

**FINANCIAL ADMINISTRATION
OF THE ROAD NETWORK
IN NATAL**

BY

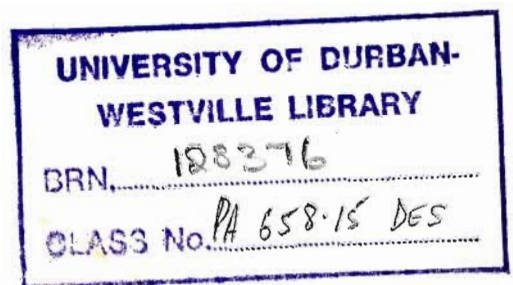
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DISSERTATION

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Man has always been a traveller and in the early days he followed the familiar and well-trodden routes. But man was always in search of the easiest route by following a direct line across a plain, the contours in hilly country or the course of a river. As the traffic developed, so did the function of the road for which the gradient and surface soon became important. Roads were provided as a means of moving people and goods, and as a means of communication. Throughout history, roads have been closely linked with conquest and with social and economic progress. The road infrastructure forms an integral part of the economic development of the country.

The problems facing the road authorities can be summed up in one word - money. This problem became serious in 1973 with the initial oil crisis and

was followed up by the rapid escalation of costs due to an adverse economical and political environment. As a result there was a reduction in the progress of new roads and a deterioration in the level of service provided by this facility. The aforementioned problem facing the provincial road authorities of a lack of funds to finance the provision and maintenance of the road network, provides a rationale for the area of study, namely the financial administration of the road network, which forms an integral part of the transport infrastructure, with specific reference to Natal.

The provincial road network in Natal is funded and controlled by the Roads Branch of the Natal Provincial Administration, whilst the Department of Transport is responsible for the national road network. As a necessary prelude to the area of study, numerous preliminary details are investigated. Initially the development of Provincial Government is investigated. Thereafter the nature of public financial administration is discussed to provide an insight into the functions and processes of this administration. A theoretical perspective is provided on the budgeting systems which are currently in use.

The development and classification of the road network in Natal is discussed and is followed by how the rural road network is administered. The current policies from a financial perspective, of the provision and maintenance of the provincial and national road network, is determined. It shows that there is a lack of adequate funds being provided to enable the road authorities to maintain a satisfactory level of service of the road network that is both economical and safe for the road user.

The study is concluded with a few recommended strategies which will aid public administrators responsible for the provision and maintenance of the road network to gain an insight into making the most out of the limited resources. The recommended strategies cover the aspects of funding sources, financing policy, road network policy, budget control, and privatisation and deregulation. It is preferable for road financing to be attuned to what the country can afford, and the available road funds should be equitably and rationally distributed according to the physical planning needs. The most advantageous means of collecting money for the funding of road programmes is by means of a dedicated road fund which should be administered by a central road authority, namely the proposed South African Roads Board. It would be this Board's task to execute strategic and financial planning, and also monitor and co-ordinate the provision of roads, of the total road infrastructure in South Africa. The provincial road authorities will continue to execute the provincial road programmes, that is to design, construct and maintain the road network, and would include the national road network.

1 . INTRODUCTION

1. INTRODUCTION

Man has always been a traveller. In the early days, man followed the familiar and well-trodden routes from one place to another. In some cases man followed the migratory routes of animals, but man was always in search of the easiest route, following a direct line across plain open country, the contours of the land in hilly country, the course of a river or a cleared path in wooded country. In many areas of the world, roads remained little more than beaten tracks right up to the eighteenth century of the Christian era.¹

A road is considered to be a route of overland communications between established communities. Hindley² stated that a road is not to be defined by the nature of its surface, but rather by its function and the nature of the traffic that travels over it. In fact, throughout history, the road and its traffic have been but two faces of the same coin, the one affecting the design of the other in the most direct way.

The earliest routes were for pedestrian traffic. Man was willing to walk up steep hills and choose a route that was dry underfoot. With the advent of draught animals, the matter of gradient became somewhat important as did the quality of the surface. The beaten tracks were adequate for the trade carried by caravans of pack horses and mules. But with the establishment of political units, the road began to find new uses. Thus,

not only the type of traffic, but also the function of the road itself, shaped its developments. Roads provided a means of moving people and goods, and a means of communication which were developed for trade and military purposes.

The advent of the wheel provided a means of faster transport, leading to a need for more and better roads. Development of roads continued to meet the demands of man, until the start of rail transport which attracted much of the traffic that used roads exclusively. Rail transport was more economical and convenient for long trips, whilst the road continued to retain its use for short trips and where there was no rail transport.

The word "road" is more correctly understood as a right of way free from physical obstructions.³ There is evidence that in the early days, the central authorities struggled to maintain this right of way, and had to rely on local authorities to keep the way open by clearing the roads of fallen trees and other obstructions. Although the traffic was heavy, not much effort was made to provide a better road nor, to maintain the existing service. In fact, the towns and lords exacted tolls on the traffic passing over certain roads. Little of this money was used in road improvement; such tolls were regarded more as an outright source of revenue for other purposes, a common fate of road taxes in other future periods.

Throughout history, roads have been closely linked with conquest and with social and economic progress. This is seen in the following discussion on the road infrastructure.

2. ROAD INFRASTRUCTURE

The road infrastructure forms an integral part of the economic development of a country. Brown⁴ stated that it is essential to have integration of transport planning with other sectors of the economy in the national development strategy. Failure to achieve this could lead to tremendous losses in development opportunity. It is essential to have a good transport system linking the major urban areas which form the engine room of the economy. In order to promote a healthy economy and minimise losses due to road accidents, it is necessary to construct and maintain a road system which is compatible with the traffic using this facility.

Hoyle⁵ has pointed out that a high priority of transport policy is to extend and improve rural transport systems, so as to bring some form of modern transport within reach of most people in the less developed regions. Also, good road transport facilities are required in rural areas if adverse social and political consequences are to be avoided. Often transport system decisions are made in isolation of the political and socio-economic content, within which the latter is intended to operate, and probably more often political and socio-economic decisions are made without reference to the possible transport system consequences. Both types of omission normally lead to disastrous situations of varying degree of gravity. To avoid wastage of scarce resources, it is necessary to treat development strategies as multi-dimensional systems within which an attempt is made to integrate all the elements of development, including transport in such a way that optimum solutions emerge.

Davis⁶ said that the art and science of transportation becomes more sophisticated with time. As this level of sophistication increases, so does the capability of providing more cost-efficient transportation. Part of this process consists of providing more effective planning and co-ordination. Transportation is one of the most important elements of the economy, and this is manifested by the fact that the contribution of the Transport Sector is almost 10,5% of the South African Gross Domestic Product, and this excludes the role of private motor vehicle ownership.⁷

In transportation and all other fields, there are always more worthwhile projects, that is where benefits exceed cost, which can be identified than there are funds that can be made available. Consequently the costs incurred in providing the transportation infrastructure are usually equal to the available funds, and not necessarily to the amount identified by planners as necessary to fulfill the need. The objective is thus to identify the demand-supply equilibrium, which is feasible within the available resources.

In view of the projected problems regarding the financing of the transportation infrastructure, particularly with regard to road infrastructure, it appears that the magnitude of the element of addition to the existing infrastructure will decline in comparison to the magnitudes of the elements of maintenance. In a situation where addition is a prime element, a user charge orientated towards average cost allocation and recovery from all vehicles may be appropriate to fund the provision of a new road network. Recognition of the relative importance of maintenance and limited resources, then in turn points to a re-evaluation

of the financial and all other aspects of transportation.

The area of study is to be focused on the financial administration of the road network, which is a part of the transportation infrastructure. In particular, the financing of the road network system in Natal is to be investigated.

3. METHOD OF STUDY

In assessing the problems facing Provincial Road Authorities, Hindle summed up the biggest problem in one word - money.^a This problem became serious since the initial oil crisis in 1973, when the rapid escalation of costs began in road construction and maintenance without sufficient increases in funds for roads. As a result, there has been a fall-off in the progress of new works and a deterioration in the standard of service. It is thus a challenge for the Provincial Road Authorities to make the most of the funds available and to make the best use of the existing assets. The aforementioned problem facing Provincial Road Authorities of a lack of adequate funds to finance the provision and maintenance of the road network, provides a rationale for the area of study, namely the financial administration of the road network with specific reference to Natal.

As the responsibility for the financing of the road network rests with the provincial authority, the development and functions of the Provincial Government in Natal is described. Thereafter, the nature of public

financial administration is discussed. This covers the activities of the Department of Finance through to its link with the Provincial Authorities. Numerous concepts are described to provide an insight into the functions and processes of financial administration.

A detailed assessment of the budgetary procedures is made. It is necessary to investigate the budgeting process to gain a clear perspective of financial administration. The systems used in planning and preparing budgets are discussed. It is seen that the budget is an important financial control measure.

The research covers the development of the road network system in Natal. There are numerous public institutions who are responsible for the financing of roads of all standards. A brief overview is given of how these institutions form part of the road network, and their influence on the need for an improved network.

The primary road network in Natal is funded and controlled mainly by the Roads Branch of the Natal Provincial Administration. Its activities and functions form the basis on which this dissertation is developed. The Roads Branch has a large role in co-ordinating all the public institutions and private enterprises involved in the provision and maintenance of the road network in Natal.

An overview is provided of how the road network is administered. The procedures of how the road network is provided are next investigated followed by the maintenance practices. The policies adopted in these

procedures are determined. The current financial practices are evaluated to determine their effectiveness. This section covers the aspect of policy-making, planning and programming.

Having looked at the current practices of financing the road network, a new strategy of budgeting is provided. This takes into account the factors of privatisation, urbanisation and deregulatory measures, which have made a serious impact on the road infrastructure. There is a need for an improved financing policy to maintain a satisfactory service to road users. The effect that privatisation has on the road network, is discussed with a view of determining what benefits it can provide. To make optimum use of the limited funds, an improved method of budget control is recommended and is outlined. It is intended that the recommendations made, will assist public administrators involved in the provision and maintenance of the road infrastructure, to gain an insight into making the most out of limited resources.

In providing material and knowledge on this dissertation, use has been made of the extensive literature on this subject. The many papers delivered at the Annual Transport Convention held annually since 1981 in South Africa, provided a background for the dilemma, which road authorities are faced with, in providing a satisfactory road network with a limited amount of finance. The views of the many parties involved in the decision-making process of roads, were also consulted to provide a broad spectrum of views. This covers those involved in the demand and supply of a road network. Historical financial records provide a useful means of assessing trends and probable control measures that should be implemented.

4. KEY CONCEPTS

A number of key concepts are continually used in this dissertation that it is preferable to give clarification on some of the terms used.

4.1 Transportation

Transportation encompasses all activities involved in the process of moving man, goods and information from one place to another. In the domestic transportation system there are five modes of transport, namely

- (i) motor vehicle;
- (ii) water;
- (iii) rail;
- (iv) air; and
- (v) pipeline.

Road and rail transportation are the most significant modes of transport in South Africa. The central point of any discussion of rail-road competition revolves around the question of who pays and who benefits.¹⁰ Railway undertakings tend to be operated by one authority which pays for and collects the revenues for the entire system. However, there is a fundamental difference with the road system, because the vehicles and terminals are paid for and operated by a large number of owners with the public sector acting on their behalf in providing the way and controlling the subsystems. It is because any one haulier is only one of millions of owners using a particular road, that his individual costs are low and the benefits he gains are not easily identifiable.

4.2 Infrastructure

The infrastructure is defined as,¹¹

"the basic requirements of a developed economy, as roads, power, education, etc."

It is important to distinguish between infrastructure and production structure. The former has a bearing on the assets necessary for and underlying production, but with little contribution to production such as roads, schools and hospitals, whilst production structure refers to all assets directly contributing to production, such as equipment and machinery.

4.3 Road

There are numerous definitions of a road. The Roads Ordinance, 1968 (Ord. 10 of 1968) states the definition to be,¹²

"road means any road (other than a railroad) intended for vehicular or animal traffic and includes a bridge, culvert, causeway or drift traversed by a road and intended for use in connection therewith, and all land reserved or designated as a road under the provisions of any Act or Ordinance".

In the Draft Roads Bill the definition is,¹³

"road means a public road and includes in addition to the roadway,
 (a) the land of which the road reserve in question extends;
 (b) anything on that land forming part of, or connected with, or belonging to the road;
 (c) land acquired for the construction of a connection between a national road and another road,"

The Longman Dictionary of Contemporary English defines a road as,¹⁴

"a smooth prepared track of way along which wheeled vehicles can travel, usually between towns rather than within one."

This latter definition of a road being a track connecting towns is very expressive and directly refers to a road as a network.

4.4 Network

The New Collins Concise English Dictionary defines a network to be,¹⁵

"an interconnected group or system, a system of intersecting lines, roads, veins, etc."

Another definition of a network is,¹⁶

"Arrangement with intersecting lines and interstices recalling those of net, complex system of railways, rivers, canals, roads, etc."

One sees a similarity with that of a network and an arterial,¹⁷

"of or like an artery" and "of or being a main road with many branches".

Babb¹⁸ stated that the term "arterial" originates from the major veins in the body. If the minor veins are not in good condition, circulation slows down and eventually stops, the tissue dies and in turn the arteries are unable to perform their intended function. This supports the need to develop and maintain a sound road network system to a satisfactory level of standard and safety.

Having described the various concepts relating to a road network, it is now appropriate to consider the nature of public financial administration, which is the purpose of this research on the road network in Natal.

4.5 Administration

Cloete defines administration as,¹⁹

"Administration is to be found wherever two or more people take joint action to achieve an objective. Therefore, administration takes place in every situation where two or more people work or even play together. It follows, thus that administration will be found in all spheres of human activity."

Administration should not be confused with the actual activity in which

the people concerned may be engaged at the time. For example, when a group of people are building a road, they are performing a functional activity. However, administration was necessary for the various activities forming the construction of a road, and administration will continue until the road is completely built. The administrative activities will always precede and-or accompany the functional and auxiliary activities which are concerned with producing goods or rendering services.²⁰

4.6 Public administration.

Public administration is used to refer to the generic administrative processes of policy-making, financing, organising, staffing, determining work procedure and control which must be carried out with the functional activities such as building roads, educating students and providing medical treatment.²¹ In South Africa there are three separate categories of public institutions, namely

- (i) legislative;
- (ii) executive; and
- (iii) judicial institutions.

Public administration refers to the activities which the executive institutions perform to do their work. The process of giving effect to public policy is termed public administration.

Administration is common to both the public and private sectors. The public sector concerns itself with providing services to the country and its people, according to the principles adopted by the ruling political party. Private administration is similar in nature to public administration in certain aspects, but differs in the way it sets about

identifying its objectives. The goal of the latter is profit optimisation whilst the goal of the former is to provide a service to the community.²²

4.7 Public financial administration

Public administration can be broken down into the six generic administrative functions referred to above of which financial administration is one. Public financial administration may be defined as consisting of the six categories of administrative processes in relation to the functional processes of procurement of money, custody of money and expenditure of money.²³

4.8 Public institutions

A number of the public institutions who are part of the public service, will be referred to regularly as they are connected with the provision and maintenance of the road network in Natal. These institutions where hereafter are referred to in abbreviated form, shall refer to the following institution:

- NRB - Natal Roads Branch;
- NPA - Natal Provincial Administration;
- NTC - National Transport Commission;
- DOT - Department of Transport;
- CSIR - Council for Scientific and Industrial Research;
- NITRR - National Institute for Traffic and Road Research; and
- TRH - Technical Recommendations for Highways.

5. SUMMARY

In this introductory chapter, the development of roads from a basic track to a road used by vehicles was followed. Man needed roads to convey people, goods and information. The road infrastructure forms part of the various activities in transportation which encompasses other modes of transport such as rail, sea, air and pipelines. The development of roads led to social and economic progress. It is essential that the planning of new roads to the network be done in liaison with the development of the country to ensure that the correct strategies are being used.

A road was defined as being a right of way connecting towns. The major link roads form a network or arterial route of roads which provide access, and thus provide opportunities for development and promoting the economy.

The goal of public financial administration of the public sector is to give effect to public policy. Public policy is to promote the welfare of the people by means of the capitalistic and free enterprise system. The private sector is the owner of the means of production and distribution in this system, and must make profits to survive. The public and private sectors are distinguishable but totally interdependent. They compete for labour, capital and other resources, but the needs for one are the contributions of the other. This state of affairs influences the public official in his duties as a public administrator affecting the financial administration of the public sector.

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2. REVIEW OF THE DEVELOPMENT OF PROVINCIAL GOVERNMENT IN NATAL

1. INTRODUCTION

The purpose of this study is to focus on the financial administration of the road network in Natal. It is thus necessary to discuss the historical developments and functions of the Provincial Government in Natal. In South Africa there are three levels of government, namely central, provincial and local government. In this chapter the development of these three levels of government will be discussed to provide an insight into how the activities of the administration of the road network in Natal are carried out. The institutions who form the public sector are then briefly discussed to complete the environment in which the provincial administrations perform their functions.

2. CENTRAL GOVERNMENT

Cloete¹ provides a historial review of the development of the Republic of South Africa since the arrival of the first settlers to South Africa in 1652.

2.1 Early history of South Africa

Many developments in government took place to reach the present day situation. Initially the settlers lived in Cape Town and its immediate

vicinity. As time moved on, the settlers began to move inland and were known as Boers. In 1795 the Cape came under its first period of British rule, the second period starting in 1806 with an intermediate rule under the Dutch between 1803 and 1806.

The Great Trek to the interior commenced in 1835, resulting in the founding of the three Boer Republics - Natal, Transvaal and Orange Free State. However, in 1843 Natal became a British Colony to join the Cape under British rule. After the Anglo-Boer War a Peace Treaty was signed in Vereeniging on 31 May 1902. Transvaal and the Orange Free State became British Colonies as well. Eight years later, on 31 May 1910 the four provinces of Natal, Cape, Transvaal and the Orange Free State became the Union of South Africa in terms of the South Africa Act, 1909.

2.2 Legislative, executive and judicial functions

Provision was made for separate institutions to deal with the legislative, executive and judicial activities of the State.² These three activities are found in all states that claim to be democratic. In South Africa these activities were performed as follows:

- (i) legislative - laws known as acts, made by the legislative generally known as Parliament which is based in Cape Town;
- (ii) executive - authority given to select group of the legislative is known as the Cabinet and is based in Pretoria; and
- (iii) judicial - ensure that activities are carried out in terms of the provisions of the legislative. The

judicial capital is situated in Bloemfontein.

2.3 Central, provincial and local government

The Constitution of the Union of South Africa provided for the formation of four provinces with their own legislative body known as the Provincial Council, who passed ordinances pertaining to laws to be implemented in their own province.³ The ordinance had to be in line with the provisions contained in the acts passed by the central government.

Provision was also made for the existence of local or municipal government bodies who made their own by-laws through their legislative body consisting of elected municipal councillors. By-laws had to be in line with the laws contained in the provincial ordinances and central government acts. Thus, this was the formation of the three tier level of central, provincial and local government.

2.4 Independent State

South Africa continued as a British Colony under the rule of its mother country, Britain. On 31 May 1961 in terms of the Republic of South Africa Constitution Act, 1961 (Act 31 of 1961), South Africa obtained its independence and was able to decide on its own, how to govern and administer its own affairs. The provincial borders of the four provinces remained intact.

On 1 April 1978 East Griqualand was transferred from the Cape Province to Natal due to numerous factors which became relevant after Transkei was declared an independent Black State. Four Black States, often referred to

as the TBVC States, gained independence as follows⁴:

- (i) Transkei on 26 October 1976;
- (ii) Bophuthatswana on 6 December 1977;
- (iii) Venda on 13 September 1980; and
- (iv) Ciskei on 4 December 1981.

Today South Africa consists of a union of four provinces and of six self-governing Black national states. The latter comprises Gazankulu, KwaNdebele, KwaZulu, Lebowa, Qwa-Qwa and Kangwane.

2.5 Current legislative structure in South Africa

Considerable socio-economic and political changes took place since the formation of the Republic of South Africa in 1961, the most important of which could be regarded to be how the Central Government wishes to provide for the devolution of powers to the local Government level. For this purpose the President's Council on 3 February 1981 was assigned, inter alia, to recommend on the development of a system of local and regional government. In addition, the President's Council had to evaluate the evidence received by the Schlebusch Commission with the purpose of advising the Executive on adaptations to the then constitutional structure of the Republic of South Africa. The Schlebusch Commission recommended, inter alia, the establishment of a President's Council under the chairmanship of a Vice - State President, the abolition of Senate at the end of 1980, enlargement of the House of Assembly and the creation of a Black Council for Black South African Citizens⁵. The Government had decided to abandon the idea of creating a Black Council as the black leaders did not support this system. However, the Government continues to liaise with members of

the black community on finding a satisfactory form of government for South Africa.

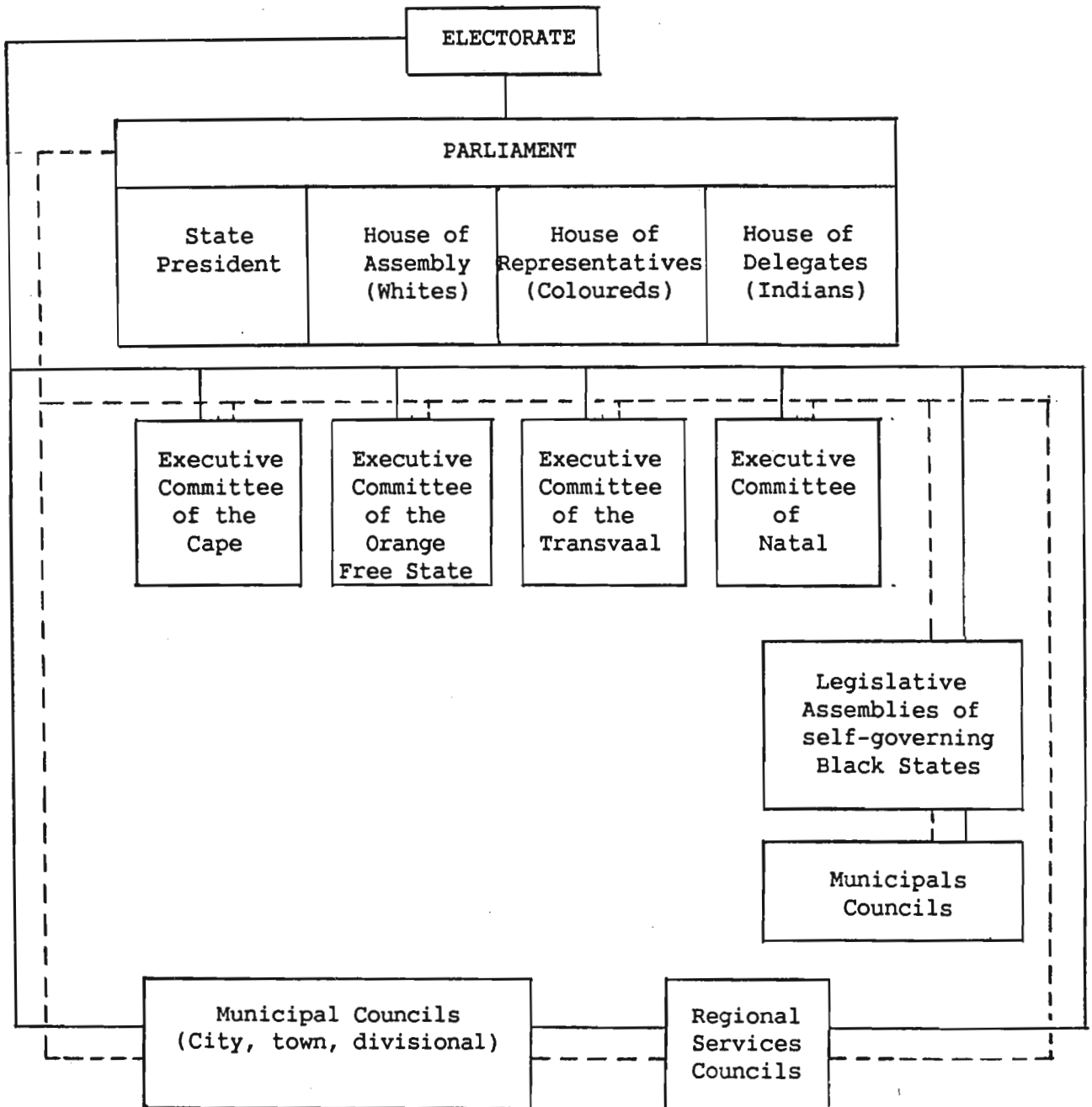
The outcome of these investigations is the promulgation of the Republic of South Africa Constitution Act, 1983 (Act 110 of 1983) which came into effect on 3 September 1984. Later on the Provincial Government Act, 1986 (Act 69 of 1986) came into effect on 1 July 1986 resulting in the dissolution of the existing Provincial Councils. They were replaced by an Administrator and a number of persons as are deemed necessary, as appointed by the State President. Under the Chairmanship of the Administrator, who together with the appointed persons, constitute the executive committee for each province. The current legislative structure in South Africa is depicted in Figure 1.

In terms of sections 30 and 37 of the Republic of South Africa Constitution Act, 1983 (Act 110 of 1983)⁶, the legislative power is vested in the State President and Parliament, which consists of three Houses to represent the different population groups as follows:

- House of Assembly for Whites;
- House of Representatives for Coloureds; and
- House of Delegates for Indians.

The Constitution provides for own and general affairs. Own affairs are matters which are peculiar to the population group of a particular House. General affairs are matters affecting all population groups in South Africa. The President's Council was set up to resolve differences between the three Houses.

FIGURE 1 : LEGISLATIVE STRUCTURE IN SOUTH AFRICA



A more detailed composition of the legislative and executive institutions in terms of the Constitution is shown in Figure 2. The Cabinet usually consists of members of the majority party of the legislatures in the three Houses and administers general affairs. Each House has a Ministers' Council which has the support of the majority party and administers own affairs. The Cabinet is the executive authority and is commonly referred to as the Government. A government can be described as,⁷

"consisting of a group of executive officers - all of whom are members of the Cabinet - who have the support of most members of Parliament (because the party-political caucuses have approved policy guidelines) and whose desires and wishes are therefore embodied in legislation".

The next level of government after the central level, is the provincial level of government.

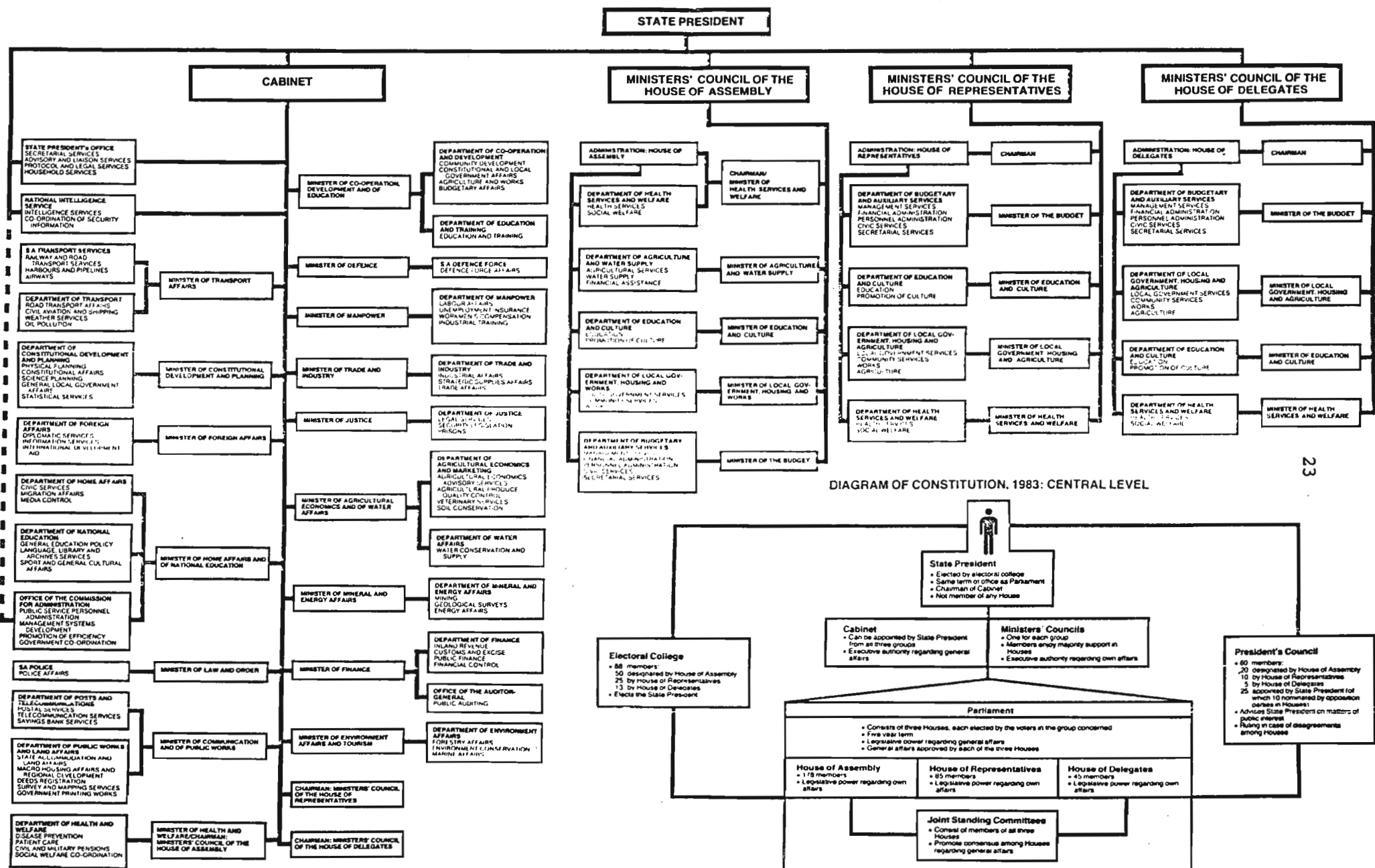
3. DEVELOPMENT OF PROVINCIAL GOVERNMENT IN NATAL

Natal is one of the four provinces of South Africa. This section reviews the establishment and development of provincial government in Natal.

3.1 Early history of Natal

Cloete^a provides an overview of the arrival of the settlers in Natal after The Great Trek from the Cape Colony 1835 - 1837. The Voortrekkers did not have specific ideas on what governmental system to apply, thus relied on the system used in the Cape under the Dutch and British institutions. In March 1838 the Voortrekkers elected a Council of Representatives as their first governmental institution. There was not much time to expand their

FIGURE 2 : EXECUTIVE AUTHORITY AND EXECUTIVE INSTITUTIONS FOR OWN AND GENERAL AFFAIRS



governmental institutions because on 15 July 1842 the territory came under British control. Natal became a British Colony by a proclamation dated 12 May 1843. Natal was incorporated as part of the Cape Colony in 1844, but in 1847 became a separate colony with its own legislative Governor as Chairman and three or more members nominated by the Crown.

The Natalians soon demanded self-government and in 1856 they obtained a Legislative Council consisting of 12 elected members and 4 nominated members who were the chief officials. At the same time these 4 officials formed the Executive Council which was introduced. Clashes began to arise between the Legislative Assembly and the Governor when the former demanded in increasingly stronger terms to be granted responsible government in Natal. This was eventually granted in 1893. This remained the form of government until 1910 when the Union of South Africa was declared in terms of the South Africa Act, 1909.

3.2 Early provincial system

The Provincial Administrations have their foundations in the pre-union colonies. Indeed, it was in the main the fears of the two smaller colonies which led to the inclusion of the provincial system in the Act of Union, which was of course an Act of the British Parliament.

Three factors emanating from those times have relevance to subsequent developments. These were: ⁹

- (i) the Union Constitution whilst having some federal elements, was not a federal one and the provincial powers and functions were never entrenched;

- (ii) desire for a measure of provincial autonomy arose out of fear of political domination; and
- (iii) the Union did not meaningfully address the possibility of the future political accommodation of the Blacks, Coloureds and Indians.

The provincial system had served South Africa well providing an effective instrument both for regional democracy and decentralised administration, particularly for the Whites. The then provincial system rendered services to all population groups but was controlled exclusively by the White electorate. The other population groups had no democratic representation or executive political participation.

Before discussing the new provincial system which came about, the function of the Provincial Councils will be outlined with regards to legislative authority.

3.3 Establishment of Provincial Councils

With the independence of South Africa in 1961, section 68 of the Republic of South Africa Constitution Act, 1961 (Act 32 of 1961) provided that each province establishes a provincial council and in terms of section 66 of the said Act,¹⁰

"in each province there shall be a chief executive officer appointed by the State President who shall be known as the Administrator of the province, and in whose name all the executive acts relating to provincial affairs therein shall be done".

The legislative powers of the provincial councils allow them to only pass ordinances on prescribed matters. Each draft ordinance has to be

submitted by the Administrator to the State President for his assent. Once the ordinance has been assented, the proposed ordinance has to be published in the particular Provincial Gazette by the Administrator.

From the foregoing, it is evident that the legislative powers of the provincial councils are subject to three restrictions, namely:

- (i) the provisions of an ordinance have to be within the prescribed limits of the legislative powers of the provincial council;
- (ii) the provisions of the ordinance cannot be inconsistent with the provisions of any Act of Parliament; and
- (iii) the State President approves the provisions of any ordinance.

3.4 Present Provincial Government

On 1 July 1986, the existing provincial councils were abolished in terms of the Provincial Government Act, 1986 (Act 69 of 1986) which then provided for the administration of provincial matters by administrators and other members of executive committees appointed by the State President.

The object, as stated by the Minister of Constitutional Development and Planning, who is responsible for the co-ordination of the four provincial administrations and local authorities, was in line with the Government's overall constitutional goal that self-determination of every group should be maintained, while at the same time giving everybody an effective say in decision-making processes affecting interests. The latter can now be



achieved since the provincial system of government is no longer confined to Whites only.

Another feature of the system is that it provides for the devolution of government functions to the lowest level of government. The object is to have certain functions performed at a level closer to the various communities. The State departments concerned will as a result no longer perform such functions, but will focus on overall planning, co-ordination and monitoring. The relevant matters of interest brought about by this new legislation will now be expanded upon.¹²

3.4.1 The Province

The existing four provinces and their seats of provincial government are retained. The State President is empowered to subdivide provinces and change their borders and seats of government by proclamation. However, the State President has to consult with the administrator concerned. Any objections are referred to a standing committee of Parliament who will resolve all issues. To make changes, account must be taken of the cost-effectiveness and efficiency of the proposal.

3.4.2 Arrangements for co-operation

The provincial executive authority and the government of a self-governing territory may exercise joint executive action. This is to be authorised by the presidential proclamation at the written request of the administrator and chief minister concerned. The administrator and the personnel of a provincial government may also, with the approval of the State President,

perform provincial functions outside the province in a foreign state, or a self-governing territory or in another province.

3.4.3 Administrator and Executive Committee

In terms of the new constitution, the administrator and executive committee follow a new format when performing their functions. Their appointment, procedure to be followed and both powers and duties are briefly as follows:

(a) Appointment

The administrator and other members of the executive committee constitute the executive authority of a province. The committee may comprise members of all the population groups and are appointed by the State President who decides the number of members.

(b) Procedure

All decisions of an executive committee are to be taken by the administrator concerned. The underlying idea of this provision is that there must be consensus arrived at by making decisions on an informal basis.

(c) Powers and duties

The powers and duties of the administrator are contained in Section 14 of the Provincial Government Act, 1986 (Act 69 of 1986). The new executive committee is to carry out the functions and duties previously entrusted to the defunct provincial council and executive committee. In addition, the State President may declare matters to be of a provincial nature or of a

regional, local or private nature in a province, in which case those matters will fall under the executive jurisdiction of the administrator.

Under the old dispensation, the provincial council was a law-making body passing laws called ordinances. Under the new dispensation, the existing ordinances remained in force and those ordinances passed by the provincial council, but not yet assented to and/or promulgated, could still be assented to and promulgated. The administrator has at the same time acquired more extensive legislative powers. He may, in consultation with his executive committee, amend, repeal or substitute any provision of an ordinance applicable to his province. Additionally he may make laws on matters assigned to the provincial government or matters of relevance to the province of a regional, local or private nature.

The legislative powers of an administrator are subordinate in that they have to comply with the rules of justice. The administrator may thus not issue proclamations which are discriminatory in nature on the grounds of race. Parliament retains legislative powers on provincial matters - simply because of its sovereignty it can make any law.

The State President may assign functions entrusted to a minister to the administrator. In effect, the administrator steps into the shoes of the minister. An administrator in turn may authorise a member of the executive committee, the provincial secretary or a person in the employ of the provincial administration to exercise any power, function or duty imposed on him.

3.4.4 Organisation

Two new acts affecting the organisational structure of the provincial administrations were accepted by Parliament in 1986. These were the Provincial Government Act, 1986 (Act 69 of 1986) and the Abolition of Development Bodies Act, 1986 (Act 75 of 1986). As the new provincial administrations were to govern on matters of general affairs, the Education Department is no longer part of the provincial administration, education being decided to be on own affair matter.

The proposed legislative and executive organisational structure in Natal is shown in Figure 3. The four relevant branches are briefly referred to.¹³ Some of the proposals have not yet been implemented to date as the Work Study Directorate in liaison with the Commission for Administration are still working out the details.

