

# EXPECTATIONS OF THE NATIONAL TRANSPORT MASTER PLAN

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## ABSTRACT

The proposed National Transport Master Plan 2005-2050 (NATMAP 2050) aims to develop a dynamic; long term; and sustainable land use/multi-modal transportation systems framework for the development of networks infrastructure facilities; interchange terminal 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; and
- a coordinated implementation schedule and/or action agenda for the whole country; and/or specific national and provincial spatial development corridors and regions until 2050.

In other words this Project is to prepare a physical development plan, referred to as a Master Plan, as the framework by which our future state-of-the-art multi-modal transportation systems planning, implementation, maintenance, operations, investments, and monitoring decisions are to be made UNTIL 2050. It is an action plan.

This Project is to; amongst many issues; identify, examine, assess, and propose;

- various land use/spatial development models to sustain investment in the state-of-the-art multi-modal urban/rural transportation systems;
- cost effective models for an integrated public/private sector corridor/regional economic development;
- a vision, goals and objectives for each of the national development corridors and/or economic regions;
- integrated growth and development strategies for each development corridor and/or region of national importance;
- potential economic development projects and compile a comprehensive economic status map of national importance;
- an integrated multi-modal infrastructure facilities development plan;
- cost effective policies promulgation, and/or changes to enhance the coordination of transportation services;
- cost effective institutional arrangements and a model for efficient and effective investment, planning, implementation, operations, maintenance, and monitoring; and
- an action agenda for the various key stakeholders, based on the preferred development strategy and integrated development plan

## 1. BACKGROUND

Transport is a prerequisite, although not a guarantee of the socio-economic development of the Republic of South Africa as a whole. To this effect transport in all aspects “is the heartbeat of the economy” and the fabric of the nation. For example; the Government’s efforts to provide sustainable food security through an expanding agricultural output requires the timely availability of seeds, fertilizers, and other inputs.

It also requires that farmers must have reasonable access to their markets. Pursuance of expanded industrial output inevitably requires the efficient transportation of raw materials, as well as the distribution of finished products to consumer outlets. Furthermore, transportation of exports requires cost effective sea/air port infrastructure facilities and land transport connections to these ports. Thus an efficient transportation network underlies a healthy economic development for all.

On the other hand an inefficient transportation network is not only a recipe for a socio-economic disaster but an eventual weapon of mass disaster. The costs of exports and imports from and to this country are exorbitant because according to the recently launched Freight Strategy:

*“The freight system in South Africa is fraught with inefficiencies at system and firm levels. There are infrastructure shortfalls and mismatches; the institutional structure of the freight sector is inappropriate, and there is a lack of integrated planning. Information gaps and asymmetries abound; the skills base is deficient, and the regulatory frameworks are incapable of resolving problems in the industry” (National Freight Logistics Strategy pp ii)*

The most critical impact has been felt in the rail network. Here we have seen a steep decline in the reliability of the ageing rolling stock fleet and the emergence of serious safety issues resulting from poor condition and technical obsolescence. Resources allocated have been insufficient either to address these safety issues or to effectively control wide spread fare evasion and criminal activities at stations. We have not built a single new section of commuter rail line for a long time. It is therefore seen as a high priority that we must first of all arrest the decline in commuter rail services and then begin a process of dramatically extending their reach. In view of the strategic role of transport in our socio-economic development, the large investments required, and the heavy foreign exchange costs frequently involved, it is now paramount that there is a comprehensive, multimodal and integrated transport plan that is demand responsive to various land uses and sectoral investments.

The concept of developing a national transport master plan has been on policy papers since the 1996 White Paper on Transport Policy. Transport Lekgotla held on 08-09 April 2005 resolved that we should develop an “Integrated National Transport Plan to provide a “big picture” for multi-modal transport systems development. The Department has already started the process of developing the proposed ‘Integrated National Transport Plan. However, due to unforeseen constraints and the magnitude of the work to be undertaken it is now paramount that there is a practical or pragmatic approach to have an integrated national transport master plan with a 2005 to 2050 planning horizon by December 2008.

