technology will be most appropriate for trip distances longer than 60 kms.

• South African Passenger Transport Modal Split:-
For all trip purpose, car travel has 31.5% of the market and public transport modes 68.5%. Within public transport for all trip purposes, the taxi industry dominates with 76.5%, followed by bus on 16.5% and rail with 7%. For work related trips only, the modal split is car 32%; taxi 25%; bus 9%, rail 6%; walk/other 28%.

• Road Infrastructure and Traffic:-
Whilst congestion on roads affects the cost and quality aspects of car travel and public transport, these impacts are mainly applicable to metropolitan areas and in which case the situation is fairly severe in some areas. Generally speaking there is no serious problem with regards to congestion along the road links outside metropolitan areas.

• Rail Passenger Transport:-
In terms of rail technology and particularly the debate about Standard versus Cape Gauge the following conclusions are drawn:
Speed allows reduced travel time: A benefit usually associated with standard gauge technology is that it enables an operator to travel at much higher speeds.

• Bus Passenger Transport:-
Firstly, the similarities include two distinct categories of the bus industry as is found in the rail industry, namely localized short distance services and long distance coach services. The difference is however that a number of sub-categories within each main group exists – reflecting different classes of services. It ranges from luxury tourism services, economy class services in terms of the long distance services; to services aimed at local and regional transport by means of subsidized and non-subsidized commuter services, BRT and metro services; learner transport services, etc.

• Air Passenger Transport:-
Air transport is perhaps the one public transport mode that reflects the most positive image of all modes in South Africa, apart from the popularity and comfort of car travel.

• Pricing and Cost Efficiencies:-
Air travel is the most expensive, followed by private car travel. Car travel is generally speaking between 25% and 40% of the cost of trips by air.

3.4 FREIGHT TRANSPORT

• As a general overarching conclusion it is recognised that due to the organisational structures and institutional framework of the major players in the freight transport arena in South Africa, future development of a demand oriented logistics system will require significant policy changes.
• In particular the monopoly position of the major service provider of rail, port and pipeline services is having a negative impact on the operational efficiency, provision of adequate equipment and facilities, and extent of services to meet present and future demand.
• The latent demand for rail service on corridors as well as urban and rural areas is being met by rapid expansion of road freight transport, causing severe unrecovered externalities in the form of road deterioration, congestion, accidents, pollution and excessive freight transport costs.
3.5 TRANSPORT INFRASTRUCTURE

3.5.1 ROAD NETWORK

Problems with regard to maintenance, rehabilitation, upgrading and provision of new roads are due to inadequate funding. Consequently, many provincial roads are in a very poor condition and are deteriorating exponentially, whilst capacity in some areas becomes limited and is unable to satisfactorily accommodate demand.

3.5.2 RAIL NETWORK

The capacity of the suburban lines is only critical in the weekday peak periods. The strategy is to limit the freight trains during these periods on the suburban lines. This cause delays to freight trains.

3.5.3 AIRPORTS

- Flights and connections are available from OR Tambo International Airport to all major cities in the World. Lanseria International Airport is the second busiest airport in South Africa in terms of aircraft movements and offers regular scheduled flights to other metropolitan areas in South Africa as well as charter and general aviation flights to any destination in Southern Africa. Wonderboom Airport is the third busiest airport in the Country in terms of airport movements and accommodates a number of general aviation users, charter operators and flying schools. Rand Airport and Grand Central although smaller in magnitude also plays a very important role in the corporate aviation field in South Africa.
- There is one international airport in the Province namely Cape Town International Airport (CTIA). This airport is the second busiest airport in South Africa in terms of passenger movements and the fourth busiest in the Country in terms of aircraft movements.
- The King Shaka International Airport should be able to satisfy the demand for scheduled flights within the planning horizon of the 2050 NATMAP planning for the province.

3.5.4 PORTS AND HARBOURS

Eastern region (Durban and Richards Bay): These two ports are complimentary in that Durban focuses mainly on break-bulk cargoes, which includes containers, whilst Richards Bay is largely focused on bulk cargoes mainly coal for export. Combined, the two ports account for nearly 70% of the cargo shipped and landed at South African ports.

Central region (Port Elizabeth, Ngqura and East London): Smaller car terminals are located in Port Elizabeth and East London; and Port Elizabeth has dry bulk and container terminals. East London has the largest export grain elevator in South Africa, which has been converted to handle imports in addition to exports. Ngqura is a new port which was scheduled for commissioning in October 2009 when Transnet Port Terminal (TPT) would start operating two container berths with an annual capacity of 750,000teu.

Western region (Saldanha, Cape Town and Mossel Bay):
- Cape Town has a container terminal and is world-renowned for the export.
- The Port of Saldanha is the deepest and largest natural port in Southern Africa, the largest iron ore exporting facility in Africa, the only iron-ore handling port in South Africa and the third largest port in the country in terms of tonnage handled.
- Port of Mossel Bay is the smallest of the 8 commercial harbors, is the only South African port that operates two off-shore mooring points within port limits, and it serves as oil rig supply boat base.