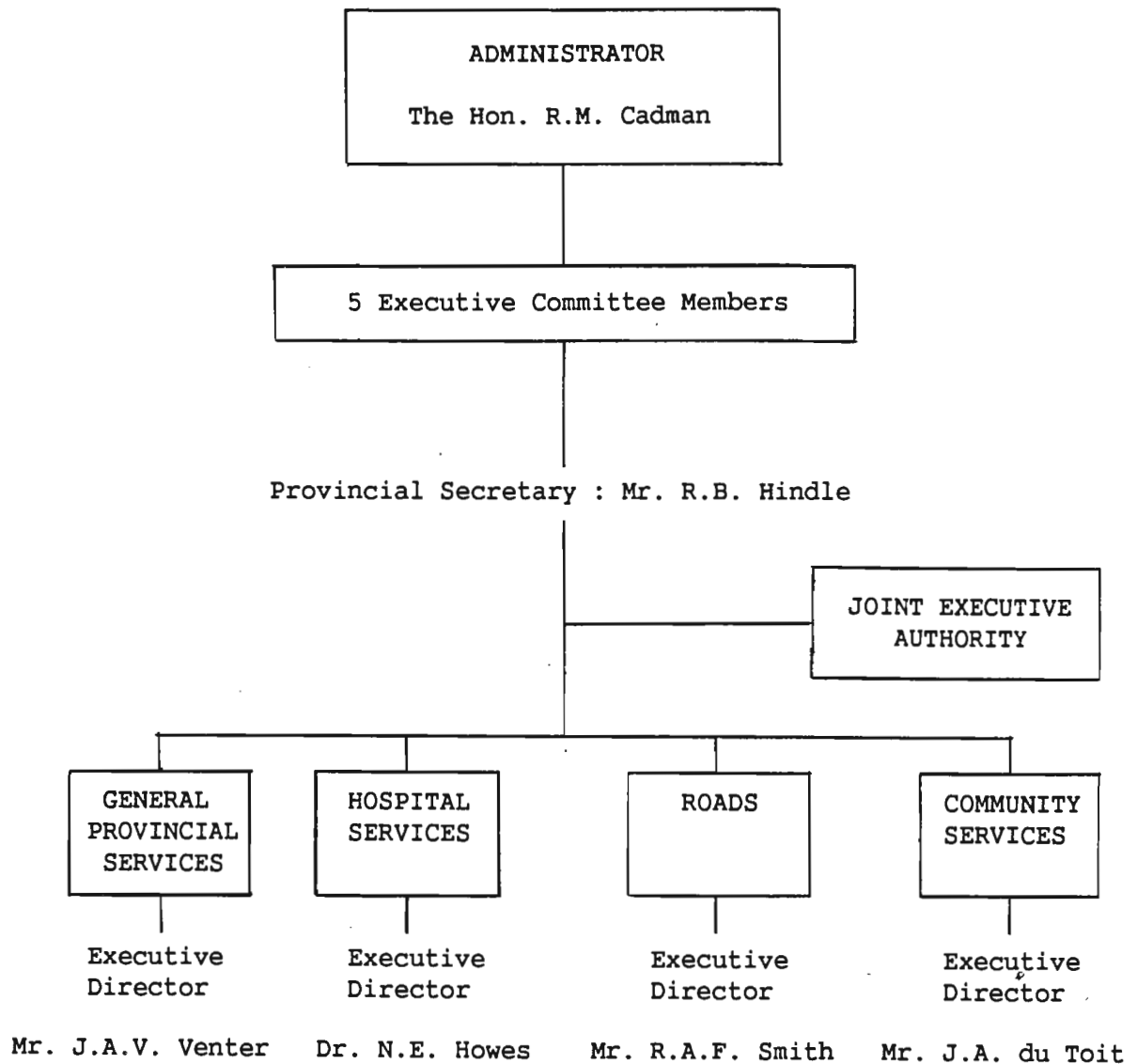
(a) General Provincial Services

This Branch contains all the management services function and the environmental conservation functions. In Natal, part of the latter function has been entrusted to a statutory body who, however, will still have to liaise through this branch. The traffic administration is no longer to be part of this branch. The activities of the Works Chief Directorate fall under the control of this Branch.

(b) Hospital and Health Services

This Branch will deal with all health matters delegated to it by the Department of National Health and Population Development.

**FIGURE 3 : LEGISLATIVE AND EXECUTIVE ORGANISATIONAL STRUCTURE
IN NATAL**



Executive Committee Members :

Mr. V.A. Volker - Roads, Hospitals
 Mr. S. Naidoo - Roads, Hospitals
 Mr. P.M. Miller - Local Government, Private Townships Board
 Mr. A.G. Jacobs - Local Government, Private Townships Board
 Mr. C.J. Pierce - Town and Regional Planning

(c) Roads

The existing functions of the Roads Branch are retained. The functions of the Government Garage have been taken over by the Directorate Mechanical in the Roads Branch and is now known as the Provincial Garage. Additional functions to be part of this Branch are the traffic and inspection services with effect from 1 September 1988, and also that of the Regional Office of the National Transport Commission on a date to be agreed upon once consensus has been reached between the affected parties.

(d) Community Services

This Branch will handle the traditional provincial functions such as library and museum services. In addition, new activities formerly carried out by the Development Boards are now performed by this Branch. These include community administration, community development and social welfare for Blacks. These additional activities are certainly the most "foreign" to be handled by the provincial administration.

The grouping of functions in the Branches described in the above model had the following objectives:

- (i) to facilitate internal co-ordination;
- (ii) to facilitate inter-provincial co-operation and liaison on matters of similar functions; and
- (iii) to facilitate co-ordination and communication with the departments and ministers who will be responsible for piloting legislation through Parliament which affects provincial activities.

The new organisational pattern should go a long way towards promoting those informal lines of communication in public administration, which do so much, to augment and make effective, the formal approved organisational structures and associated channels of communication.

3.4.5 Personnel

All provincial employees were transferred to the Public Service with effect from 1 August 1986. All employees so transferred became subject to the service conditions applicable to public servants according to the contents of the Public Service Act, 1984 (Act 111 of 1984), except where the Commission for Administration recommended otherwise. The personnel of the development boards have mostly been transferred to the provincial administrations, but there is disparity in salaries and perks which these officials enjoyed.

3.4.6 Finance

In terms of the new provincial system, the existing Provincial Finance and Audit Act, 1972 (Act 18 of 1972) was replaced on 1 April 1987 by the Exchequer and Audit Act, 1975 (Act 66 of 1975), which contains the financial regulations at central government level. This Act provides for an Account for Provincial Services to which revenues are credited and from which expenditure is defrayed. The Minister of Constitutional Development and Planning who is responsible for provincial affairs, will pilot the provincial budget through Parliament. It follows that each budget will be subjected to scrutiny by a Select Committee on Financial Matters for each province. The budget will be included in the main budget tabled by the Minister of Finance. Thereafter, it will be referred to a

Select Committee on Finance consisting of Members of Parliament of the three Houses drawn from the respective Province.

The Administrator and members of the Executive Committee and the Provincial Secretary and high ranking officials of the provincial branches, will have to appear before this Select Committee to justify the budget¹⁴.

In conclusion, under this new provincial system, the members of the House of Delegates and the House of Representatives will also now be carefully watching the interests of their own constituencies in the provincial sphere, in addition to the members of the House of Assembly who already enjoyed participation in provincial government. This puts the process of public accountability on the part of provincial administration officials, on a far wider platform. It must also be borne in mind that as the provincial budget is a general affairs budget, it has to be approved by all three Houses of Parliament, thus necessitating the need for provincial administrations to understand the requirements of each of these Houses. The methods of evaluation and cost-effectiveness will have to be well developed and performed to satisfy the electorate. The new provincial system thus provides an ideal platform for co-operation between the various population groups in striving for increased security, development and reform.

3.5 Joint Executive Authority

The Joint Executive Authority for KwaZulu and Natal has been established in terms of the Joint Executive Authority for KwaZulu and Natal Act, 1986

(Act 80 of 1986).¹⁵ A Chief Executive Officer will head the joint Executive Authority assisted by a

Deputy Director : Provincial Administration,
Senior Provincial Administration Officer,
Senior Provincial Administration Clerk,
State Accountant and a Typist.

The Secretariat of five officials are to be selected from the KwaZulu and Natal Provincial Administration officials in no particular combination. The Secretariat and Chief Executive Officer will be based in Durban. His duties are:

- administer the Joint Executive Authority's affairs and execute its resolutions;
- provide a secretarial service and develop and maintain procedural measures to attain the objectives of the Joint Executive Authority;
- maintain and develop sound financial systems and control, and act as accounting officer;
- make innovative proposals regarding the relevance of the scope of the Joint Executive Authority's activities; and
- ensure co-ordination between the Joint Executive Authority, the KwaZulu Public Service and the Natal Provincial Administration.

The next section covers the development of local government.

4. LOCAL GOVERNMENT

The primary reason that municipal and other local authorities were established, was the need to provide for those matters of a local nature which affected the lives of the citizens within the local authority. Each local community has their own unique characteristics and accordingly wish to be involved in the determination of the policies which affect the provision of local public goods and services, as well as the implementation of the policies.

4.1 Early history

In the early days of Natal there were no real urban centres as the population was very small.¹⁶ Using the systems that the settlers had brought with them from the Cape, they formed their own governing bodies. In 1843, Natal became a British Colony with provision made for the establishment of municipal boards. In 1847, Pietermaritzburg was granted an elected municipal authority modelled on the municipal authority introduced in the Cape. This form of local authority did not prove successful, and as a result, this system was replaced in 1854 by one of municipal corporations. In terms of Section 93 of the South African Act, 1909 provision was made for "all powers, authorities and functions lawfully exercised at the commencement of this Act by divisional or municipal councils shall be and remain in force until varied or withdrawn by Parliament or by a provincial council having power in that behalf".¹⁷ Thus the Union of South Africa provided for the continued existence of local authorities.

4.2 Local Government in Natal

Numerous ordinances were introduced for the establishment and functioning of municipal authorities. The ordinance currently applicable to local authorities in Natal, is the Local Authorities Ordinance, 1974 (Ord. 25 of 1974). In terms of this Ordinance the local authority areas are those towns proclaimed as such. There are four categories of towns for the white community in Natal contained in Sections 3, 4 and 7 in this ordinance:^{1a}

- (i) rural residential areas falling outside the jurisdiction of a town board, town or city council. These areas are governed by Health Committees under the control of the Development and Services Board which has since been abolished in terms of the Abolition of Development Bodies Act, 1986 (Act 75 of 1986);
- (ii) townships which have less than 1000 voters on the voters list and have rateable property of less than R4 million. These areas are governed by Town Boards;
- (iii) Boroughs governed by municipal town councils, if there are more than 1000 voters and if the rateable property exceeds R4 million; and
- (iv) City Councils which status is granted by the Administrator if the borough is the dominant centre of influence in a significant area.

As a result of extensive investigations, a new constitutional dispensation was introduced in terms of the Republic of South Africa Constitution Act, 1983 (Act 110 of 1983). It provides for the establishment of local authorities for the different population groups to enable them to develop

and maintain their own identity in terms of culture, tradition, way of life and customs. Local authorities are thus deemed to be own affairs falling under the control of their own House. The Black local authority areas fall under the control of the Department of Development Aid.

4.3 Regional Services Council

The concept of regional services councils stems directly from the investigations and recommendations of the Council for the Co-ordination of Local Government Affairs which was formed on 1 January 1984. In terms of the Regional Services Councils Act, 1985 (Act 109 of 1985), ¹⁹ regional services councils will be statutory multi-racial local government bodies that will develop and provide services on a regional basis.

4.3.1 Objective

The objective of the establishment of regional services councils is aimed at:²⁰

- (i) broadening democracy to include all population groups in South Africa;
- (ii) eliminating and preventing domination of any one group over another;
- (iii) eliminating discrimination based on race, colour and creed;
- (iv) providing local government services as efficiently and cost-effectively as possible; and
- (v) generating additional revenue at local level to promote development and to provide services in areas with the greatest need.

4.3.2 Functions

The concept of regional services councils is not new. Similar institutions have been in existence for many years, such as the Lower South Coast Regional Water Corporation and the Pinetown Regional Water Service Corporation who provide bulk water to a number of local authorities. The Administrator of the province will decide which functions within a region which boundaries he has defined, will be provided on a regional basis. These would include, amongst others, water, electricity, roads, sewerage, transport systems and produce markets. Functions not defined as being of a regional nature will continue to be performed by the local authorities. Regional services councils are horizontal extensions of local authorities and do not constitute a higher government level.

4.3.3 Representation

The regional services councils will be representative of all population groups and local communities. The Administrator, when defining a region, must take into account factors such as the inter-dependency and community of interests amongst the various communities in a particular area. Each local body may elect one member but no more than five members to the council. Voting powers are determined by the proportion of services purchased (excluding regional services provided for industrial or central business areas), but no local authority may have more than 50 per cent of the votes.

These regional services councils will be financed by levies raised from commerce and industry based on turnover.

5. PUBLIC SERVICE

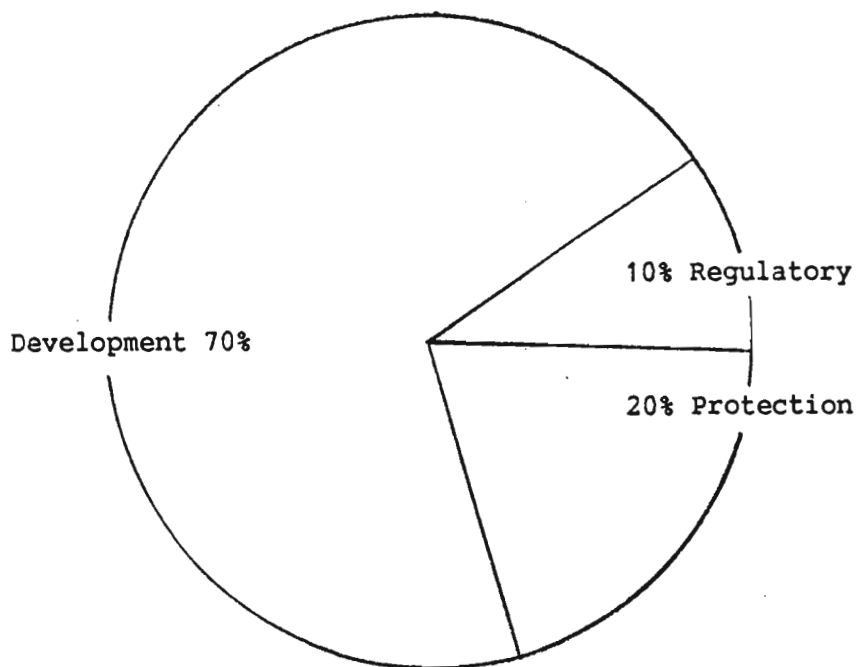
The central and provincial departments consist of all departments listed in the Public Service Act, 1984 (Act 111 of 1984) and includes own affairs departments. It excludes the Department of Posts and Telecommunications and the South African Transport Service.²¹

The Exchequer personnel corps consists of all these departments, provincial administrations, public services of National States and parastatal institutions comprising, amongst others, Council for Scientific and Industrial Research, Human Sciences Research Council, South African Bureau of Standards, Natal Parks Board and universities. The Exchequer personnel corps are financed by the Exchequer in Treasury. The local authorities, S.A. Transport Services and Department of Posts and Telecommunications have their own sources of income and are thus not remunerated by the Treasury. The Exchequer personnel corps comprises 8,4% of the total economically active population in South Africa.

The central departments and provincial administrations perform their functional activities in the ratio shown in Figure 4. The development activities include health services, and the establishment of infrastructure such as building, roads and harbours. Protection services include the activities of the Defence Force, South African Police and Prisons Service. The regulatory functions are performed by those people rendering administrative and logistic support to the development and protective functions. This gives a broad spectrum of the Government's policy on how funds are expended.

The public sector covers a wide area and includes the following: State Departments, provincial administrations, parastatal institutions, public service of self-governing National States, S.A. Transport Services, Department of Post and Telecommunications, local authorities, agricultural control boards and public corporations.

FIGURE 4 : PUBLIC SERVICE FUNCTIONAL ACTIVITIES



6. SUMMARY

South Africa has come a long way since the arrival of the early settlers. Numerous forms of government at central, provincial and local level have been implemented. Emphasis is being placed on the governing of the people at the lowest possible level. The new constitutional pattern focuses on the provincial administrations providing general services to all

population groups. Local authorities are to be provided for each population group dealing with own affairs. Where feasible, general public services are to be co-ordinated and provided for to the local authorities within a declared region, by the regional services council.

The first and second tier of government cannot operate efficiently without an effective third tier government at local level. Co-operation is needed at the third level due to the different population groups separately provided for. This provides an opportunity for increased co-operation and communication between the different population groups. Greater party political involvement, however, will take place at the third tier level as a result of the termination of the previous provincial system and also the Government's policy of devolution of power. This was observed in the elections held at the local authority level on 26 October 1988 where certain constituencies in the local authorities were contested on a political platform. However, a number of candidates preferred to be apolitical and preferred to be assessed on their managerial capabilities as a councillor, rather than by political affiliation and beliefs.

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3. NATURE OF PUBLIC FINANCIAL ADMINISTRATION

1. INTRODUCTION

As the purpose of this study is to investigate the financial administration of the road network in Natal, the nature of public financial administration is discussed.

The primary purpose of the government is to provide on a collective basis that which cannot be achieved through individual action.¹ There are two fundamental activities of government which lay foundation to this statement:

- (i) the regulation of individual actions to ensure that they will not be detrimental to the general public; and
- (ii) provision of public facilities and services for the mutual benefit of all the citizens.

To carry out these two fundamental activities, the government has to have a source of finance. Public financial administration refers to the revenue and expenditure of public institutions which carry out the activities of the government. In particular, reference is made to the activities of these institutions with respect to the acquisition, collection, custody, allocation, supply and control of government moneys.

In this chapter reference will also be made to the legislation,

organisational structures, budgetary procedures and control aspects involved in performing the aforementioned functional activities.

2. ADMINISTRATIVE PROCESS

2.1 Activities

Public financial administration is concerned with the study and execution of the administrative processes involved with the functional activities of the procurement of money, custody of money and expenditure of money. Cloete² described administration as consisting of the thought processes and actions necessary for setting and achieving an objective. He³ lists the six generic administrative processes to be policy-making, financing, organising, staffing, determining work procedures and control. These administrative processes always precede and-or accompany the functional and auxiliary activities which are concerned with providing goods and services. The functional activity is determined to be a line activity as opposed to the staff activity. Finance is one of the administrative processes.

These three groups of activities are shown in Table 1.⁴ When dealing with public financial administration, the functional activities that are carried out to provide goods and services include the procurement, custody and expenditure of public. The auxiliary activities are used as an aid in attaining the objective of providing goods and services for the general public.

TABLE 1 : ACTIVITIES TO PROVIDE GOODS AND SERVICES

ADMINISTRATIVE ACTIVITIES/PROCESSES	FUNCTIONAL ACTIVITIES	AUXILIARY ACTIVITIES
Policy-making	Procurement,	Data processing
Financing	Custody,	Research
Organising	Expenditure	Collection of data
Staffing	of money	Decision making
Work procedures		
Control		

2.2 Administrative activity

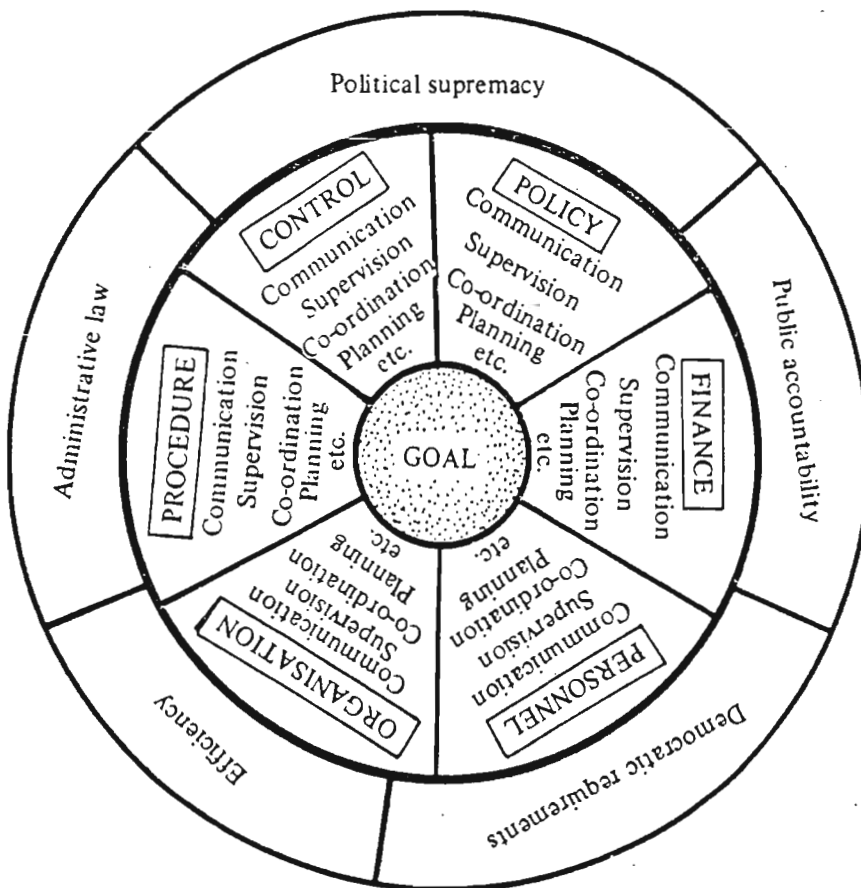
Administration always has a goal, in view. It is thus necessary to analyse the steps and procedures needed to realise this goal. Among these are communication, supervision, co-ordination and planning. Thus, the first step in administration is the determining of the goal and the frames of reference that will be used. This is referred to as policy-making. The steps in administration are:

- (i) Policy-making - define goal;
- (ii) Financing - provide finance to achieve goal;
- (iii) Organising - who is to do what;
- (iv) Staffing - find people to do the work;
- (v) Work procedure - how to work; and
- (vi) Control - monitor work progress.

The analytical model which forms the administrative processes is shown in

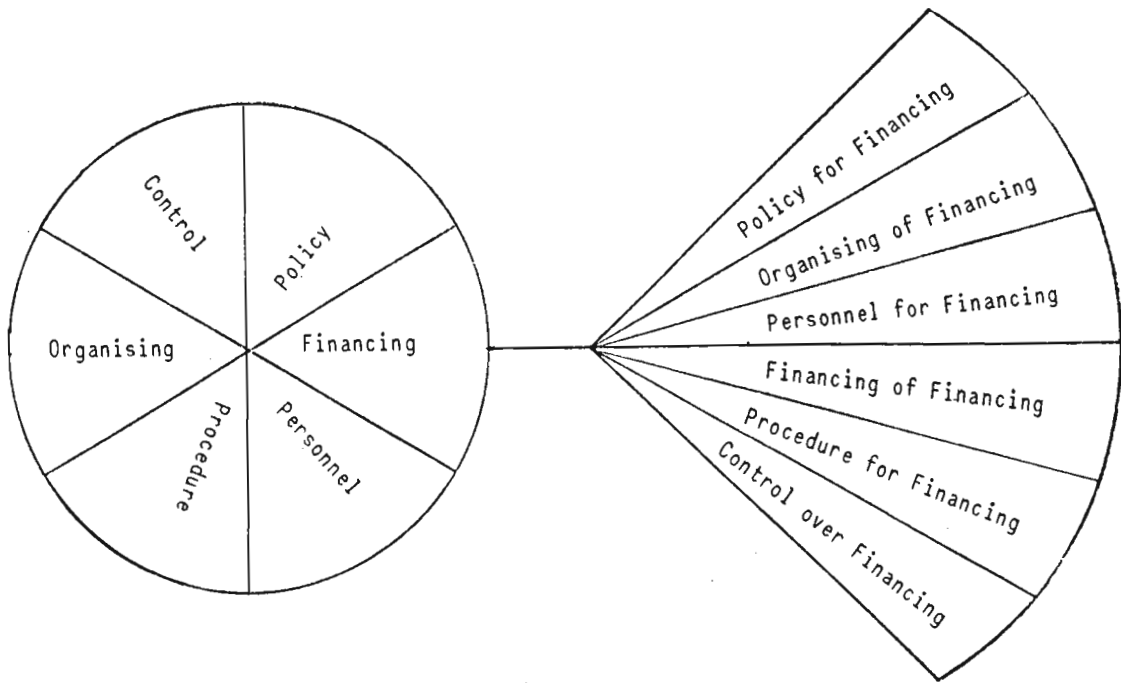
Figure 5.⁵ In performing these processes the public administrator has to account for various factors which will influence his decision-making. These factors consist of political supremacy, public accountability, democratic requirements, administrative law and efficiency.

FIGURE 5 : ANALYTICAL MODEL IN PUBLIC ADMINISTRATION



The administrative functions are mutually inclusive as depicted in Figure 6. In performing the functional activity of finance which deals with the procurement, custody and expenditure of money, the six generic

FIGURE 6 : MUTUAL INCLUSIVENESS OF ADMINISTRATION



administrative processes are performed.

2.3 Administrative theory and practice

Public officials use theory in performing their administrative functions although it is not uncommon to find that use is made of practical experience.

2.3.1 Professionalism

The manner and degree of expertise in which a task is undertaken, determines whether the activities are being performed in a professional manner.

Many public administrators lack a formal training background and therefore, deficient in theoretical grounding, are ill-disposed to apprehend theory and its potential practical uses. They, therefore, continue to develop by gaining experience in their work situation rather than by receiving formal training. The top posts are usually filled by candidates selected or approved by the political office-bearers who could be interested in qualities other than proper knowledge, skills and attitudes required for the performance of the duties attached to these higher posts. The result of this state of affairs is that the officials serving in the highest posts in the public service do not regard themselves as members of a professional corps as they do not have the characteristics usually associated with such a corps. Cloete⁷ states that these top public officials are often referred to as "lay administrators" to distinguish them from other top officials who have occupied their posts by having a professional qualification in the field of inter alia, medicine, law and engineering. The requirements for professionalism, administrative functions and the factors which affect the role of the administrator not being regarded as professional, are now outlined.

(a) Requirements for professionalism

It is generally accepted that a vocation or profession should satisfy the following criteria to be recognised as a profession according to Cloete^a:

- (i) body of knowledge developed through research and practice;
- (ii) advanced training and skills as a condition for admission to the field of work;
- (iii) ethical rules to govern the behaviour of persons who

undertake research and practise the particular profession;

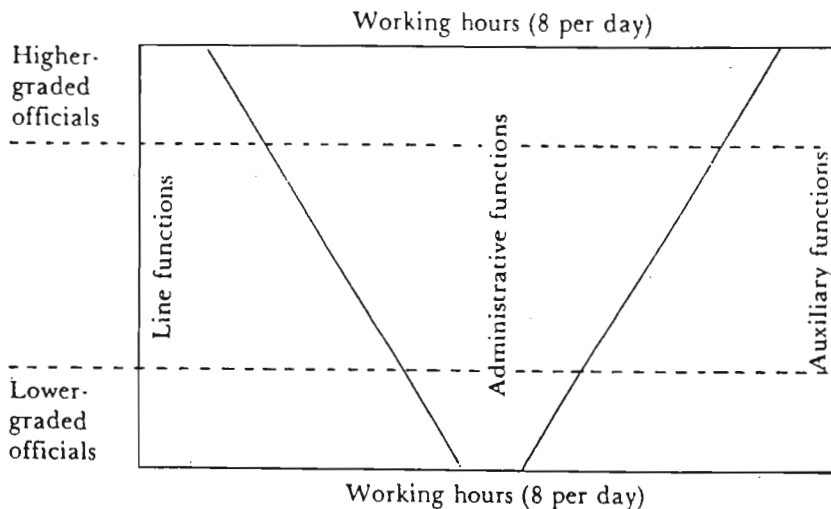
(iv) active development and support by professional association; and

(v) esprit de corps and a sense of pride amongst the researchers, teachers and practitioners concerned.

(b) Administrative functions

Functions performed by public officials can be classified into three categories, namely administrative (staff), line and auxiliary, as shown in Figure 7.⁹

FIGURE 7 : FUNCTIONS OF PUBLIC OFFICIALS.



This diagram shows that the higher one progresses in the hierarchy, the more administrative functions one will perform. This is applicable to,

inter alia all engineers, teachers, lawyers and medical practitioners. Thus, to recognise a professional administrator, one must identify the six generic administrative processes described already.

(c) Factors which affect the role of the administrator not being regarded as professional

Cloete identified five factors which tend to lead to those officials carrying out administrative functions not being regarded as professionals as follows.¹⁰:

- (i) lack of clarity about administrative functions;
- (ii) practices for the filling of administrative posts;
- (iii) negative attitude of practising administrators;
- (iv) negative attitude of political office-bearers; and
- (v) failure to develop criteria for evaluating administrative performance.

There is a need to take positive steps to promote professionalism in public administration to counter these five factors. Judging by the attendance at seminars and courses in Public Administration, there is an increased awareness by public officials in being trained to perform the duties attached to the top posts.

2.3.2 Public management

There is often confusion and misuse of the words administration and management. The word management is traditionally used in the private sector to refer to the functions and activities of the managers of businesses according to Cloete.¹¹

In the Public Service, the word management is used to refer to:¹²

- (i) the activities of work study officers who provide management services in the institutions in which they are employed;
- (ii) higher placed officials who are said to be managers and members of the management echelon or management team who meet regularly in management meetings; and
- (iii) management training courses provided.

Thus, the word management is not used as a synonym for the word administration. The management functions consist of the four basic tasks of planning, organising, directing and controlling together with five additional activities of decision-making, communicating, motivating, co-ordinating and discipline. It is thus seen that the management functions form part of the total administrative tasks performed by public administrators.

2.3.3 Theory and practice

A policy is defined as a statement of intent. It may or may not be based on theory. Most scientific observations and experiments require materials with which to work, and scientific observation in administration takes place in contexts packed with live action. Therefore, to imagine that theory is divorced from practice is to misconstrue the nature of the theory-practice relationship.

The elements of scientific theory has three main attributes, namely :¹³

- (i) it comprises of concepts, assumptions and

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generalisations;

- (ii) it describes, explains and predicts behaviour of phenomena; and
- (iii) it is heuristic, that is, it stimulates and guides further knowledge development.

Using theory will result in a positive improvement of the quality of administration performed by public administrators. Officials should thus be motivated to be willing to further their knowledge of work procedures and accordingly gain recognition from receiving formal training rather than the old concept of getting promotion based on years of experience.

3. GOAL OF FINANCIAL ADMINISTRATION

The goal of the financial administration of the public sector is to give effect to public policy. Public policy finds fruition in laws, rules and regulations and is aimed at the promotion of the welfare of the peoples by means of the capitalistic and free-enterprise system, which exists in South Africa. Capitalism is defined as "an economic system based on the private ownership of the means of production, distribution and exchange".¹⁵ It is an ideal concept, but there is no State where the economic system is totally in the hands of either the private sector or the public sector.

On 22 November 1979 both the then Prime Minister and the Minister of Finance at the occasion of the Summit Conference held in the Carlton

Hotel, stated in no uncertain terms that it was the policy of the Government to diminish the role of the public sector and increase the role of the private sector.¹⁶

Thus, South Africa is a capitalistic State, because it is the public policy of the Government to move in the direction of capitalism, and not for any other reason.

Free-enterprise is defined as "an economic system in which commercial organisations compete for profit with little state control".¹⁷ South Africa is somewhere between "fully-free" and "totally un-free". One can describe the South African economy as free-enterprise because it is the policy of the Government to apply as little control as is consistent with the welfare and security of the people.

It is the function of the public official to give effect to public policy. Public officials work within the framework of the law and are subject to the will of their political masters. Within these constraints every public official, from the director-general down to the desk clerk, must therefore promote the capitalistic, free-enterprise system when formulating or advising on policy, when exercising discretionary powers and when performing daily tasks.

4. ROLE OF THE GOVERNMENT IN THE ECONOMY

Various theories on public finance exist and have developed over the years. The concept of money and sources of revenue is described to complete the nature of the role the Government plays in the economy.

4.1 Traditional principles

State funds are public money, because they have in fact been borrowed from the tax paying public for the purposes of implementing the policies of the Government. The Central Government has the responsibility to promote the economy. The elected representatives are the highest final decision-makers on the imposition of taxes and the allocation of expenditure. In order to pinpoint the responsibility in the public institution, it is necessary to have someone appointed to be held accountable for all the financial transactions. This functionary is the accounting officer.

4.2 Activity of the Government in the economy

The Government has three roles in the economy, namely as initiator, regulator and participator.^{1a}

4.2.1 Initiator

The Government as the central authority, initiates activity in the economy by :

- (i) policy institutions : legislative councils, economic advisory councils, planning council and the central financial authority (Treasury); and

- (ii) Service institutions : State departments and State commercial institutions.

4.2.2 Regulator

The central authority acts as regulator of economic activities through:

- (i) basic framework institutions : registrar of companies, registrar of financial institutions, registration of properties, rights and citizenship;
- (ii) regulatory institutions : price controller, and government inspections; and
- (iii) reconciliatory institutions : industrial councils, wage boards and rent boards.

4.2.3 Participant

The central authority participates in the economy in the production of goods and provision of services as follows :

- (i) financial institutions : Treasury for floating loans, reserve bank and development bank;
- (ii) entrepreneurial institutions : transport, communication and production; and
- (iii) consumption institutions : military, government garage and provincial administrations consume goods and services.

✓ 4.3 Nature of government finance

The nature of government finance procedures differs from those used by private enterprises.¹⁹ These procedures are:

- (i) Government can obtain large loans from abroad;
- (ii) income is acquired by force;
- (iii) greatest part of budget is spent on social services;
- (iv) public finance is a public affair;
- (v) extraordinary accounting practices and control methods are employed to maintain responsible use of public money; and
- (vi) uniform accounting procedures are used to avoid theft or embezzlement.

4.4 Expansion of government finance

There are ten factors which will lead to the expansion of public expenditure:²⁰

economic growth;	population growth;
democratisation process;	cultural awakening;
communication;	western socialism;
war, terrorism, crises and natural disasters;	
technical and scientific innovations;	
devaluation, inflation and foreign exchange; and	
maladministration and waste	

4.5 Expansion of government functions

The government functions constantly change and grow for various reasons.²¹

The services it performs include:

- (i) community services : assistance for community such as flood relief fund, drought relief fund;

- (ii) social services : refers to work of social workers in the field of medicine, drug addicts or alcoholism;
- (iii) economic services : to enable personal wealth to increase there is a need for services such as health, electricity, water and roads;
- (iv) protection services : provision of security;
- (v) development services : assistance provided to private entrepreneurs to develop;
- (vi) regulatory services : to guarantee orderly development by having marketing control, labour control and agricultural control; and
- (vii) information services : to promote flow of information by reports, radio, television and articles.

4.6 Money

Financial administration at government level revolves around the question of money. Money has no value except gold coins, but it represents value. Money is the source of power and wealth and is a much sought after commodity. It can be earned, saved, spent, stolen and even embezzled. Money can assume various forms.²²

- (i) real money - real cash consisting of coins and notes which can be directly used in any transaction;
- (ii) quasi-money - papers which become money only after certain instructions have been written into these documents. These include cheque and postal orders; and
- (iii) fictitious money - where no money is involved but a

transaction is made with the use of credit cards or other methods of obtaining benefit without real money.

4.7 Sources of revenue

The government also performs a dual function, namely allocative and distributive.²³ The allocative function involves the provision of goods and services to the community. The distributive function is that of rearranging the incomes and wealth among the several groups or classes in the community in accordance with accepted notions of fairness.

4.7.1 Taxation

Taxation is a means of the government performing its allocative and distributive functions. A tax is a compulsory contribution levied by the State to finance the provision of goods and services for the general public.²⁴ The Social and Economic Planning Council believed that there were two norms according to which the tax system should be shaped:²⁵

(a) as a means of raising revenue, the tax system should be :

- (i) productive;
- (ii) economical;
- (iii) elastic;
- (iv) subject to social control;
- (v) certain (evasion-proof);
- (vi) impartial; and
- (vii) convenient;

(b) as an instrument of social policy the tax system should promote:

- (i) long-term maximisation of the national income;
- (ii) cyclical stability and the maintenance of a high level of employment; and
- (iii) the alleviation of extreme inequalities of wealth.

The procedures of taxation are contained in the Income Tax Act, 1962 (Act 58 of 1962), as amended. It contains chapters dealing with administration, normal tax, company tax, donations tax, other taxes, assessments, arrears and miscellaneous items.²⁶

Tax avoidance by employing acceptable means of reducing the tax payable is allowed. Tax evasion whereby one uses unacceptable means such as withholding income, to pay less tax is not allowed and could lead to prosecution.

4.7.2 Other sources of revenue

Botes lists seven other sources of revenue as follows :²⁷

- (i) revenue from Government enterprises;
- (ii) interest and revenues;
- (iii) levies;
- (iv) licences;
- (v) fines and forfeitures;
- (vi) special funds and accounts; and
- (vii) loans.

Having identified the goal of the Government to be that of providing goods and services for the general public, it follows now to investigate the

legislative procedures governing the financing of these goods and services.

5. LEGISLATIVE INSTITUTIONS IN CHARGE OF PUBLIC FINANCE

Before describing the legislative institutions which are in charge of public finance, the concept of financing policy is explained.

5.1 Financing policy

The broad financing policy of a State prescribes in broad terms how public institutions are to be financed.²⁸ The legislation provides a framework within which the legislatures regulate their financial affairs.

In a democratic State tax is not levied on the citizens if they do not have representation in the legislative assembly. Thus particular procedures are adopted in providing finance such as :²⁹

- (i) executive authorities must obtain authority from the legislatures before collecting or spending money;
- (ii) the legislatures vote money annually in the form of a budget to enable the executive institutions to perform their work;
- (iii) legislatures held responsible for manner in which public funds are spent;
- (iv) the financing process is carried out using basic guidelines of public administration; and
- (v) the powers of the legislatures are specified by law.

5.2 State President

The Office of the State President is that of executive head of State. In effect, this merged the functions of the former Prime Minister with those of the former State President. The present State President is both a party-political leader and executive head of State. As chairman of the Cabinet he takes the lead in making policy decisions on the economic development of the country and the administration of public finance. He has the right to appoint the Minister of Finance. Thus, by his executive status he is directly involved and plays a leading role in decisions on public finance.³⁰

5.3 Parliament

Parliament consists of three Houses as follows:

- House of Assembly for whites;
- House of Representatives for Coloureds; and
- House of Delegates for Indians

The Houses of Parliament by the delegated authority of its electorate, have the power to make laws for the government of the country including the administration of public finance. The study of public financial administration is, therefore, closely linked with party politics. The budget represents the party-political objectives of the majority parties for a given financial year. The Constitution provides for own affairs and general affairs. Thus, budgets are drawn up for both own affairs and general affairs. The President's Council was set up to resolve differences between the three Houses.

Parliament cannot directly control the daily administration of public

finance. Hence, it creates executive offices and institutions to do so on its behalf. These include the Standing Committee on Finance which represents all three Houses and also the Standing Select Committee on Finance of which each House has its own.

5.4 Cabinet and Ministers Council

Ministers have four separate functions performed by one person:³¹

- (i) political - represent their parties' policies. In the South African tricameral Parliament there are three majority parties;
- (ii) parliamentary - submits audited financial statements of his department to Parliament;
- (iii) governing - control of legislative process; and
- (iv) executive - as the executive head of his department he is a public official.

The Cabinet usually consists of members of the majority party of the three Houses and administers general affairs. Each House has a Ministers' Council which has the support of the majority party and administers own affairs. The Cabinet submits bills on public finance to Parliament for approval. Once the bills have been passed, the decisions of the Cabinet are enforceable by law.

6. EXECUTIVE INSTITUTION IN CHARGE OF PUBLIC FINANCE

The Department of Finance is the executive institution in charge of public

finance. A brief description of this institution is provided to gain an insight of its function.

6.1 Minister of Finance

The Minister of Finance is a member of the Cabinet. In each Minister's Council there is a Minister of the Budget who deals with own affairs.

The Minister of Finance performs his duties according to the regulations contained in the Exchequer and Audit Act, 1975 (Act 66 of 1975) the provisions of which and definitions are listed on pages 1 and 2 as per Annexure 1. For every financial year, the Minister has to submit an estimate of expenditure to be defrayed from the State Revenue Fund, and an estimate of expected revenue during that financial year.

Financial year means,³⁴

"the period from 1 April in any year to 31 March in the next succeeding year."