Meanwhile, it is of great importance that we all understand why we need this plan. The main reason in developing a national plan is to examine, determine, and crystallise the relationships between various land uses and the consequential transportation requirements/needs. In other words the Master plan must attempt to attain a cost effective

balance between demand and supply. To this effect the Plan will ultimately show how the interaction between various land uses may be varied so as to evolve an integrated transportation plan's investment strategy for the development of the entire country such that any sectoral economic Planning Authority may meet its established transportation goals and objectives in the most efficient, economic, and cost effective way, bearing in mind constraints on availability of all the necessary resources. At the moment, development of multi-modal transport systems in the country is still on a relatively uncoordinated basis.

In the course of developing the Plan, it will be necessary to identify and crystallise existing perennial problems and those which will result from alternative socio-economic development strategies and indicate how best these may be tackled. There are many issues that need to be looked at; for example, whether the existing land use patterns are optimum and consistent with local aspirations outside major urban centres; whether the economic feasibility of developing more intensive multi-modal transport services in any part of the country is dependent on rapid population increase in the area; substantial growth in income levels resulting in increased vehicle ownership, increasing housing density; and increased travel/mobility demand. This of course presupposes that strategic investment in transport planning, operations and management will influence urban and rural development through stimulating industry, wholesale and retail business, office demand and location; and residential development at strategic nodes in the transportation network.

In view of the above, the proposed National Master Plan is to be undertaken in four major phases. The first phase is in essence the 'status quo' Inventory primarily concerned with establishing the basic facts needed for any meaningful long term planning. The presentation of facts in this phase will be quite candid so as; (1) to describe the national status quo of various land uses versus the supply of transport services;(2) to provide measurable data for the base year (2005);and (3) to indicate alternative models for reliable forecasts over the planning period.

The second phase will be concerned with analysing the amount, kind and location of travel likely to take place from land uses of national importance within the country in the next 20-50 years. This Phase 2 will be concerned with future growth and change in the country and in its travel requirements between 2005 and 2050.It will delineate the demographic and economic growth in the country and project these through 2050.The future uses of land will be detailed and, using this source, future travel requirements will be computed. These future travel requirements will be scaled against the existing supplies of transportation services so that the magnitude of needed future improvements will be known. This will set the stage for plan making

Phase 3 will set forth the criteria for planning, including standards for transportation facilities and for servicing the various land uses. Plans for (national transportation systems networks structural lay outs) and public transport infrastructure facilities will be developed and tested. At this stage, benefits will be weighed against costs, tax requirements will be estimated and financial feasibility measured.

The final stage, Phase 4, will be a pragmatic action plan for the staging of a prioritized work programme so as to obtain the greatest community benefits as implementation proceeds.

## 2. SOME OF THE PROBLEMS TO BE ADDRESSED

Transportation systems in the Republic of South Africa are characterized and riddled with both intra and inter-modal (endogenous and exogenous) inherited and/or acquired problems. To this effect various transport components/elements of current transport systems are operated and regulated by different governmental agencies and private operators at all three spheres of government. In many cases, there is little coordination amongst those responsible for the operation of the various components/elements of both rural and urban transportation systems. This has resulted in each agency and operator attempting to improve those elements under its jurisdiction without consideration of the efficiency and effectiveness of the overall rural and urban transportation systems and sometimes at the expense of the other elements of the various modes of transport. It has also resulted in the exclusion of alternatives or modal system options that do not have institutional sponsors.

A typical example is the lack of coordination in many urban areas between agencies responsible for providing and operating infrastructure facilities and public passenger transport systems. Another example is the general inability of the taxi industry, SARCC, PUTCO operators to plan and operate their transport systems in an integrated manner.