3.5.5 PIPELINES

- The capacity of the existing Transnet Pipelines network is expected to come under pressure by mid 2009, due to the high level of economic growth in South Africa and the high demand for fuel. It will therefore be required to provide additional capacity for transport of petroleum products from coastal to inland areas, to prevent fuel shortages in especially the Gauteng area.
- Pipeline constraints at provincial levels include the following: KwaZulu-Natal, Mpumalanga, Free State and Gauteng. Pipelines are running at near capacity, especially the Durban Gauteng refined products line which is expected to be replaced by a new 24 inch (610mm) multi-product pipeline (NMPP) which is scheduled for commissioning in 2011 and will raise overall capacity to 25-billion liters a year. The Transnet Pipelines network has been in operation for over 40 years and is considered to have reached the end of its economic life (Bohlweki Sivest Joint Venture, 2008).
3.6 FINANCING AND TRENDS

- South Africa is currently experiencing unprecedented capital formation across the entire spectrum of transportation modes and in both infrastructure and operations. The bulk of said spend is by the public sector – both fiscus and government agencies (including corporate entities).
- This commitment is underpinned by the resolve to move from a budget surplus in 2007/8 to a borrowing requirement of about 3% over the medium term. Capital expenditure should reach almost 11% of total government spending by 2011/12. This comes in the wake of increased overall capex as a percentage of government spending from 6.3% in 2004/5 to 9.3% in 2007/8.
- Except for the air mode, transportation investments have trailed economic growth and, in fact, come in the wake of general ‘divestment’ when considered against requisite spend just to maintain installed infrastructure and operational capacity.

3.7 ENERGY AND ENVIRONMENT

Oil scarcity is inevitable; the only question is when and by how much. All indications are that the time horizon is about 20 years, at which point the available fuel will have reduced to about 50% of what is used today. The South African transport system (and thereby the economy) is extremely vulnerable to changes in the availability of liquid fuel and the price. This is even more so for public transport, where currently most people make use of taxis. It can be expected that an increase in the cost of transport will have a significant impact on the lower income groups and that they will either be forced to move closer to where there are job opportunities, or become excluded from the labour market.

Below is some of the analysis of the future energy position:

- The question is whether transport reacts to demand, or should economic and social development be built around a sustainable transportation system? The changes are predicted to be rapid, and if planning and implementation are not done proactively, there is a significant risk that the economy will be severely affected and that especially the poorer echelons of society will be exposed to increased hardship as the cost of transportation becomes so high that it excludes them from access to jobs.
- The second will require co-operative governance and a willingness to make unpopular decisions in bringing about modal shift changes, specifically from taxis to buses and/or trains. However, it will need advocacy at the highest level, and Department of Transport should focus on this as a priority.

3.8 INFORMATION SYSTEMS AND DATABANKS

If a national spatial data framework is to offer meaningful analytical support to the aims of NATMAP 2050, a number of fundamental changes are needed in the way the DoT operates its information systems. Of immediate importance is the need to set up a centralized but internal GIS committee to engineer and oversee national structures and GIS development. No longer should provincial departments be allowed uncontrolled independence to make unilateral decisions without consideration of the national perspective. Rather the key provincial architects of GIS should be the committee and introduce their initiatives into a broader framework. Collective custodianship is intrinsic to the success of such an endeavor.

GIS, by design, is able to offer a wealth of outstanding analysis functionality, given its inherent, core topological capability. More attention needs to be directed towards the range of GIS modeling tools that can be introduced. Thematic interactions, intelligent gridding, lateral thinking and pattern recognitions can all offer useful and statistically defensible models to help towards NATMAP’s 2050 goals.

3.9 INSTITUTIONAL ASPECTS OF TRANSPORT

Current legislation needs to be reviewed and amended in order to ensure and promote the proper integration of transport modes.

The biggest problem from a legislative point of view is that some important principles contained in policies drafted by municipalities/provinces and national government and various pieces of legislation are not being implemented. If implemented correctly, they could be of great effect.

It is imperative, in terms of section 41 of the Constitution, that the different spheres of government co-coordinate their actions and legislation with one another.
3.10 LEGAL AND POLICY ANALYSIS

The need for a revision of existing transport legislation arises for a number of reasons. The main underlying factors are: the emergence of new development patterns, with the redistribution of responsibilities for resource management among central and local governments, local communities and the private sector; and, even more important, the growing concern for sustainability and increasing awareness of the interactions among interdependent activities.

In many cases, an overall review of the transport sector may evidence the need for new or revised legislation. There may be a need to provide a legal basis for issues that are not dealt with under the existing legislation, for example activities that have become common but lack enabling legal provisions, or activities that are being encouraged.