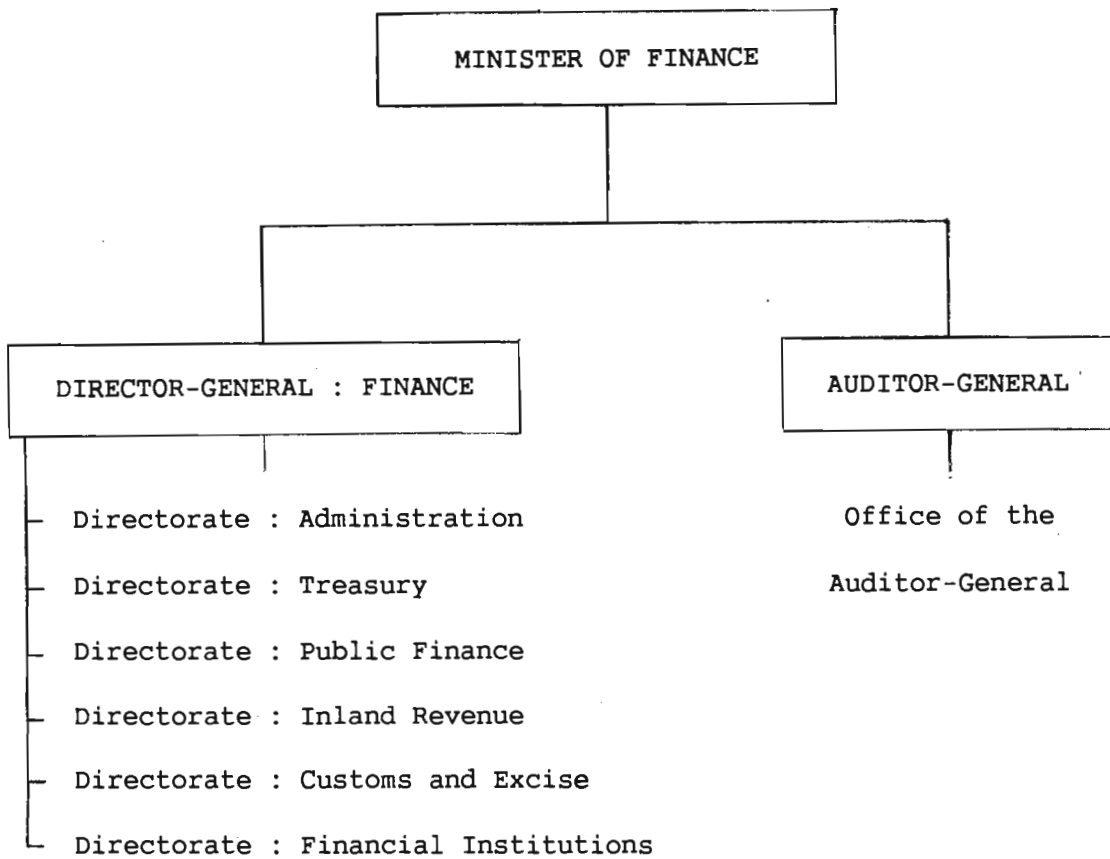
Although public financial administration is concerned with the administration of public finance, it must be stated that the functions of the Minister of Finance extend beyond merely administering public finance. He, together with the three Ministers of the Budget, are responsible for the economic development of the country.

6.2 Department of Finance

The Minister of Finance is in charge of the Ministry of Finance which has two departments, namely the Department of Finance and the Office of the

Auditor-General, as shown in Figure 8.

FIGURE 8 : MINISTRY OF FINANCE ORGANISATION CHART



The Department of Finance is responsible for the provision of funds to the public sector. The Treasury is the central financial authority in the Public Service which is vested in the Department of Finance mentioned in the Public Service Act, 1984 (Act 111 of 1984).³³

The South African Reserve Bank is the bank for the Government. The Bank

keeps an account called the "Exchequer Account for the Republic of South Africa", whilst the Treasury keeps an account called the "Account of the Paymaster-General". The moneys deposited in the State Revenue Fund are transferred to the Paymaster-General account. The Treasury also keeps a separate account for each of the individual departments.

The South African Mint mints coins. It makes coins and notes which are used as the only legal tender for buying goods and services.

6.3 Accounting Officer

Every Department is under the control of a Director-General or an officer with a different title but of equal rank, who is responsible for fulfilling the functions of his Department. The Director-General is also the accounting officer of his Department. The word accounting refers to financial accounting and not to arithmetical book-keeping.

The accounting officer is closely involved with compilation and preparation of the budget. He is in direct contact with Treasury and must be au fait with all instructions and regulations of Treasury. The accounting officer is responsible for the requisition, custody and spending of public money necessary for the implementation of the functions of any department. The accounting officer, therefore, works in close co-operation with all other public institutions which are involved in one way or another in the administration of public finance.

7. BUDGETARY PROCEDURE

Any budgeting process of the State is concerned with three main problems, namely:

- scarcity problem;
- allocation problem; and the
- redistribution problem.

7.1 Nature of the budget

A budget is defined as the annual estimate of possible income and expenditure.³⁴ More specifically the budget can be utilised in five ways:

- (i) policy document;
- (ii) source of information;
- (iii) work programme;
- (iv) control instrument; and
- (v) economic instrument.

7.2 Types of budgets

Budgets can be classified in three ways as follows.³⁵

7.2.1 According to institution

- (i) State Revenue Fund appropriation - to fund government departments;
- (ii) Transport Services appropriation; and
- (iii) Post and Telecommunication appropriation

7.2.2 According to nature

- (i) Revenue Budget;
- (ii) Current Expenditure Budget; and
- (iii) Capital Budget

7.2.3 According to period covered

- (i) Part Appropriation Budget -a temporary budget to provide for expenditures for the period starting 1 April until the main budget has been approved;
- (ii) Main Appropriation Budget - contains all details for the year;
- (iii) Supplementary Budget - to update budget and rectify mistakes; and
- (iv) Additional Budget - last budget of the current financial year.

A schematic representation of the identification of budgets according to period is shown in Table 2.³⁶

7.3 Budget information

The budget should cover details on the objectives, aims, financial responsibility, expenditure items, source fund, priority classification, control and analysis.

7.4 Expenditure Classification

Expenditure is classified as follows :

- (i) current expenditure - recurring expenditure on goods

TABLE 2 : SCHEMATIC REPRESENTATION OF APPROPRIATION BUDGETS

Financial year	Appropriation Budgets
<i>1 April – 30 March</i>	
<i>January</i>	<i>Part appropriation budget</i>
Parliament commences	(Advance on main budget — "small budget" i.e. provision of funds for coming financial year)
	<i>Additional budget</i>
	(Last budget of <i>current</i> financial year)
<i>March</i>	<i>Main budget</i> (Political policy for <i>current</i> financial year expressed in monetary terms)
<i>June</i>	<i>Supplementary budget</i> (Part appropriation, main- and supplementary budgets approved simultaneously)
Parliament prorogues	
<i>July – December</i>	<i>First revised budget</i> (August)
Parliament in recess	<i>Second revised budget</i>
	For departmental and Treasury planning purposes only. Concerns current financial year. These two budgets are used to draft the additional budget.

and services excluding acquisition of capital assets.

- (ii) capital expenditure - capital formation by acquisition of fixed capital assets such as land, structures and buildings; and
- (iii) transfer payments - paid to other institutions or bodies in the form of subsidies, grants-in-aid or financial assistance.

7.5 Budgetary cycle

The budgetary cycle consists of seven steps: ³⁷

- (i) forward planning stage whereby detailed estimates are

- prepared and submitted to Treasury;
- (ii) consideration by Treasury of all claims in the light of the government's economic policy;
- (iii) re-planning and review of projects and programmes;
- (iv) consideration of draft budget by Cabinet;
- (v) summation of individual estimates;
- (vi) constant review of allocated funds throughout the year; and
- (vii) approval of additional funds by Parliament.

An important part of the budgetary procedure is the control aspect which has to be carefully administered.

8. CONTROL

The Exchequer and Audit Act, 1975 (Act 66 of 1975) provides for the appointment of an Auditor-General who is responsible for the auditing of all the accounts of government departments and other public institutions. He reports to Parliament through the Minister of Finance. The reports on the accounts of the individual Houses are scrutinised by select committees while the accounts of the departments of general affairs are discussed by the Standing Committee on Public Accounts. The Auditor-General occupies a prominent position in the ranks of public institutions.

A great effort is made to ensure that accountability for financial matters is maintained. Reports are always submitted to the legislatures who

consider them in open sessions. The result is that irregularities attract wide publicity. Thus, the political office-bearers in charge of executive institutions will do their utmost to avoid adverse publicity. The reports and public debates thereon encourage honesty in dealing with public moneys.

To complete this discussion on control, the concept of accountability and responsibility will be described.³⁸ It is generally accepted that all political office-bearers and public officials act responsibly when performing their duties. They will thus be able to give account in public of their actions. However, due to the large number of public officials involved in the hierarchy, the higher ranked officials cannot be held responsible for the actions of their subordinates although they will be held accountable for the actions of their subordinates. One delegates responsibility but not accountability. Public accountability is the accountability for public funds where accountability may be defined as the responsibility of public officials to conduct themselves in a way in which they can be seen to be respecting the value of everything with which they come into contact as well as those things which are of value to others.

The Financial Cycle is illustrated in Figure 9.³⁹ It shows the path that information, regulations and money take between the various public institutions and the legislatures who are all involved in the administration of public finance. Public administrators who are in control of public funds are thus accountable for their actions to the highest level of control, which is Parliament. The office of the Auditor-General ensures that the correct Treasury procedures are adhered to.

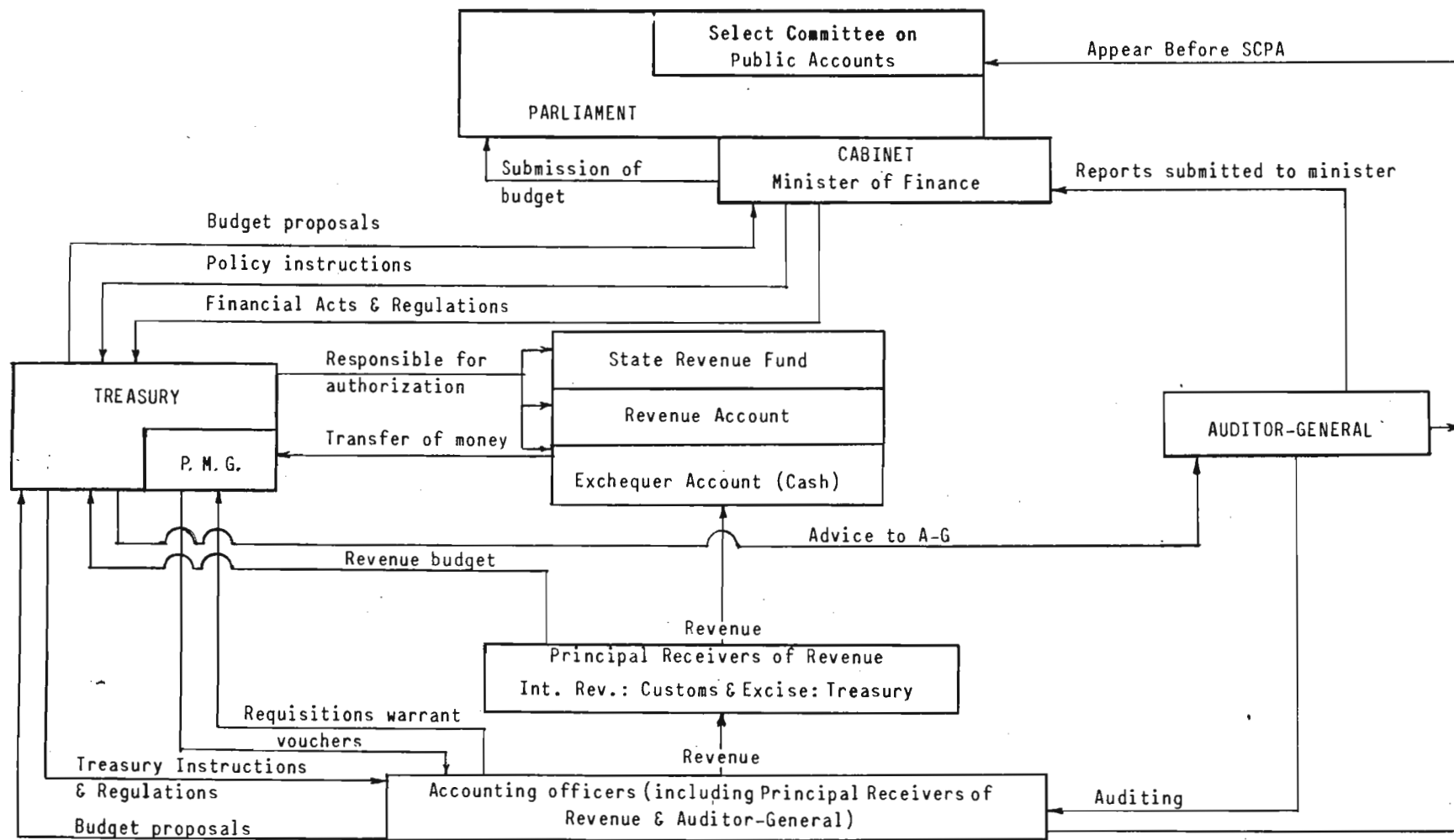


FIGURE 9 : FINANCIAL CYCLE

9. SUMMARY

The role of the Government is to provide goods and services to the community, and also to promote the welfare of the community by stimulating the economy which will increase the wealth of the population. To enable the Government to perform its activities it has to have a source of funds. Public financial administration refers to the revenue and expenditure of public institutions which carry out the activities of the Government. The administrative processes involved with the functional activities of the procurement of money, custody of money and expenditure of money were discussed. These processes are identified as the six generic administrative processes of policy-making, financing, organising, staffing, determining work procedures, and control. To assist the public administrator in his duties, he makes use of auxiliary activities which include, inter alia, research, data processing and decision making.

The goal of public financial administration is to give effect to public policy which the Government has formulated. South Africa can be said to be a capitalistic and free-enterprise country as these are the systems which the Government attempts to implement, as it applies as little control as is consistent with the welfare and security of the people. It is the function of the public official to give effect to public policy, according to the will of their political masters. Within these constraints every public official, from the director-general down to the desk clerk, must therefore promote the capitalistic, free-enterprise system when formulating or advising on policy, when exercising discretionary powers and when performing daily tasks.

The Government plays an active role in the economy. It has roles of initiator, regulator and participator in the economy. By the policies it adopts, it is able to guide the economy towards its goals. It is seen that the Government functions continually grow with an increased demand for goods and services by the community. This results in more funds being required to finance these increased functions. Numerous sources are available to obtain more funds such as taxes, loans and levies:

The legislative institutions are in charge of public finance and by their policies are able to control how the money is spent. The executive institutions are responsible for implementing the policies. The Minister of Finance is in charge of the Department of Finance which is responsible for the provision of funds to the public sector. The accounting officer is responsible for the administration of public finance. He is closely involved with the compilation and preparation of the budget which is an actual estimate of income and expenditure. Control of the procedures contained in the Exchequer and Audit Act, 1975 (Act 66 of 1975) which gives the regulations of how money is to be collected and spent, is exercised by the Auditor-General who carries out audit inspections.

In an economy where there is a scarcity of resources, the success with which public finances are administered, will have a positive influence on stimulating the economy leading to growth and increased opportunities for further development. A means of assisting public officials to administer public finances effectively, is the use of the budget which can be prepared and presented in different ways which are referred to as budgeting systems, which will now be discussed.

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4. BUDGETING SYSTEMS :

A THEORETICAL PERSPECTIVE

1. INTRODUCTION

The theory and practice of financial administration will now be further discussed with specific reference to the budgeting systems which are available for the public administrator to utilise in the performance of his duties. Financial matters are sometimes considered as mere accounting or computation matters that can be dealt with by subordinate officials. However, money is the life blood of all activities and affects the attainment of every goal. A public official must, therefore, in the performance of his administrative tasks take particular notice of the financial implications of his work.

The budget is probably the most important measure for obtaining order in financial matters. It is thus imperative to ensure that all activities connected with the determining of the contents of the budget, executing the decisions and controlling and activities of the officials flowing from the budget, are performed effectively.

The community needs a variety of public services. It requires a complex system of administrative activities to be performed, to provide for the demand for services which tends to increase more rapidly than the availability of resources. Furthermore, it must be determined if the available State machinery and arrangements are still capable of handling

these complex activities which include all the budgeting activities.

Budgetary decisions are to a great extent influenced by political considerations. Even though proposals might be made after thorough investigations, the politicians might still adopt the proposals to suit their own needs to ensure popularity irrespective of the long-term consequences of a particular decision. In order to restrict the arbitrary actions by politicians, new budgetary practices have been developed.

Before discussing these budgetary practices, the budgetary procedure will be discussed. Also the relationship between finance, effectiveness and efficiency will be explained. Thereafter, the following five budgeting systems, which have developed over the years, will be discussed :'

- (i) Line Item Budgeting;
- (ii) Performance Budgeting;
- (iii) Management by Objectives;
- (iv) Planning-Programming-Budgeting System; and
- (v) Zero-Base Budgeting.

These budgeting systems are applicable to the preparation of the budget for the provisioning and maintenance of road networks. Each system has its own characteristics which should be considered when adopting a particular system. Preference for a particular system is generally based on who is making use of the budget, and on what sort of information is required. Top management is more concerned with the overall details of budget to ensure that the stipulated objectives have been attained, whilst lower management is more concerned with the more specific and detailed aspects of the

budget to ensure that the available resources have been utilised efficiently and effectively.

2. BUDGETING

2.1 Nature of the budget

The budget of the State expresses the total State activity in figures.² It covers the State's activities for a given financial year, so it is a useful management tool. The Budget presupposes that the Government, members of Parliament, the Public Service and general public know what the public money is to be used for. The budgeting technique is a budget system which attempts to explain to all involved in the budgeting process how the public money voted for the budget will be used. The budget is a political document attracting the intense concern of politicians, public officials, interest groups and the general public.

The actual budget should be the result of well-considered priority decisions made by the Government. The Government's financial policy, which is expressed by the budget, is not merely a question of economics. Prosperity is worth a great deal but justice, education, good social relations, public health, national security and many other items may and often do rank higher. The nature of the budget is affected by, inter alia, social, political economic and technological factors. The public official who has to prepare the budget, using limited resources, has the same task as the tailor who has to cut his suit according to the cloth he has available.

2.2 Budgetary procedure

Cloete³ identifies three parts in the budgetary procedure, namely the preparation, approval and implementation of the budget.

2.2.1 Preparation of the budget

There are numerous forms which the budget can take, depending on which budgeting system is used. The budget sets out estimates of revenue and expenditure for the forthcoming financial year. In preparing the budget, cognisance has to be taken of the need to provide the resources necessary for the State Departments to attain their goals which are part of the broad policy of the Government. However, due account has to also be made of the fact that to finance these resources, the public has to provide the funds in the form of taxes.

2.2.2 Approval of the budget

The approval of the budget authorises the collection of revenue and expenditure thereof on the approved programme. Although the approval of the budget is the climax of the budgetary process, this approval does not ensure that the financing operations of the budget is the climax of the budgetary process, this approval does not ensure that the financing operations of the public institutions will be done effectively (satisfy needs of community) or efficiently (public funds will be economically spent). The crucial stages in ensuring effectiveness and efficiency are the preparation and implementation of the budget.

2.2.3 Implementation of the budget

After the legislatures have approved the budget, a start can be made on

the implementation thereof. It must be remembered that the sums of money voted on are only estimated amounts and should thus only be spent where necessary.

2.3 Trends in budget procedure

In striving to meet the need for an improvement in the usefulness of the budget, basic trends in budget procedure have developed. Four such trends can be identified.⁴

2.3.1 Long-term planning

In view of the present levels of public expenditure and taxation and their far-reaching effect on the socio-economic structure of the country and its future development, there would seem to be no argument against long-term planning being the best policy. A situation may arise in which new developments call for new decisions and in which current needs cause alterations to be made to long-term plans. Thus under these circumstances one has to:

- (i) establish priorities; and
- (ii) have an annual review of the long-term plan.

2.3.2 Macro-economic function

Modern economists acknowledge the connection between budget policy and the general trend of the economy. Modern budget procedure, therefore, should be shaped in such a way that due account is taken of the macro-economic factors, inter alia, national income, government spending, total consumption, total employment and general price level. The macro-economic function of the budget can be adequately performed only if it is within

the framework of the long-term policy as regards economic growth and it provides for the current economic situation.

2.3.3 Delegation

The need for decentralisation and consequent devolution of functions has been recognised. Decentralisation is the process whereby the responsibility for the performance of functions is distributed more widely to lower levels of authority, whilst devolution is the process whereby authority is transferred from the central government to the provincial, regional and local level of government. In view of the complexity of modern public administration, a completely centralised budgetary system is impossible. Budget procedure allows for the delegation of certain activities to lower governmental levels provided these are kept within the limits of the general outlines of the budget itself.

2.3.4 Use of experience

Valuable use has been made of the experience gained in private enterprise by adapting the techniques to suit the needs of the public institutions.

2.4 Budgeting systems

The budgeting technique or budgeting system relates to the manner in which the budget proposals are set out. Mitchell describes the development of budgeting techniques over the years to have had one aim in mind, namely ⁵

"It attempts to show clearly, unambiguously and logically how public money is to be spent to enable decision-makers vested with authority in respect of spending government funds to ascertain how, where and how effectively public money is being spent."

Since the budget is a document of political policy, innovations in budgeting systems are aimed at narrowing the gap and reducing the chances of differences occurring between the selection of government goals and their realisation in practice. Public budgeting techniques are systems for making choices about the means necessary to implement government policies for the general good of society. Budgetary decision-making consists of the actions of many varied politicians and public officials. All these decisions and actions are inter-related.

Budgeting systems have tended to move away from the mere presentation of resources information in terms of manpower and monetary units towards the direction of management of programme budgeting. The improvement in budget systems is a matter of a shift of emphasis, in the course of time, from inputs to outputs.⁶ The concept of inputs and outputs is explained by the following example. A contractor builds roads. Roads are the end product, that is the output. To build roads he needs input resources of men, machines and materials. If the firm paid excessive attention to the quality of his resources, he would be concentrating on his inputs. Also, if he concentrated on the quality of the road, he would be oriented to the output. In the business world it is sound policy to concentrate on both facets.

In policies and public administration a multiplicity of factors result in a concentration on the outputs. The government has been oriented to goal-attainment (outputs) with not much consideration to how the goal was attained in terms of finance (inputs). With increased expectations by the public of better services, the government has had to concentrate on its

source of income (inputs) rather than on its goals (outputs). Public money is scarce and is even becoming scarcer; allocation of these scarce means for the attainment of public goals requires much thought.

It is against this background, that the ideal budget system should be developed which will enable the government to utilise its resources efficiently and effectively in striving to attain its goals.

3. RELATIONSHIP BETWEEN FINANCE, EFFECTIVENESS & EFFICIENCY

Faced with limited resources, the South African Government has to decide which goods and services to provide to the community. Unlike a private enterprise, the Government cannot measure its success by comparing its income and expenditure and so determine what profit has been made. The Government has to rely on its success being measured by the outcome of its goals. If the objectives of a programme have been attained, then the Government is regarded to have been effective.⁷

Economy is achieved when resources of inputs of men, machines and materials of a specified quality and quantity have been acquired at the lowest price. The efficiency of a programme may be defined as the ratio of units of output to units of input.

Thus, if the Government undertook to build a road project such as the Mariannhill Toll Road, it would be considered to have been effective if the road project realised a net benefit to the community in terms of

reduced travelling time, fewer accidents and cheaper transport cost. Efficiency would be achieved by a reduction in the cost of the project through optimum utilisation of resources and improved construction techniques.

It is difficult to define efficiency in precise terms but Cloete^a says,

"efficiency in the public sector means satisfying the most essential needs of the community to the greatest possible extent, in qualitative and quantitative terms using the limited resources that are available for this purpose, and also involves upholding public accountability, democratic requirements, fairness and reasonableness and the supremacy of the legislature".

The primary concern of the Treasury is how the various segments of the public sector are financed from the State Revenue Fund. The Cabinet and the Treasury are well aware of the principles of efficiency and effectiveness.⁹ Evidence of this awareness is noted by the enormous effort and expense in recent years to replace the outdated item budget system by the budgeting by objectives system. The relationship between inputs and outputs is much clearer in all Departments than it was ten years ago. This is particularly so in the case of programmes whose results or objectives are of a material nature such as the kilometers of roads built or the number of hospital beds provided.

In promoting effectiveness and efficiency six aspects should be considered.¹⁰ The six aspects can be separated into two groups relating to work and people.

(i) Work aspects:

- a rational approach to work is needed. The organisational arrangements, work methods and

procedures should be rationalised to promote productivity;

- the provisions of legislation which govern the activities of public officials must lead to effectiveness and efficiency; and
- priority setting is essential for effective and efficient utilisation of personnel.

(ii) People orientated aspects:

- personnel structuring should be taken with care as this is the basis for the provision and utilisation of personnel;
- training is essential; and
- the work climate affects the human relations aspects and should thus receive constant attention.

4. LINE-ITEM BUDGETING

The line-item budgeting system is the traditional system and is used by most local authorities. This technique is based on honesty and efficiency by the government but is inflexible. It is control orientated with the control based on inputs placing restrictions on items such as salaries, supplies and construction. No transfer of funds between items is permitted. There is no reference to the outputs which the resources of men, machines and materials produce.

Traditionally the following items are used in the budget:

- A - salaries, wages and allowances;
- B - contribution to pension and provident funds;
- C - subsistence and transport;
- D - telecommunication services;
- E - printing, stationery, advertisements and publications;
- F - furniture and equipment; and
- G - miscellaneous.

Other items included, depending on the nature of the budget, are road maintenance, road construction, ambulance services and library services.

In this technique, use is made of historical data as a base. Future expenditures and revenues are predicted mainly on a straight line basis or according to trends. This system is ideal for institutions whose activities are reasonably constant and have to only allow for inflation and not level of activity. Service institutions normally have annual committed expenditure which are repetitive such as salaries, services and machinery. This system emphasises the independence of each department with no attempt being made to co-ordinate the activities between departments.


5. PERFORMANCE BUDGETING

This technique shifted the emphasis from control to management. The outputs are assessed by means of job measurement and cost-effectiveness

management. This system was not popular as it did not assist in determining how funds should be distributed between programmes, nor which programmes were most important.¹¹

6. PLANNING-PROGRAMMING-BUDGETING SYSTEM (PPBS)

The budget became regarded as not being a means of control or management, but rather as a planning document. Golembiewski and Rabin define the Planning-Programming-Budgeting System as,¹²



"a rational decision making technique which may be used to make more systematic decisions, given a set of objectives and the information at hand. PPBS emphasises the long term benefits and costs of programmes rather than the short term. PPBS is composed of program budgeting and system analysis which typically involves cost-benefit studies. This system should be considered as cyclical. That is, the results of the decisions of previous years provide data for decisions in any current year".

6.1 Models of decision-making

The Theory of PPBS implies a specific model of decision-making using a rational model as opposed to an incremental model with the latter emphasising that it is difficult to foresee the consequences of many decisions made by man on complex problems. There are four factors in the rational model :

- (i) objectives are determined and clarified separately usually before considering alternative policies;
- (ii) objectives generate a search for alternatives to attain them;
- (iii) alternatives are analysed by a cost-benefit study; and

- (iv) the best alternative is selected.

6.2 Specific structure of PPBS

There are four major elements in the PPBS system.¹³

6.2.1 Goal Definition

The system starts with the goal being stated. Thereafter, a series of sub-objectives are formulated by department heads to attain the main goal.

6.2.2 Development of programme structure

The programme structure consists of the programme categories which are determined on the basis of objectives. The programme is usually subdivided into smaller components based on sub-objectives. The line-item budgets emphasise estimating within departments individually whilst the programme budget stresses the broad objective, thus co-ordinating all the departments' budgets.

6.2.3 Major PPBS documents

There are three documents which are considered:

- (i) multiyear programme covering a period of years, shows the activities which have been authorised and are contemplated. The projected costs and receipts are listed;
- (ii) a special analytical study may be implemented annually or over a few years on a specific topic; and
- (iii) the programme memorandum provides the documentation for the strategic decisions recommended for the year. It

contains a cost comparison and effectiveness of alternatives to achieve the objective.

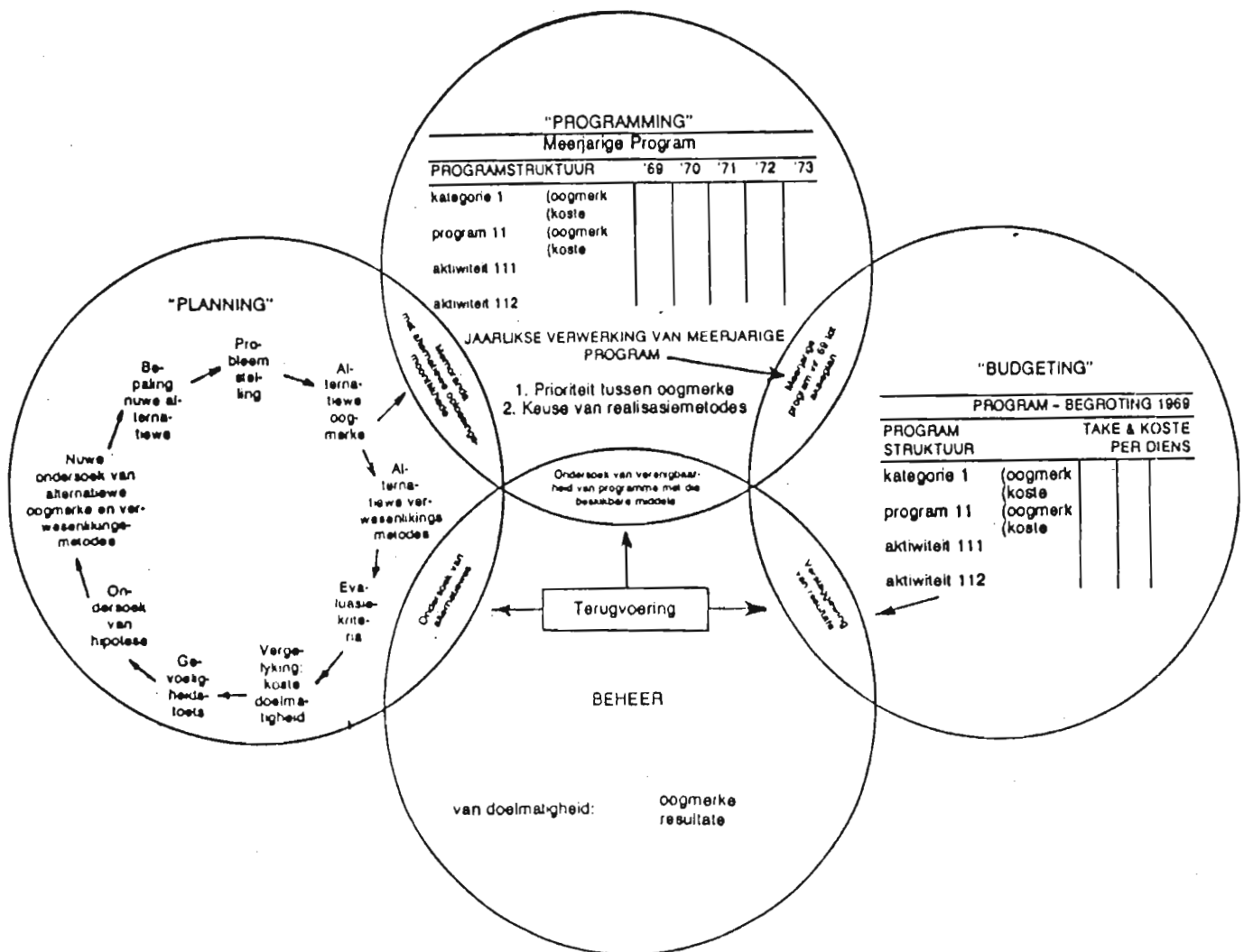
6.2.4 Cost-benefit analysis

The major goal in this analysis is to determine the projected costs and benefits of different alternatives to achieve an objective or sub-objective. Problems are encountered when one attempts to meaningfully quantify all relevant variables, assess cost and obtain reliable information.

6.3 Overview of PPBS

The PPBS system is concerned with inputs, outputs, effects and alternatives. The cost-benefit analysis provides a means of assessing alternatives. This system emphasises the need to plan on a multi-year basis. The system has not found favour with some politicians and public officials as it does not provide them with an opportunity to have value choices. Also, governments do not allow themselves to be committed to long-term plans. It is politically unacceptable to allow the possibility of a political change by the curtailment of a long-term programme. It is claimed by the protagonists of this approach that by making the budget an integral part of the decision-making process (note that the "planning" referred to in this system is in fact policy formulation), arbitrary political directives will be minimised or eliminated. The interaction, feedback and control of the Planning-Programming-Budgeting System is shown in Figure 10.¹⁴ There is much review made of the activities in this system to enable the programmes to be co-ordinated to best advantage in the light of the latest available data.

FIGURE 10 : PLANNING-PROGRAMMING-BUDGETING SYSTEM



7. MANAGEMENT BY OBJECTIVES (MBO)

The Management By Objectives Budgeting System is in many ways a return to Performance Budgeting. The MBO system is not only concerned with inputs, outputs and effects but also investigates alternatives. MBO is primarily concerned with programme effectiveness, with a decentralised and

participatory policy-making style that stresses common sense. Operational goals are centrally determined but their implementation is decentralised to line managers. The budgetary institution thus becomes concerned chiefly with programme effectiveness and efficiency. Thus, according to Mitchell, those closest to the problem receive considerable latitude in dealing with the problem.¹⁵

7.1 Background of MBO in South Africa

For various reasons since World War II expenditure in most countries showed a sharp increase. Financing this greater expenditure has not only placed an increasing burden on the sources of revenue of these countries, but the lack of sufficient means, especially of a non-inflationary nature, to satisfy all the needs has become more evident over the years.

The South African Exchequer Account has the following deficit data excluding loans:

1950 - 51	R 64m	9% of Total Budget
1960 - 61	R 81m	
1970 - 71	R 243m	
1976 - 77	R1 220m	15% of Total Budget

Also Treasury expenditure increased from 16% of the Gross Domestic Product in 1960-61 to 21% in 1970-71 and in 1976 amounted to about 25%. The increases in Treasury expenditure gives rise to other problems. Both the public and private sector lay claim to the limited resources of the national economy. The tendency to increase public expenditure affects the

availability of resources to the private sector, leading to a strengthening of inflationary tendencies.

It is clear that the community's needs for public services cannot be satisfied simply by utilising additional means and resources. The effective, indeed the optimal, utilisation of the Government's share of the limited means available will have to play an increasing role. It is against this background that the Treasury developed the MBO system for the public sector. The MBO system provides State departments the opportunity to improve their own management systems by utilising the financial planning and control instrument that is embodied in this system. The primary objective is that the system should satisfy the needs and requirements of each individual State department and that it should also serve the wider interests of the Treasury, the Cabinet and Parliament. Treasury issued a publication on the MBO System in 1976.¹⁶ The contents of this publication forms the basis on which the MBO System is discussed. R.P. Wronsley gives a summarised interpretation of this document, which also contains the statistics of the exchequer account listed in this section.¹⁷

7.2 Basis of MBO system

Previous budgeting systems had globular amounts, salaries for example. It did not say in which State department, branch, directorate or sub-directorate the salaries were being used for. To solve this problem, the item budget system was amended to reflect outputs, that is the purpose of the expenditure. The budget is nothing but a political policy. By detailing the expenditure items, one is able to determine what the

Government's policy is. The study policy of the following two students is clear from their budgets :

Student	A	B
Clothes	R 40	R 10
Recreation	R 50	R 10
Books	<u>R 10</u>	<u>R 80</u>
	<u>R100</u>	<u>R100</u>

Clearly the policy of B is "S" for Study whilst that of A is "S" for Socialise.

In an effort to make the budget a more useful document for the various public officials, it was decided to incorporate into the budget the following four categories of information.

7.2.1 Centre of financial responsibility

It is essential to identify which State department, regional administration, branch, directorate or sub-directorate will be requesting funds. In other words, an estimate of expenditure for each centre of financial responsibility must be provided.

7.2.2 Expenditure items

The public institutions have to budget their expenditure according to current prices for specific goods and services. An estimate has to be made of each item, for example salaries, plant, materials and services.

7.2.3 Source of finance

The source of the finance expenditure must be identified, that is the vote, fund or account must be budgeted for.

7.2.4 Aim of the expenditure

The above three types of information were contained in the item budget but not in the same format. The fourth type of information is that of the purpose of the expenditure. The decisive consideration regarding allocation is always the purpose for which the funds are required, that is, the specific need to be satisfied, problem to be solved or advantage to be gained. Thus, a detailed estimate must be compiled by each department. This entails determining and making available to decision-makers the costs of all departmental activities within the programme structure. This is done by doing estimates on sub-programmes, activities and even elements of the activities. The basic aim is, therefore, to link every departmental policy objective as directly as possible to, and integrate it with, its own programme and budget.

7.3 Demand and priority classification

When allocating means, it is essential for decision-makers to consider the estimated cost of planned new activities separately from the financial obligations involved in the continuation of existing activities. Estimates of expenditure are therefore grouped into three categories:

- (i) continuation of programmes for the attainment of specific objectives;
- (ii) new programmes approved in principle or the expansion of existing programmes; and
- (iii) unapproved new programmes.

The following priority indicators have been formulated to determine for new programmes and the expansion of existing programmes, what the priority list is.

(1) Absolute priority

The omission or postponement will have catastrophic results.

(2) Essential

Expansions or new programmes which cannot be left in abeyance or postponed without serious prejudice to the public interest.

(3) Desirable

Expansions or new programmes which should enjoy priority on the ground of the exceptional or special advantages which they hold for the community (economic, social or political).

(4) Useful

Expansions and new programmes which, although dispensable, nevertheless have a useful aim and which should be undertaken by the State in the public interest.

(5) Dispensable

Expansions or new programmes which may be abandoned or postponed without real prejudice to the public interest.

7.4 Basic principles of MBO

The basic principles of the MBO Budgeting System can be summarised as follows:

- (i) identifies aims and objectives of departments and subjects these policy objectives to close scrutiny with a view to the allocation of means, the needs to be met,

the problems to be dealt with, the advantage to be achieved and the expected outcome;

- (ii) identifies and formulates programmes and structures to attain objectives;
- (iii) emphasises determination of policy priorities;
- (iv) integrates objectives and the financing of the associated programme.
- (v) embodies a policy of long-term planning; and
- (vi) stresses the evaluation and development of analytical techniques for evaluation.

8. ZERO-BASE BUDGETING (ZBB)

The Zero-Base Budgeting System stresses the ranking of programme priorities. The ZBB system refers to the review and justification of selected current programmes by starting somewhere in the base area and not necessarily at "zero base". Whereas the traditional system of budgeting tends to review and justify new programmes only.

Pete Sarant defines Zero-Base Budgeting as,^{1a}

"a technique which complements and links the existing planning, budgeting and review processes. It identifies alternative and efficient methods of utilising limited resources in the effective attainment of selected benefits. It is a flexible management approach which provides a credible rationale for reallocating resources by focusing on the systematic review and justification of the funding and performance levels of current programmes or activities".