The Department of Transport seeks ways and means to improve the efficiency and effectiveness of multi-modal transportation systems. To this end, DoT is now focusing on alternative approaches for improving the coordination and integration amongst the various agencies and operators responsible for operating various elements of transport systems and how to better organize and operate multi-modal systems. In pursuance of this quest, the Department firmly believes that the proposed National Transport Master Plan (NATMAP) must address but not be limited to the following problems.

1. Currently our transport systems are neither demand responsive nor cost effective. There is an urgent need to turn around current supply of inefficient and wasteful transport services to demand responsive services aligned to existing and sensitive land use patterns.
2. The lack of an up to date and accurate data bank is a major constraint to transport planning, implementation, management and monitoring. In 1998, the Department unsuccessfully attempted under Tender PS8: LAND TRANSPORT INFORMATION SYSTEM to establish a Central Data Bank. NLTTA (2000) Section 6(1) requires that: *"The Minister must develop, establish and maintain a national information system with regard to land transport, based on sound business processes, and in collaboration with the provinces integrate with the information systems kept by them in relation to land transport"* *"It is not possible to have a meaningful forward planning without a sound data base on both land uses which generate demand and transport systems that provide the supply part of the equation.*
3. South African Railways rolling stock is approximately 35 years behind current state of the art systems." Its expense, and the inability of the rail network to show signs of rapid restructuring and increased efficiency, confirms what is on the minds of government planners - that free market competition in the sector is necessary to foster reform, efficiency and effectiveness....Almost every respondent believes that the state-run rail network is either below average or poor in its performance." (Business Day June 21 2005). At the same time the Gautrain Project, and the Transnet CEO announcement that "a feasibility study into the construction of a high-speed wide-gauge freight railway line between Johannesburg and Durban is being conducted as part of the Government's R165bn infrastructure expenditure programme. The new line would improve turn around times and enable rail customers to meet their production

deadlines”\* (South Africa Transport News - 10 January 2005) has introduced a twofold problem. First, the need for a definite policy shift from the Cape Gauge of 1 067mm to the Standard Gauge of 1 435mm. Second the need for a quantitative economic analysis of the socio-economic impacts, if the country has to shift to the wide gauge.

4. The Department's Taxi Recapitalisation project is at an advanced stage. The main objective of this project is to gradually replace obsolete vehicles with new vehicles. However, there are several transport multi-modal questions that must be answered by the proposed NATMAP if this Project is to become the success story of our transformation in the transport sector .
5. There is pronounced poor land use/transport integrated planning in South Africa. Generally, one expects transportation systems to respond to the needs of committed and/or proposed land use developments, population growth, economic and social welfare in the country. It is equally important that transportation should stimulate economic development in any part of the country. Whilst major corridors are being identified, the travel characteristics in each corridor require detailed consideration in terms of magnitude, orientation and trip length. These characteristics are particularly important for the planning of both passenger and freight services because they dictate the nature of the services or technologies which are most appropriate for each corridor, region and the country as a whole. For example, would passenger and freight services in the Johannesburg/Durban corridor be best handled by rail instead of high capacity road/non-rail guided infrastructure facilities and services? Furthermore, future travel demands within identified travel corridors have not been assigned to the existing networks in order to compare the capacities of the existing transportation systems with future demand and to establish where the greatest deficiencies in transport capacities are likely to occur. These estimates of deficiencies would form the basis for future additions to the existing transportation network.
6. In the absence of estimated deficiencies, it is proposed that existing and future transportation needs within the country be examined under various land use/transport integrated scenarios, with a view to satisfying transportation requirements within each local authority intra- and inter-corridor and providing facilities or services which would be compatible with the characteristics of travel demand in each corridor. The land use alternatives should then be developed as responses to particular transportation problems. For example, if future travel demand analysis suggests a major capacity deficiency within the Johannesburg/Pretoria corridor resulting from significant outbound commuting destined for new development beyond Pretoria or outside the corridor, then the expected land use response would be to reduce total employment within the Johannesburg/Pretoria corridor and re-allocate some of these employment opportunities to locations within another corridor.
7. Poor land use/transport integrated planning is aggravated by sporadic unplanned land use within major corridors; and urban areas. For example, since 1994, unplanned residential areas have mushroomed within and/or along major transport corridors; and within major urban areas. A planning paradigm is that residential areas should as far as possible be separated from major radial and arterial roads in order to enhance road safety and minimize neighbourhood disruption and environmental problems like noise and air pollution. Major road improvements should not divide neighbourhoods. Efforts will be directed towards minimizing the impacts that through traffic presents for local and unplanned residential neighbourhoods. In addition certain transportation improvements create pressure for redevelopment that in some instances may ultimately destroy the neighbourhood concept and cause adverse noise, air pollution and visual intrusion, unless effective development control is exercised by various land use development authorities. Radial and arterial roads in urban areas may usefully define boundaries between various land use zones.