Transport policy and legislation have to deal with and reconcile a great number of actors, regulatory regimes and property and use rights that interact in the same areas. This simple consideration explains many of the difficulties often encountered in the development of appropriate transport legislation.

4. FORWARD PLANNING (PHASE 3)

4.1 ECONOMIC ROLE OF TRANSPORT

- Given the recognition that without transportation there would be no travel or trade of any kind, the extent of infrastructure investment as well as those related to transport services and the inter-industry linkages are integral parts of transport’s overall economic role.
- Time lags between investments and their influence on growth also affect transport’s contribution to the economy.
- Transport efficiency is also a major impacting factor on the GDP, this does not necessarily hold for individual projects and as such the application project appraisal methods becomes important in setting of priorities and implementation decision making processes. All in all, the basic theme recurs: there can be no economic growth without transport but there is no magic in transport.

4.2 DEMOGRAPHIC FORECASTS

- **Densification and infill development** should take place along public transport corridors, in order for people to reduce their driving time to work. The provision of community facilities should become a priority in these corridors and nodes.
- **Development of rural areas** would provide the necessary infrastructure that promote economic activity and reverse the movement of people from rural areas as well as make the maintenance of the rural infrastructure sustainable.
- The lack of an up to date population policy that is sensitive to the dynamics and movement of the population impedes on proper transportation planning.

Given the continued influx of the population to the more economically developed metropolitan and other urban areas and the burden of providing proper transport in the high density areas, public transport provision should be supported by population and land policies that actively support population control.

4.3 LAND USE

Strategies that are formulated to align land use and transportation are geographic specific and are formulated on a provincial basis. Below is a brief list of these strategies:

- The extended Moloto Corridor linking Tshwane (Gauteng) with Jane Furse in Limpopo via the Mpumalanga sections of the Moloto corridor using alternative modes of public transport.
- Establish a strong Development Corridor linking the Southern Cape with Saldanha-Vredenburg Growth Motor via Malmesbury, Wellington, Gouda, Wolseley, Ceres, Worcester, Breede River Valley.
- An extended Multi-Purpose Development Corridor linking the new port and Industrial Development Zone (IDZ) of Ngqura (Coega), to Maputo via Port Shepstone, Pietermaritzburg, eThekwini and Richards Bay.
- Corridor development focusing on three major nodes approximately 200km radius around both Port Elizabeth (PE) and East London (EL).
• The Xhariep Route linking the Xhariep Dam with Bethulie, Smithfield, Rouxville and Zastron, where it links up with the Maloti route.

• Link the Lephalale coal field to the Richards Bay Coal Terminal and the Witbank coal-fired power stations, with inter alia infrastructure development to enable rail movements to Richards Bay Harbour Coal Terminal.

• An inter-regional commuter rail network must be developed to link the Highveld high density urban areas of eMalahleni and Steve Tshwete with Pretoria, also linking with the Moloto Rail Corridor and the Gautrain system between Pretoria and Johannesburg.

• Focused infrastructure delivery to enhance mining related growth: Infrastructure delivery programme to support new mining activities in Bojanala Platinum and Dr Kenneth Kaunda districts.

• Improving transport infrastructure for Tourism Industry: Upgrading of the primary road to Kgalagadi Transfrontier Park (R358) and some sections of the N12 in the province.

4.4 ENERGY AND ENVIRONMENT

4.4.1 Energy and Transport

The following actions are proposed:

Short term (2010-2013)

• Create an energy awareness programme.
• Promote non-motorized transportation.
• Promote fuel efficiency measures.
• Plan for new long-term transportation infrastructure.

Medium term (2020)

• Continue further public education and awareness programme.
• Finalize long-distance infrastructure investment and planning.
• Implement transport mode shifts.
• Review earlier short-term measures.

Long term (2030)

• Implement long-distance infrastructure.
• Expand the quantity of goods and number of people affected by transport mode shifts.
• Review earlier medium-term measures.

4.4.2 Environmental Management and Transport

A number of principles are addressed and proposals are made that concern linkages between environmental management, land-use and transportation.

• Demand Management
• Diversifying Options
• Integrated Urban Planning and Transportation Planning
• Decision making processes
• Environmental Protection and Waste Reduction
• Land Use
• Energy Use

4.5 PASSENGER TRANSPORT STRATEGIES

• The DoT and Cabinet should approve the principle of the establishment of an inter-regional SPTN as an extension of the IRPTN’s in terms of the National Public Transport Strategy and Action Plan;
• All planning of Planning Authorities, DoT Agencies and Public Enterprises must be aligned with the SPTN;
• A detailed SPTN Operational Plan, Business Plan, Financial Plan and Implementation Plan must be developed in 2010 in order to establish the SPTN;
• That research is conducted on the operating costs of different inter-regional public transport modes in South Africa, including modern technologies used internationally, and their optimal roles in serving different market segments, as inputs into the SPTN;
• Clear guidelines should be provided in terms of who should be responsible for the provision, funding, and maintenance of facilities and the control and management functions of the proposed services.
• Proposals should be made on how the National, Provincial and Local Government need to coordinate planning to determine funding needs and priorities within the province.
• Modal transfer facilities should be located at major nodes in the province, to ensure that different services are interconnected, and to ease transfer between modes and between routes.