The ZBB complements and allows the use of other management tools such as

the MBO system. Due to the success enjoyed by the private industry and State of Georgia where President J. Carter of the United States of America was previously Governor, he introduced it into the Federal Budget Process on 14 February 1977. This system did much to make the USA State departments function more effectively and efficiently.

8.1 Objectives of ZBB

The principal objectives of the ZBB system are to:

- (i) involve all officials at all levels in the budget process;
- (ii) justify resource requirements for existing and new activities;
- (iii) focus the justification on the evaluation of discrete programmes or activities of each decision unit;
- (iv) establish at all management levels objectives against which accomplishments can be identified and measured;
- (v) assess alternative methods of achieving objectives;
- (vi) analyse the probable effects of different budget amounts or performance levels on the achievement of objectives; and
- (vii) provide a credible rationale for reallocating resources.

8.2 ZBB Process

Officials have to have information available to assess various programmes and then rank them in order of priority. There are four steps in the ZBB process:

- (i) identification of objectives;

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- (ii) preparation of decision packages;
- (iii) ranking of decision packages; and
- (iv) preparation and submission of the budget.

The Zero-Base Budgeting System has not proved to be too successful. The system tends to involve excessive paperwork that ultimately had little or no impact on policy making. It was also quite time consuming. Administrators saw their budgets being cut when they identified programmes which could be omitted or operated with a smaller budget. Also many programmes were mandatory within the political arena and could not be dismantled no matter how compelling the available data and analysis. Shortly after President Reagan took office in January 1981, the new administration announced that ZBB would no longer be practised. Despite the drawback, ZBB contains basic principles which are worthwhile and can be useful to government departments.

9. SUMMARY

The budget is a means of the Government expressing its policy in monetary terms. The budget should be the result of well-considered priority decisions to enable the various programmes to be implemented objectively. There are a number of budgeting systems each with their own characteristics.

The need to develop effective budget systems results from the fact that resources are becoming scarcer and public officials have to work with

limited means. Thus, the Government needs to utilise its resources effectively and efficiently in striving to attain its goals.

The general form of the budget is governed by three main considerations:¹⁹

- (i) supply of information to Parliament;
- (ii) preservation of continuity in the votes; and
- (iii) the maintenance of control.

The estimates of expenditure are thus a carefully prepared plan, formally approved, which is binding on the spenders who are not allowed to depart from it without special authorisation. With estimates being prepared at least six months before implementation, the power of virement is allowed whereby variations between subheads can be made on request. Problems do arise in the course of the execution of the budget. To reduce deviation from the budget, a suitable budgeting system should be used.

The preparation of the budget is the root of financial management. If the present budgetary process is rightly or wrongly deemed inadequate, then the political system of which the budget is an expression, has to be altered. The most significant way of influencing the budget is to introduce basic political changes. In the long run the current constitutional changes in South Africa will inevitably alter the budgetary process in the country.

Sound financial management rests to a very large extent on complete co-operation and trust among those concerned in planning and executing the budget. Parliament through the Treasury, relies on departmental heads for

full co-operation. This spirit should prevail throughout, and an honest attempt should be made to estimate accurately and to accord priorities equitably. In addition, every effort should be made to derive the maximum benefit from the money spent, by proper delegation and supervision of the various sections.

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5. CLASSIFICATION AND DEVELOPMENT OF THE ROAD NETWORK IN NATAL

1. INTRODUCTION

Discussion in this chapter reveals, inter alia, that with the formation of the Union in 1910 between the four provinces, Central Government considered that it was their responsibility to provide railways under the direct control of a cabinet minister. The provision and maintenance of roads were to be a provincial matter. The policy was that travel over long distances should be the responsibility of the Central Government. Roads were intended for short-distance traffic feeding the railway system. Thus, road development remained dependent on different authorities at the provincial and the local levels of government. These authorities had few powers and their scope for taxation was limited.

The various authorities involved in the provision and maintenance of the road network in Natal are described in this chapter. However, this is preceded by a discussion on the six categories according to which a road network system is classified. This approach is adopted as a necessary prelude to the discussion in Chapters 7 and 8 on the financial administration of the road network, in view of the direct relationship between the classification of the road network and its financial impact. There are a number of ways that a road is classified which is done according to its ownership, function or nature. The desired standard of a road that is required is not always provided due to a lack funds.

2. ROAD NETWORK CLASSIFICATION

There are a number of terms used to describe a road which is a part of the overall road infrastructure. The most commonly used frame of reference to classify a road network, is to describe the road network according to one of the following categories, namely

- (i) surface, (ii) area,
- (iii) function, (iv) geometry,
- (v) route, and (vi) controlling authority.

These six categories are inter-connected and are not exclusively dealt with. The road designer takes into account all six categories in planning the road design. The more important factors which the designer takes into account are traffic volume, type of traffic, speed, safety and terrain. These design criteria all influence the nature of the road network system. The six categories according to which a road network system is classified, will now be described.¹ After this a table will be provided giving statistics of the road network system in Natal.

2.1 Surface

The initial roads used by man were traditionally trodden paths referred to as an unsurfaced road. The second type is a surfaced road. The road surface has numerous qualities which can affect the driver's perception of the situation ahead of him. The most significant quality is that of skid resistance according to the document Technical Recommendations for Highways, namely TRH 17² which is prepared by the National Institute for Transport and Road Research.³

2.1.1 Unsurfaced

Initially the roads were left untreated. But as the road deteriorated through an increase in traffic volume and through adverse weather conditions, it became necessary to cover the road with a selected type of material obtained from a borrow pit or quarry. This material is usually of a good quality with good characteristics of abrasion, weathering, riding quality and skid resistance. This material is commonly referred to as a gravel, hence the use of the terminology "gravel road" when reference is made to an unsurfaced road. The gravel is applied to the road in its natural state with no additives except water to assist with the processing and compaction of the gravel. In recent years various types of additives in the form of an organic polymer have been successfully used to bind the clayey particles in the gravel to provide a more durable surface.

2.1.2 Surfaced

As the volume of traffic increases further and in order to reduce the maintenance costs of regularly repairing gravel roads, so the road is a surfaced road and is commonly referred to as a "blacktop" road as the road looks black, having been covered with a tar or bitumen binder.

Macadam was one of the first to apply scientific principles to road construction, using both tar and bitumen to cement together aggregate particles to give a dust free, waterproof, long lasting and even riding surface.⁴ A surfaced road is also often referred to as a "tarmac" road deriving this name from Macadam who used tar as a binder on the uppermost layer in the road on which the traffic travels.

Macadam was quickly followed by many other pioneers and various forms of asphaltic macadam were introduced. In recent years there have been new types of surfaces used depending on the application. Surfacing refers to the uppermost pavement layer on which the traffic travels. As the volume of traffic increases so does the type of surface change in the order of sandseal, single chip-and-spray, double chip-and-spray, premix or concrete. The large price increases of bitumen in the past decade obtained from abroad, made concrete roads more cost effective as the raw materials of concrete roads are all locally produced. Concrete roads have specific applications. The "blacktop" roads made with a bitumen or tar binder, comprise 99% of the surfaced road network in South Africa. In Natal the criteria of a traffic count of 400 vehicles per day on a road, warrants the road to be surfaced. As soon as the traffic count reaches 2000 vehicles per day, a superior surface of premix is used. These traffic volumes are merely guidelines and are varied depending on funds and site conditions.

2.2 Area

There are two generally recognised areas in South Africa relating to road networks, namely rural and urban areas. Reference is often made to peri-urban areas but these are considered part of the urban road network system as they have similar characteristics. These areas are found just outside the boundaries of a local authority, or out in the rural area where no local authority has been established. The peri-urban area is known as the Development and Services Board in Natal, Board for the Development of Peri-Urban Areas in Transvaal and the Divisional Councils in the Cape Province.

2.2.1 Rural

A rural road is one which serves the community in the country. TRH 17 defines a rural road as "one that is not likely to acquire urban characteristics during its design life."⁵ The design life of a road is generally twenty years which means that the road will be able to provide for the traffic requirements in capacity to an acceptable level of service for twenty years.

TRH 4 have two definitions of a rural road which are very expressive:⁶

"interurban road - a primary road between urban areas carrying from light to heavy traffic with a high level of service", and

"rural road - a surfaced secondary road serving small rural communities and carrying very light traffic with a relatively low level of service".

Thus, a rural road is one situated outside urban areas to serve the community out in the country and also links urban areas. Rural roads in Natal are the responsibility of the Natal Roads Branch and the National Transport Commission.

2.2.2 Urban

The urban road network are those roads found in towns where there is a concentration of community development. In Natal there are four categories of towns as provided for in the Local Authorities Ordinance, 1974 (Ord. 25 of 1974), namely rural residential areas, townships, boroughs and city councils. TRH 4 defines an urban road as "a road within an urban or metropolitan area ranging from the residential cul-de-sac to a major arterial route".

2.3 Function

The functional classification of a road does not automatically lead to the selection of a design speed and cross-section for that road, though it is useful as a guide in the selection of appropriate design parameters. In general, higher-order routes tend to have higher design speeds and serve greater volumes of traffic and hence require wider cross-sections. The seasonal, weekly, daily or hourly fluctuation in traffic volumes on a given route varies with the function of the route.

Table 3⁸ gives the class of rural roads in Natal according to their function. The table also shows the standard width of road reserve⁹ expropriated for road purposes in terms of Section 10 (1)(a) of the Roads Ordinance, 1968 (Ord. 10 of 1968). To complete the list of roads, by-roads have been included although they are on private property.

2.3.1 National Roads

A national road is defined as,¹⁰

"a road or route declared as such in terms of section 4 (1) of the National Roads Act, 1971 (Act 54 of 1971) and includes a part of such road or route".

B.C. Floor describes a national road as,¹¹

"roads which forms principal avenues of communication between:
 (a) major regions of the Republic and/or
 (b) defined or proposed metropolitan areas and/or
 (c) major regions of the Republic and outside countries".

The national roads of Natal are expropriated by the Natal Roads Branch on behalf of the National Transport Commission. The national roads are those roads which have been declared as such and accordingly expropriated. There are numerous cases of where declared national roads have not yet been

TABLE 3 : FUNCTIONAL DESCRIPTION OF ROADS

<u>ROAD CLASS</u> (Road reserve width)	<u>FUNCTIONAL DESCRIPTION</u>
NR National 60m	Proclaimed National Roads Function - long distance traffic movement throughout RSA, linking major centres of the country.
PR Primary 40m	Proclaimed Provincial Main Roads Major routes between cities and major centres in the Province, catering for both interregional and intraregional movements
SR Secondary 40m	Proclaimed Provincial Main Roads Collector - distributor roads, catering for medium to long distance movement between primary roads, towns and agricultural areas. Links to public resorts.
TR Tertiary 30m	Proclaimed Provincial Main Roads Links from higher order roads to communities and farms, performing a local access function.
DR District 20m	Proclaimed Provincial Districts Function - local access.
SP Special Purpose 40m	Proclaimed Provincial Road Route providing primarily for one activity such as tourism, timber, military and mining activities. Includes development roads.
BR By-roads 10m	Private Road Provides access to locals onto public roads.

built and thus it is necessary for the traffic to link back onto the provincial road network. One such example is the N2 on the North Coast where the road between Umdloti and Ballito is a provincial road. The longer national roads are split into sections for ease of reference. The sections usually end and start at an international boundary, provincial boundary, magisterial district boundary or a major river.

In Natal there are four national roads, namely the N2, N3, N11 and N20. They are described as follows:

- (i) the N2-21 starts at the Transkei Border at Brooke's Nek, follows a route towards the coast at Port Shepstone, and then follows the coast to the north ending at the Swaziland Border at Golela with section N2-31. The N2-1 commences in Cape Town;
- (ii) the N3-1 commences at Candella Road in Durban and follows an inland route ending with section N3-6 at Van Reenen;
- (iii) the N11 commences at the Vaalkrans Interchange on the N3 near Ladysmith and ends at Volksrust; and
- (iv) the N20 linking Port Shepstone with the Transkei Border just beyond Port Edward.

The latter two national roads were declared as such in 1988.

2.3.2 Provincial main roads

The definition of a main road is as follows:¹²

"main road means any road declared as such in terms of this Ordinance, inclusive of the full extent of its width notwithstanding that only portion thereof may be in actual use for traffic purposes; and includes any deviation of a main road or any portion or section of a main road".

Additional width of road reserve is required than the actual road surface, to provide for drainage, road signs, sloping of banks and access for maintenance purposes. If a re-constructed main road follows the existing route and the terrain is fairly flat, then only a 30m road reserve is expropriated. Where the terrain is very hilly, it is sometimes necessary to expropriate land more than the standard 40m width to enable the cut and fill slopes to be constructed to the required slope stability criteria.

The 497 main roads are numbered 1 to 616 with a few intermediate numbers omitted due to de-declaration. Main road 1 is referred to as MR1 or more commonly as P1.¹³ The longer main roads are split into convenient sections, such as P1-1 Durban to Emberton, P1-2 Emberton to Drummond and so forth up to P1-13 Newcastle to Volksrust. The smaller numbers are used for the major routes in Natal.

The provincial main roads consist of a three-level hierarchy, namely primary, secondary and tertiary.¹⁴

(a) Primary Road

The primary road is intended for main movement, that is relatively uninterrupted high-speed flow between towns. This level can be sub-divided into long-distance routes connecting towns in several regions as the highest order, followed by routes connecting towns in adjacent regions, followed in turn by intra-regional routes between towns.

(b) Secondary road

At this level the secondary road has a collector-distributor function.

While primary routes have towns as their destinations, secondary roads invariably connect local areas such as small towns, agricultural areas and public resorts, to the primary network. The terminal is usually on a primary road, secondary road or intersection of two or more tertiary roads. Travel speeds on the secondary road network are generally not as high as those on the primary roads. Traffic volumes very often do not warrant the road to be surfaced, thus secondary roads are classified as surfaced or unsurfaced roads.

(c) Tertiary road

Tertiary roads are intended to provide access to properties, that is they link them to the higher-order routes in the hierarchy. Thus, traffic volumes and speeds tend to be low, so that tertiary roads are rarely surfaced. Properties are also linked directly to secondary and primary routes, but the control of access to a route is more stringently applied as the importance of the route in the hierarchy increases.

2.3.3 Provincial district roads

The definition of a district road is as follows: ¹⁵

"district road means any main road or by-road or section of a main road or by-road or any new road which has been declared to be a district road, inclusive of the full extent of its width notwithstanding that only portion thereof may be in actual use for traffic purposes, and includes any deviation of a district road."

The function of district roads is to provide local access. District roads are not expropriated but a road servitude of 20m width is acquired. Very small distances of district roads are surfaced where the conditions required surfacing such as an approach to a main road, small section

carrying heavy traffic or there is a dust problem near a built up area. The 759 District Roads are numbered from 1 to 780 with some of the intermediary numbers missing due to de-declaration or upgrading to a Main Road. District Road 20 is designated D20.

2.3.4 Special roads

A special road is a proclaimed provincial main road which is a route that provides access primarily for one activity such as tourism, timber, military, mining activity and industry. Special roads include development roads. Special roads are intended to provide for goods traffic on routes where no rail facilities existed and were regarded as essential roads. In principle, special roads were intended to complement the systems of national roads and railways and not duplicate any of their links by providing parallel routes. In Natal there is one special road designated S8 and also referred to as Main Road 47. S8 was built between Vryheid and Melmoth to provide an acceptable standard of road for the conveyance of heavy goods between the Reef and the Richards Bay Harbour.

2.3.5 By-roads

The definition of a by-road is as follows:¹⁶

"by-road means a public road or a public path which provides a reasonable means of access to another public road, public path, a railway station or siding, or any other public amenity, but excludes all roads for the maintenance of which the State is liable and any road or right-of-way in so far as it lies within the limits of any borough, township or health committee as contemplated by the Local Authorities Ordinance, 1974 (Ordinance No. 25 of 1974), or any development area as contemplated by the Development and Service Board Ordinance, 1941 (Ordinance No. 20 of 1941)."

A by-road is a road on private property on which a servitude is acquired

to provide access for a few locals who have no suitable alternative access to areas as described in the above definition of a by-road. By-roads are handled and provided for by private individuals who have an interest in the existence of a by-road. At present the registered by-roads are numbered from 1 to 359 although there are only 319 registered by-roads.

2.4 Geometry

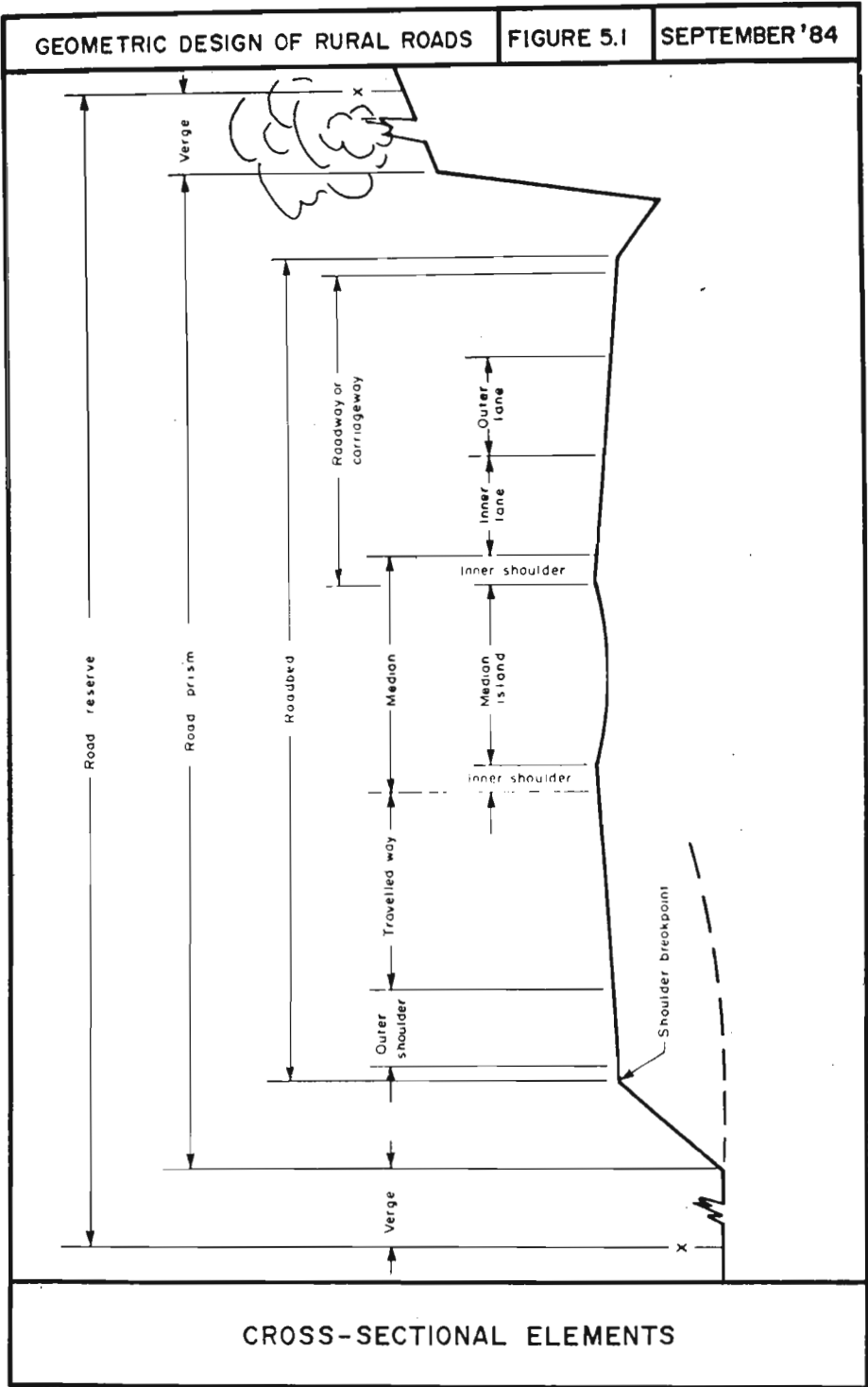
The road has various geometric characteristics dependent on the class of road according to the function it fulfills.

2.4.1 Cross section elements

In Figure 11'7 the road cross-sectional elements are shown. The main elements are described as follows:^{1a}

- (i) auxiliary lane: that portion of the roadway adjacent to the travelled way used for parking, speed change or other purpose supplementary to through traffic movement;
- (ii) carriageway: that area normally used by vehicles and consisting of one or more contiguous traffic lanes, including auxiliary lanes and shoulders;
- (iii) climbing lane: an auxiliary lane provided in the up-grade direction, normally on single carriageway two-lane roads;
- (iv) lane: the portion of the surfaced width intended for the movement of a single line of vehicles;
- (v) median: the areas between the two travelled ways of a dual carriageway road. It includes the inner shoulders and central island;

FIGURE 11 : ROAD CROSS SECTIONAL ELEMENTS



- (vi) roadbed: the natural in situ material on which the fill, or in the absence of fill, any pavement layers are to be constructed;
- (vii) road prism: the portion of the road construction included between the original ground level and the outer lines of the slopes of cuttings, fills or drains;
- (viii) road reserve: that area of land reserved for construction and maintenance of the road;
- (ix) shoulder : the usable area alongside the travelled way, excluding provision for edge rounding, edge drains, or guardrail mounting;
- (x) shoulder break point: the line along which the extended flat plane of the surface of the shoulder intersects with the slope line of the cut or fill;
- (xi) travelled way: that portion of the carriageway including the various traffic lanes and auxiliary lanes but excluding the shoulder; and
- (xii) verge: the area between the longitudinal work and the road reserve boundary, providing room for maintenance purposes outside the road prism.

2.4.2 Selection of cross section type

The selection of a cross section type for a particular road depends on the following factors:

- functional classification;
- anticipated traffic; and
- economic considerations.

Before deciding on a particular cross section, capacity calculations have to be done and thereafter the economic implications of the alternatives have to be assessed. The selection of the cross section type is done according to Table 4.¹⁹ Thereafter, use is made of Table 5²⁰ to select the cross section elements. Where a climbing lane is provided on a single carriageway road, the lane width is 3,0m.

2.4.3 Geometric classification

In Table 4 the geometric classification of the road is shown to fall into two categories with reference to Figure 11 as well, namely single or dual carriageway.

(a) Single carriageway

The single carriageway can comprise the following:

- (i) two lanes - one lane for each direction of traffic;
- (ii) three lanes - the additional lane is used for slow moving traffic in the upgrade direction and is regarded as a climbing lane. Traffic use the centre lane for overtaking; and
- (iii) four lanes - traffic in both directions use left hand two lanes only.

(b) Dual carriageway

Provision is made for two carriageways with each carriageway carrying traffic in one direction only. There are generally two lanes per carriageway, which can be increased to three or even four lanes. The latter case is accompanied by a reduction in lanes width. The

TABLE 4 : SELECTION OF ROAD CROSS SECTION TYPE

Functional Class	No. Lanes	Cross-section Type	Proj AADT (evu's)
Dual Carriageway			
PR	6	1A	25000 +
	4		4800 - 25000
	6	1B	25000 +
	4		4800 - 25000
Single Carriageway			
PR	4	2A	4800 - 10000
	2	2B	2000 - 4800
	2	2C	450 - 2000
SR	2	3	1000 +
	2	4	400 - 1000
	2	5	0 - 400
TR	2	4	400 +
	2	5	0 - 400
DR	2	4	400 +
	2	6	0 - 400

TABLE 5 : CROSS SECTION ELEMENTS

X/S Type	No. Lanes	Lane Width	Shoulder Width (m)		C/Way Width	Road Reserve
		m	Outer	Inner	m	m
Dual Carriageway						
1A	6	3,7	3,0	1,0	15,1	60
	4	3,7	3,0	1,0	11,4	
1B	6	3,7	3,0	1,0	15,1	60
	4	3,7	3,0	1,0	11,4	
Single Carriageway						
2A	4	3,7	2,35	-		40
2B	2	3,7	2,5	-	12,4	40
2C	2	3,5	1,5	-	10,0	40
3	2	3,25	1,0	-	8,5	30
4	2	4,0	-	-	8,0	30
5 Gravel	2	3,75	-	-	7,5	30
6 Gravel	2	3,0	-	-	6,0	20

dual carriageway roads are generally the freeways used for high speed traffic. The median width can vary from zero to eighteen meters. In the former case a concrete barrier is provided to separate the two carriageways.

To complete this section of the geometric classification, the definition of a freeway road must be stated and is as follows:²¹

"a freeway is a dual roadway with a continuous median island so constructed as to prevent vehicular traffic from gaining direct access from one roadway to the other. Access to and exit from any of the roadways is fully controlled in such a manner that no at-grade crossings are permitted as other intersecting roads pass either over or under the freeway".

2.5 Route

To assist motorists to select a road to reach their destination, a system has been devised whereby the major arterial roads have been identified and given a route number. Roads with a route number are thus roads which provides motorists the optimum choice of route to reach their destination. To further assist motorists, the routes are classified into three rural categories, namely national, major provincial and minor provincial. The route number is shown on a board which is pentagonal, diamond and square in shape, respectively. The background of the board is blue for freeways and green otherwise. In urban areas which have been designated as metropolitan areas, use is also made of the route system to identify major and minor routes with the same shape and colour coding as for the provincial routes.²²

The designated routes in Natal are shown in Map 1.²³ The proposed policy of route numbering in South Africa is shown in Table 6.²⁴ Routes always

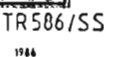


TABLE 6 : SOUTH AFRICAN ROUTE NUMBERING CRITERIA

	<u>National - Level 1</u>	<u>Major - Level 2</u>	<u>Minor - Level 3</u>	<u>Minor - Level 3</u>
Service function	International Interprovincial	Interprovincial Interregion	Local, parallel and higher order	Intraprovincial Intraregion
Population	≥ 100 000	≥ 5 000	≥ 1 000	≥ 500
Population level	1	4 and higher	5 and higher	5 and higher
Level difference between endpoints	0	≥ 2	> 3	> 3
Route level at endpoint	1	2 and higher	3 and higher	3 and higher
Distance between endpoints	≥ 500km	≥ 100km	≥ 10km	≥ 20km
Surface requirements	Permanent	80% Permanent	Permanent	Weather stable

start or end at another route of the same level, or else at the border of South Africa. The three main parameters in selecting route criteria are population, junction of routes and distance to next destination. The three route categories according to which rural road networks are classified, are described hereunder.

2.5.1 National

Natal has four national routes, namely the N2, N3, N11 and N20. National routes provide access between provinces or countries. Where declared national roads have not yet been constructed, the adjacent provincial road which is used as the alternative route, is demarcated as the national route.

2.5.2 Major provincial

The major provincial routes link provinces and also regions within a province. The route number constitutes only two-figures. Where two routes coincide on a section of road, the common section of the road is given both route numbers to provide continuity.

2.5.3 Minor Provincial

These routes can be further split into two categories depending on their number group as follows:

- (i) 100 - series: these are local routes and parallel routes to a higher level route which has replaced them. For example, where the N2 follows a new route, the old route is numbered R102 and similarly for N3 and R103, respectively; and
- (ii) 600 - series: Natal has been allocated numbers in the six-hundreds for other routes within the province and regions. Where provincial roads are wholly within a metropolitan region, the road will adopt a M-series number.

2.6 Authority

The Provincial border of Natal at the time of the Union of South Africa has undergone various changes in controlling authority of the land from the Provincial Authority as follows:

- (i) portion of Transkei has been excluded;
- (ii) East Griqualand has been incorporated;
- (iii) KwaZulu, as a self-governing state, has been recognised.

KwaZulu also administers some South African Development Trust land on behalf of the Department of Development Aid;

- (iv) Department of Development Aid administers the S.A. Development Trust²⁵ land and also scheduled areas for development for the blacks, but not administered by KwaZulu. This Department also administers the Black local authorities of Inanda, Kwa Dabeka, Clermont, Imbali and Edendale; and
- (v) besides the rest of the province which the Natal Provincial Administration is in control of, it also administers property not yet acquired by the S.A. Development Trust and also land privately owned by blacks who have not agreed to inclusion in KwaZulu.

Within the area of control, are own affairs local authorities of the three Houses of Parliament. An extension of the local authorities is the Durban and Pietermaritzburg Metropolitan Boards and more recently, the Regional Services Council system. Areas of conservation are also set aside and are administered by the Natal Park Board which is a Statutory Board.

The development of the road network in Natal will now be described at provincial, national and local level. The focus of this study is on the rural network at provincial and national level, but a brief overview of the urban roads will also be made as they have an influence on the rural network.

3. PROVINCIAL ROADS

Since the turn of the century, the road network in Natal has developed extensively from an approximate 230 recognised main roadways with an estimated length of 1200 miles, to the present declared 1 258 roadways with a length of 15 472 kilometers in 1986.

The present roads in Natal comprise four national roads, 497 main roads and 759 district roads. This excludes the road networks which have developed in KwaZulu and were formerly part of Natal. There was essentially one road authority responsible for the development of roads in Natal. The responsible authority changed in name only as the form of government changed.

3.1 Colony of Natal

The Colonial Engineer, who held several offices, was initially the responsible person for roads prior to the establishment of Natal in 1893. The Department of Public works who dealt with buildings, roads and bridges, continued to function under the guidance of the Colonial Engineer until 1897 when Mr. J.F.E. Barnes was appointed as Chief Engineer of Public Works in the Colony of Natal. In his annual report of 1901,²⁶ he reported how the progress of roads was being hampered by the wars and a shortage of oxen used for making roads, due to sicknesses. These two factors continued to affect progress of roads on a number of occasions in the years to follow.

The initial road improvements were confined to reducing the steep

gradients and selecting shorter routes to those developed by the Boer Settlers. With the availability of time and money, road hardening was commenced at the turn of the century. The acquisition of labour-saving plant such as stone crushers, tramways and steam rollers, it enabled the improvement of roads to be systematically done.

3.2 Provincial Administration

With the formation of the Union in 1920, the responsibility of the provision and maintenance of roads rested with the four provincial authorities. The Union Public Works Department remained responsible for the design and finance of bridges. In 1920, the length of recognised roadways in Natal had increased to 5427 miles. The first head of the Natal Roads Department was the Engineer-Superintendent, Mr.H.B. Jameson. He made a valuable contribution to the development of the road network system, especially the main trunk routes which later formed part of the national network. In 1918, as part of the road improvement scheme, he recommended that 592 miles of road be abandoned.²⁷ He was of the opinion that no matter how poorly formed or surfaced a road may be, if it was well located and graded, the road would be an asset.

With the progress of the road network falling behind expectations and development, a Commission was appointed in terms of Provincial Notice No. 148 dated 15 April 1937. The Commission was to investigate and report upon the general organisation and administration of the Provincial Roads Department with a view of recommending the best methods for effecting the greatest efficiency in developing the road network of Natal. The main problem found in the findings of the Commission, was a lack of funds

allocated to provide for the standard of roads expected by the public.²⁸ The lack of funds did not enable the Natal Roads Department to use the correct methods of construction and maintenance. In attempting to make the best use of limited resources, roads were not built with the correct materials, there was insufficient attention given to drainage and a lack of overall supervision.

The province financed their roads from revenue and loans. General maintenance and improvements were financed from revenue whilst new construction was financed from loans. Initially, the Natal province was divided into 11 road districts. There were also 26 divisional areas which the 11 districts covered but the boundaries did not coincide. The number of districts was later reduced to 7.

Following on a recommendation made in 1941,²⁹ Natal was divided in 1945 into five districts covering fourteen areas. This changed to fifteen areas in 1978 when East Griqualand was incorporated into Natal, and has since remained unchanged.

Although hindered by the natural conditions of poor road making materials, hilly terrain and high rainfall area, the Natal Roads Department was able to develop its road system to a standard commensurate to the available finances. In attempting to make the most of the available funds, new techniques were experimented upon and successfully implemented in Natal. Amongst these are the stabilisation of road materials with lime and the various types of road surfacing. The construction programme was commenced in earnest in 1950 with work done departmentally.³⁰ The private sector

had not developed into having the resources to build roads. By 1960 with a dramatic preference for travel by road, due partly to the rail system being overloaded, the road system began to develop further. To satisfy this increased demand, work was handed out to the private sector to design together with an increased amount of roads being constructed as well. This trend has continued to the present day.

In the recent two decades there has been an increase in the demand and subsequent provision of roads at national and urban level. The name of the Natal Roads Department was recently changed to Natal Roads Branch as part of the Central Government's revised nomenclature policy. It still falls under the control of the Natal Provincial Administration, which is a department.

4. NATIONAL ROADS

Prior to the formation of any national road authority, the provinces were responsible for the provision and maintenance of all roads. The sources of income were inadequate to meet the increased demand for better roads, although the Divisional Councils in the Cape had the most advanced system of collecting revenue. However, it was not long before roads in some areas were built to higher standards whilst in other areas the major through-roads were in a poor state through lack of finance and inadequate planning. This forms the background of the need to provide a national road authority.

4.1 Initial planning

In the meantime, the need for co-ordination in road development and improvement had become evident. In 1918, H.B. Jameson, the Superintendent of Roads in Natal had proposed that a well-devised system of trunk roads should be provided throughout the country and that a general tax should be levied to pay for their provision and maintenance.³¹ This led to the formation of a Roads and Bridges Committee in 1925, with Jameson a member. This Committee had to report on the current state of roads and make recommendations regarding a future road policy. Among the recommendations made were the classification of national roads and the establishment of a permanent National Road Board.

4.2 National Road Board

The Government did not establish an authority to be responsible for co-ordinating the provision of road and rail infrastructure. However, it established a National Road Board in terms of the National Roads Act, 1935 (Act 42 of 1935). The Minister of the Interior was conferred various powers relating to public roads. The Minister described the Act as the answer to one of the outstanding needs of national development. In keeping with the politics of the time, he promoted the Act to further the cause of national unity. He declared that builders of major roads were regarded as builders of the nation and that the Act would provide the opportunity to build these roads.³²

In terms of this Act, a National Road Fund was created to finance the national road network. The first levy in 1935 amounted to 3d per gallon on imported petrol. Between 1922 and 1935 the provincial administrations

struggled to meet the demands for spending on roads and had to make use of loan funds. The National Roads Board, when formed, had to carry the burden of the interest on some of these loan funds. The Board was also not able to meet its own commitments of national roads from the National Road Fund. There was a drastic lack of funds to meet the requirements. Part of the shortage was the result of under-estimation of the cost of road construction and also the lack of realising the implications of providing a surfaced national network.

The relations between the National Road Board and the four provincial administrations, who undertook all the provisioning and maintenance of national roads on behalf of the Board, continued to deteriorate. The reasons for this were mainly due to a lack of funds. Lack of consultation with the provincial administrations on route selection and the provincial administrations did not have a representative on the Board. Also a Ministry of Transport was formed in 1943 to co-ordinate all the transport activities of the State, which together with the ever increasing poor relations with the provincial authorities, resulted in the Board being abolished in 1948. At the same time the National Transport Commission was formed. During its existence, the National Road Board has performed many useful functions, the most notable being the foundation it had provided for the development of the system of major roads linking the cities and towns of South Africa.

4.3 National Transport Commission

In terms of the Transport (Co-ordination) Act, 1948 (Act 44 of 1948), the National Transport Commission was formed. It undertook similar functions

of the abolished National Road Board, but in addition performed other activities pertaining to transport. The Commission was also to ensure collaboration with the provinces. An advisory committee on Roads was also formed with each province having a member on this Committee. The Commission had to liaise through the provinces for any work on the national roads. The provinces were of the opinion that the public's interest would best be served if the National Road Fund was used to provide trunk roads wherever they were needed, whilst the Commission considered its task to be that of providing a good system of road networks between the major centres. This conflict was never resolved.

In terms of the National Roads Act, 1971 (Act 54 of 1971) the National Transport Commission became a fully-fledged road authority assigned with the full responsibility for the planning, construction and maintenance of a national freeway system for the Republic. The Commission was now able to pursue its policy of providing high standard freeways on the major road networks of South Africa bypassing towns and encircling metropolitan areas. Those national roads which did not conform to these standards or were not in the process of being improved to these standards, were de-declared. This fragmented the whole national road network and placed an additional financial burden on the provincial road authorities.

One of the Commission's major achievements, is the completion of the construction of the Durban Outer Ring Road in 1978. The road is on the N2 route and is 42 kilometers long and built at a cost of R90 million. The road was conceived in 1958 by E.B. Cloete, the Regional Engineer of the Department of Transport in Natal.³³ In more recent years the N2 South

Coast freeway has been developed together with the N3 freeway leading to the Witwatersrand. A key section of the N3 is the Mariannhill Section which by-passed Fields Hill at Kloof. This by-pass was opened on 7 March 1986 and is the first toll road in Natal. The second toll road is the Frere-Keeversfontein Section opened in September 1988 and this road was further extended as a toll road in December 1988 up to Cedara with the tolling booth situated at Mooi River.

4.4 South African Roads Board

(In terms of the Draft South African Roads Board Bill, 1987³⁴ a South African Roads Board is to be established and will replace the National Transport Commission.) The exact details have not yet been finalised. It is intended that the Regional Offices of the commission be incorporated in the Provincial Road Authorities who will resume responsibility of carrying out the provision and maintenance of national roads. This is programmed to take place on 1 April 1989. (The function of the South African Roads Board would be to design and finance the national road network system.) The provincial authorities will be represented on this Board who will also look at strategic provincial roads. At the moment the Commission for Administration is re-evaluating the present function of the National Transport Commission to determine how the proposed South African Roads Board would function. The national roads will be administered according to the provisions of the Draft South African Roads Bill, 1987.

The development of the urban road network has a direct influence on the rural road network, where access is needed and will now be discussed.

5. URBAN ROADS

The process of urbanisation whereby the population from the rural areas have migrated to the urban centres and the immediate adjacent areas, has resulted in a rapid increase of population in the built up areas. With the increased need for a better road infrastructure to meet the development changes, the local authorities have been faced with a new problem especially in the light of there being inadequate funds.

To ease the financial burden and provide a means of planning and co-ordinating the transport infrastructure development in the larger centres, two metropolitan areas in Natal have been declared, namely Durban on 10 March 1978 and Pietermaritzburg on 14 June 1985 in terms of the Urban Transport Act, 1977 (Act 78 of 1977). Durban has already implemented a metropolitan route system of arterial roads classifying the routes into major or minor routes. Pietermaritzburg has to date not selected any metropolitan routes. The function of the Metropolitan Transport Advisory Board is also to promote co-operation between the local authorities or to advise on the allocation of funds for transport improvements.

Outside of these two metropolitan areas, no other areas are envisaged in Natal. The implementation of the Regional Services Council system in urban centres covering portions of the rural zones which have not yet been identified, is underway but to date there has been no progress in the development of road networks. It is anticipated that the responsibility of the provision and maintenance of the rural road network system will remain with the provincial authority.