8. Uncoordinated implementation of multi-sectoral land use committed developmental projects is prevalent in South Africa. At the moment local perception is that there is an increasing tendency for each sector to do its own land use development without due regard to the bigger picture of national development. For example, the Provincial Department of Agriculture in the Eastern Cape is implementing its “Mass Food Production Project” without correlating it to investment in the desired transport needs in order to successfully implement the project. To this effect; coordinating of residential, transportation, manufacturing, commercial, tourism, education, health, agriculture, and forestry projects would minimize duplication and waste of resources. Since transportation requirements are intrinsically related to land use, it is imperative that implementation of major economic projects by various sectors is coordinated in order to attain a maximum/cost effective rate of return on capital. A desired land use concept is to locate new employment growth in a number of nodes and limit future employment growth in the major urban centres to manageable proportions. Ideally affordable residential development should be located within the proximity of envisaged employment development. This is only achievable through a pragmatic coordination of land use/transport developmental projects. Thus an improved level of co-ordination and constant consultation is needed “between the three spheres of government (and the private sector) with a view to avoiding duplication of effort and resources” (NLTTA2000Section5 (5) (e));
9. It is therefore imperative to effectively relate land-use to transport planning so that changes in one reflect the needs of the other. For example there are several RDP housing schemes currently under construction in various urban and rural areas in this country. The transport implications of such projects have to be fully examined. A characteristic of transport is that it is not demanded for its own sake, but rather as a necessity consequence of a spatial distribution of activities. The long term influence on changing the spatial structure of any of our urban areas has to be considered as an integral element of land use and transport integrated planning. To this effect, the transport operators must be consulted at an early stage when planning new developments in order to permit the timely purchase of additional vehicles and so as to ensure satisfactory provision for bus routing and other public transport facilities. Development planning must take into account and interact with transportation consequences of such development including improved routes within the transportation network and terminal facilities in the employment areas.
10. There is poor rural accessibility in predominantly rural areas of this country. Approximately 67% of the Eastern Cape population lives in the rural areas of the former homelands of Transkei and Ciskei. Some of the communities live in such remote areas that accessibility is almost impossible especially during the rainy season. Greater mobility is desired for all. This fulfills social and employment needs by ensuring a reasonable level of personal mobility. Provision and maintenance of public transport is essential for public transport captive user-thus people with no modal choice. Ideally people in the rural areas should be provided with reasonable access facilities to their places of work, school, recreation; social welfare services delivery points, and shopping.
11. Escalation of infrastructure facilities, rolling stock and equipment capital and maintenance costs since 1990 is phenomenal. The provision and maintenance costs of the transport infrastructure facilities, rolling stock and equipment are escalating at an unprecedented rate. It is desirable to optimise the use of existing facilities and provide efficiency at a minimum cost. In some areas, some short and medium term solutions can be sought through simple traffic management schemes. Where new investment is inevitable, it will be necessary to ensure that the greatest benefit is derived from the new investment.