4.6 FREIGHT TRANSPORT STRATEGIES

The following main conclusions are drawn, presented as a vision statement for the freight industry in South Africa:

• Freight Transport operations in all modes will supply services to meet the demands of customer industries.
• Government will supply infrastructure and will manage effective quality regulations.
• There will be regulated free and open competition within and between all freight modes.
• Infrastructure usage charges will provide for current rehabilitation and sustainable funding.
• Freight Transport services will be self sustaining for both infrastructure and operations.
• Quality regulation will be based on defined and legislated standards to control externalities and ensure equitable competition.
• Department of Transport will be structured to effectively manage the quality standards, with appropriate delegation to provinces and agencies, based on monitored performance contracts.
• Private sector investment and innovation will be promoted in all freight modes including PPP developments in regulation and provision of subsidized social services, e.g. branch lines and rural facilities.
• Effective and appropriate information systems will be developed as part of operator registration systems in all modes, to inform policy directions.
• Effective cross-border procedures and processes will be developed and implemented to promote SA regional trade;
• Intermodal transport will be promoted by removing restrictions on road and rail operations.
• Long term strategies and measures will be developed to forestall impacts of liquid fuel shortages.
• Coastal Shipping and a SA Merchant marine industry will be promoted.

4.7 INFRASTRUCTURE DEVELOPMENT PLANS

4.7.1 Road Network

South African road network is one of best road infrastructure networks in SADC and the entire continent. It includes national roads, provincial roads (R2 and R3 levels), district and local roads. The network is currently carrying the most of passenger movements and short & middle distance freight transport. Proper preservations of the public assets need sufficient funds. Department of Transport and Road Agencies at national and local levels should pay attentions to maintain the road network in order to meet the needs of economic development.

Using First Order Network Assessment (FONA) and EMME2 (Transport Demand Model) from 2005 to 2050, the models indicate that most of the provinces will double their traffic volumes. The overloading control and broad road safety measurements should be enforced nationwide to serve the routine travel demand and growing economy.

4.7.2 Railway Network

The NATMAP 2050 indicates that standard gauge (1 435 mm) is better than “Cape Gauge” (1 067mm) in all respects except for the infrastructure cost that would approximately be between 5-7% or more. However, it recommends that the Cape Gauge (1067 mm) of the current network should be retained on the medium term for freight and lower speed passenger services due to the cost to change the gauge.

Standard gauge (1 435 mm) should however always be considered as an option for new services and extensions of existing lines where both gauges could be viably accommodated to provide the desirable service levels. (Sections could be provided with a third rail or passengers could be transferred at stations).

4.7.3 Airports

Continued growth at the international airports in metropolitan areas presents a major concern, particularly at the three main airports in Gauteng, KZN and Cape Town. OR Tambo International Airport is the only one capable to handle large traffic volumes and wide bodied aircraft and is predicted to accommodate 210 million passengers
per annum by 2050. Apart from the above no major problems are foreseen to accommodate the growth at the domestic and smaller international airports.

In 2050 also Cape Town International Airport will have to be expanded to the maximum capacity that can be accommodated on the present terrain and will operate at full capacity. King Shaka International Airport in Durban will also be operating at 80% of the estimated maximum capacity which could be accommodated on the terrain. However, this airport has limited facilities for corporate, general aviation and law enforcement activities. Options to accommodate these functions at the smaller airports in the province or at the old Durban IA need to be investigated.

Planning for new international airports at the three main airports, particularly its location and time program needs to be executed form a holistic national point of view and any extensions at smaller airports within these provinces need to be synchronized with that as well.

4.7.4 Sea Ports

Sea Port freight handling activities are concentrated mainly in the Eastern Region ports of Richards Bay and Durban where in 2007 the throughput was over two-thirds in all categories followed by the Western Region. Over two-thirds of all liquid bulk will continue to pass through the port of Durban, followed by Ngqura and Saldanha where no new facilities are envisaged during the plan period. The ones at Port Elizabeth are expected to be relocated to Ngqura in 2017 or earlier depending on budget allocation.

Requirements for container facilities will be the key growth segment during the plan period with throughputs are likely to increase five-fold with the new Ngqura Container Terminal, which handled the first vessel in October 2009, providing the main catalyst. In 2007, 67% was handled through Durban, 20 percent through Cape Town, while Port Elizabeth and East Landon handled 13 percent.