6. NATAL ROAD NETWORK STATISTICS

The road network system in Natal has come a long way since the turn of the century. The extent of the development is shown by the following detail of statistics:

- (i) classification of roads as at 31 December 1979 and 1986 in Table 7;³⁵
- (ii) record of road surface type for the period 1967 to 1985 in Figure 12;³⁶
- (iii) national roads in South Africa as at 31 March 1985 in Table 8;³⁷ and
- (iv) road authorities in Southern Africa for 1986/87 in Figure 13.³⁸

The statistics show that the length of roads provided has increased, with more public roads being declared. There has been a general trend of more gravel roads being surfaced. Together with an annual increase in traffic volume, these factors have necessitated in more financial resources being needed to provide and maintain the road network such that it retains its asset value, and has a safe and acceptable level of standard.

7. SUMMARY

The road network in Natal has developed through difficult times over the years. The main problems facing the Provincial Road Authority were the effect the wars had, conditions of terrain and the allocation of funds.

TABLE 7 : ROAD KILOMETER STATISTICS

The kilometres of each classification of road was as follows :

	31 December 1979	31 December 1986
National Roads	437,2	503,5
Blacktop	437,2	503,5
of which:		
Dual carriageway	262,4	332,5
Single carriageway	174,8	171,0
Provincial Main Roads	10 498,8	10 657,9
Blacktop	4 307,9	5 445,0
of which:		
Dual carriageway	50,6	81,2
Single carriageway	4 162,9	5 276,6
Maintained by		
Local Authorities	94,4	91,5
Gravel	6 190,9	5 212,9
District Roads	3 900,6	4 310,9
Blacktop	25,9	45,1
Gravel	3 874,7	4,265,8
Total	<u>14 836,6</u>	<u>15 472,3</u>

Breaking down the figures further, the results are as follows :

Blacktop Surface

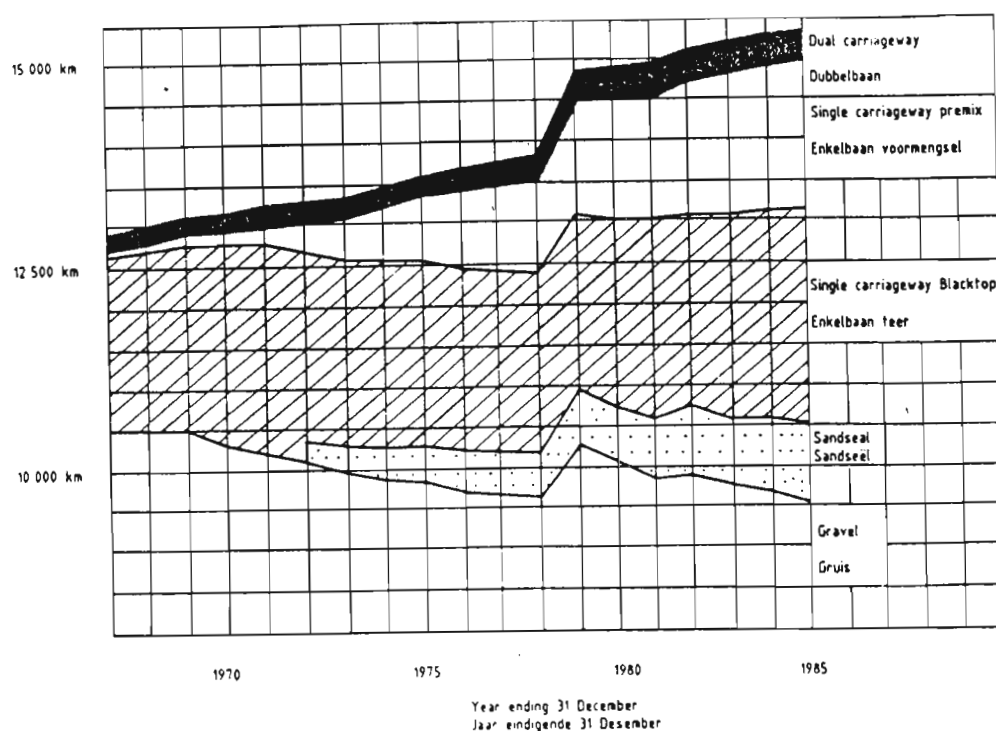
- (i) Dual carriageway, high type surface
- (ii) Single carriageway, high type premix surface
- (iii) Single carriageway, ordinary blacktop surface
- (iv) Single carriageway, sandseal

National Provincial District				National Provincial District			
Roads	Roads	Roads	Total	Roads	Roads	Roads	Total
262,4	59,0	-	321,4	(i) 332,5	81,2	-	413,7
37,1	1 465,7	-	1 502,8	(ii) 33,3	1 719,0	-	1 752,3
137,7	2 146,9	1,1	2 285,7	(iii) 137,7	2 717,3	6,0	2 861,0
-	636,3	24,8	661,1	(iv) -	927,5	39,1	966,6
<u>437,2</u>	<u>4 307,9</u>	<u>25,9</u>	<u>4 771,0</u>	<u>503,5</u>	<u>5 445,0</u>	<u>45,1</u>	<u>5 993,6</u>

Gravel Surface

Main Roads	5 465,5	4 556,3
Secondary Main Roads	725,4	656,6
District Roads	3 874,7	4 265,8
Total	<u>10 065,6</u>	<u>9 478,7</u>

FIGURE 12 : ROAD SURFACE TYPES



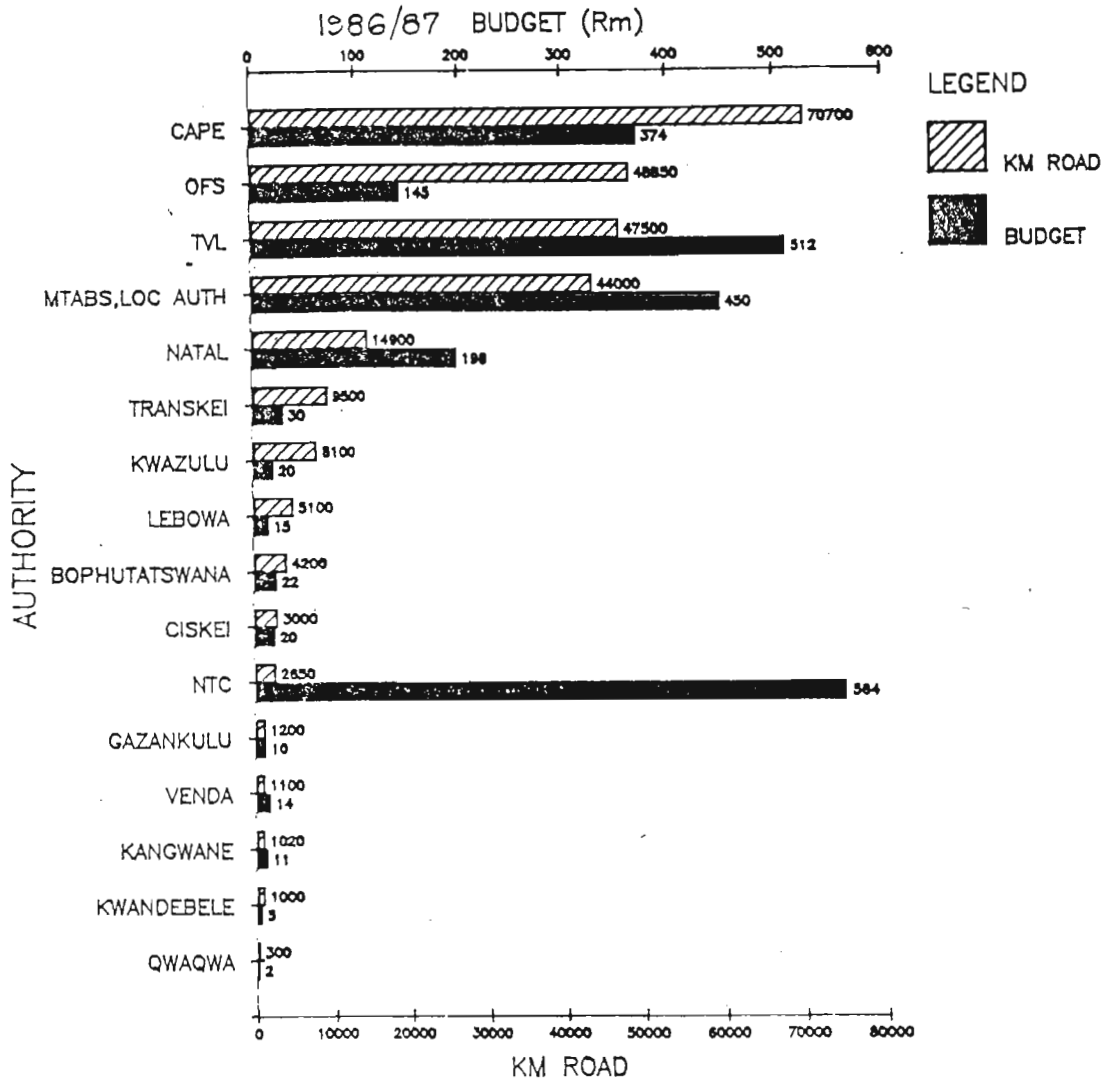
Note : There are no records of sandseal before 1972. The large increase in length in 1979 was due to the incorporation of East Griqualand.

Nota : Daar bestaan geen rekord van sandseal voor 1972 nie. Die groot toename in afstande gedurende 1979 was as gevolg van die inkorporering van Griekwaland - Oos.

TABLE 8 : NATIONAL ROADS IN SOUTH AFRICA

Provinsie/ Province	Verklaar/ Pro- claimed	Dubbelbaan deurpad Oop/Dual carriage- way free- way/Open	Enkelbaan- deurpad Oop/Single carriage- way free- way/Open	Onbe- perkte toegang/ Un- limited access	In aan- bou/ Under con- struc- tion
	km	km	km	km	km
Oos-Kaap/Eastern Cape.....	448	98	147	124	75
Wes-Kaap/Western Cape.....	528	96	—	207	12
Transvaal.....	888	442	—	341	77
OVS/OFS.....	879	52	268	323	42
Natal.....	687	267	73	96	82
Totaal/Total..... 31 March 1985	3 430	955	488	1 091	288

FIGURE 13 : ROAD AUTHORITIES IN SOUTHERN AFRICA



In attempting to make the best use of the available resources, use was made of innovation to develop new techniques and standards of building roads. Natal has remained in the forefront in this aspect by providing a road network that is safe and economical with the available resources at its disposal.

With roads providing a means of communication and transport, the development of the road network system needs to keep pace with the needs of society. Part of the development of the overall infrastructure of a country, is the development of the road network system which is decided by the broad policy of the ruling government whose decisions are political in nature. This is a simplification of the decision-making process and is only true to the extent that all decisions are initiated by politicians who appoint the bodies who control the provision and maintenance of roads at the highest level. Decisions at political level merely revolve around the allocation of funds.

The execution of the functions pertaining to roads are carried out at the national, the provincial and the local levels of government and forms the framework of discussion in the next chapter.

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6. ADMINISTRATION OF THE ROAD NETWORK

1. INTRODUCTION

The functional activities of the provision and maintenance of the road network can only be carried out effectively if the enabling administrative functions are performed effectively, that is, if policy-making, organising, financing, personnel provision and utilisation, determining of work procedures and the controlling function are performed effectively. Effective performances of the enabling administrative functions requires effective inputs from the members of the legislative institutions and the political office-bearers as well as the appointed officials. This chapter focuses attention on the generic administrative functions which are performed in the provision and maintenance of the road network in Natal. In Natal, the Roads Branch of the Natal Provincial Administration is responsible for the provincial road network whilst the National Roads Chief Directorate of the Department of Transport is responsible for the national road network. Reference is mainly made to the activities of the Natal Roads Branch in this chapter.

2. ROAD NETWORK AS A COMPONENT OF PUBLIC ADMINISTRATION

The provision and maintenance of the road network can be viewed as a component of public administration, as the responsibility therefor is with

numerous public functionaries, namely the legislators, political office bearers and public officials. With reference to the provision and maintenance of the road network, the nature of public administration and the role of the public administrator is briefly discussed.

2.1 Nature of public administration

The nature of public administration was discussed in Chapter 3.' With reference to the road network, the activities constituting public administration can be divided into three broad categories, namely:

- (i) generic administrative activities of policy-making, financing, organising, personnel provisioning and utilisation, determination of work procedures and methods of control;
- (ii) functional (line) activities such as the provision and maintenance of the road network; and
- (iii) auxiliary activities such as research, traffic surveys, analysis of data, and decision making.

The administrative activities are aimed at providing a safe and acceptable standard of road network with the economic use of resources. In other words, these activities are aimed at the welfare of the community. The generic administrative activities are the enabling thought processes and actions which determine the nature and scope of the line and auxiliary activities. For example, a policy on the road network has to be formulated, funds have to be allocated, organisational arrangements made, personnel provided, work procedures determined and control exercised in the provision and maintenance of the road network. In addition, data has

to be collected and analysed to allow decisions to be made.

2.2 Role of the public administrator

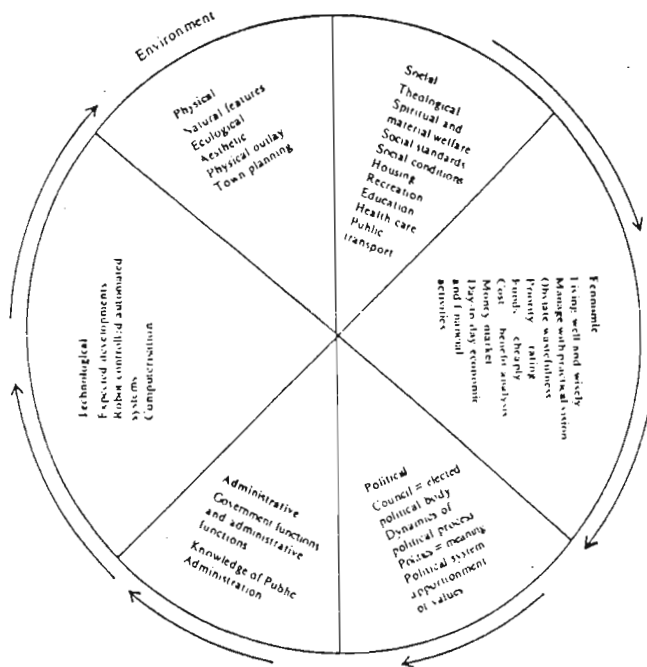
When considering the role of the public administrator, it is necessary to establish the characteristics of the public sector to determine the environment within which the administrator operates. It is also necessary to take into account the nature of the duties of the administrator and also the factors which affect the competent performance of these duties. The engineer is the top ranking official of the executive institution which is responsible for the provision and maintenance of the road network.

2.2.1 Environment

Actions by public institutions are aimed at rendering services to promote the general welfare of Society. Apart from the peculiar duties the public administrator has to perform, his decisions are often enforceable on his clients. This requires the public administrator not only to take cognizance of all the relevant and ascertainable facts before he takes a decision, but he also has to exercise restraint in his decisions and actions as few clients will ever question his decisions. However, if it becomes apparent that he lacks empathy, acts indifferently or is prejudiced, the clients served and the communities affected may become disillusioned with the public sector. Thus, the public administrator must perform his duties competently to ensure that the image of the public sector is enhanced, as the public sector is the guardian of community values, life and general well-being of the people.

In his role as a public administrator, he comes into contact with the six aspects of the environment, namely physical, social, economic, political, administrative and technological as depicted in Figure 14.²

FIGURE 14 : ENVIRONMENT OF THE PUBLIC ADMINISTRATOR



Actions by the public institutions are aimed at rendering services to promote the general welfare of society. In most cases such services will only be undertaken if the private sector cannot or will not meet community needs satisfactorily. This implies that the nature of public services differ markedly from those normally undertaken by the private sector. Furthermore, private institutions are usually concerned only with services that can be provided on a financially viable basis. Their actions are largely determined by market forces. Public institutions render services in accordance with policies determined by the Government. Such policies are not necessarily scientifically-based, but are justified in terms of

political philosophies or values.

2.2.2 Duties

The public administrator is mainly concerned with advising the minister or other relevant executive political office-bearer on policy issues and giving effect to policy decisions; establishing organisational structures for rendering services; allocating funds within his organisational structure to ensure the effective execution of policies; making recommendations regarding personnel needs and measures to utilise personnel effectively; determining work methods and procedures to ensure efficiency; and exercising control over the actions of his subordinates.

As the actions of all public institutions are community orientated, particular attention should be paid to the establishment of sound relationships with the clients as members of the different communities. By evaluating the work of the administrator and by determining guidelines for his actions, the activities of all subordinates can be influenced. The monopolistic nature of some public institutions have far-reaching implications requiring the public administrator to work in an environment where there is lack of competition and monetary incentive to perform at a high level of competence.

The public administrator has several roles in the performance of his duties of providing goods and services to the community as follows:³

- (i) innovator; (ii) public relations officer;
- (iii) expert; (iv) community leader;
- (v) educator; and (vi) guardian of social justice.

The public administrator has an essential role to play in rendering services to communities. He has to ensure that his actions are performed in such a way as to promote the general welfare of the community and not in a manner in which there is no respect for the rights and liberties of the citizens. It is the duty of each public administrator to see himself in society as an instrument for rendering services.

2.2.3 Factors which hamper public administration

The public administrator is sometimes hindered by several factors in the performance of his duties as follows:⁴

- (i) political instability;
- (ii) inefficient government;
- (iii) lack of overall policy statements indicating clearly the objectives to be reached in every physical and social sector of the community life;
- (iv) lack of co-operation between the institutions which have to make contributions for reaching the overall policy objectives;
- (v) lack of administrative capacity of all the executive institutions on the national, provincial and local levels of government; and
- (vi) disregard of public administration as an accepted profession.

By improved communication and co-ordination between the public institutions and private sector and also training of public officials, the factors which hinder the effectiveness of the duties of the public

administrator, can be reduced to an acceptable level.

2.2.4 Public administrators in the road network

The public administrators which are responsible for the provision and maintenance of the road network, cover an occupation field which includes engineers, technologists, technicians, administrative personnel and a group of varying occupations, inter alia, road foremen, artisans, drivers, machine operators, mechanics and labourers.

The executive head of the public institutions directly responsible for the provision and maintenance of the road network, is a civil engineer. The term "civil engineering" was originally used to distinguish between "military" and "civilian" engineering. Nowadays this distinction is not made, but differentiation is rather made between the various branches of engineering, for example, civil, mechanical and electrical engineering.

Engineers are planners and builders and act as the mediator between the philosopher and the working force. The engineers also act as problem solvers, managers and decision makers. Much of the management function is directed towards economic objectives and monitored by economic measures. Engineers are faced with economic as well as technical problems. They have to direct the great resources of power in nature for the use and convenience of man. Many practical engineering problems require an effort of intellect, a flow of imagination, a level of abstraction, an ability to handle complexity and an intensity of concentration far beyond that required for many purely humanistic studies. To aid the engineer in his role as a planner and builder to be accomplished, he must make use of

education, communication and training.

It is the function of the professional planning disciplines to provide facilities designed to serve the needs of society. These facilities modify the environment, thus all reasonable steps need to be taken to minimise harmful effects and achieve an optimum balance between desirable and undesirable effects on the environment before decisions are taken. The motto of the South African Institute of Civil Engineers is "Fortiter Conde Animo Forti", which translated means "Build strongly with a resolute mind". It stresses the importance of intellectual courage in planning and executing civil engineering works. In defining the accomplished civil engineer one finds there is no one attribute which fulfills this aspect.⁵ It is not possible to decide whether the accomplished civil engineer is a highly skilled specialist, a general practitioner well versed in the laws and regulations governing the many aspects of the work of the civil engineer, or the engineer who is able to blend his technical knowledge and skill with the humanities. The fruits of technology should never be seen to be more important than people. The respect for the dignity and value of the human should always be upheld. The environment in which the public administrators responsible for the road network function, is shown in Figure 15.⁶ The road planner has to take into account the needs of the road user, policies of central government, natural factors and land use policies in building a road.

The administrative activities that have to be performed in the provision and maintenance of the road network in Natal, is now discussed.

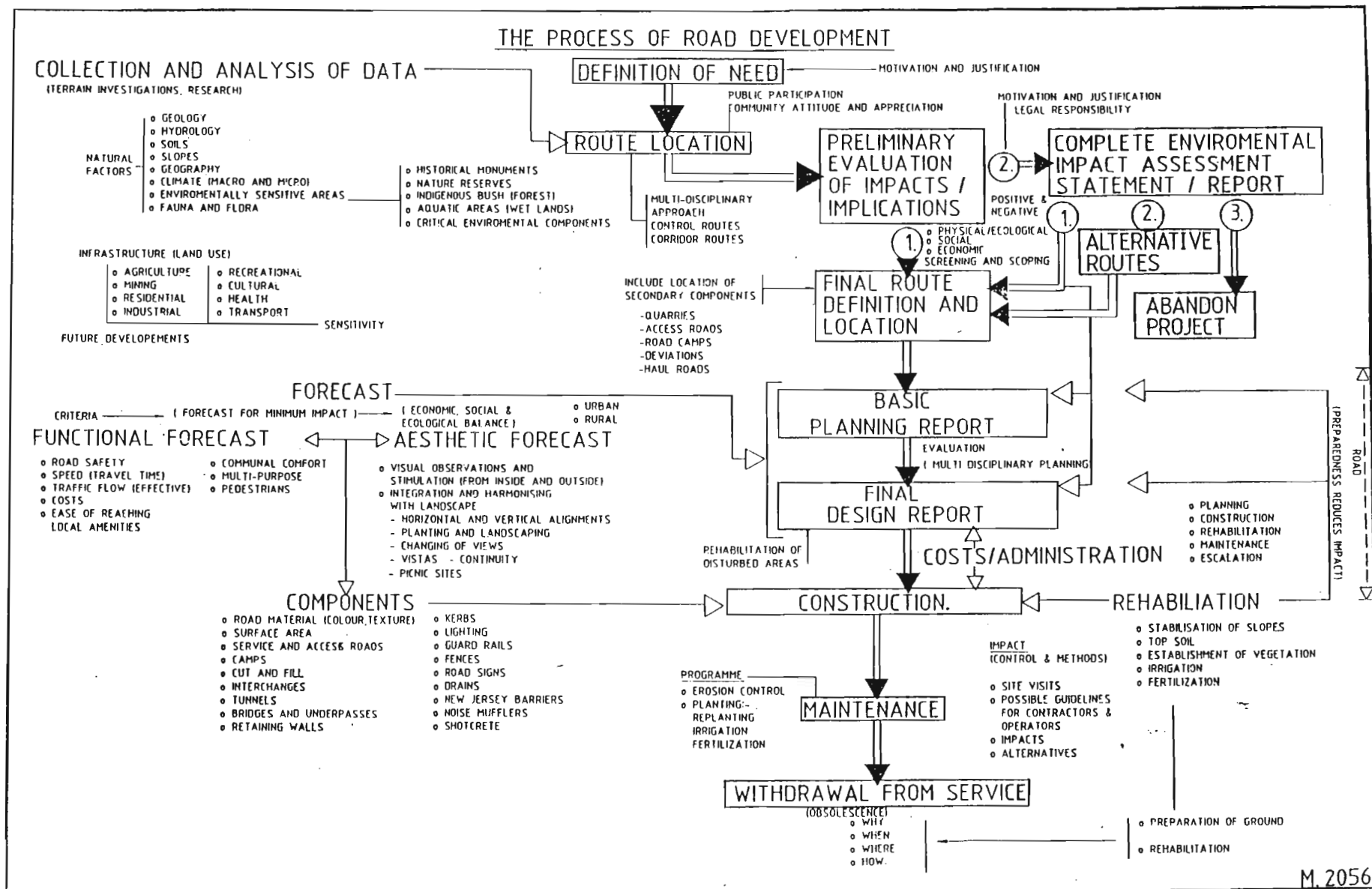


FIGURE 15 : ROADS AND THE ENVIRONMENT

3. POLICY-MAKING

Policy-making is spread throughout the governmental structure of South Africa. It is practiced at the three levels of government, namely central, provincial and local levels. One of the basic requirements of public administration is that each and every activity should be directed specifically at achieving a goal. The objective will have to be continually adopted to meet changing circumstances. When an objective is set in the public sector, it is said that a policy has been set. The actions and thought processes which precede the announcement of the objective is known as policy-making.

3.1 Definition of policy-making

Since the legislatures in the public sector have to decide on objectives, it is accepted that they should have the biggest say in policy-making. A policy can be defined as,⁷

"the art or science of governing a nation; a set of accepted principles and plans constituting a programme of political action; any single plan, scheme or measure adopted by a government or party in its management of public affairs..."

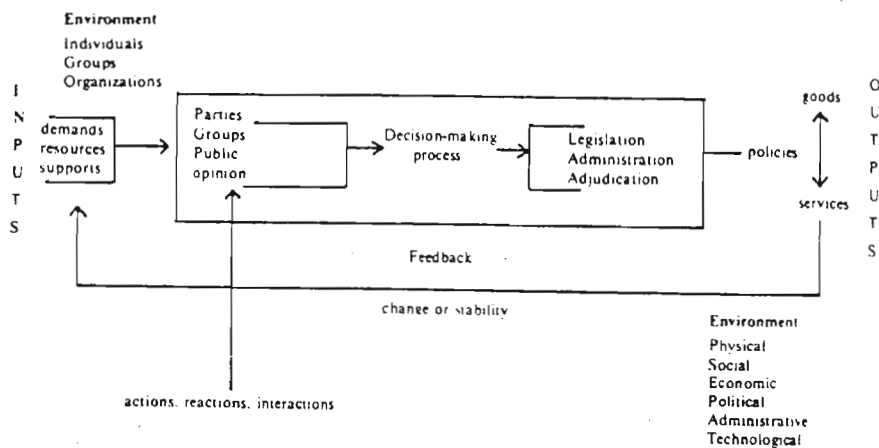
The purpose of the policy is the achievement of the goals and objectives set by the policy-makers for the benefit of the community. According to Hanekom and Thornhill,⁸

"policy-making is the activity preceding the publication of a goal, whereas a policy statement or a policy is the result of that activity, the formal articulation of the goal to be pursued. Public policy is therefore the formal articulation, statement or publication of a goal that the government intends to pursue with the community".

Policy-making is thus a process whereby decisions on policies are made to

achieve the objective of satisfying the needs of the community. Policy-making should not be confused with decision-making which is a neutral auxiliary activity and is undertaken regularly at all levels in the administrative, functional and auxiliary activities. To have a clearer perspective of functioning of the political system, reference is made to Figure 16.⁹ Public policies are subject to review and adaptation by the legislatures. However, it must be noted that many proposals for the adaptation of existing policies and the acceptance of new policies emanate from public administrators who are responsible for the execution of public policies.

FIGURE 16: THE POLITICAL SYSTEM



3.2 Factors which affect policy

Policy like all the other components of public administration, is not static and needs to be reformulated and adapted to provide for changing circumstances and needs. There are six factors which have an influence on

the policy in force at a particular time :¹⁰

- (i) circumstances in the total environment;
- (ii) public need;
- (iii) policies of political parties;
- (iv) activities and representations of interest groups;
- (v) personal views of political office-bearers; and
- (vi) research and investigations as well as the views and experience of public officials.

Policy-making is inter-related with the activities of planning and programming which are discussed in the next section.

3.3 Policy-making, planning and programming

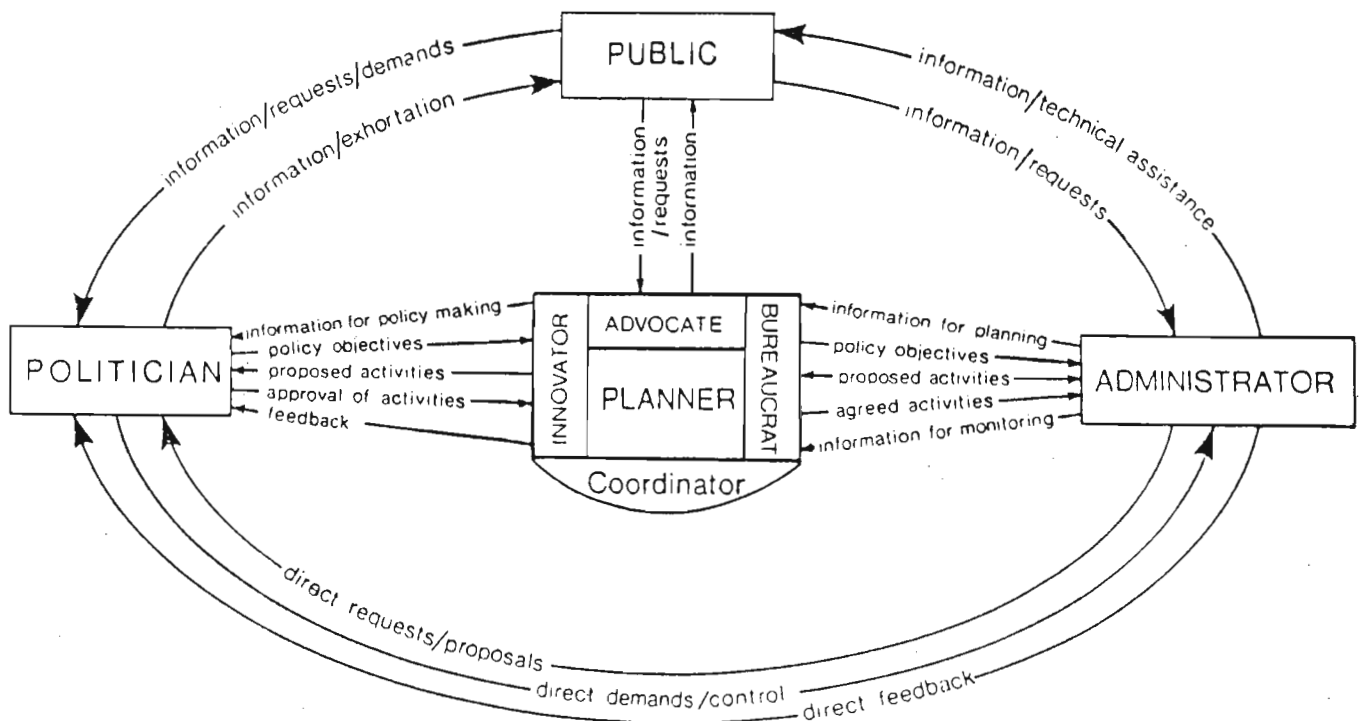
These three functions are carried out in the order listed and are dealt with in this order which they normally occur in practice.¹¹ The policy-making function produces a policy which is a statement of the goals to be attained and made authoritative by means of laws by the legislatures. In forming a policy, the questions relating to what, how, where, when and by whom are attempted to be answered. Policy-making is the foremost and crucial part of the comprehensive process of administration.

To attain the goals set out in policy-making, planning is required. This means that a search must be made for an approach, process or function whereby the policy goals can be realised effectively and economically. Conyers and Hills define planning as,¹²

"a continuous process which involves decisions, or choices, about alternative ways of using available resources, with the aim of achieving particular goals at some time in the future".

Planning involves making decision on which of a number of courses of action to adopt. Thus, the best choice amongst a number of alternatives to satisfy the objective, has to be selected. From the foregoing, it is clear that the planner in his attempt to implement a policy, has to make use of planning to perform each of the generic administrative functions as well as the functional and auxiliary activities. The environment in which a planner operates is shown in Figure 17.¹³ The three inter-related concepts of policy-making, planning and programming are carried out by politicians, planners and administrators respectively.

FIGURE 17 : INTERRELATIONSHIPS OF POLITICIANS, PLANNERS,
ADMINISTRATORS, AND THE PUBLIC



Following on policy-making and planning, there is programming which is a set of specific actions which have to be undertaken to reach a specific goal or implement a plan. The model of the programme must quantify the goal to be reached, detail alternative actions, select the best action and list in detail the functions which have to be executed to reach the policy goal. Planning is dealt with as a functional activity but where possible is utilised as an auxiliary function.

3.4 Policy-making for the road network

Specific levels of policy can be identified. Policies are set by the legislatures who are at the top of the hierarchy. As the implementation of the policy is carried out at lower levels, so is the policy more refined. It is not possible to make all the decisions at one level. Four levels can, therefore, be distinguished in the hierarchy, namely political, executive, administrative and operational (technical) policies.¹⁴

3.4.1 Political policies

The political policies are those of the ruling political party which has the support of the majority votes. These policies are normally idealistic, of a general nature and often consist of a list of political slogans. The political policies result from the interplay of ideas which have developed as put forward by, inter alia, press, public, pressure groups, propagandists, and different schools of thought. Thus in a democratic state, any citizen can express his opinion in the formulation of political policies. At a congress held after an aerial survey of the flood damage in Natal during September 1987, the President of South Africa, Mr.P.W. Botha, reaffirmed the policies of the Government to be:¹⁵

- firstly, security;
- secondly, development of the country; and
- thirdly, political reform.

Thus, the development of the road network forms part of the second priority of the Government.

3.4.2 Executive policies

The executive policies are those implemented by the executive committee of the provincial authority. The policies at this next level are more specific. The executive committee consults experts, appointed officials and representatives of interest groups in order to formulate policies based on the guidelines of the political policies. The Natal Roads Branch carries out its function of the provision and maintenance of the provincial road network in Natal according to the provisions of the Roads Ordinance, 1968 (Ord. 10 of 1968), section 10. The National Transport Commission relies on the Department of Transport to perform the executive and administrative work in the provision and maintenance of the national road network in South Africa according to the provisions of the National Roads Act, 1971 (Act 54 of 1971). In terms of the Draft South African Roads Board Bill, 1987 a South African Roads Board is to be established and will replace the National Transport Commission. This Board will administer the national roads according to the provisions of the Draft South African Roads Bill, 1987.

3.4.3 Administrative policies

Administrative policy is mainly concerned with the practical steps to give effect to the stated executive policy. At this level, the policies are

developed by public officials who have to assess and interpret the executive policies and compile the administrative policies. Administrative policies are made continually and can deal with serious or trivial issues. Policies that are dealt with include whether certain functions should be performed internally or by the private sector and also the standard according to which roads are built.

The long term line function goals and the 1987/88 management by objectives of the Natal Roads Branch are shown in Table 9 and Table 10 respectively.¹⁶ The goals and objectives of the National Roads Chief Directorate of the Department of Transport are shown in Table 11.¹⁷ These are the administrative policies of both these road authorities.

3.4.4 Operational policies

At the operational level, the policies that are set are also referred to as technical policies. Here the officials set norms in operating the techniques of their profession at the level where the work is to be done. Decisions at this level are taken by supervisors on matters that will not affect the line goals. The policy directives are confined to specific areas and consequently only a small number of officials will be affected. The discretion with which supervisors are able to make policies at this level, is derived from the delegation of authority. An example of a policy at this level is the method whereby a road has to be constructed such that it meets the desired goal of being a surfaced road of an acceptable standard.

Policy-making is a continuous process at every level of the hierarchy of

TABLE 9 : NATAL ROADS BRANCH GOALS

1. CONSTRUCTION GOALS

1.1	<u>Blacktop surfacing</u>		
1.1.1	Blacktop surface sufficient kilometres each year to avoid an increase in vehicle kilometres on gravel roads, and bring down the average traffic on gravel roads to 125 vehicles per day.	144 vpd	
1.1.2	Get 90% of the total traffic onto blacktop surfaces.		91%
1.1.3	Blacktop all roads carrying over 400 vehicles per day.	Km outstanding :	500
1.1.4	Keep length of sandseal surface (Class 4) below 25% of total Provincial blacktop length.		18%
1.2	<u>Premix surfacing</u>		
1.2.1	Premix surface all roads carrying over 2000 vehicles per day, and provide passing lanes at bottle-necks.	Km outstanding :	293
1.2.2	Maintain 67% of total traffic on premix surfaces.		70%
1.3	<u>Dual carriageway</u>		
1.3.1	Double all roads carrying over 6000 vehicles per day.	Km outstanding :	282
1.3.2	Maintain 33% of total traffic on dual carriageway roads.		34%
1.4	<u>Structures</u>		
1.4.1	Eliminate all single-way structures up to 5 metres long on Primary Main Roads with a blacktop surface, or gravel surface carrying over 300 vehicles per day.	Outstanding :	24
1.4.2	Eliminate all structures inefficient for at least 10% of the 25 year requirement, on Primary Main Roads with a blacktop surface, or gravel surface carrying over 400 vehicles per day.	Outstanding :	24
1.4.3	Eliminate all railway level crossings on Primary Main Roads carrying over 500 vehicles per day.	Outstanding :	24
1.5	<u>General</u>		
1.5.1	Fulfill arterial road long-term programme targets.		

2. MAINTENANCE GOALS

2.1	<u>Gravel roads</u>		
2.1.1	Widen, raise and gravel all roads carrying over 500 vehicles per day.	Km outstanding :	936
2.2	<u>Blacktop roads</u>		
2.2.1	Surface all gravel shoulders excluding sandseal roads (Class 4).	Km outstanding :	85

3. ROAD CONTROL

3.1	Protect all arterials roads as minimum 80 kph roads throughout.		
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TABLE 10 : NATAL ROADS BRANCH
MANAGEMENT BY OBJECTIVES 1987/88

1. Use and develop innovative techniques to promote economic utilisation of resources.
2. Develop revised accounting procedures in order to provide up to date expenditure information for management.
3. Keep the serviceability of existing roads efficient and convenient by monitoring the condition, safety and service components of road performance, and then co-ordinating these into a meaningful rehabilitation action.
4. Complete the final design of 72 km of Class 2 and 3 roads, and provide levels and alignment for 78 km of Class 4 roads.
5. Produce a Bridge Draughting and Design Guide to help improve the productivity of newcomers to bridge design.
6. Obtain an overall plant efficiency of 89%, that is
$$\frac{\text{Plant Earnings}}{\text{Total Possible Plant Earnings}} * 100$$
7. Keep the NQSA accident frequency below 11% for skilled workers and 8% for unskilled workers. Also, effect a 10% reduction of vehicle accidents caused by departmental drivers.
8. Increase the number of quality circles by 100%, that is from 6 to 12.
9. Implement the MoI philosophy of motivating subordinates in at least 50% of the Maintenance Area Depots.
10. Extend the computerised stores administration system to an additional six Area offices.
11. Extend the computerised workshop job costing system to the Midlands Zone Workshops.

TABLE 11 : DEPARTMENT OF TRANSPORT
NATIONAL ROADS OBJECTIVES AND GOALS

Objective

Promote and encourage the development of transport in South Africa and, where necessary, to co-ordinate various phases of transport in order to achieve the maximum benefit and economy of transport services to the public.

The following goals have been set in order to achieve this objective :

1. Design, build and maintain a network of freeways and roads for South Africa so as to supplement the existing system.
2. Draw up a priority list of roads to be built or improved.
3. Design and build various special roads that are of national importance.
4. Draw up geometric standards for the construction of national and special roads.
5. Have regard for the environment.
6. Apply available funds in the most cost-effective manner in the provision of a primary road network for South Africa.
7. Provide rest and service areas in conjunction with private enterprise at strategic points on national roads in order to promote road safety.

office-bearers, officials and institutions. Policy-making is the foremost and crucial part of the comprehensive process of administration, thus there is extensive attention given to policy-making, policy analysis and policy implementation. The primary function of a policy is that it should be goal-orientated towards the provision of goods and services necessary for the general welfare of the community.