12. Financing of transportation systems infrastructure facilities, rolling stock, and equipment is competing with other public services sectors like health, education, housing, water for diminishing financial resources. The major transportation infrastructure requirements in the provinces and local authorities are primarily financed from their own resources. Given existing huge backlogs attributed to lack of funds in the various provincial capital expenditure and maintenance programmes; there is a need for a long term strategy for financing transport infrastructure facilities.
13. At the moment transportation in this country is characterized by fragmentation of the responsibility for multi-modal planning, operation, and regulation amongst different government departments, agencies and private operators in all three spheres of Government and institutional hierarchies. Whilst, it will take a long time to convince the diehards that all aspects of transport should be under one roof for cost effective and homogenous functioning, there is a need to minimize impotent overlaps by establishing cost effective and homogenous institutions; in view of increasing concerns for more efficient and cost effective transportation systems. However, in spite of fragmented institutional responsibilities there have been notable improvements in coordinating multi-modal operations.

In order to improve the efficiency and effectiveness of future multi-modal transport systems planning, operations and regulations in this country, the Department is now interested in cost effective ways of improving coordination amongst various government institutions, and agencies; and integration amongst different service operators. The Department is also interested in developing optimum alternative institutional organisational arrangements that will institutionalize coordination amongst various modes; and integration of different available services. The Department will equally take cognizance of the need to develop both institutional and human technical capacities and efficiencies in the quest of developing and operating sustainable state-of-the-art transportation systems in this country from now until 2050.

*“Capacity building: An integral objective of the project was (is) to build human capacity both at the Steering Committee and within the Department itself. The capacity building goal entailed creating the ability, in the Department and in the sector, to understand and continually refine and develop the strategy long after the consultants had left the project.” (MSA p8)*

### **3. PROJECT OBJECTIVES**

Transportation objectives are vital and must be agreed upon by all planning authorities at a very early stage of developing the National Plan. These goals have to be developed within the context of the nation’s macro socio-economic development plan. The importance of spelling out clear transportation goals and objectives is to use them to establish; the criteria to be used in evaluating alternatives; and the goals achievement matrices. To this effect the following identified objectives will form the basis upon which the national plan is to be developed.

- Maximize utilization of existing infrastructure facilities;
- Development of future infrastructure facilities;
- Development of an up to date and accurate central land use/transportation DATA BANK;
- Gradual and incremental shift from the current 1 067mm Cape Gauge to 1 435mm Standard (Stevenson) Gauge and high speed infrastructure facilities; equipment and rolling stock technologies for the railways network;
- Rail plan implementation strategies;

- Maritime Transport implementation strategies;
- Civil Aviation implementation plans and strategies;
- Public passenger transportation plans and implementation strategies;
- Environmental impact standards;
- Economic contribution of transport to national GDP;
- Land use strategies complementary to transport cost effectiveness;
- Current Transportation Planning Process and Jurisdiction rationalisation; and
- Road Infrastructure Planning and implementation programmes.

#### **4. THE NEED FOR INTEGRATION**

Almost all of the above planning initiatives took and continue to take place in a fragmented manner. There is therefore a need to have a national plan for transport that will guide transport planning, management and operations for all the spheres of government as well as all the different modes. Section 5(5)(k) of the NLTTA prescribes that the Minister must promote effective integrated transport planning.

There is therefore a need for central transport planning that will integrate all of the planning initiatives and close the gaps with regard to transport planning. It is envisaged that a National Transport Plan will go some way to provide a solution to this problem. The envisaged National Integrated Plan will attempt to not only comply with the legislation but also to streamline transport planning both vertically (among the planning authorities) and horizontally (across all modes).