4.7.4 Pipelines

Transnet Pipelines (TPL) currently operates all of the pipelines in KZN with Sasol those in Sasolburg and related activity areas. Although demand at the Sasolburg refinery is expected to increase between 2012 and 2014 as a spin-off of upgrades to meet new “clean fuel” specifications the addressable demand will continue to be constrained by refinery rather than pipeline capacity. The refinery is expected to “saturate”, i.e. reaching its capacity limit of about 5, 6 billion litres p.a. in about 2013/14. There are thus at this time no plans to increase the capacity of the crude-oil pipeline as its current capacity of 6,8 billion litres pa is more than sufficient to meet demand.

There is scope for further pipeline development and with private sector investment and competition there is likely to be a reduction in costs of transport by pipeline and supply of adequate capacity in the future. If all future pipeline strategic decisions and investment is restricted to government parastatals which are mainly profit driven and with less focus on national economic stability and security, it is likely that supply will lag demand and future tariffs will continue to reflect a monopoly premium and transport logistics will be sub-optimal.

4.8 FINANCE

Recommendations for funding sources and governance mechanisms

• **Provincial Transport Investment Funds (PTIFs):** A transport investment fund is proposed for each province to provide the necessary dedicated funds to fund new and maintain existing transport infrastructure in the provinces.

• **Weight-Distance Tax:** This form of taxation is proposed for future consideration. To be effective, weight-distance charges must collect and relate only basic data elements on a particular facility/network during a specific time period, viz., vehicle kilometers travelled, vehicle weight or axle weights, and a means of identifying and relating a particular vehicle to the owner and to the mileage and weight measurements.

• **User Charge Evolution:** A user charge structure that is heavily dependent on fuel tax could face some instability when considering both rising input prices for fuel as well as environmental considerations into the future. In the South African context, the three spheres all have some roles and responsibilities to provide transport. This entails some participation in revenues raised for transport. A restructured user charge therefore, appears to be advisable, based upon the following principles.
  o Ownership or licence fee accruing at local level would be an entry fee into the system, taking into account the value of the vehicle, type and usage – commercial or non-commercial.
  o Facility use tax (access) accruing at local and provincial levels. This level should reflect facility usage – benefit derived, hence allows charges according to mileage.
  o Weight-distance tax accruing at provincial and national levels: This would reflect actual axle weight, type of facility, location, distance and time of travel so as to cater for pavement wear;
Environmental degradation charge accruing at national level. The fuel levy, stable as it may have been in the past – growing with traffic, is bound for structural adjustment in the face of escalating prices, environmental concerns, alternative motive power and, hence, fuel sources, energy conservation concerns.

Recommendations for mega transport projects relevant to NATMAP 2050: With regard to current infrastructure facilities that are owned by Government, their expansion to meet future requirements could be done through concessioning to the private sector with a view that the private sector could upgrade and operate such facilities for a certain defined period of time. This would allow the private sector funder and operator to recover their investment and associated costs. However, Government oversight is always critical to ensure that such facilities are accessible to all and further to ensure that they are used for purposes of facilitating economic growth.

4.9 LEGAL AND INSTITUTIONAL

The abovementioned phase 3 recommendations should be discussed and work shopped with a view to drafting the necessary legislation. In the case of provinces, they should investigate their provincial legislation to determine the impact of the proposals on their existing legislation and then amend it if necessary. Where non-statutory structures, such as co-ordination committees, are proposed, the necessary steps should be taken to establish them. The Proposed Transport Planning and Implementation Bill is being developed to enact most of the new institutions proposed below and to institute NATMAP 2050 as a statutory planning instrument.

New institutions:
- Department of Transport – Multi Modal Policy Forum
- Transport Investment Clearing House
- Transport Economic Regulator
- Road Weight Distance Charging Agency

5. AGENDA FOR ACTION (PHASE 4)

The main features of the analysis are summarized as follows:
- The total value of all NATMAP 2050 projects is **R751.739 billion over a 40 year period**.
- The envisaged expenditure programme is:
  - 19% or R144.375bn in the first 5 years between 2010 – 2015
  - 45% or R335.792bn during 2015 and 2030 and
  - 36% or R271.571bn during 2030 and 2050
- The provincial distribution of the total projects costs varies between 3% and 31%, amongst the 9 provinces, with 65% of total cost situated in the three largest provinces containing most of the metropolitan areas (Gauteng, KZN and Western Cape). The rural provinces allocation comprises 35%, ranging from 3% to 10%.
- The distribution of total cost by transport sector (or category) indicates that most expenditure would be for rail infrastructure with 43% or R326.5bn, followed by road infrastructure (27%, R202.0bn).
- A further detailed breakdown indicates that expenditures on passenger rail projects (25%, R191.1bn) would be the highest, followed by freight rail infrastructure (18%, R135.4bn); national roads (16%, R122.8bn); harbors and airports (12% each, R92bn each) and other roads (10%, R78.7bn).
- Provincial infrastructure projects (i.e. projects located within only one province) represents 60% of total costs; with national infrastructure projects (projects across provincial boundaries) representing 39% of total costs. Financial Institutional Legal and Management (FILM) projects represents less than 1% of total costs or R709 million. However, the majority of project planning and design costs are included in the estimated capital costs of infrastructure projects.
## National Infrastructure Projects