4. ORGANISING

The process of organising follows once a policy has been set, that is, once the objective has been set, then the procedure of organising takes place to attain the predetermined objective. The term organising is used to refer to the activities involved in the administration of organisational units which are called institutions in the public sector. The organisational structure for the road network comprises of a branch which has various directorates, each contributing towards the administration of the road network. Each directorate covers a field of work and is sub-divided in the order of sub-directorate, division, sub-division, section and sub-section each contributing towards the objective and purpose of the directorate. The organisational structure for the road network is described in this section.

4.1 Definition of organising

In discussing the process of organising, Cloete makes the following statement:¹⁸

"administration takes place as soon as two or more individuals co-operate in achieving an objective, means that organisation

has taken place. In fact, organising consists of grouping people (individuals or as groups) in an orderly pattern so that everything they will do will be aimed at achieving predetermined objectives".

It cannot be assumed that the process of organising people into organisational units to achieve combined purposeful action, is an elementary task of merely placing individuals into groups. Each individual has a will of his own and cannot be manipulated by merely placing him in a group or laying down formal rules of conduct. In terms of the new dispensation appointment, placements and promotions are not based on race, religion or creed. This means that there will be a variety of people in an institution who will have to combine their efforts to achieve the goals that have been set. There will be interpersonal conflict, value struggles and communication barriers, because it is only human to differ on the question of values, traditions and beliefs. The public administrator who is the manager of many people, will have to integrate these conflicting values, traditions and beliefs in such a manner that the goals of the institution are attained.

The process that constitute organising can be classified into two groups. The first group of processes is concerned with the determination of objectives which are decided by policy-making. The second group relates to the internal organisation of institutions which is now discussed.

4.2 Internal organisation of institutions

There are five functions which are performed when an institution is organised.¹⁹

(a) Horizontal division of work

It is not possible for each individual to be competent in all fields of work, thus the work has to be divided amongst the various occupation groups who occupy designated posts. To enable each group to perform their function, the work is divided into smaller units in the order of branch, directorate, sub-directorate, division, sub-division, section and sub-section. As one progresses down the hierarchy, more units are created to form the pyramid-type of organisation which is most common in the public sector and emphasises the supervisor-subordinate relationship. Work can be divided on the basis of function, geographical area, nature of service or nature of client. Work is also divided between the staff and line function whereby the former provides a supportive and specialist service whereas the latter is entrusted with functional work.

(b) Delegation of authority

Here the vertical division of work is determined. The assignment of authority and the grading of work according to its complexity is done at different levels each having a determined degree of responsibility. To meet the requirements of accountability, particular attention is given to ways and means of exercising control of the authority which is delegated. This is usually done by means of reports.

(c) Co-ordination

It is essential for the activities of the different work groups to be co-ordinated to enable the overall objective to be attained.

(d) Channels of communication

For the objectives to be attained there has to be continual communication between the officials who are in pursuit of the goal. In order to regulate an orderly work procedure, it is essential to have a formal communication network which is prescribed by rules, regulations, work manuals or procedure codes. In addition to the direct line of communication within a work group, there has to be lateral communication with other groups to ensure that all activities are being co-ordinated.

(e) Control

The control function is most important in the public sector as public accountability has to be maintained. The task of the supervisor is to explain the objective and fix the standard of work in terms of quality and quantity, to attain the objective.

These five functions show that organising is a comprehensive and dynamic process which needs to be continually reviewed to provide for the changes that take place in the environment in which the public administrator works in. In Natal, any changes at provincial level to the organisation structure of an institution has to be motivated and thereafter presented to the Directorate of Organisation and Work Study which is under the control of the General Provincial Services Branch. The objective of Organisation and Work Study is to assist management in the promotion of efficiency through the use of effective organisation and work procedures. Organisation and Work Study is one of the management tools whereby a more scientific approach is used to organise and staff the various governmental institutions. Its purpose is by means of a positive approach, to

streamline procedures and provide a basis for work improvement.

The recommendations of the functionaries of Organisation and Work Study are then submitted for approval to the Commission for Administration which is the central personnel authority for the South African Public Service. Initially known as the Public Service Commission since its establishment in 1912, the Commission for Administration changed its name in 1984. The Commission for Administration is a separate institution whose task is to secure a well paid, efficient and contented Public Service adequate for the needs of the State. It deals annually with the budget inputs concerning conditions of service from departments and recognised staff associations. The Commission regulates its functions and activities according to the provisions of the Public Service Act, 1984 (Act 111 of 1984). The availability of funds to a large extent dictates the decisions and directives of the Commission.

Government departments are true manifestations of groups of people working together to achieve defined goals. Organisational teamwork, interrelated communications and goal definitions tend to change with the increased introduction of highly developed technology, change in task environment and interaction between people in the public sector. The personalities within the organisational team have a direct influence on the "personality" of the department because the organisational unit consists of the sum total of people in the team. The converse is also true : the institution and the goals it wishes to achieve have a direct bearing on the formulation of human personalities in the institutional context. For example, the personalities found involved in the road infrastructure

differ from those working in education, hospitals, law and medicine. Even the personalities involved in the road infrastructure differ according to the nature of their goals, for example, provincial or national roads and construction or maintenance of roads.

The organisational structure of the institutions responsible for the provincial and rural road network in Natal is now discussed.

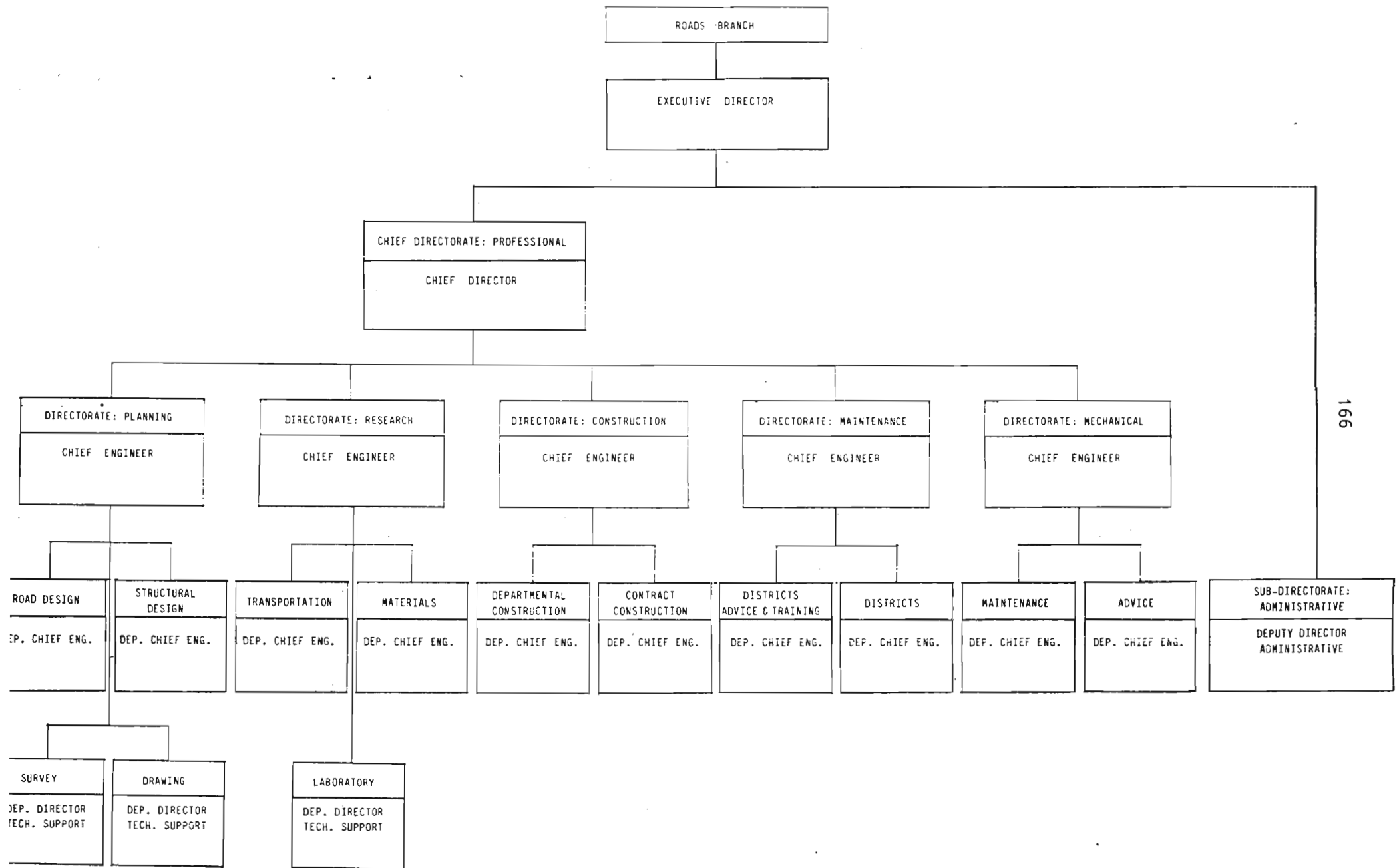
4.3 Organising the road network

Arising out of the need for communication and access between centres of activities and where goods are produced, a road infrastructure has had to be provided. The necessary resources to provide this road infrastructure, are the responsibility of two road authorities who manage the provincial and national road network separately.

4.3.1 Provincial road network

The provincial road network in Natal is the responsibility of the Roads Branch of the Natal Provincial Administration. The provincial rural road network comprises main roads and district roads which are proclaimed. Assistance is rendered to the public in establishing by-roads which are on private property and provide access to public roads and places for the public. The head office of the Roads Branch is situated in Pietermaritzburg. The Executive Director is the highest ranking official of the Roads Branch, whose organisational structure is shown Figure 18.²⁰ There are five professional technical directorates who carry out the line functions of the Roads Branch, which is the provision and maintenance of the provincial road network. The function and activities of each

FIGURE 18 : NATAL ROADS BRANCH - ORGANISATIONAL STRUCTURE



directorates together with that of the support administrative sub-directorates, are now briefly described.²¹

(a) Research

This Directorate carries out traffic surveys to determine the need for additional and improved roads to the network. Investigations are carried out to determine the ideal route based on a cost-benefit analysis, which best satisfies the needs of the road user taking into account the availability of resources. The financial aspects are discussed in Chapter 7. Other matters carried out by the Traffic Sub-directorate include road safety studies, traffic engineering, signs design, administration of abnormal loads and vehicle weighing. The basic function of the materials sub-directorate is the structural design of the road and the quality control to ensure that the best use is made of the available road-making materials. Activities performed include investigations, testing, specifications and control. The investigations which are carried out include route location taking into account the location of good and poor materials. The activities of the Research directorate are important as its investigation and control of materials used in the finished road amounts to almost 90% of the cost of the provision and maintenance of a road.

(b) Planning

The Planning Directorate is responsible for the design of the road. Based on the nature of the terrain and traffic demand, a route and appropriate standard of road is selected. The design includes selection of the road profile and the design of all structures which are needed for the

provision of access or drainage. The Survey Division does all the survey work in determining the layout of the natural terrain. All prominent features have to be identified as these could affect the design and location of a road. The Drawing Office Division prepares and maintains all plans of the road. Almost all aspects of the road network development require decisions to be made at the present day, which will have an effect on the overall infrastructure development of South Africa in the distant future. It is therefore evident that the planning function is an important function in the total management of the road network.

(c) Construction

The Construction Directorate is responsible for the construction of all roads which is done departmentally and also by the private sector. In addition, major re-habilitation contracts for the repair of roads is also supervised by this Directorate. The departmental major construction units are controlled by a Resident Engineer and are situated as follows :

Unit 2 - Durban

Unit 3 - Port Shepstone

Unit 4 - Greytown

Unit 1 completed its activities on 31 December 1987 as it had completed the construction of its primary objective, namely the N2 South Coast freeway between the Illovo River and Hibberdene. Each unit carries out construction work in the immediate vicinity of its office, normally up to fifty kilometers away. Where necessary, projects are undertaken further away. Each unit has limited resources, thus a fair amount of its own work is let out to the private sector, inter alia layerworks, plant hire,

supply of materials and surfacing. In addition, work is also let out to the private sector in the immediate vicinity of these departmental offices. There are also five minor departmental construction units under the control of the Maintenance Directorate situated at Talana, Winterton, Cedara, Amanzimtoti and Empangeni.

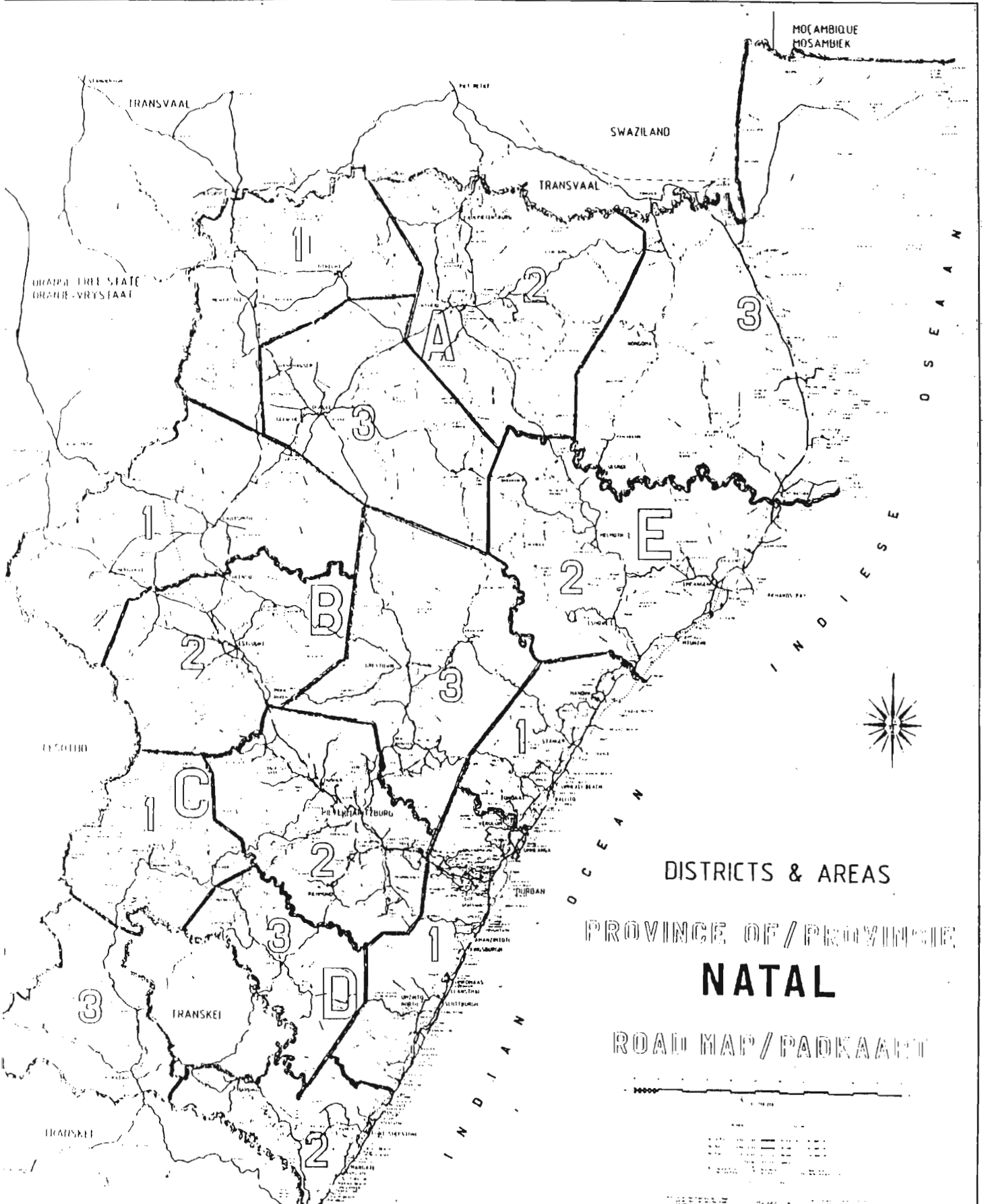
(d) Maintenance

The Maintenance Directorate is responsible for the maintenance of the national and provincial road network, with the former function being on an agency basis on behalf of the Department of Transport. The field work is carried out in five districts as shown below on Map 2.²² Each district is controlled by a District Engineer with district offices situated at Dundee, Estcourt, Pietermaritzburg, Durban and Eshowe. Each district is further divided into three maintenance areas under the control of a Roads Superintendent. The area offices for each district are numbered 1, 2 or 3 and are situated as follows :

	1	2	3
A : Dundee	- Newcastle	Vryheid	Dundee
B : Estcourt	- Ladysmith	Estcourt	Greytown
C : Pietermaritzburg	- Underberg	Pietermaritzburg	Kokstad
D : Durban	- Durban	Port Shepstone	Ixopo
E : Eshowe	- Stanger	Eshowe	Hluhluwe

The Minor Construction Unit in each district constructs smaller projects throughout its own district. The Maintenance Directorate also has a Training and Advice Sub-directorate which determines maintenance methods and the training needs of staff.

MAP 2 : NATAL DISTRICT MAP



(e) Mechanical

The Mechanical Directorate is responsible for the purchase and maintenance of all departmental vehicles and earthmoving equipment. Other activities include the manufacture of road signs and accommodation. Where the equipment needs of the department exceed its establishment, additional resources are hired from the private sector. The departmental vehicles and equipment are hired out to the other directorates. Three maintenance offices are controlled by a Mechanical Engineer as follows :

North Zone - Ladysmith

Midlands Zone - Pietermaritzburg (Mountain Rise)

South Zone - Durban (Merebank)

A maintenance service is also rendered to other government institutions, inter alia Community Services, Traffic, Hospitals, Works, Natal Parks Board, Ambulance Services and Bantu Trust Agencies who pay for this service. The activities of the former Government Garage now known as the Provincial Garage, are now carried out by the provincial administrations and are the responsibility of this Directorate.

(f) Administrative

The Administrative Sub-Directorate provides the staff function and auxiliary activities to support the line function of the provision and maintenance of the road network. Its activities are grouped into six divisions as follows :

- (i) general administration;
- (ii) personnel;
- (iii) budgetary control and supplies;

- (iv) administrative inspection and training;
- (v) real estate; and
- (vi) road traffic administration.

The Natal Roads Branch performs many activities to attain its objective of the provision and maintenance of the provincial road network in Natal. To enable it to fulfil its objective, extensive use is made of the private sector to provide some of the goods and services which are constituents of the road infrastructure.

4.3.2 National road network

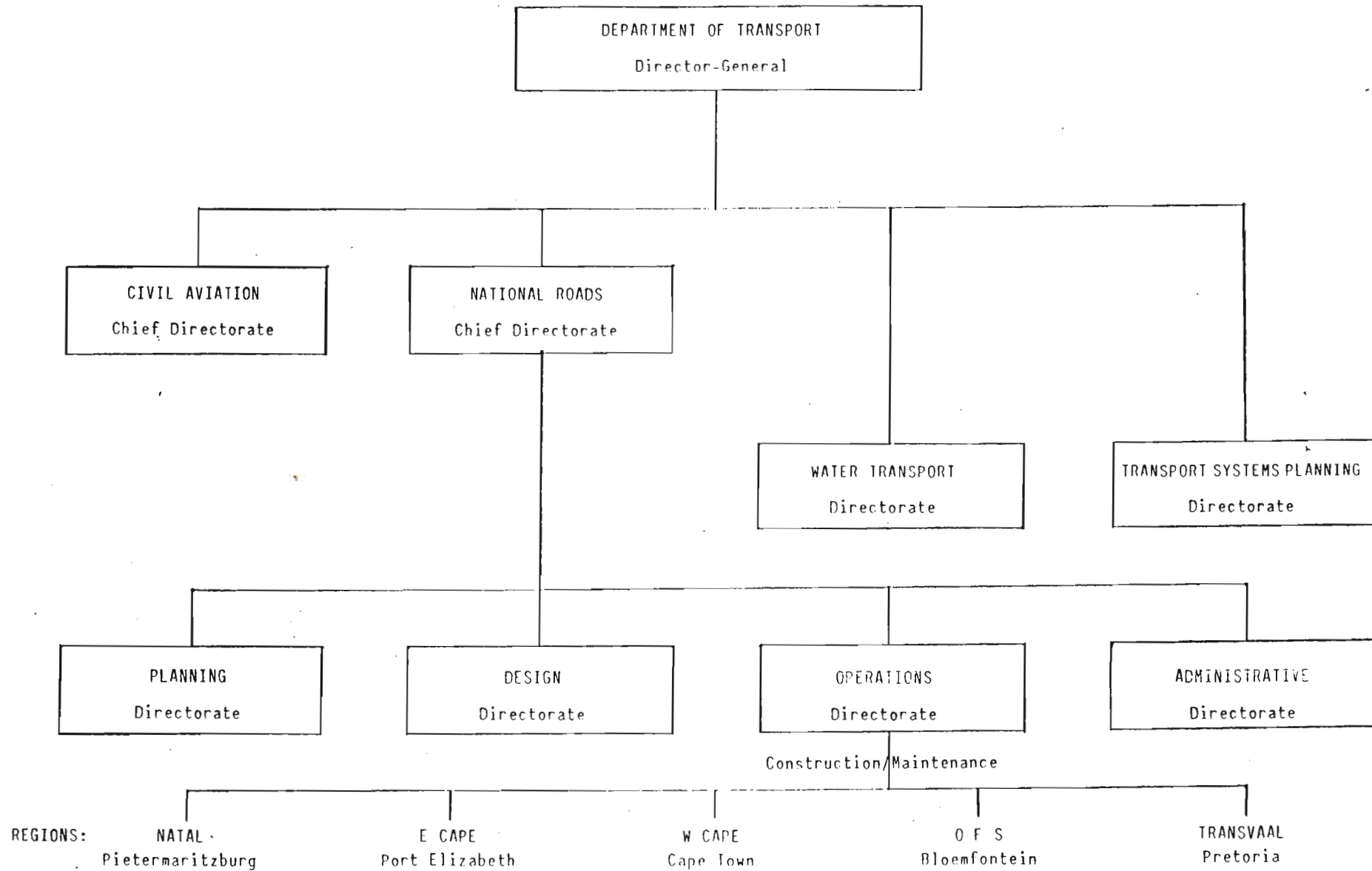
The national road network in Natal is the responsibility of the National Roads Chief Directorate of the Department of Transport. The organisational structure of the Department of Transport is shown on Figure 19.²³ The affairs on the National Roads are regulated by the statutory body named the National Transport Commission, which is the fifth road authority in South Africa. The Department of Transport only comprises top and middle management who plan and supervise the development of the national road network. It relies mainly on the private sector to carry out most of the function of the provision and maintenance of the national road network, and is accordingly the most privatised road authority.

The arrangements of how this function is performed, will be dealt with at an institutional and private sector level.

(a) Institutional arrangements

Most of the field work is performed by the private sector under contract,

FIGURE 19 : DEPARTMENT OF TRANSPORT - ORGANISATIONAL STRUCTURE



and is controlled by the Regional Engineer of the five designated regions. The provincial authorities render assistance in the provision of the road network, by supervising contracts where the Department of Transport is unable to carry out this activity. The provincial authorities are fully responsible for the routine maintenance of the road network, which they carry out on an agency basis on behalf of the Department of Transport. Similarly, where required, the provincial authorities render assistance in the supervision of contracts for major maintenance work.

(b) Private sector arrangements

Since the dedicated National Road Fund was discontinued on 1 April 1988, the national road network had to compete with all the other State Departments to obtain funds from Treasury. To assist with resolving this predicament whereby the development of the national road network would be delayed, the Government implemented a new policy of declaring certain sections of the network as private toll roads. This is in line with the Government's latest policy of privatisation and "user-pay" policy. Two private sector toll consortiums have been formed, namely Tolcon and Tollway, with Tolcon being the much larger of the two.

The five major shareholders of Tolcon are Murray and Roberts, Group Five, Grinaker, Keeve Steyn and Sanlam.²⁴ The Government has a 25% share in Tolcon, and have three public officials serving as directors on the board to protect the interests of the general public. They are :

Dr R.W. Burton - Secretary to the Treasury
 Mr R.G. Meyer - Director General of Transport
 Mr M.F. Mitchell - Chief Director Of National Roads

Tolcon have secured a 25 year toll road concession with the Department of Transport, and will be responsible for the financing of the design, provision, maintenance and operation of 169km of the N1 and 438km of the N3 national roads as shown in Figure 19.²⁵ The concession agreement was signed on 25 March 1988, the implementation of which was subject to a number of conditions, the more important ones being that the legislation had to be amended to provide for privatised toll roads and that Tolcon had to provide all the required finance. As a reward, they were able to levy a toll fee amounting to not more than 75% of the perceived benefit which a motorist would enjoy when using the toll road, compared to using the alternative route.

Tolcon have committed an investment in this concession estimated at being R1400m based on 1988 money rates. It is important to note that Tolcon does not have any tangible assets to secure their investment. The new and existing sections of the toll road, are only made available to it for the 25 year concession period. These sections have to be handed back to the Department of Transport at the end of the period, all in a well maintained condition and at no cost to the State, who retain ownership of these roads. The toll road concession could be extended for a further 25 year period, subject to an agreement being reached again. In their investment decision, Tolcon had to consider the following long term risks,

- (i) the success of the project is totally dependent on the attraction rate and growth rate of traffic;
- (ii) the project is exposed to considerable risk on capital costs in a country with endemic inflation and subject to economic pressures from outside the country; and

- (iii) the project is exposed to the risk of high interest charges over the lengthy period of the project.

In terms of the concession agreement, Tolcon has an ongoing commitment to:

- (i) new road road construction;
- (ii) road expansion in accordance with traffic growth;
- (iii) pavement management, road maintenance and road rehabilitation;
- (iv) traffic management to ensure safety and a convenience to the public;
- (v) rest and service areas to provide facilities to the public; and
- (vi) roadway communication systems for accident and breakdown emergencies.

The agreement allowed for portions of the existing road to be tolled. With particular reference to the N3 route, as it is partly in Natal, the following statistics are observed from Figure 20:

<u>Road section</u>	<u>Length (km)</u>	<u>Toll road distance saved (km)</u>
Old road - single carriageway	508	70
Existing road prior to tolls	485	47
Proposed toll road	438	--

The existing road length of 485km includes sections of the freeway, which were opened to the public prior to the formation of the tolling concessionaires. Part of the agreement with Tolcon, allowed them to base

their toll fee at the Mooi Plaza at the maximum allowable rate of 75% of the perceived saving of using the tolled road in preference to the alternative road, which in this case is not the existing alternative, but rather the old R103 route which is 20km longer. This is not how the general public understands the agreement to be, and has led to much public criticism. This agreement has been contested in court, and it appears if the agreement might be amended to permit Tolcon to only charge a more realistic toll fee. The State would accordingly have to reimburse Tolcon for any loss of revenue. But at least, the public who desire to use this existing facility, would be paying a more acceptable fee. Tolcon spent R68m on rehabilitating this existing section between Cedara and Frere, yet is charging a toll fee which will recoup this investment well within the 25 year concession period. Also, the section between Frere and Keeversfontein was built with State funds, and given over to Tolcon to maintain and upgrade if necessary. In this case the public are more receptive, as this is a brand new facility which has been provided. Although, the people of Natal will be not pleased in having to have their roads tolled, whilst it has helped to finance other roads in the country over the years through paying the various taxes, levies and licenses.

This is permissible in terms of the agreement which is a package deal for Tolcon to manage the 169km of the N1 and 438km of the N3. They needed a means of recovering their current investment in building the new sections of the toll road. This will lead to a long term benefit for the public, in that the toll fee will be lower, and a good road network that is cheaper, faster and safer, will be provided at an earlier date than would normally be the case. As part of the agreement, the State would receive 25% of any

profit, besides the normal tax it would earn.

Proposals have been made to rationalise the national road network by forming the South African Roads Board, which will replace the National Transport Commission. There would then be devolution of powers to the provincial road authorities, thus returning to the system of four main road authorities for South Africa as it was prior to 1971. It is programmed for the control of national roads to revert back to the provincial administrations in the near future, once consensus has been reached between the affected parties. The implementation date has been delayed several times pending the outcome of further investigations on this proposal. A move in this direction is seen to be a step in the right direction, as it would rationalise and unite the efforts of the four provincials administrations who will be responsible for the provision and maintenance of the national and provincial road network.

To conclude this discussion on organising, it must be stated that the process of providing an organisation structure for the provision and maintenance of the road network is a complicated one. Organisational peace and development can only be achieved by a humanitarian approach which is more successful in contrast to the mechanistic approach. Aims are achieved by humans and not by procedures, rules and organisation charts. To satisfy the goals of providing a safe and acceptable standard of road network for the use of the road user with the economic use of resources, the public administrators involved in the road network will have to be proactive and innovative to attain the goals that have been set within the limited resources available.

5. FINANCING

In dealing with public moneys the fundamental rule is that no money from the public or from any source whatever may be collected without the approval of Parliament. Similarly, no public money may be spent without previous approval of Parliament. To attain the goals set by the Government, public money is needed to finance the activities which are carried out in the attainment of these goals. The Government has to work rationally in the process of public financing, namely in the collection, custody allocation and spending of public money and of accounting for it. Once the policy of a road authority is determined in the form of its goals set in the road programme, it is necessary to ascertain how to finance this programme. The source and application of funds to enable the road programme to be carried out, is described in this section.

5.1 Definition of financing

In describing the need for financing, Cloete makes the following statement,²⁶

"just as a person cannot initiate a business undertaking without money, a public institution also cannot initiate any work without money".

To be able to fulfil its line function, the Natal Roads Branch has to rely on funds being provided by Central Government enabling it to carry out the road programme.

5.2 Financing of the road network

The process of the financing of the road network is controlled by certain procedures. How this process is carried out, will be described by looking

at the following sub-processes, namely financing policy, organisational arrangements, budgetary procedure and control.²⁷

5.2.1 Financing policy

Since public money has to finance the road network, it follows that the road programme has to be in line with the Government's road network policy. The legislatures authorise the expenditure of public money for the attainment of the goals and objectives set by the Government, which in effect are those of the ruling political in Parliament. This is the framework according to which the financing policy is determined. The funds are accordingly provided to the executive institutions to carry out their work programmes. These funds are voted for annually in the form of budgets which specify the purposes for which the money is to be spent. The budget is in fact, the work programme of the executive institution which it wishes to implement to attain its goals and objectives.

5.2.2 Organisational arrangements

A broad outline of the functionaries and institutions responsible for the implementation of the financing policy is contained in Figure 6 in Chapter 3. For the budget to be approved, it is prepared and submitted to the following persons and institutions :

- (i) the head of each Branch of the Provincial Administration submits their budget to the Provincial Accountant;
- (ii) the Provincial Accountant prepares the province's budget for submission to the Provincial Secretary;
- (iii) it is then submitted to the Administrator for approval in consultation with the Executive Committee;

- (iv) the budget is now submitted to the Minister of Constitutional Development and Planning; and
- (v) the budget is further dealt with by the Minister of Finance, Standing Committee on Finance and the Joint Committee of the three Houses of Parliament.

Throughout the discussion process of the Standing Committee, the Administrator, Provincial Secretary and Branch Heads are consulted if further information is needed on the proposed budget.

The organisational arrangements for the financing of the road network have distinct political and administrative implications. On the one hand the arrangements are restrictive in nature to prevent the political office-bearers from misusing public funds, and on the other hand they have to be flexible and adaptable to enable the road programmes to be implemented effectively and efficiently.

5.2.3 Budgetary procedure

The budgetary procedure can be divided into three main parts, namely preparation, approval and implementation of the budget.

(a) Provincial road network

The budget prepared by the Roads Branch is mainly in the form of a programme budget in which the proposed capital expenditure on the provision of roads and bridges is listed. Other parts of the budget are itemised under the respective sections. The Roads Branch has funds allocated to it under Vote 3 of the Budget of the Natal Provincial

Administration. This vote is sub-divided into subheads A to Q, some of which are further sub-divided into items. These details for the financial year ending 31 March 1989 are shown in Table 12.²⁸ Together with six other votes, this forms the annual budget of expenditure and income for the Province of Natal. The statement of these details for the financial years 1979/80 to 1988/89 is shown in Table 13.²⁹

The budget of the Roads Branch has diverse expenditure items including, inter alia, expropriation of land, grants-in-aid, and subsidies to numerous institutions and organisations. The Roads Branch receives revenue from essentially four sources as follows :³⁰

- (i) Central Government - money is allocated to the Province according to a complicated formula which takes into account various statistics, including population, development plans and length of road network.
- (ii) Natal Provincial Administration - the Provincial Accountant also receives revenue from various sources, inter alia, totalisator tax, hospital fees and motor vehicle licences. This revenue is distributed between the various Branches.
- (iii) Treasury - funds are provided for strategic roads which are of national interest. Examples hereof include roads on the border and roads leading to development areas.
- (iv) Miscellaneous - funds are received from various sources for projects which the Branch undertakes on their behalf an agency basis, such as the Department of Transport, Defence, KwaZulu and local authorities.

TABLE 12 : NATAL ROADS BRANCH : 1988/89 BUDGET

		1988-89	1987-88
A.— SALARIES, WAGES AND ALLOWANCES — SALARISSE, LONE EN TOELAES —			
1.	Basic salaries, wages and allowances <i>Basiese salarisse, lone en toelaes</i>		
Approved establishment <i>Goedgekeurde diensstaat</i>			
		1987-88	1988-89
		567	457
		7 565	5 905
		8 132	6 362
	Head Office/ <i>Hoofkantoor</i>	6 720 000	5 568 000
	Regional and field staff/ <i>Sreek- en veldpersoneel</i>	46 848 000	34 195 000
		53 568 000	39 763 000
	Less: Salaries met from other sub-heads of the Vote.....	46 848 000	34 195 000
	<i>Min: Salarisse wat uit ander subhoofde van die begrotingspos bestry word.</i>	6 720 000	5 568 000
2.	Service bonus.....	3 590 000	3 014 000
	<i>Diensbonus</i>		
	Less: Bonuses met from other sub-heads of the Vote.....	3 080 000	2 586 000
	<i>Min: Bonusse wat uit ander subhoofde van die begrotingspos bestry word.</i>	510 000	428 000
3.	Leave gratuities.....	678 000	578 000
	<i>Verlofgratifikasies</i>		
	Less: Provision met from other sub-heads of the Vote.....	408 000	348 000
	<i>Min: Voorsiening wat uit ander subhoofde van die begrotingspos bestry word.</i>	270 000	230 000
	TOTAL ITEMS 1 TO 3 TOTAAL ITEMS 1 TOT 3	7 500 000	6 226 000
B.— CONTRIBUTIONS TO PENSION AND PROVIDENT FUNDS — BYDRAES TOT PENSIOEN- EN VOORSORGFONDSE —			
1.	Administration's contributions.....	5 705 000	5 176 000
	<i>Administrasie se bydraes</i>		
2.	Advances in respect of officers' arrear contributions.....	1 000	1 000
	<i>Voorskotte ten opsigte van beamptes se agterstallige bydraes</i>		
3.	Stabilisation account.....	972 660	882 000
	<i>Stabilisasie rekening</i>		
		6 678 660	6 059 000
C.— SUBSISTENCE AND TRANSPORT — VERBLYF- EN VERVOERKOSTE —			
1.	Subsistence.....	300 000	304 000
	<i>Verblyf koste</i>		
2.	Transport (air, rail, motor — personnel).....	45 000	19 000
	<i>Vervoerkoste (lug, spoorweg, motor — personeel)</i>		
3.	Transport of goods (including personal effects of personnel).....	30 000	17 000
	<i>Vervoer van goedere (insluitende persoonlike besittings van personeel)</i>		
4.	Incidental transfer costs (personnel).....	40 000	15 000
	<i>Bykomstige oorpasingskoste (personeel)</i>		
5.	Subsidised car and travelling allowances — <i>Gesubsidieerde motor- en reistoelaes —</i>		
	(a) Subsidised car allowances.....	340 000	408 000
	<i>Gesubsidieerde motortoelaes</i>		
	(b) Travelling allowance.....	70 000	35 000
	<i>Reistoelae</i>		
6.	Upkeep and running costs of official vehicles.....	135 000	94 000
	<i>Onderhoud- en bedryfskoste van amptelike voertuie</i>		
7.	Purchase of official vehicles.....	220 000	61 000
	<i>Aankoop van amptelike voertuie</i>		
8.	Purchase of subsidised cars.....	854 000	950 000
	<i>Aankoop van gesubsidieerde motors</i>		
		2 034 000	1 903 000
D.— TELECOMMUNICATION SERVICES — TELEKOMMUNIKASIEDIENSTE —			
1.	Telecommunication.....	205 000	188 000
	<i>Telekommunikasie</i>		
2.	Post Office Data Services.....	5 000	5 000
	<i>Poskantoor-data diens</i>		
		210 000	193 000

	1988-89	1987-88
	R	R
E.— PRINTING, STATIONERY, ADVERTISEMENTS AND PUBLICATIONS DRUKWERK, SKRYFBEHOEFTE, ADVERTENSIES EN PUBLIKASIES		
1. Printing/Drukwerk	105 000	60 000
2. Stationery/Skryfbehoeftes	155 000	90 000
3. Advertisements/Advertensies	20 000	10 000
4. Publications/Publikasies	20 000	15 000
	300 000	175 000
F.— FURNITURE AND EQUIPMENT — MEUBELS EN TOERUSTING—		
1. Office furniture and equipment	230 000	226 000
Kantoormeubels en toerusting		
2. Survey equipment	155 000	151 000
Opmeetings-toerusting		
3. Computer Output Microfilm	4 000	4 000
Rekenaaruitvoermikrofilm		
	389 000	381 000
G.— MISCELLANEOUS — DIVERSE—		
1. Incidental expenses including legal expenses: losses and deficiencies: claims against the Administration	270 000	241 033
Bykomstige onkoste met inbegrip van regskoste; verliese en tekorte; eise teen die Administrasie		
2. Transport levy	1 000	1 000
Vervoerheffing		
3. Workmen's compensation	78 000	75 000
Skadeloosstelling van werksmense		
4. Unemployment insurance	205 000	168 000
Werkloosheidsversekering		
5. Computer Bureau — purchase, hire, maintenance, software charges	1 198 900	868 000
Rekenaarburo — aankoop, huur, instandhouding, programmatuurskoste		
6. Contributions to medical aid schemes	1 018 000	983 000
Bydraes tot mediese hulpskemas		
7. Housing subsidy	1 519 000	1 512 000
Behuisingsubsidie		
8. Official entertainment —		
Amptelike onthaal —		
(a) Departmental/Departementeel	3 000	3 000
(b) Executive Director: Roads/Uitvoerende Direkteur: Paaie	*1 200	1 200
(c) Chief Director: Professional Services/Hoofdirekteur: Professionele Dienste	*900	900
9. Ex gratia payments —	1 000	1 000
Ex gratia-betalings		
10. Expenditure (including subsistence and transport) in respect of visits abroad	45 000	43 000
Uitgawes (insluitende verblyf- en vervoerkoste) ten opsigte van buitelandse besoeke		
11. Contributions to medical aid scheme i.r.o. pensioners of Divisional Council of East Griqualand	1 000	1 000
Bydrae tot mediese hulpskema t.o.v. pensionarisse van die Afdelingsraad, Griekwaland-Oos		
12. Contributions to group insurance scheme i.r.o. ex-employees and pensioners of Divisional Council of East Griqualand	1 000	1 000
Bydrae tot groepversekeringskema t.o.v. oud-werknemers en pensionarisse van die Afdelingsraad Griekwaland-Oos		
13. Regional Services Levy	111 000	111 000
Sireksdiensteheffing		
14. Departmental training	80 000	70 000
Departementele opleiding		
15. Flood relief	13 530 000	—
Vloednoodleniging		
	18 064 000	4 080 133
H.— GRANTS-IN-AID, SUBSIDIES AND SUNDRY PAYMENTS — HULPTOELAES, SUBSIDIES EN DIVERSE BETALINGS —		
1. Assistance in the repair of by-roads, bridges and ponds	100 000	150 000
Hulpverlening i.v.m. die regmaak van syppaie, brue en ponte		
2. Assistance in the fencing of main roads	200 000	150 000
Hulpverlening i.v.m. omheining van grootpaaie		
3. Subsidies to local authorities in respect of main roads maintained by boroughs and townships	467 000	1 192 000
Subsidies aan plaaslike owerhede ten opsigte van grootpaaie onderhou deur munisipaliteite en dorpe		
4. Assistance in respect of roads, other than main roads, within the area of a local authority	646 147	2 000 000
Hulpverlening in verband met paaie, behalwe grootpaaie, binne die gebied van 'n plaaslike owerheid		
5. Proportional allocation of motor tax to boroughs, townships and health committees for road purposes	*14 032 293	12 047 967
Proporsionele toedeling van motorbelasting aan munisipaliteite, dorpe en gesondheidskomitees vir padoeleindes		
Carried forward/Oorgedra	15 445 440	15 539 967