#### **5. DELIVERABLES**

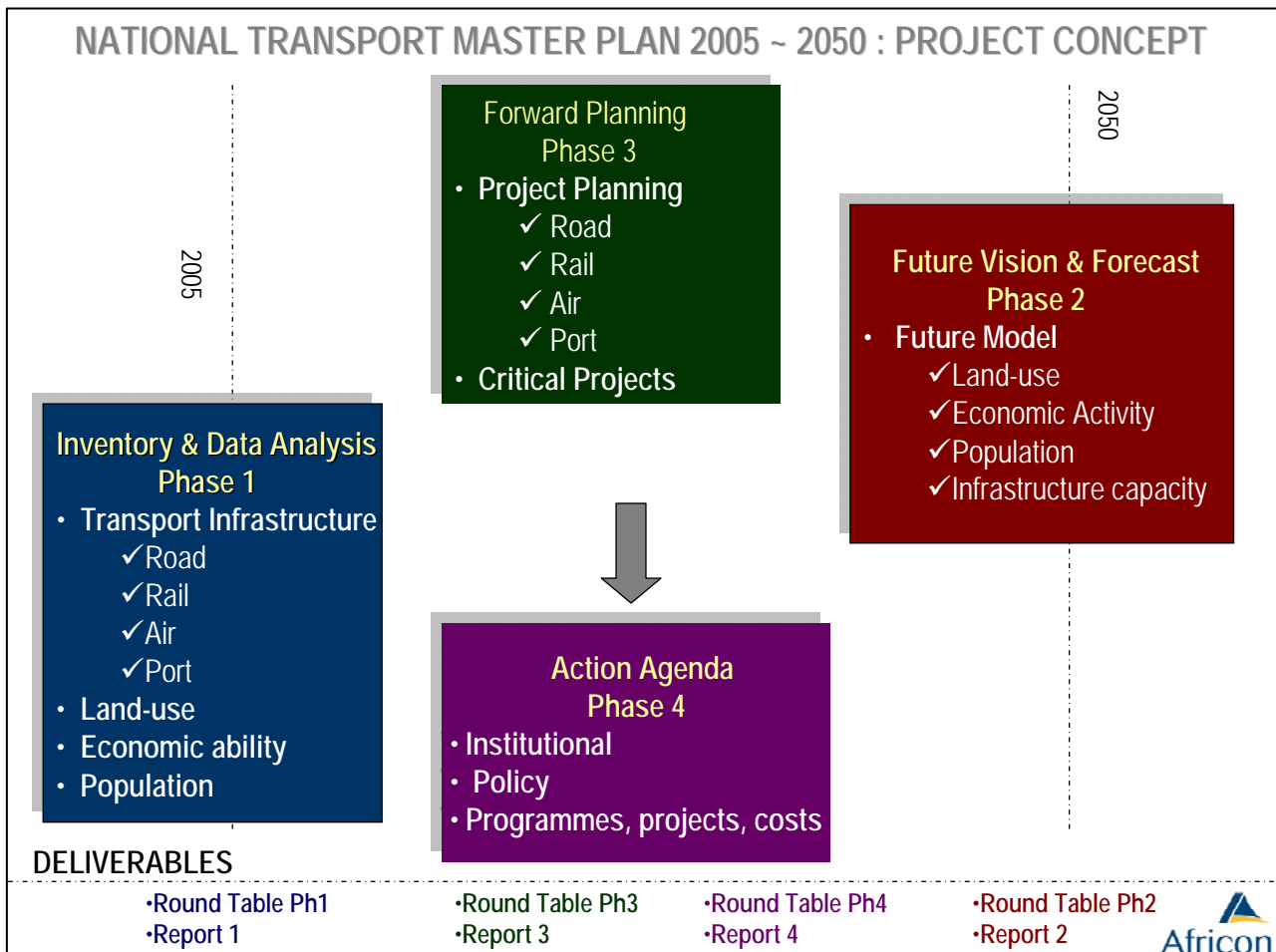
Deliverables, as part of this assignment include, but shall not be limited to, the following:

1. Facilitating the preparation, and/or interfacing of Provincial land use/transportation Master Plans with other sectoral master plans;
2. Facilitating Round Table Conferences for critical stakeholders at the end of each phase to concur, realign, formulate a vision, goals and objectives for the developmental corridors; regions and any spatial initiatives of national importance,. Documenting the vision, goal and objectives in a format that will assist in effectively communicating the strategy to all role-players.
3. Detail the inception project report, refining the scope of work and programmes, taking cognisance of work already done by the various national/provincial departments, agencies and other spatial development initiatives.
4. Phases 1; 2; 3 and 4 Draft Final Reports containing amongst other things technical recommendations
5. Regional maps of the economic development status quo and proposed development visions;
6. National and regional maps containing multi-modal (all modes) systems networks operational statistics, indicating design, practical, spare capacities of all major and/or critical links and nodes of each mode of transport;
7. A Goals Achievement Matrix based but not limited to the stipulated problems and objectives; an integrated transportation analysis, necessary for evaluation of any transport projects;
8. A Central Data Bank, hardware and software,
9. Establishment of an ongoing monitoring system to keep track of trends in the traffic management, and transport planning situation and to measure the effects of specific projects, policy changes, or conditions with direct and/or indirect impacts on transport



10. Proposals on potential anchor/mega projects and preliminary mechanisms for potential investors to participate in the development and preparation of projects for internal and/or external financing;
11. Land use/Transportation Integrated Infrastructure Development Plans for 2005-2050
12. Financing of transport infrastructure facilities criteria;
13. A detailed Agenda for Action and five years periods with interactive programmes for all land use/transportation sectors for the first twenty years, and for the next thirty years thereafter,
14. Round Table Conference presentations and feedback to critical stakeholders at the end of each Phase;
15. A Draft Final Report incorporating stakeholders' feedback and presenting an integrated growth and economic development strategy for each corridor, region, and spatial initiative of national importance. This will subsequently be presented at the Round table Conference;
16. Economic feasibilities and financial viabilities of the Agenda for Action mega projects;
17. A Final Report including an action agenda and implementation framework for the various key stakeholders, based on the development strategy and development plan.

## 6. PROGRESS TO DATE



**Figure 1: Process and phases for the NATMAP project**

The Inception Reports have been completed for all 9 provinces. The provincial Steering and Technical Committees have been established following visits to all 9 provinces by the Project Manager and the Consortia appointed to carry out the NATMAP. Future progress will depend on the inputs received from the provincial committees. Their input will be vital in ensuring the success of the NATMAP process.

Figure 1 summarises the process to be followed in achieving the objectives of the project. The diagram summarises the content of each of the phases and the important components of NATMAP.

## **7. CONCLUSION**

In brief we should ask ourselves a very simple question that many people will always ask us. What is the National Transport Master Plan going to do that other studies have not done to improve transportation planning and investment in this country?

The proposed National Transport master Plan 2050 is a dynamic framework that will facilitate a mandatory planning, developing and maintaining of affordable, safe and efficient multi-modal transport systems. The NATMAP 2050 is to:

- Provide a land use/transport integrated plan providing a prioritized programme of implementation and investment responsive to a national economic development strategy;
- Provide Provincial Master Plans for each province embracing the resources and uniqueness of each spatial development;
- Provide a 5 years alignments and multi year- transportation projects;
- Provide the forum through which provincial decision makers will take unified decisions to invest the state of the art transportation infrastructure facilities; rolling stock and equipment.

The success of the project will depend on the enthusiastic and open-handed participation of all provincial and municipal stakeholders.

## **8. REFERENCES**

- [1] Department of Transport. White Paper on National Land Transport Policy, Pretoria, August 1996.
- [2] Department of Transport. Vision 2020 – Moving South Africa. Pretoria 1998.
- [3] Department of Transport. National Household Travel Survey. Pretoria 1998.
- [4] Department of Transport. Transport Master Plan – Terms of Reference, Pretoria, May 2006.