### Eastern Cape

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tr>
<td>4067</td>
<td>Upgrade N9 through EC</td>
<td>R 320.00</td>
<td>R 320.00</td>
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<td>34</td>
<td>SSI 4: N2 Wild Coast East London-Durban</td>
<td>R 10,000.00</td>
<td>R 10,000.00</td>
<td>R 2,000.00</td>
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<td>4627</td>
<td>Upgrade N6</td>
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<td>R 1,420.00</td>
<td>R 420.00</td>
<td>R 1,000.00</td>
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<td>4626</td>
<td>Upgrade N10</td>
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<td><strong>R 13,020.00</strong></td>
<td><strong>R 2,740.00</strong></td>
<td><strong>R 10,280.00</strong></td>
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**Total Category 2 & 3 Provincial Project Cost**

| | | | | | | |
| | R 35,867.10 | R 35,867.10 | R 2,740.00 | R 33,127.10 | R 1,434.00 | R 1,434.00 |

### Free State

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</thead>
<tbody>
<tr>
<td>174</td>
<td>New Multi-Modal Pipeline (NMPP) between Durban &amp; Gauteng</td>
<td>R 11,000.00</td>
<td>R 3,740.00</td>
<td>R 3,740.00</td>
<td>R 0.00</td>
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<tr>
<td>626</td>
<td>SA2 Rail a: JHB - Durban High Speed Line: Feasibility study</td>
<td>R 97,997.00</td>
<td>R 34,300.00</td>
<td>R 18.00</td>
<td>R 7,000.00</td>
<td>R 27,282.00</td>
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<td>9</td>
<td>KZN N3 a: De Beer’s Pass</td>
<td>R 5,200.00</td>
<td>R 1,300.00</td>
<td>R 1,300.00</td>
<td>R 625.00</td>
<td>R 675.00</td>
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<td><strong>Total Category 3 - National Infrastructure Project Cost</strong></td>
<td><strong>R 114,197.00</strong></td>
<td><strong>R 39,340.00</strong></td>
<td><strong>R 4,383.00</strong></td>
<td><strong>R 7,675.00</strong></td>
<td><strong>R 27,282.00</strong></td>
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**Total Category 2 & 3 Provincial Project Cost**

| | | | | | | |
| | R 46,476.71 | R 46,476.71 | R 11,572.62 | R 34,904.09 | R 29,669.69 | R 29,669.69 |

### Gauteng

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<tbody>
<tr>
<td>174</td>
<td>New Multi-Modal Pipeline (NMPP) between Durban &amp; Gauteng</td>
<td>R 11,000.00</td>
<td>R 1,320.00</td>
<td>R 1,320.00</td>
<td>R 0.00</td>
<td>R 0.00</td>
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<tr>
<td>614</td>
<td>KZN 2 Rail b: Johannesburg - Durban: Provide 3rd line</td>
<td>R 50.00</td>
<td>R 5.00</td>
<td>R 0.00</td>
<td>R 0.00</td>
<td>R 5.00</td>
</tr>
<tr>
<td>626</td>
<td>Johannesburg - Durban High Speed Line</td>
<td>R 97,997.00</td>
<td>R 9,800.00</td>
<td>R 47.00</td>
<td>R 9,753.00</td>
<td>R 0.00</td>
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<tr>
<td>999911</td>
<td>Develop a regional passenger rail system: N4 corridor (Pretoria-eMalahleni-Middelburg-Mbombela-Kaapmuiden)</td>
<td>R 24,000.00</td>
<td>R 4,000.00</td>
<td>R 0.00</td>
<td>R 2,000.00</td>
<td>R 2,000.00</td>
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<tr>
<td>1060</td>
<td>Develop a regional passenger rail system: N12 corridor (Johannesburg-Delmas-Ogies-eMalahleni)</td>
<td>R 6,500.00</td>
<td>R 2,000.00</td>
<td>R 0.00</td>
<td>R 2,000.00</td>
<td>R 0.00</td>
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<tr>
<td>4545</td>
<td>Pretoria - Polokwane High Speed Rail</td>
<td>R 14,000.00</td>
<td>R 3,000.00</td>
<td>R 0.00</td>
<td>R 3,000.00</td>
<td>R 3,000.00</td>
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<tr>
<td>4586</td>
<td>Pretoria Moloto New Medium Speed Rail line and passenger service (Siyabuswa to Pretoria)</td>
<td>R 12,000.00</td>
<td>R 4,000.00</td>
<td>R 10.00</td>
<td>R 3,990.00</td>
<td>R 0.00</td>
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<tr>
<td>4449</td>
<td>Multimodal transfer at Jameson Park for transfer from pipeline to road</td>
<td>R 20.00</td>
<td>R 20.00</td>
<td>R 20.00</td>
<td>R 0.00</td>
<td>R 0.00</td>
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<tr>
<td><strong>Total Category 3 - National Infrastructure Project Cost</strong></td>
<td><strong>R 165,567.00</strong></td>
<td><strong>R 24,145.00</strong></td>
<td><strong>R 1,397.00</strong></td>
<td><strong>R 23,248.00</strong></td>
<td><strong>R 17,743.00</strong></td>
<td><strong>R 5,005.00</strong></td>
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</table>