	1988-89	1987-88
	R	R
H.— GRANTS-IN-AID, SUBSIDIES AND SUNDRY PAYMENTS — continued HULPTOELAES, SUBSIDIES EN DIVERSE BETALINGS — vervolg		
Brought forward/Oorgebring	15 445 440	15 539 967
6. Council for Scientific and Industrial Research <i>Wetenskaplike en Nywerheidsnavorsingsraad</i>	246 900	240 000
7. Elimination of high frequency accident spots in urban areas <i>Uitskakeling van hoëfrekwensie-ongelukskolle in stedelike gebiede</i>	400 000	400 000
8. Contribution to Durban Metropolitan Transport Fund <i>Bydrae tot die Durbanse Metropolitaanse Vervoerfonds</i>	2 500 000	3 250 000
9. Contribution to Pietermaritzburg Metropolitan Transport Fund <i>Bydrae tot die Pietermaritzburgse Metropolitaanse Vervoerfonds</i>	1 000 000	1 000 000
10. Subsidies to local authorities in respect of traffic signals on provincial roads within local authority areas <i>Subsidies aan plaaslike owerhede ten opsigte van verkeersone op provinsiale paaie binne die gebiede van plaaslike owerhede</i>	350 000	350 000
11. Contribution to committee of state road authorities <i>Bydrae aan komitee van staatspadowerhede</i>	10 000	10 000
	19 952 340	20 789 967
J.— LABORATORY: TESTING MATERIALS, ETC..... LABORATORIUM: TOETSMATERIAAL, ENS.	1 360 000	1 210 000
K.— ROAD MAINTENANCE, REPAIRS AND BETTERMENT — ONDERHOUD VAN PAAIE, REPARASIES EN VERBETERINGS —		
1. Normal maintenance and minor betterment, main and district roads <i>Normale onderhoud en klein verbeterings, groot- en distrikspaaie</i>	38 890 000	32 574 900
2. Major betterment and gravelling <i>Groot verbeterings en begruising</i>	16 631 000	14 000 000
3. Resurfacing <i>Herafdekking</i>	28 600 000	25 847 000
4. Structures: minor works, repairs and maintenance <i>Strukture: kleiner werke, reparasies en onderhoud</i>	1 801 000	1 640 000
5. Access roads: National monuments and war graves <i>Toegangspaaie: Nasionale gedenkwaardighede en oorlogsgrafie</i>	336 000	300 000
6. Elimination of high frequency accident spots in rural areas <i>Uitskakeling van hoëfrekwensie-ongelukskolle in plattelandse gebiede</i>	1 000 000	1 000 000
	87 258 000	75 361 900
L.— CONSTRUCTION OF ROADS AND BRIDGES — BOU VAN PAAIE EN BRUE —		
1. Provincial roads (as itemised on pages 46 to 47) <i>Provinsiale paaie (soos gespesifiseer op bladsye 46 tot 47)</i>	78 485 500	85 063 000
2. Special roads — National Transport Commission (as itemised on page 48) <i>Spesiale paaie — Nasionale Vervoerkommissie (soos gespesifiseer op bladsy 48)</i>	18 000	4 000
3. Special Roads — Treasury (as itemised on page 49) <i>Spesiale Paaie — Tesourie (soos gespesifiseer op bladsy 49)</i>	15 476 000	4 041 000
4. Special Roads — other departments and bodies (as itemised on page 50). <i>Spesiale paaie — ander departemente en instansies (soos gespesifiseer op bladsy 50)</i>	3 946 500	6 332 000
	97 926 000	95 440 000
M.— RECLAMATION WORKS — HERWINNINGSWERKE —		
1. St. Lucia Reclamation Scheme <i>St. Lucia-herwinningskema</i>	992 000	992 000
2. Investigation and research <i>Ondersoek en navorsing</i>	8 000	8 000
	1 000 000	1 000 000
N.— DEPARTMENTAL TRAINING..... DEPARTEMENTELE OPLEIDING	400 000	—
P.— AUGMENTATION OF TRADING ACCOUNTS (Annexure A — Page 51) AANVULLING VAN BEDRYFSREKENING (Bylae A — Bladsy 51)	6 670 000	—
Q.— CAPITAL PROVISION FOR SUBSIDISED MOTOR TRANSPORT..... KAPITAAL VOORSIENING VIR SUBSIDIEERDE MOTORVERVOER	2 052 000	—

TABLE 13 : PROVINCE OF NATAL—STATEMENT SHOWING EXPENDITURE FOR THE PERIOD 1979-1980 TO 1988-1989
PROVINSIE NATAL—STAAT AANTONENDE UITGAWE VIR DIE TYDPERK 1979-1980 TOT 1988-1989

	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986	1986-1987	1987-1988 (original estimate) (voorspronklike begroting)	1988-1989 (estimate) (begroting)
VOTE 1 GENERAL ADMINISTRATION										
A - Salaries, wages and allowances	7 744 712	9 529 541	10 836 236	14 030 991	17 050 221	21 618 904	21 404 342	22 050 412	26 414 000	34 871 000
B - Contributions to pension and provident funds	1 240 508	1 349 430	1 719 349	2 187 544	2 683 140	3 499 259	3 531 481	3 419 624	4 167 000	5 930 000
C - Subsistence and transport	1 281 227	1 443 355	1 816 082	2 512 982	3 091 813	2 852 228	4 003 210	4 373 133	3 865 000	4 440 000
D - Postal and telecommunication services	153 154	196 564	232 138	296 560	343 546	408 616	591 085	1 309 858	1 341 000	1 766 000
E - Printing, stationery, advertisements and publications	412 846	499 942	446 769	592 278	685 548	768 701	1 021 330	1 249 686	1 393 000	1 727 000
F - Furniture, equipment, supplies and services	415 208	681 754	830 349	1 125 185	1 295 063	1 450 688	1 672 209	2 000 862	2 961 000	3 271 000
G - Miscellaneous expenses	504 152	591 285	794 850	1 352 727	1 889 653	3 054 516	3 992 296	3 820 364	5 868 000	6 035 000
H - Pensions and gratuities	1 005 395	331 244	412 265	426 534	433 151	431 736	4 425 515	5 197 207	4 603 000	8 140 000
I - Statutory bodies	49 215	78 957	91 484	103 246	106 463	138 650	126 996	167 335	139 000	150 000
K - Provincial Library and Museum Services	1 007 461	1 096 673	1 109 493	1 385 271	1 568 969	1 714 625	2 278 270	2 702 754	—	—
	13 813 778	15 798 745	18 280 215	24 013 318	29 147 567	35 937 923	43 046 734	46 291 235	50 751 000	66 330 000
EDUCATION*										
A - Salaries, wages and allowances	(a) 60 019 482	(a) 74 462 960	(a) 91 950 080	(a) 111 778 540	(a) 116 641 604	(a) 144 228 169	(a) 165 232 543	—	—	—
B - Contributions to pension and provident funds	(a) 8 205 447	(a) 10 432 539	(a) 15 084 824	(a) 18 212 400	(a) 19 101 870	(a) 24 139 566	(a) 27 171 057	—	—	—
C - Subsistence and transport	(a) 774 256	(a) 920 852	(a) 1 194 270	(a) 1 481 932	(a) 1 592 890	(a) 1 624 911	(a) 2 042 468	—	—	—
D - Postal and telecommunication services	(a) 146 312	(a) 176 536	(a) 207 704	(a) 272 053	(a) 353 839	(a) 368 242	(a) 474 971	—	—	—
E - Printing, stationery, advertisements and publications	(a) 168 994	(a) 140 774	(a) 150 587	(a) 200 179	(a) 233 557	(a) 223 450	(a) 310 426	—	—	—
F - Furniture and equipment	(a) 10 231	(a) 13 681	(a) 22 251	(a) 17 054	(a) 50 856	(a) 70 124	(a) 179 888	—	—	—
G - Supplies and services	(a) 8 347 415	(a) 9 623 227	(a) 10 525 478	(a) 11 687 773	(a) 12 524 560	(a) 14 333 987	(a) 17 123 311	—	—	—
H - Miscellaneous	6 068 530	7 921 427	9 558 395	12 841 693	15 829 244	15 829 244	27 302 424	—	—	—
J - Subsidies to aided schools and hostels	2 675 142	2 961 924	3 656 898	4 373 292	4 666 013	5 342 209	5 296 091	—	—	—
K - Grants-in-aid	45 960	70 710	77 810	82 535	83 785	86 385	62 745	—	—	—
	86 461 769	106 724 630	132 428 297	160 947 451	171 078 218	213 689 823	245 195 924	—	—	—
VOTE 2 (3 prior to 1 April 1986) HOSPITAL, MEDICAL AND HEALTH SERVICES										
A - Salaries, wages and allowances	59 632 758	76 239 267	90 422 073	116 316 052	136 859 862	167 240 913	175 557 249	223 091 130	241 018 000	290 307 000
B - Contributions to pension and provident funds	5 339 143	8 658 130	11 118 828	13 897 544	17 020 688	21 385 653	21 491 453	28 513 706	30 575 000	38 510 000
C - Subsistence and transport	1 846 766	1 706 919	2 386 501	3 260 615	3 354 796	3 998 525	5 207 598	5 651 944	5 484 000	6 484 000
D - Telecommunication services	425 409	500 833	623 594	805 127	1 061 704	1 323 097	1 749 805	1 832 554	2 110 000	2 384 000
E - Printing, stationery, advertisements and publications	402 166	541 950	561 950	856 229	789 739	896 631	1 173 429	1 617 877	1 500 000	1 500 000
F - Furniture and equipment	2 275 457	2 707 209	5 399 897	7 704 997	11 016 149	7 658 421	12 348 401	19 543 294	12 500 000	14 004 000
G - Supplies and services	29 793 862	36 914 568	44 981 182	53 872 797	63 591 819	76 510 265	93 890 592	125 612 756	133 921 000	145 008 000
H - Miscellaneous	1 215 433	1 424 033	2 359 479	3 477 746	4 969 644	7 040 494	9 961 279	11 859 490	15 130 000	17 693 000
J - Grants-in-aid and subsidies	3 597 760	5 208 614	6 192 426	7 734 934	9 226 140	10 499 576	8 740 098	11 094 269	13 977 500	17 753 000
K - Hospitalisation of patients in other hospitals	218 616	220 813	311 515	851 011	817 346	851 942	1 478 300	2 086 643	2 700 000	2 700 000
L - Indigent patient services	—	—	—	—	—	—	(h) 126 507	(h) 2 064 306	(h) 2 000 000	(b) 2 200 000
M - District surgeons	—	—	2 542 704	3 414 754	4 342 478	5 674 281	7 490 839	8 333 256	8 660 000	8 660 000
N - Ambulance services	—	—	534 998	3 452 864	3 884 740	5 220 189	6 716 482	3 643 998	2 640 000	3 430 000
Public Health	58 103	68 175	73 225	95 564	92 941	106 510	—	—	—	—
P - Programme: Health Services	—	—	—	—	—	—	—	—	—	86 310 000
	104 805 473	134 190 511	167 508 372	215 740 234	257 028 006	308 406 497	345 932 032	444 945 223	472 205 500	636 943 000
VOTE 3 (4 prior to 1 April 1986) ROADS AND BRIDGES										
A - Salaries, wages and allowances	1 749 379	2 508 778	2 479 208	3 110 353	3 870 856	5 064 755	4 992 137	5 997 208	6 226 000	7 500 000
B - Contributions to pension and provident funds	1 336 298	1 930 571	2 463 315	2 816 058	3 302 989	4 452 541	4 702 619	5 297 413	6 059 000	6 678 660
C - Subsistence and transport	393 725	523 313	589 640	804 594	941 856	1 088 555	1 292 627	1 534 387	1 903 000	2 034 000
D - Telecommunication services	62 665	79 026	88 119	113 253	147 794	178 615	232 214	176 266	193 000	210 000
E - Printing, stationery, advertisements and publications	88 336	80 926	79 163	141 776	115 616	134 226	164 177	233 788	175 000	300 000
F - Furniture and equipment	62 051	92 178	139 864	207 128	180 456	199 743	295 656	325 172	381 000	389 000
G - Miscellaneous	852 474	726 915	977 075	1 224 438	3 147 910	8 467 701	9 771 398	5 411 256	4 080 133	18 064 000
H - Grants-in-aid, subsidies and sundry payments	4 964 515	6 876 452	7 773 753	8 307 585	9 819 795	12 508 805	14 128 177	17 673 521	20 789 967	19 952 340
J - Laboratory: Testing materials, etc.	459 265	344 218	343 529	381 797	390 014	548 382	599 561	750 104	1 210 000	1 360 000
K - Road maintenance, repairs and betterment	19 922 010	26 269 734	30 982 222	33 945 116	39 092 881	48 885 871	55 447 239	64 243 526	75 361 900	87 258 000
L - Construction of roads and bridges	45 855 960	53 620 949	70 515 662	78 501 509	82 674 735	73 141 537	87 290 379	100 722 015	95 440 000	97 926 000
M - Reclamation works	429 779	1 130 967	1 010 124	1 499 302	614 532	313 225	805 799	709 153	1 000 000	1 000 000
N - Departmental training	—	—	—	—	—	—	—	—	—	400 000
P - Augmentation of trading account	—	—	—	—	—	—	—	—	—	6 670 000
O - Capital provision for subsidised motor transport	—	—	—	—	—	—	—	—	—	2 052 000
	76 176 457	94 184 027	117 441 674	131 052 909	144 299 434	154 983 956	179 721 983	203 073 809	212 819 000	251 794 000

**BEGROTINGSPOS 1
ALGEMENE ADMINISTRASIE**

A - Salarisse, lone en toelae	26 414 000
B - Bydraes tot pensioen- en voorsorgfondse	4 167 000
C - Verbyl- en vervoerkoste	3 865 000
D - Pos- en telekommunikasiedienste	1 341 000
E - Drukwerk, skryfbehoeftes, advertensies en publikasies	1 727 000
F - Meubels, toerusting, leweransies en dienste	3 271 000
G - Diverse uitgawes	5 868 000
H - Pensioene en gratifikasies	8 140 000
J - Statutêre liggame	139 000
K - Provinsiale Biblioteek- en Museumdienste	—

ONDERWYS*

A - Salarisse, lone en toelae	—
B - Bydraes tot pensioen- en voorsorgfondse	—
C - Verbyl- en vervoerkoste	—
D - Pos- en telekommunikasiedienste	—
E - Drukwerk, skryfbehoeftes, advertensies en publikasies	—
F - Meubels en toerusting	—
G - Leweransies en dienste	—
H - Diverse	—
J - Subsidies aan ondersteunde skole en koshuise	—
K - Hulp-toelae	—

**BEGROTINGSPOS 2 (3 voor 1 April 1986)
HOSPITALE, MEDIESE EN GESONDHEIDSDIENSTE**

A - Salarisse, lone en toelae	290 307 000
B - Bydraes tot pensioen- en voorsorgfondse	38 510 000
C - Verbyl- en vervoerkoste	6 484 000
D - Telekommunikasiedienste	2 384 000
E - Drukwerk, skryfbehoeftes, advertensies en publikasies	1 500 000
F - Meubels en toerusting	14 004 000
G - Leweransies en dienste	145 008 000
H - Diverse	17 693 000
J - Hulp-toelae en subsidies	17 753 000
K - Hospitalisering van pasiënte in ander hospitale	2 700 000
L - Behoeftige pasiënte dienste	2 200 000
M - Distriksgeneeshere	8 660 000
N - Ambulansdienste	3 430 000
Openbare gesondheid	—
P - Program: Gesondheidsdienste	86 310 000

**BEGROTINGSPOS 3 (4 voor 1 April 1986)
PAAIE EN BRÛE**

A - Salarisse, lone en toelae	7 500 000
B - Bydraes tot pensioen- en voorsorgfondse	6 678 660
C - Verbyl- en vervoerkoste	2 034 000
D - Telekommunikasiedienste	210 000
E - Drukwerk, skryfbehoeftes, advertensies en publikasies	300 000
F - Meubels en toerusting	389 000
G - Diverse	18 064 000
H - Hulp-toelae, subsidies en diverse betalings	19 952 340
J - Laboratorium: Toetsmateriaal, ens.	1 360 000
K - Onderhoud van paaie, reparasies en verbeterings	87 258 000
L - Bou van paaie en brue	97 926 000
M - Herwinningwerke	1 000 000
N - Departementele opleiding	400 000
P - Aanvulling van bedryfsrekening	6 670 000
O - Kapitaalvoorsiening vir gesubsidieerde motor vervoer	2 052 000

(a) Amounts shown under Sub-heads A to G previously shown under the headings Administration: Training of teachers: Pre-primary, primary, secondary and agricultural schools/Bedrae aangetoen onder subhoofde A tot G voorheen getoon onder die Hoofde Administrasie: Opleiding van onderwysers: Pre-primêre, primêre, sekondêre en landhoukskole.

(b) Previously partly provided under Sub-heads L and N./Voorheen gedeeltelik voorsien onder subhoofde L en N.

* Vote 2 Education fell away as from 1 April 1986 when Education was taken over by the Department of Education and Culture (Administration: House of Assembly)/Begrotingspos 2 Onderwys het vanaf 1 April 1986 weggeval toe Onderwys deur die Departement van Onderwys en Kulture (Administrasie: Volksraad) oorgeneem is.

PROVINCE OF NATAL — STATEMENT SHOWING EXPENDITURE FOR THE PERIOD 1979-1980 TO 1988-1989
 PROVINSE NATAAL — STAAT AANTONENDE UITGAVES VIR DIE TYDPERK 1979-1980 TOT 1988-1989

	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986	1986-1987	1987-1988 (original estimate) (oorspronklike begroting)	1988-1989 (estimate) (begroting)	
VOTE 4 (5 prior to 1 April 1986) WORKS											BEGROTINGSPOS 4 (5 voor 1 April 1986) WERKE
A - Salaries, wages and allowances	6 894 431	8 095 109	8 775 512	10 413 233	13 238 808	15 955 647	16 390 284	5 801 195	5 696 000	8 074 000	A - Salarisse, lone en toelae
B - Contributions to pension and provident funds	721 405	1 005 635	1 288 793	1 492 689	1 993 290	2 494 915	2 526 746	860 679	889 000	1 064 000	B - Bydraes tot pensioen- en voorsorgfondse
C - Subsistence and transport	446 554	491 252	514 495	676 740	685 939	841 600	949 730	331 742	966 000	956 000	C - Verbyl- en vervoerkoste
D - Telecommunication services	61 131	77 750	84 797	111 659	140 481	163 592	212 218	117 418	82 000	82 000	D - Telekommunikasiedienste
E - Printing, stationery, advertisements and publications	68 012	88 497	77 247	101 494	100 894	133 958	144 483	151 071	65 000	205 000	E - Drukwerk, skryfbehoeftes, advertensies en publikasies
F - Furniture and equipment	36 177	46 142	67 279	72 589	74 883	401 216	1 195 753	786 160	395 000	797 800	F - Meubels en toerusting
G - Miscellaneous	1 394 687	1 602 952	1 896 176	2 323 796	2 972 868	3 431 822	4 412 250	3 595 218	7 241 100	7 929 000	G - Diverse
H - Purchase and maintenance of mechanical plant and vehicles	802 640	838 029	956 136	1 232 054	1 472 066	1 774 704	2 067 999	611 756	1 157 000	1 320 200	H - Aankoop en onderhoud van meganiese toerusting en voertuie
J - Purchase and maintenance of machinery, tools and workshop equipment	170 702	191 575	186 107	227 705	255 900	302 859	394 776	199 492	220 000	253 000	J - Aankoop en onderhoud van masjinerie, gereedskap en werkwinkeltoerusting
K - Repairs and maintenance	3 727 607	4 162 347	4 718 743	7 490 800	8 411 701	7 933 308	8 443 827	2 614 361	5 466 000	5 664 000	K - Reparasies en onderhoud
L - Minor works	(a) 292 837	(a) 507 796	(a) 472 647	(a) 666 919	(a) 1 616 800	(a) 1 754 362	(a) 2 160 302	(a) 617 054	1 786 000	1 804 000	L - Kleiner werke
M - Major works											M - Groter werke
E - Education	8 621 060	7 529 436	9 616 175	11 444 412	14 655 704	13 632 566	9 847 754	—	—	—	O - Onderwys
1. Hospitals	9 623 636	14 035 983	19 980 729	16 220 668	9 408 381	9 414 517	10 406 664	19 733 498	13 145 000	16 519 000	1. Hospitale
2. Roads and inspection services	2 368 648	1 404 448	188 319	247 954	1 545 637	929 197	299 155	803 941	1 853 200	3 408 000	2. Paaie en inspeksiedienste
3. General	3 101 287	2 709 456	4 342 823	6 190 434	7 893 608	17 300 573	24 338 157	12 973 897	15 035 800	13 873 000	3. Algemeen
4. Community Services	—	—	—	—	—	—	—	—	2 239 000	—	4. Gemeenskapsdienste
N - Industrialised buildings	(a) 104 850	(a) 259 560	(a) 356 813	(a) 719 925	(a) 308 251	(a) 884 762	(a) 1 279 296	(a) 352 807	1 165 000	1 650 000	N - Ge-industrialiseerde geboue
P - National Monuments	—	—	—	—	—	—	—	251 413	100 000	100 000	P - Nasionale Gedenkwaardighede
O - Purchase of Land and Buildings	—	—	—	—	—	—	—	—	400 000	438 000	O - Aankoop van Grond en Geboue
Subsidies to local authorities — Fire brigade services	134 194	137 983	187 975	—	—	—	—	—	—	—	Subsidies aan plaaslike owerhede — Brandweerdienste
Recoverable services	464 888	676 778	656 062	389 995	101 396	241 873	—	—	—	—	Verhaalbare dienste
	39 034 746	43 860 728	54 366 828	60 023 066	64 881 687	77 091 161	85 316 007	49 755 398	57 901 100	64 137 000	
VOTE 5 (6 prior to 1 April 1986) MISCELLANEOUS SERVICES											BEGROTINGSPOS 5 (6 voor 1 April 1986) DIVERSE DIENSTE
A - Grants-in-aid and subsidies	13 657 240	18 018 607	20 227 459	27 284 707	34 844 124	51 777 952	54 848 848	64 484 124	59 492 800	70 658 000	A - Hulp-toelae en subsidies
B - 1988 Feasts	—	—	—	—	—	—	—	2 282 792	267 000	143 000	B - 1988 Feeste
C - Problem animal control	780	1 000	176	1 046	696	766	1 189	7 542	54 000	66 000	C - Plaagdier beheer
D - Combating of pollution	—	—	—	—	—	—	—	—	1 000	1 000	D - Bestryding van besoedeling
E - Establishment of cemeteries	—	—	—	—	750	—	—	—	10 000	10 000	E - Instelling van begraafplase
F - Civil Defence	—	34 730	24 953	6 255	85 530	299 037	91 454	223 177	300 000	300 000	F - Burgerlike beskerming
G - Stores capital	—	625 000	50 000	755 000	800 000	—	800 000	2 120 000	2 200 000	1 550 000	G - Voorradekapitaal
H - Creation of Employment Opportunities	—	—	—	—	—	—	—	—	8 400 000	8 800 000	H - Skepping van werk geleenthede
J - Joint Executive Authority: KwaZulu/Natal	—	—	—	—	—	—	—	—	—	293 000	J - Gesamentlike uitvoerende owerheid: KwaZulu/Natal
Assistance to de-amalgamated local authorities	—	114 000	—	101 902	—	—	—	—	—	—	Hulp aan afgestigte plaaslike owerhede
National Monuments	—	5 992	24 765	47 875	56 653	17 828	—	—	—	—	Nasionale Gedenkwaardighede
Zulu War centenary	54 773	94	—	—	—	—	—	—	—	—	Eeufees van Zoeloeoorlog
Centenary of the battle of Majuba	—	23 133	—	—	—	—	—	—	—	—	Eeufees van die slag van Majuba
Recoverable advances	50 552	—	—	—	—	—	—	—	—	—	Terugtehaalbare voorskotte
Interest and redemption on loan ex Revolving Fund	3 095 000	—	—	—	—	—	—	—	—	—	Rente en delging op voorskot uit wentelfonds
Non-recurrent	1 070 085	3 560 952	2 275 663	1 049 835	747 182	1 087 004	1 512 399	17 819 354	—	—	Nie-herhalend
	17 928 430	22 383 508	22 603 016	29 246 590	36 534 925	53 177 627	57 255 890	86 936 989	70 720 800	81 821 000	
VOTE 6 COMMUNITY SERVICES											BEGROTINGSPOS 6 GEMEENSKAPSDIENSTE
A - Salaries, wages and allowances	—	—	—	—	—	—	—	—	39 895 500	26 304 000	A - Salarisse, lone en toelae
B - Contributions to pension and provident funds	—	—	—	—	—	—	—	—	4 479 000	3 936 000	B - Bydraes tot pensioen- en voorsorgfondse
C - Subsistence and transport	—	—	—	—	—	—	—	—	5 934 600	5 074 000	C - Verbyl- en vervoerkoste
D - Telecommunication services	—	—	—	—	—	—	—	—	942 600	859 500	D - Telekommunikasiedienste
E - Printing, stationery, advertisements and publications	—	—	—	—	—	—	—	—	901 400	767 000	E - Drukwerk, skryfbehoeftes, advertensies en publikasies
F - Furniture and equipment	—	—	—	—	—	—	—	—	1 319 000	1 118 000	F - Meubels en toerusting
G - Supplies and services	—	—	—	—	—	—	—	—	4 646 500	3 401 000	G - Leweransies en dienste
H - Miscellaneous	—	—	—	—	—	—	—	—	6 445 300	4 739 000	H - Diverse
J - Pensions, allowances and related matters	—	—	—	—	—	—	—	—	75 876 000	88 180 000	J - Pensioene, toelae en verwante aanleenthede
K - Grants-in-aid and subsidies	—	—	—	—	—	—	—	—	46 950 700	50 609 000	K - Hulp-toelae en subsidies
L - Security services	—	—	—	—	—	—	—	—	886 000	908 000	L - Veiligheidsdienste
M - Municipal police	—	—	—	—	—	—	—	—	3 013 000	9 218 000	M - Munisipale polisie
N - Purchase of plant	—	—	—	—	—	—	—	—	1 000	1 000	N - Aankoop van masjinerie
P - Interest and redemption charges	—	—	—	—	—	—	—	—	2 816 000	1 944 500	P - Rente en delgingskoste
Q - Planning and upgrading of communities	—	—	—	—	—	—	—	—	1 000	1 000	Q - Beplanning en opgradering van gemeenskappe
R - Library services	—	—	—	—	—	—	—	—	3 030 600	3 507 000	R - Biblioteekdienste
S - Museum services	—	—	—	—	—	—	—	—	133 400	152 000	S - Museumdienste
	—	—	—	—	—	—	—	—	197 271 600	200 719 000	
VOTE 7 Improvement of conditions of service											BEGROTINGSPOS 7 Verbetering van diensvoorwaardes
	—	—	—	—	—	—	—	—	33 000 000	9 602 000	
	—	—	—	—	—	—	—	—	33 000 000	9 602 000	
GRAND TOTAL	338 220 653	417 142 149	512 628 402	621 023 568	702 969 837	843 286 987	956 468 570	831 002 654	1 094 669 000	1 311 346 000	GROOTTOTAAL
Surplus carried forward	12 269 466	19 445 210	32 218 003	24 330 113	34 922 996	39 450 194	10 948 211	12 390 341	—	—	Oorskot oorgedra
	350 490 119	436 587 359	544 846 405	645 353 681	737 892 833	882 737 181	967 416 781	843 392 995	1 094 669 000	1 311 346 000	

(a) Previously provided under Sub-head K. /Vooreen voorsien onder subhoof K

(b) Previously provided under Sub-head H. /Vooreen voorsien onder subhoof H

PROVINCE OF NATAL — STATEMENT SHOWING RECEIPTS FOR THE PERIOD 1979-1980 TO 1988-1989
 PROVINSE NATAAL — STAAT AANTONENDE ONTVANGSTE VIR DIE TYDPERK 1979-1980 TOT 1988-1989

	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986	1986-1987	1987-1988 (original estimate) (toesproonlike begroting)	1988-1989 (estimate) (begroting)	
PROVINCIAL TAXATION											PROVINSIALE BELASTING
Totalisator Tax	5 906 743	6 956 338	8 258 046	9 818 650	11 328 756	12 177 331	13 273 656	16 560 278	17 808 000	24 000 000	Totalisatorbelasting
Betting Tax and licence fees	2 253 542	2 799 087	3 621 286	4 777 011	5 264 810	6 298 557	7 466 036	6 984 403	7 100 000	7 100 000	Weddenskapbelasting en lisensiegelde
Auction Sales Tax	264 113	303 529	345 728	356 839	460 951	471 979	598 615	—	—	—	Vandisielbelasting
Licences — Dog	68 198	79 604	72 242	80 637	90 306	118 335	128 601	112 524	140 000	140 000	Lisensies — Hond
— Fish	182 838	224 336	273 034	308 001	337 116	399 558	440 607	456 123	520 000	520 000	— Vis
— Game	23 556	25 822	26 741	22 888	30 113	27 561	27 742	28 417	27 000	30 000	— Wild
Motor Vehicles — Registration and licence fees	21 404 822	22 908 378	30 142 045	40 614 790	46 811 786	59 613 745	60 239 832	70 161 241	73 653 000	79 503 000	Motorvoertuie — Registrasie- en lisensiegelde
Permits for abnormal loads	265 579	378 837	421 057	457 080	671 664	728 519	728 859	409 799	770 000	770 000	Permitte vir abnormale vragie
Sale of game	175 359	628 832	320 347	106 409	60 532	66 043	42 824	25 833	40 000	40 000	Verkoop van wild
Trade licences	347 997	491 662	586 324	595 269	721 920	917 100	842 296	887 576	860 000	900 000	Handelslisensies
Total — Provincial taxation	30 892 747	34 796 425	44 066 850	57 137 574	65 777 954	80 818 723	83 789 068	95 626 194	100 918 000	113 003 000	Totaal — Provinsiale belasting
DEPARTMENTAL RECEIPTS											DEPARTEMENTELE ONTVANGSTE
Fines and forfeitures	1 646 742	2 024 140	1 790 256	2 826 072	2 875 494	3 446 113	4 146 727	4 347 113	4 000 000	4 500 000	Boetes en verbeurings
Local government audit fees	569 861	772 692	809 941	983 188	1 326 621	1 645 962	1 325 099	61 028	—	—	Oudigelde van planslike besture
School bus fees*	—	—	—	—	—	1 251 704	1 274 222	—	—	—	Skoelbusgelde*
Education receipts*	776 642	928 354	1 213 529	1 569 875	1 831 878	945 633	1 063 805	—	—	—	Onderwysontvangste*
School hostel boarding fees*	1 640 353	1 797 653	2 291 258	2 978 529	3 323 211	3 595 851	3 857 561	—	—	—	Skoelkoshuisgelde*
Training colleges — boarding and tuition fees*	—	834 730	944 243	1 362 600	1 454 320	1 676 411	1 613 702	—	—	—	Opleidingskolleges — losies- en onderriggelde*
Hospital receipts	—	—	—	—	—	—	—	—	—	—	Hospitaalontvangste
Fees	7 677 010	8 389 609	8 999 952	12 367 362	13 997 288	16 252 062	20 057 484	26 349 229	26 394 000	42 000 000	Gelde
Other	1 068 141	1 167 576	1 295 046	1 645 079	1 745 679	1 933 877	2 316 229	2 164 696	2 700 000	2 700 000	Anders
Repayments of advances on subsidised transport*	466 612	566 879	708 261	807 888	1 056 022	1 260 525	1 622 383	1 178 361	1 410 000	1 410 000	Terugbetaling van voorskotte op gesubsidieerde voertuie*
Community-funded services*	358 512	696 449	360 998	551 320	157 222	269 665	278 651	—	—	—	Gemeenskapsgefinansieerde dienste*
Subsidised transport receipts*	79 923	197 860	141 871	242 253	365 485	411 463	289 309	310 750	200 000	141 000	Gesubsidieerde vervoer-ontvangste*
Repayments of advances in respect of officers' arrears pension contributions*	200 883	241 620	226 726	186 641	212 600	191 073	209 203	145 989	120 000	100 000	Terugbetaling van voorskotte ten opsigte van beampies se agterstallige pensioenbydraes*
Sale of Government property	271 643	366 523	331 278	429 628	280 269	251 142	260 786	361 126	280 000	300 000	Verkoop van staatsieendom
Provident Fund benefits	173 569	—	—	—	—	—	—	—	—	—	Voorsorgfondsvoordele
Refunds of bursaries*	—	—	783 481	863 784	950 613	1 029 458	966 304	—	—	—	Terugbetalings van beursgelde*
Interest	—	—	—	—	—	10 022 077	4 862 222	3 379 079	—	—	Rente
Miscellaneous receipts*	2 829 902	2 844 841	3 786 566	5 440 198	4 843 732	3 289 109	3 099 346	3 444 480	5 450 000	4 000 000	Diverse ontvangste*
Special capital receipts*	1 059 289	2 152 610	2 703 146	2 564 176	2 016 589	2 156 688	1 897 413	2 232 347	2 128 000	3 200 000	Spesiale kapitaalontvangste*
Services rendered to various Departments by Community Services Branch:	—	—	—	—	—	—	—	—	—	—	Dienste gelewer aan verskeie Departemente deur die tak Gemeenskapsdienste:
Employment/Community Services	—	—	—	—	—	—	—	—	1 321 000	220 000	Werkverskaffing/Gemeenskapsdienste
Manpower	—	—	—	—	—	—	—	—	920 000	—	Mannekrag
Internal Administration	—	—	—	—	—	—	—	—	17 374 000	12 000 000	Interne Administrasie
Sale of liquor	—	—	—	—	—	—	—	—	4 030 000	2 000 000	Verkoop van drank
Grants from S.A. Transport Services for road maintenance	63 840	63 840	72 720	136 880	122 240	187 110	198 000	296 000	198 000	287 000	Toelae van S.A. Vervoerdienste vir onderhoud van puaie
National Transport Commission — share of costs in respect of special roads	6 267 049	2 301 467	917 372	192 058	30 313	249 075	54 430	49 766	1 000	8 000 000	Nasionale Vervoerkommissie — bydraes tot koste van spesiale puaie
Recoveries in respect of road works	—	2 982 625	6 061 701	6 526 572	4 453 177	2 862 463	671 646	3 099 702	1 500 000	1 500 000	Verhalings ten opsigte van padwerke
Total — Departmental receipts	25 150 001	28 329 468	33 438 345	41 669 103	41 042 767	52 929 461	50 064 522	47 419 666	68 026 000	82 359 000	Totaal — Departementele ontvangste
Total — Provincial taxation and departmental receipts	56 042 748	63 125 893	77 505 195	98 806 677	106 820 721	133 748 184	133 853 590	143 045 860	168 944 000	195 362 000	Totaal — Provinsiale belasting en departementele ontvangste
SUBSIDIES, GRANTS, ETC.											SUBSIDIES, TOELAES, ENS
Subsidy from Central Government	256 958 000	331 492 000	411 196 000	477 629 000	562 042 000	672 766 000	742 113 000	648 569 000	—	—	Subsidie van Sentrale Regering
Capital Grant	29 354 000	29 700 000	36 700 000	36 700 000	41 700 000	41 300 000	52 000 000	44 718 000	—	—	Kapitaaltoekenning
Transfer from the State Revenue Account (Section 4(1)(a)) of the Exchequer and Audit Act 1975 (Act 66 of 1975)	—	—	—	—	—	—	—	—	33 000 000	9 602 000	Oordrag van Staatsinkomsterekening (Artikel 4(1)(a)) van die Skatwett. 1975 (Wet 66 van 1975)
Charge against State Revenue Account/Allocation from Central Government	—	—	—	—	—	—	—	—	887 187 000	1 106 382 000	Last teen Staatsinkomsterekening/Toekenning van Sentrale Regering
Total — Subsidies and allowances	286 312 000	361 192 000	447 896 000	514 329 000	606 742 000	714 066 000	794 113 000	693 287 000	920 187 000	1 115 984 000	Totaal — Subsidies en toelaes
Sub-total	342 354 748	424 317 893	525 401 195	613 135 677	713 562 721	847 814 184	927 966 590	836 332 860	1 089 131 000	1 311 346 000	Sub-totaal
Transfer from Revenue account	—	—	—	—	—	—	—	—	—	—	Oordrag uit Inkomsterekening
GRAND TOTAL	342 354 748	424 317 893	525 401 195	613 135 677	713 562 721	847 814 184	927 966 590	836 332 860	1 089 131 000	1 311 346 000	GROOTTOTAAL
Accumulated surplus	8 135 371	12 269 466	19 445 210	32 218 003	24 330 113	34 922 996	(a) 39 450 194	7 060 135	5 538 000	—	Opgehoofte surplus
Deficit carried forward	350 490 119	436 587 359	544 846 405	645 353 680	737 892 834	862 737 180	967 416 784	843 392 995	1 094 669 000	1 311 346 000	Tekort oorgedra

* As from 1 April 1986 these revenue collections became wholly or partly due to the Department of Education and Culture (Administration: House of Assembly). Vanaf 1 April 1986 is hierdie inkomsteverdiensde geheel of gedeeltelik aan die Departement van Onderwys en Kultuur (Administrasie: Volksraad) betaalbaar.