**Total Category 2 & 3 Provincial Project Cost**

| | | | | | | |
| | R 104,297.96 | R 104,297.96 | R 25,069.16 | R 79,228.80 | R 67,369.30 | R 11,859.50 |
### List of National Infrastructure Projects in KwaZulu-Natal

<table>
<thead>
<tr>
<th>Project Ref. No.</th>
<th>Project Description</th>
<th>National Project Cost</th>
<th>Cost Located within Province</th>
<th>Project Cost Allocated to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>621</td>
<td>KZN 8 Rail: Richards Bay - Broodsniersplaas: Provide 3rd line</td>
<td>R 29,803.00</td>
<td>R 18,627.00</td>
<td>R 29,803.00</td>
</tr>
<tr>
<td>614</td>
<td>KZN 2 Rail b: Johannesburg - Durban: Provide 3rd line</td>
<td>R 50.00</td>
<td>R 27.00</td>
<td>R 50.00</td>
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<tr>
<td>9</td>
<td>KZN N3 a: De Beer’s Pass</td>
<td>R 5,200.00</td>
<td>R 3,900.00</td>
<td>R 2,025.00</td>
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<tr>
<td>626</td>
<td>SA2 Rail a: Johannesburg - Durban High Speed Line: Feasibility study</td>
<td>R 97,997.00</td>
<td>R 53,897.00</td>
<td>R 42,873.00</td>
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<tr>
<td>174</td>
<td>New Multi-Modal Pipeline (NMPP) between Durban and Gauteng</td>
<td>R 11,000.00</td>
<td>R 4,840.00</td>
<td>R 4,840.00</td>
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</tbody>
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Total Category 3 - National Infrastructure Project Cost: R 144,050.00

Total Category 2 & 3 Provincial Project Cost: R 234,903.00

### List of National Infrastructure Projects in Limpopo

<table>
<thead>
<tr>
<th>Project Ref. No.</th>
<th>Project Description</th>
<th>National Project Cost</th>
<th>Cost Located within Province</th>
<th>Project Cost Allocated to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4481</td>
<td>Upgrade D113 : Link between Sun City to Derspoort via Limpopo</td>
<td>R 291.00</td>
<td>R 291.00</td>
<td>R 261.00</td>
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<tr>
<td>4483</td>
<td>Upgrade of R37 linking Burgersfort via Lydenburg N4 corridor and Maputo harbor</td>
<td>R 829.00</td>
<td>R 829.00</td>
<td>R 746.00</td>
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<tr>
<td>4587</td>
<td>Moloto Jane Furse: Extend New Moloto Rail corridor</td>
<td>R 9,500.00</td>
<td>R 9,500.00</td>
<td>R 9,500.00</td>
</tr>
<tr>
<td>4545</td>
<td>Pretoria - Polokwane High Speed Rail</td>
<td>R 14,000.00</td>
<td>R 11,000.00</td>
<td>R 11,000.00</td>
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<tr>
<td>651</td>
<td>Upgrades/Capacity Improvements on N1</td>
<td>R 464.00</td>
<td>R 464.00</td>
<td>R 464.00</td>
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<tr>
<td>653</td>
<td>Add Capacity: 1 lane per direction on N1 Section between Makhado and Musina and Gauteng North (Carousel Plaza) and Bela-Bela</td>
<td>R 526.00</td>
<td>R 526.00</td>
<td>R 526.00</td>
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<tr>
<td>4080</td>
<td>Provide SADC Maputo Link via Mombela</td>
<td>R 4,500.00</td>
<td>R 4,000.00</td>
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Total Category 3 - National Infrastructure Project Cost: R 30,110.00

Total Category 2 & 3 Provincial Project Cost: R 49,029.60
## Category 3: List of National Infrastructure Projects in Mpumalanga

<table>
<thead>
<tr>
<th>Project Ref. No.</th>
<th>National Project Cost</th>
<th>Cost Located within Province</th>
<th>Project Cost Allocated to:</th>
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</thead>
<tbody>
<tr>
<td>173</td>
<td>Kendal to Matola Petroleum Pipeline</td>
<td>R 2,200.00</td>
<td>R 2,200.00</td>
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<tr>
<td>614</td>
<td>KZN 2 Rail: Johannesburg - Durban: Provide 3rd line</td>
<td>R 50.00</td>
<td>R 18.00</td>
</tr>
<tr>
<td>999911</td>
<td>Develop regional rail passenger system along the N4 Corridor (Pretoria-eMalahleni-Middelburg-Mbombela Kaapmuiden)</td>
<td>R 24,000.00</td>
<td>R 20,000.00</td>
</tr>
<tr>
<td>177</td>
<td>Upgrade of N17 (development of Extended N17 Toll Road)</td>
<td>R 600.00</td>
<td>R 600.00</td>
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<tr>
<td>4080</td>
<td>Provide SADC-Maputo link via Mbombela</td>
<td>R 4,500.00</td>
<td>R 500.00</td>
</tr>
<tr>
<td>4586</td>
<td>Pretoria Moloto New Medium Speed Rail line &amp; passenger service</td>
<td>R 12,000.00</td>
<td>R 8,000.00</td>
</tr>
<tr>
<td>174</td>
<td>New Multi-Modal Pipeline (NMPP) between Durban and Gauteng</td>
<td>R 11,000.00</td>
<td>R 1,100.00</td>
</tr>
<tr>
<td>621</td>
<td>KZN 8 Rail: Richards Bay-Broodsnyersplaas: Provide 3rd line</td>
<td>R 29,803.00</td>
<td>R 11,176.00</td>
</tr>
<tr>
<td>4060</td>
<td>Regional Rail Passenger System: N12 Corridor</td>
<td>R 6,500.00</td>
<td>R 4,500.00</td>
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</table>

### Total Category 3 - National Infrastructure Project Cost

|                       | R 90,653.00 | R 48,094.00 | R 3,906.67 | R 23,011.33 | R 21,176.00 |

### Total Category 2 & 3 Provincial Project Cost

|                       | R 75,546.30 | R 8,301.67 | R 39,839.63 | R 27,405.00 |

## Category 3: List of National Infrastructure Projects in Northern Cape

<table>
<thead>
<tr>
<th>Project Ref. No.</th>
<th>National Project Cost</th>
<th>Cost Located within Province</th>
<th>Project Cost Allocated to:</th>
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</thead>
<tbody>
<tr>
<td>608</td>
<td>WC 1 Rail: Ore Line Improve Capacity</td>
<td>R 8,959.00</td>
<td>R 3,136.00</td>
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<tr>
<td>609</td>
<td>WC 2 Rail: Ore Line: Double Line</td>
<td>R 39,606.00</td>
<td>R 13,862.00</td>
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</table>

### Total Category 3 - National Infrastructure Project Cost

|                       | R 48,565.00 | R 16,998.00 | R 3,136.00 | R 3,325.00 | R 10,537.00 |

### Total Category 2 & 3 Provincial Project Cost

|                       | R 27,217.70 | R 4,364.00 | R 8,424.10 | R 14,429.60 |

## Category 3: List of National Infrastructure Projects in North West Province

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<th>National Project Cost</th>
<th>Cost Located within Province</th>
<th>Project Cost Allocated to:</th>
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</thead>
<tbody>
<tr>
<td>5139</td>
<td>Development of a Regional Passenger Rail System on the N4 Corridor</td>
<td>R 6,225.00</td>
<td>R 6,225.00</td>
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<tr>
<td>5140</td>
<td>Development of a Regional Passenger Rail System on the N12 Corridor</td>
<td>R 8,715.00</td>
<td>R 8,715.00</td>
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</table>

### Total Category 3 - National Infrastructure Project Cost

|                       | R 14,940.00 | R 14,940.00 | R 0.00 | R 14,940.00 | R 0.00 |

### Total Category 2 & 3 Provincial Project Cost

<p>|                       | R 25,755.40 | R 2,021.60 | R 20,807.60 | R 2,926.20 |</p>
<table>
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<tr>
<th>Project Ref. No.</th>
<th>Project</th>
<th>National Project Cost</th>
<th>Cost Located within Province</th>
<th>Project Cost Allocated to:</th>
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<tbody>
<tr>
<td>608</td>
<td>WC 1 Rail: Ore Line Improve Capacity</td>
<td>R 8,959.00</td>
<td>R 5,823.00</td>
<td>R 5,823.00</td>
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<tr>
<td>609</td>
<td>WC 2 Rail: Ore Line: Double Line</td>
<td>R 39,606.00</td>
<td>R 25,744.00</td>
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<td>R 31,567.00</td>
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<td>R 151,936.38</td>
<td>R 33,619.38</td>
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