(a) An estimated amount of R3 888 076 was transferred to Deposits and deposited in the appropriation account: House of Assembly in respect of the difference between the amounts appropriated and expended for Education in 1985/86 in terms of proclamation No. 56, 1986 (Government Gazette 10171 dated 27 March 1986).

In Beraamde bedrag van R3 888 076 is na Deposito's oorgeplaas en in die begrotings rekening: Volksraad gedeponeer ten opsigte van die verskil tussen die bedrae bewillig en gespaandeer vir Onderwys in 1985/86 kragtens proklamasie Nr. 56, 1986 (Staatskoerant 10171 gedateer 27 Maart 1986).

The final approval of the budget is a function of the legislature and often takes place after a series of public debates. Although the approval is the climax of the budgetary process, it does not follow that the financing operations of the institution will be carried out effectively and efficiently.

The final phase of the budgetary process is the implementation of the budget whereby the road programmes are executed. As the budgetary process is long and is initially prepared well in advance, the sum of money voted are only estimates. Due care must thus be exercised over how the funds are expended on the road programme.

The virement authorisation in terms of the Exchequer and Audit Act, 1975 (Act 66 of 1975) permits the transfer of money between votes with the approval of the Minister of Finance, whilst transfers between subheads can be carried out by the Provincial Accountant without prior authorisation of Treasury.

The Natal Roads Branch previously had to compete for funds with the other Branches of the Natal Provincial Administration. Previously the Treasury provided a globular allocation of funds to the province, which needs were decided by the Central Government according to quantity of population and services within the Province. More specifically, funds were determined for roads on a complicated formula based on statistics, such as road length and registration of vehicles. This was subject to inaccuracies as it does not allow for through or foreign traffic, and also business entrepreneurs tended to register their vehicles in the province with the lowest

licensing fee. Thus, after Central Government had determined the individual needs of the branches, it allocated the total funds to the provincial administration who then decided its own priorities of how to allocate the funds to the various branches according to its own set of goals and objectives.

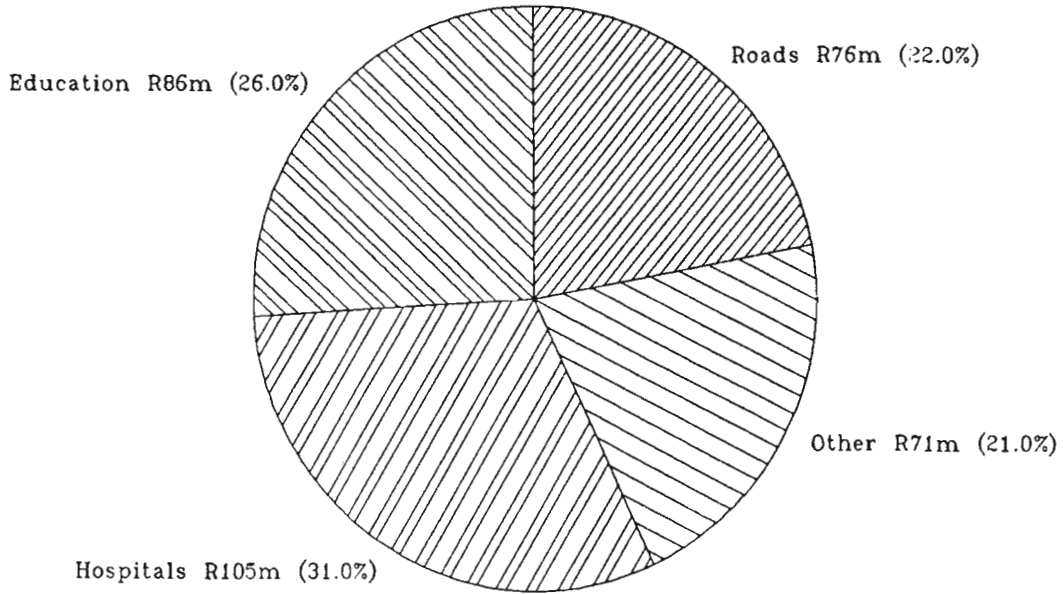
The effect of how the Roads Branch has had to compete for funds, is shown in Figure 21 which has been drawn up from the schedule of the Natal Provincial Administration's annual budget in Figure 13. The funds allocated to roads relative to the total Provincial budget decreased from 23% in 1979/80 to 19% in 1985/86. The Province placed on a higher priority on funds being allocated to health and education, resulting in the Roads Branch getting a smaller slice of the funds. More significantly, the annual allocation of funds decreased in real terms, and is even more drastic when the road network has had to provide for an increased volume of traffic. Thus, using a homely analogy for the budget, the Roads Branch is faced with getting a smaller slice of the cake, which itself is getting smaller each year. With the formation of the new provincial government system on 1 July 1986, funds allocated for roads from Central Government, is now appropriated exclusively for the funding of roads and is not manipulated to other needs. This is at least an improvement in the procedure of the allocation of funds.

(b) National road network

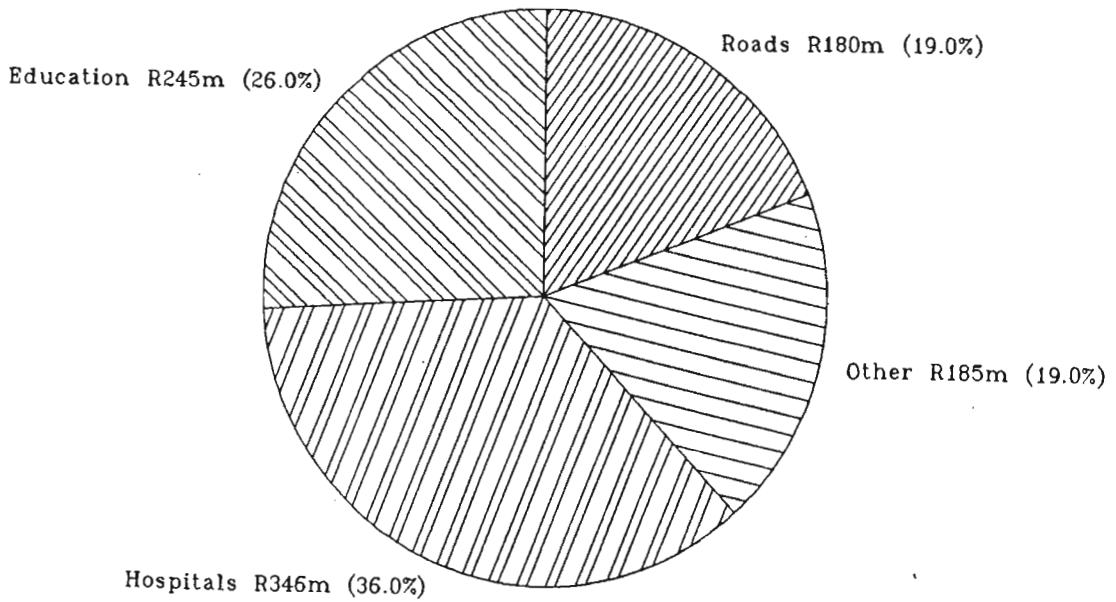
The funds for the national road programme are provided by the Department of Transport, which was previously in the form of a dedicated national road fund, from levies raised on the sale of petrol and diesel to road

FIGURE 21 : NATAL PROVINCIAL ADMINISTRATION BUDGET

Budget Year 1979/80 R338m



Budget Year 1985/86 R956m



users. This provided a stable and realistic source of income as the funds generated, were proportional to the vehicular traffic on the road network. Naturally the levy rate could be altered to counter fluctuation in the fuel prices and demands of the road network. However, since 1 April 1988 Treasury now collects the fuel levy and includes it in the State coffers for general use according to its own priorities. The State then determines how much is to be allocated to the National Transport Commission for the development of the road network. This method of raising funds from the general public based on the user-pay philosophy, provided a simple system for the government to increase its revenue for the financing of other priorities such as security and housing. This was met with severe criticism by the general public.

A new method of financing the road network, is the use of tolls. The Department of Transport has two of its own toll roads, namely on the N3-1 at Mariannhill and the N2 at Tsitsikama. The funds raised here are utilised to redeem the loans that were obtained to finance these two toll road sections. Provision has also now been made for two private concessionaires, namely Tolcon and Tollway, to operate certain sections of the national road network as toll roads. Faced with a lack of funds, and in line with its latest policy of privatisation and "user-pay" principle, the Government has adopted this new approach, to finance the development of the national road network, which will be done at an earlier date than would normally be the case.

5.2.4 Control

The legislators have to accept responsibility for all the financial

transactions of the executive institutions. Accordingly, a financial policy is determined whereby specific instructions are given on how the financing functions are to be implemented. All collection and expenditure of public money is done according to the regulations contained in the Exchequer and Audit Act, 1975 (Act 66 of 1975). The office of the Auditor General investigates and audits all accounts to ensure that the accounting offices have performed their duties in the correct manner and implemented the budget according to sound accounting principles. The collection and expenditure of public money has to be dutifully carried out to ensure that no wastage or irregularity takes place. The accounting officers on behalf of the executive institutions remain accountable for all financial matters.

The provision of adequate funds for the provision and maintenance of the road network is the deciding factor on what standard of network is provided. This standard is determined by the policy of the Central Government who decides what the priorities of the country are.

6. STAFFING

It is vital that in the public institutions as it is in the private sector, that top management posts are filled by the best available persons with the "best" possible training. Thus, it is essential that suitably trained personnel are employed to promote efficiency and effectiveness in the administration of the road network. This section describes how the personnel are provided and set about their tasks in this process.

6.1 Definition of staffing

According to Cloete the process of providing people to do work is known as staffing which can be described as,³¹

"the function of staffing public institutions, constitutes an extensive field of work and involves many separate activities. The staffing function is in fact also known as the personnel function, personnel administration and personnel work".

There is a general need for knowledgeable and skilled officials with appropriate attitudes. The level of expertise required is on the increase as higher standards are set and greater demands made on the personnel. To meet this demand, emphasis is being placed on the education and training of officials. It is also essential to have a dynamic management who are proactive and innovative to attain the goals that have been set within the limited resources available.

6.2 Staffing for the administration of the road network

The staffing of the Roads Branch to enable it to administer the road network, involves numerous processes which are called staffing functions and which constitute the comprehensive staffing function carried out by personnel officials. This staffing function is the responsibility of the Administrative Sub-Directorate which is headed by the Deputy Director of Administration. The activities constituting the comprehensive staffing function can be grouped into three functions of generic administrative, auxiliary and functional.

6.2.1 Generic administrative function

The activities which comprise this function are policy-making, organising, financing, staffing, determining work procedures and control. This

function is performed according to the regulation set in the Public Service Act, 1984 (Act 111 of 1984). This document contains in detail the policies which have to be adopted in carrying out the three functions which make up the staffing function.

The Administrative Sub-Directorate report to the Director of Personnel Management in the office of the Provincial Secretary situated in the Natalia building in Pietermaritzburg, on all matters pertaining to the personnel function, which are further referred to the Commission for Administration. This Commission, previously known as the Public Service Commission, is situated in Pretoria. Because of the special significance of personnel matters, legislation has provided for this institution to regulate staffing matters. The Commission for Administration is essentially a controlling body and renders assistance to the various executive institutions whose responsibility it is for the staffing of their own institutions. The basic objective of the Commission for Administration is to make the public officials independent of the politicians. Thus, all service conditions, promotions, salary adjustments and termination of services are handled by this institution although it does delegate certain of these functions to lower levels of authority.

The State plays a pivotal role in the overall development of the country and thus needs competent personnel to carry out its activities. The State has to accordingly compete effectively on the open manpower market to be able to attract and retain its staff by providing a competitive remuneration package. Having an organised process of employment with rigid controls, limits the State's effectiveness to respond to short term trends

in the economy. To offset this effect, regular investigations are carried out to provide for occupational differentiation. The personnel administrative standards for each occupation group are continually reviewed to allow it to match the open market situation, but this review process is comprehensive and time consuming resulting in its implementation lagging behind the demands of the occupational groups.

6.2.2 Auxiliary functions

To enable the functional activities involved in staffing to be carried out, certain auxiliary functions have to be performed, namely data collection, processing and decision-making. Information is needed by top management on the quantity and quality of the available manpower. Data collection and the processing thereof is an ongoing activity which is needed on all aspects of the work. Statistics are required on production outputs, costing rates, consumption rates, traffic statistics and quality control which are some of the records required by top management to enable them to measure the efficiency and effectiveness of the road programmes.

In recent years extensive advances have been made in acquiring the latest models and systems available in electronic data-processors. With the ever increasing demands made for up-to-date information, the demand for computerisation of numerous activities remains a top priority. Delays in acquiring the hardware and software are caused by the lengthy procedures which have to be followed to obtain this equipment, as it is a prerequisite that requests therefor have to be motivated extensively and submitted to the Directorate of Organisation and Work Study who have to evaluate all such requests. Notwithstanding these delays, the Roads Branch

has made good progress in computerising many of its activities, inter alia, bridge and road designs, survey, mechanical records, materials records, personnel data and stores. However, the most important outstanding activity requiring computerisation, is the costing. The effects hereof will be discussed in Chapter 9 where it will be seen what the effects are on the budget when financial records are not readily available.

An additional auxiliary function is that of decision-making which is a neutral function in that it is not exclusively carried out by a particular group. All personnel in the Administration are faced with having to make decisions on their work duties.

6.2.3 Functional activities

The functional activities which the personnel staff perform can be grouped into four separate functions as follows :

- (a) personnel provision involves the creation of posts according to establishment requirements, recruitment, placement, promotion and termination of services;
- (b) support functions include the activities of determining conditions of service, record keeping, settling grievances and research;
- (c) the training and development functions comprise the training and development of staff by in-house training schemes together with more specialist training programmes which are available in the private sector; and
- (d) the utilisation function provides a means whereby duties are allocated

to each post. The quality of work performed has to be assessed which is done by means of the merit system which provides a technique to evaluate the performance of the staff. This evaluation of public officials provides information on the quality of the staff who could then receive a salary adjustment, promotion, reassignment, training and even dismissal.

The staff establishment cover a broad spectrum of work differentiation groups all of whom need continuous training to keep abreast of the latest developments in the road industry. The establishment only provides a core of the personnel needs necessary to construct and maintain the road network in Natal. It is estimated that about 70% of the Branch's budget is spent on activities performed by the private sector. The staff establishment of the Roads Branch in 1987 in occupational groups is shown in the following schedule, with the predominant work force being the category of artisan/operator/driver/labourer who actually perform the direct physical line functions, and of which 92% are black personnel :

Engineer	58
Technician	173
Roads Superintendent	42
Administrative	346
Foreman	106
Artisan	329
Operator/Driver	935
Labourer	<u>4329</u>
TOTAL	<u>6318</u>

The staffing function is a most important one as the activities of a

public institution are dependent on people and how they perform. The legislatures thus institute appropriate personnel laws which regulate the performance of all staff to enhance the quality of work performed.

7. PROCEDURE

With the goal identified, and the organising, financing and staffing functions completed, the work and processes needed to achieve the goal may be implemented. In the working environment where it is possible to achieve the goal by adopting different methods, experience has shown that by following proven procedures the goal may be attained more effectively and efficiently. This results in a cost saving with due allowance made for the time that it takes to complete the task. Thus, in an institution where the possibility exists that there are many varied viewpoints on how the tasks are to be performed, it becomes necessary to develop procedures on how to do the work. As the expertise of staff increases and technological advances are made, so the procedures are improved upon.

7.1 Definition of procedure

According to Robbins, a procedure can be described as,³²

"a series of interrelated sequential steps established for the accomplishment of a task".

Therefore, work procedures are viewed as a series of interdependent and consecutive steps which must be taken towards the achievement of objectives. The procedures which are laid down, provide a means for

personnel to perform their functions. Thus, the setting of work procedures should be considered with the organising and personnel utilisation functions which are all interrelated. The procedures which have been developed for specific fields of work can provide the means whereby officials can be trained and developed. This applies in particular to where procedures are adopted on a regular and repetitive basis as it provides the means of how the objective is attained in the most direct route possible. The need for procedures results in a need for them to be formally documented in code or manual form.

7.2 Procedure manuals

As procedures regulate the activities of personnel, they should not be too rigid in context but merely provide guidelines on how work processes should be undertaken. If the procedures are too exact it will lead to a tendency for methods being applied without flexibility. There should always be scope for the individual to be innovative and be given the opportunity of making rational decisions. The negative aspect of having procedures is that it leads to conservatism and often by adhering strictly to the official rules, it leads to lengthy steps having to be followed otherwise referred to as red tape. It is accepted that public officials are accountable for all their actions and should act in the best interests of the country in providing public goods and services. This accountability provides the basic need to have procedures.

With the rapid progress being made in the technological, scientific and administrative fields, there is a pressing need for the procedures to be updated on a regular basis. There is a tendency for there to be a

resistance to change for varying reasons such as fear of the unknown, apathy, threat of organisation changes and the possibility of becoming redundant. This is very evident at present where there is extensive pressure by the private sector for the Government to privatise many of its activities. The Roads Branch has developed a good system of procedure manuals as listed in Table 14.³³ The list is not exhaustive as there are numerous official publications and codes of practice which are to be applied in the provision and maintenance of the road network. Also, circulars are regularly compiled detailing amendments and interpretations of the set of manuals. Once the function of policy-making has been carried out, the determination of work procedures and related policies have to be made. The manuals in effect act as the policy of the institution in that it sets out in detail how the work activities have to be performed and to what level of standard. The politicians and general public give effect to a need for the policies to be regularly reviewed as a result of their changing needs relative to how much they are prepared to pay for these public goods and services. The Government is not merely guided by economic principles in determining work procedures, but has to provide for the overall needs of the country by taking into account other factors such as development and job creation.

8. CONTROL

In any democratic state the political office-bearers and executive functionaries have to render account to the general public individually and collectively for their actions. There must be a means of ensuring

TABLE 14 : NATAL ROADS BRANCH : POLICY AND PROCEDURE MANUALS

ACTS AND ORDINANCES

Exchequer and Audit Act, 1975 (Act 66 of 1986)
Machinery and Occupation Safety Act, 1983 (Act 6 of 1983)
Mines and Works Act, 1956 (Act 27 of 1956)
National Roads Act, 1971 (Act 54 of 1971)
Professional Engineers Act, 1968 (Act 81 of 1968)
Provincial Government Act, 1986 (Act 69 of 1986)
Public Service Act, 1984 (Act 111 of 1984)
Republic of South Africa Act, 1983 (Act 110 of 1983)
Ribbon Development Act, 1940 (Act 21 of 1940)
Road Traffic Ordinance, 1966 (Ord. of 1966)
Roads Ordinance, 1968 (Ord. 10 of 1968)

MANUALS

Guidance of District Road Advisory Committees	
Signposting for Roadworks - Rural Areas : K56 Manual	
Signposting for Roadworks - Urban Areas : Site Manual	
Standard Specification for Roads and Bridges	
General Conditions of Contract	Contract Supervision
Supervision of Bridge Construction	Bridge Design
Drainage	Culvert Design
Survey	Geometric Design
Materials	Standard Details
Construction	Traffic Markings
Maintenance	Traffic Signs
Task Procedure	Road Studs Policy
Performance Standards	Facility Signs
Betterment and Gravelling	Administrative
Field Staff Training	Costing
Handbook for Guidance of Workman	Stores

that the public institutions utilise their resources for the benefit of the community. This is done by implementing control measures whereby the actions of the public institutions are controlled and reported on.

8.1 Definition of control

In describing the concept of control, Cloete states that,³⁴

"the exercise of control in the public sector can have but one objective: namely to ensure that an account is given in public for everything the authorities do or neglect to do, so that all citizens can see exactly what is being done or not being done, to further their individual and collective interests".

In other words, public functionaries are governed by rules and regulations which should be obeyed at all times. In the execution of their duties, public functionaries should remain accountable for all their actions, not only to their immediate supervisors but also to the public.

8.2 Control procedures

In the Public Service control consists of two parts, namely internal control as exercised by the executive functionaries, and external control as exercised by the legislatures who have to give account of their actions in meetings.³⁵

Internal control measures exercised by the Roads Branch take the form of reporting, measuring and appraising the end product which is the road network. The reports are done on quality, progress, benefits and costs. The evaluation of performance as a control function is undertaken to prevent deviations and errors, to take corrective action where necessary, and to adjust objectives and the activities undertaken in the light of changing circumstances. To further the internal controls, inspections are

carried out by in-house personnel and also by officials of the audit institution.

The political office-bearers give account of the activities of the executive institutions at meetings. Where there has been maladministration, steps are taken in the form of either a commission of inquiry, internal investigation, or appearance in court to determine the extent of the misdemeanor. This normally provides an adequate deterrent to officials wishing to misappropriate funds. The situation can arise whereby an official deviates from the specified procedures to attain the objective by a more direct route, but this is subject to disciplinary measures.

By setting high standards and demanding a better quality of life, the general public can achieve their goal of development. This in itself acts as a control measure, as it motivates the public official to attain the goals effectively and efficiently.

It is most advantageous for the morale of staff to be high and for both self-control and self-discipline to be instilled in all public functionaries. Here the control process would need to be a two-way affair whereby the supervisor would advise the subordinate of his performance, with the subordinate then taking the appropriate action to ensure that his work performance is at an acceptable level. This action generally leads to the public functionaries acquiring a sense of duty, will to work, diligence, self-development and professional pride. In the administration of the road network control, is an embodiment of rules and regulations to be followed in the achievement of objectives. Control cannot be viewed as

an independent entity, as in fact it can only take place once one or more of the other administrative processes have been accomplished.

9. SUMMARY

The administration of the road network refers to a particular kind of administration prevailing in the Public Service where it concerns the execution of policies covering the road network. These policies have been determined at central and provincial government level, and as these have been determined by the legislatures, it follows that the provision and maintenance of the road network falls within the ambit of public administration.

The administration activities of the Roads Branch of the Natal Provincial Administration and to a lesser extent the Department of Transport who are both responsible for the provision and maintenance of the provincial and national road network respectively in Natal, have been discussed in relation to the six generic administrative processes of policy-making, organising, financing, staffing, procedure and control. These processes are prevalent in the administration of all public institutions and are considered to be interrelated, inter-dependent and mutually inclusive.

In South Africa, it is generally agreed by road users and personnel in both the public and private sectors who are involved with roads, that the administration of the road network in Natal is carried out more effectively and efficiently than in the other provinces. This is

attributable to the people whose responsibility it is to provide and maintain the road network. This refers to both the public and private sectors who have a shared responsibility. A most favourable esprit de corps exists among the people involved in the road industry in Natal.

The effectiveness and efficiency with which the administration of the road network is carried out is not the result of being granted more funds, because it was seen that not only is the Natal Roads Branch getting a smaller slice of the available funds each year, but also the overall budget each year is getting smaller in real terms.

With the dwindling in the amount of funds in real terms being made available to preserve and develop the road network, the public functionaries have had to resort to developing new techniques and methods whereby the best value is obtained from the limited resources which are made available. With the needs far exceeding the available resources, innovation has been the key to maintain the level of service of the road network to an acceptable standard. The top management of the Natal Roads Branch have responded well to this challenge, by the dynamic and proactive manner in which they have set about fulfilling their functions for the attainment of the goals and objectives that have been set.

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7. PROVISION OF THE ROAD NETWORK :

A FINANCIAL PERSPECTIVE

1. INTRODUCTION

The provision of the national and provincial road network is the responsibility of the Government. By the nature of the road network and its cost, it is not possible for a private company to provide this public facility, although in recent years there has been a development in this direction by the formation of toll companies. To enable the government to provide a road network, it relies on funds collected from the general public. This chapter discusses the financial aspects of the provisioning of a road network with reference to policy-making, planning and programming, but initially the nature of road network provisioning is discussed. Some of the observations made and certain statistics provided, have been based on personal experience and acquaintance with the subject.

2. NATURE OF ROAD NETWORK PROVISIONING

When comparing a rail system with a road network, attention is focused on who pays and who benefits. In a road network the fundamental difference is found in the network being owned and provided by the Government for the benefit of many owners who own the vehicles and terminals which rely on the road system. The development of a road system has a significant impact on the economic and social development of the country. Thus, the

development of the road system is dependent on the policy directives of the ruling political party, that is, the National Party.

2.1 Capital budget

Capital, as production factor, consists of the amount of goods, namely machinery, vehicles, roads and railway lines produced in the past as aids to the production of goods and services. Here capital goods are treated in a real and physical sense and are tangible as opposed to intangible assets such as social and human capital. In contrast to natural resources, man can increase the amount of capital assets. Assets are generally grouped into two broad types, firstly as buildings and construction projects such as hospitals, schools, dams, roads and railways, and secondly as durable production equipment such as machinery, plant, vehicles and furniture which are used for production purposes. Capital assets are referred to as the former type and can be divided according to economic activity such as, inter alia, agriculture, mining, industry and construction, to mention but a few. These capital assets all form the infrastructure which is needed to enable goods and services to be provided.

A capital budget comprises the funds appropriated for the acquisition of capital assets whilst the funds appropriated for the general operation and maintenance of these assets are considered as operational expenditure.¹ An investment made on capital assets is characterised by having potentially large anticipated benefits, a relatively high degree of risk, and a relatively long time period between the initial outlay and the anticipated return. The provisioning of a road network system is considered to be a capital asset from which the government does not derive any return, but it

leads to the economic development of the country, through the opportunities it provides to the community to carry out their personal and business requirements.

2.2 Composition of a road network

A road network has various standards according to which it can be described, as covered in Chapter 5. The adopted standard depends mainly on the traffic need but is affected by the availability of funds. There are a number of constituents in the road prism which together form a road, and in broad terms are as follows :

- (i) the earthworks is bulk earth placed or removed to give the road the desired vertical and horizontal alignment;
- (ii) selected subgrade material is generally about one metre thick and placed within a half a metre of the road surface and provides the lower foundation for the road;
- (iii) the layerworks comprise the upper foundation of the road and is the top half a metre of a road. The material is specially processed in thin layers and is of a high standard as it forms the base for the road;
- (iv) the wearing course is the final surface on which the traffic rides, providing a smooth surface for the traffic and also acting as a protective layer to preserve the lower layers in the road prism;
- (v) drainage work takes the form of bridges, culverts, kerbing, pipes and sub-soil drains to control the flow of water;
- (vi) Landscaping features consist of planting grass, trees

and shrubs to re-establish the local environment; and
 (vii) miscellaneous features which have safety and information characteristics such as barriers, roadmarking, road studs and signs.

The policy on what standard of road is needed to meet the needs of traffic, determines the funds to be provided to acquire this capital asset according to the capital budget.

3. FINANCIAL BASIS FOR ROAD NETWORK PROVISIONING

The basis of how funds are appropriated for the provision of a road network is discussed according to the interrelated activities of policy-making, planning and programming.

3.1 Policy-making

The Minister of Finance has many demands on available funds and has to regulate the distribution of these funds according to the state of the economy. The distribution of funds for the road network has to be dealt with in competition with other high priority services such as security, education, public debt and social services. As noted earlier, security is the first national goal of the Central Government followed by economic development. Road networks is only one of the many categories forming part of economic services which consist of, inter alia, transport, agriculture, mining, commerce, industry and government enterprises. The allocation to economic services amounts to about 21% of the total State

expenditure.

The State President's Committee on National Priorities has to decide on how to allocate the available funds. Factors that are taken into account comprise the urgency of the problem, effect of partial implementation, what the competing services are and how much money is needed. The Central Economic Advisory Services acts as a secretariat to this committee and as such it assists the Central Government's functional departments to develop procedures and methods to provide the Committee with the necessary information. To determine the allocation of funds, the Committee initially determines the total resources that will be available in the economy, which quantity depends on the economic growth rate. For all functions of the government, different scenarios and goals are projected and the corresponding growth rates and expenditure for the various scenarios over the period in question are also determined. The different goals and costs for all the functions are evaluated and compared, with one specific goal being selected for each function of government so that the total cost of all functions will be within the available resources.

Central Government investment in transport has been characterised by a lack of comprehensive co-ordination by a central transport authority and is not due to the fault of the road authorities. Allocation of funds is made by Treasury based on a complicated formula to the various road authorities. The formula takes into account the national and provincial goals together with local traffic and population statistics. The lack of a central co-ordinated transport policy leads to each road authority determining its own standards and making their own long-term investment

decisions.

Extensive road needs studies have been carried out to determine the actions required to attain the goals of road based transport which has to serve the four main national goals of economic, social, strategic and political needs. According to Jordaan a road needs study is,³

"a scientific, factual evaluation of the investments proposed to contribute towards the achievement of the goals of the road based transport sector, in its contribution towards the achievement of national goals".

The road needs have to be assessed in terms of the national goals. To provide a means of doing so one looks at the measure of effectiveness that competing activities have on the national goals according to certain criteria and thereafter investigate the measure of effectiveness that roads specifically have on the national goals. The means whereby the measure of effectiveness can be determined in both these instances is shown in Table 15.⁴ Direct as well as indirect costs and benefits have to be determined. Thus the measure of effectiveness provides a means whereby requests for funds to the Committee on National Priorities can be supported.

In striving to attain the national goals, the Natal Roads Branch has determined its own policy of which roads to build. This involves utilising the management by objectives method of budgeting discussed in Chapter 4 under Section 7. In this method the provision of services is analysed in terms of priorities set by Treasury to determine whether the service is essential. A description of the five categories of priority adapted for the Roads Branch with reference to the provision of roads is as follows:⁵

**TABLE 15 : MEASURE OF EFFECTIVENESS OF NATIONAL GOALS
AND ROAD TRANSPORT SECTOR**

NATIONAL GOALS			ROAD TRANSPORT SECTOR		
Group	Criteria	Measure of Effectiveness	Goal	Criteria	MOE
Financial	Capital needs	Rand	Economic	Optimise total road user cost, ie, sum of providing and using the service	c/veh km
	Cost - benefit analysis	One of: Internal rate of return Nett Present Value Benefit/Cost ratio		Provide only economically justifiable infra-structure	Internal rate of return or Nett Present Value
Economic	Employment	Number of new employment opportunities	Social	Provide mobility to the population	Population/km of road
	Contribution to the Gross National Product	Rand		Reduce traffic accidents	No of accidents
	Effect on the balance of payment	Rand	Strategic	Provide an acceptable alternative route to given strategic points	Kilometers of road not having an alternative
	Contribution to Regional Development	Ratio of the Non-metropolitan GGP contribution of the project to the GNP contribution of the project		Conserve fossil fuels	Litres
Non-Economic	Social aspects	Rating scale of 1-10 (a)	Politic	Provide an acceptable quality of service to the low income population	% of population served by Public Transport
	Political aspects	Rating scale of 1-10 (a)			Travel cost/km
	Strategic aspects	Rating scale of 1-10 (a)			Travel speed km/h

(a) Absolute priority services

These are services which the Government would give a high priority because it is in the country's interest to have a fast development or implementation. The specific absolute priority services related to roads are:

- (i) roads needed for the upliftment of particular communities, for example roads serving black areas;

- (ii) Cabinet approved security roads;
- (iii) roads which form part of or serve the infrastructure of other absolute priority projects; and
- (iv) roads to cope with disasters of nature.

(b) Essential services

These are services which are needed to keep existing assets in good order, to make existing services again suitable for demands and high demand services brought about by extraordinary demands. The specific essential services related to roads are:

- (i) reconstruction of existing roads where the condition is unsatisfactory;
- (ii) measures to maintain acceptable road safety standards;
- (iii) upgrading of existing roads to cope with traffic volumes; and
- (iv) new roads required because of above normal developments.

(c) Desirable services

These are services for which a proven need exists and which would also yield high economic, social and politic benefits. The specific services related to roads are:

- (i) roads minimising distance, time and cost of travel;
- (ii) roads serving food sources, forest products, mineral and energy resources; and
- (iii) roads serving new development areas.

(d) Advantageous services

These are services for which a need exists but with limited benefits to the province as a whole. The specific advantageous services related to roads are:

- (i) projects which would complete a meaningful road network;
and
- (ii) roads where the main purpose is to serve access to resorts, parks, historical places, etc.

(e) Dispensable services

Projects demanded only by public or political pressures.

In deciding into which one of these five categories a project should be grouped, the highest applicable service provided by the project should be used, for example a road to a black area needing rehabilitation should be grouped as an absolute priority project.

To enable the Roads Branch in fulfilling its function effectively and efficiently, it has set a list of road construction goals as shown in Table 9 in Chapter 6. These line function goals are those which the Department strives to achieve to maintain a satisfactory level of service for the road user. The attainment of these goals is largely determined by the availability of funds.

The Department of Transport has adopted a new approach in the financing of some of the national road network. This has been brought about by the Central Government's policy on privatisation and user-pay principle.

Previously funds were allocated to a dedicated road fund, for road funding purposes from levies raised on the sale of fuel, but Treasury now collects these levies and determines how much should be allocated to roads. In striving to maintain the development of the national road network, the Department of Transport have implemented a new policy whereby sections of the network have been declared as privatised toll roads. Tolcon operates the N3 route from Cedara up to Alberton as a toll road. The policy of toll roads partly helps to make up the shortfall in funds, and allows for the road network to be developed and provided for, at an earlier date than would normally be the case.

3.2 Planning

Once the policy-making activity has been carried out, it is followed by the planning activity. Whilst the transport system forms an integral part of the economic development of the country, it does not automatically promote this development. It is essential for the transport planning to be integrated with the other sectors of the economy as part of the national development strategy. Failure to achieve this can lead to tremendous losses in development opportunity. The need for a good road system is confirmed by the following statement made by the Reynders Commission,⁶

"an increasing growth in road transport must be expected and in fact should be encouraged. Today it is a fact that motor trucks are indispensable to South Africa's present economic and export system and experts stressed that irrespective of the cost consideration, they attach in their transport requirements considerable importance to ready availability and speed of service".

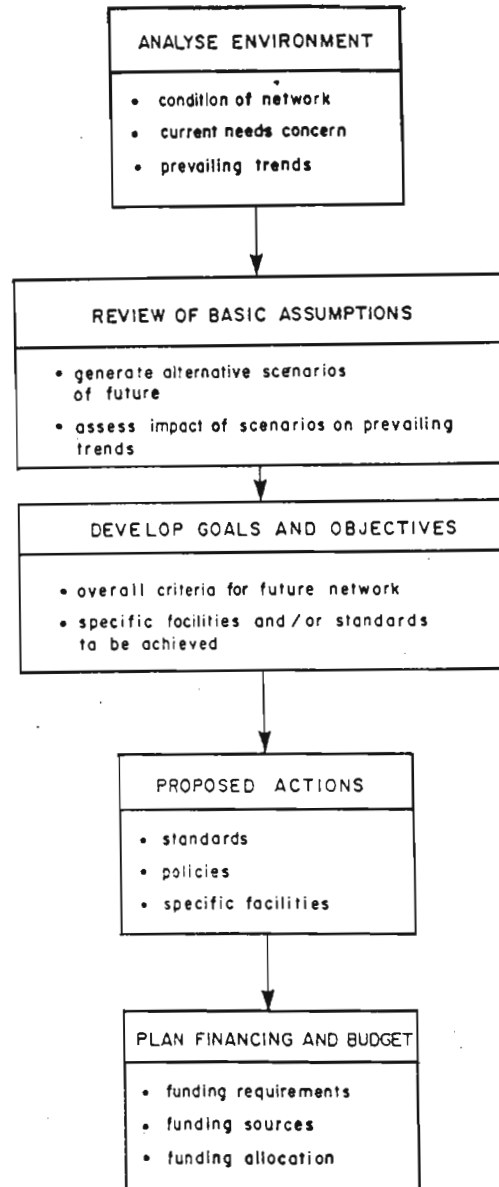
The various activities undertaken in the planning process for the provision of the road network will now be discussed, with reference to strategic planning, economic considerations and project selection.

3.2.1 Strategic planning

The increasing difficulty in financing the provision, maintenance and operation of a road system, has emphasised the need to have a sound financial planning system. Proper financial planning should identify needs, develop managerial strategies, make the best use of limited resources, reduce uncertainty and help educate the public and public officials. There is a tendency for physical and financial planning to be dealt with separately. This is more evident in recent years where there has been a reduced amount of funds in real terms being made available for roads. The separation of financial planning and implementation no longer produces satisfactory results but rather leads to a fragmented planning process in which projects that are identified are not always financially feasible. But faced with this predicament, the road authorities need to make use of the strategic planning process to obtain the optimum value from the resources that are available.

Strategic planning consists essentially of matching current or short-term actions to long term goals and objectives based on a view of future preferences and of procuring and allocating the necessary resources to finance these actions. Developing a strategic plan for a road network includes the activities shown in Figure 22.⁷ The strategic planning is not a unilateral one-off procedure undertaken by a road authority, but is rather an interactive process between the road authority and the financial authority to obtain an acceptable balance of views. The road authority produces a physical plan and a statement of the fiscal implications of this process according to its perception of the future needs and resources of the country. This is as far as possible based on

FIGURE 22 : DEVELOPMENT OF A STRATEGIC PLAN FOR A ROAD NETWORK



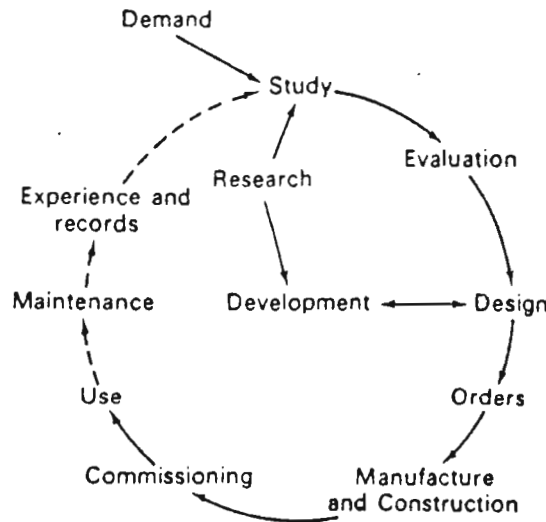
economic criteria, accepted standards of safety, and broader issues such as human life, pollution, social benefits and regional development.

3.2.2 Economic considerations

The pursuit of the goal of economic efficiency for road projects requires

that the objectives and criteria be clearly defined for objective decision making. These objectives and criteria are a function of the stages of a road project. At the planning stage road economics, consequence to non-user and non-user economics are considered and form the basic input into the selection of road projects. Many projects are identified which can improve the road system. A system has to be devised whereby a selection process can be implemented such that projects are selected on merit. Figure 23^a shows that the stages of work for an engineering project form a cycle and to ensure an orderly flow of projects through this cycle, selection at the various stages is essential.

FIGURE 23 : STAGES OF WORK FOR AN ENGINEERING PROJECT



In making the selection, road projects can be ranked and grouped according to one of three following goals :

- (i) social goals to promote welfare by the redistribution of income;

- (ii) investment in projects which are worthwhile but are not economically beneficial; and
- (iii) pure economic efficiency by maximising returns on investments regardless of to whom they may accrue.

The pursuit of the third goal is the most desirable as it attempts to satisfy the goal of a road system which is to provide the users with a reliable service ensuring efficient and safe travel besides conserving energy and minimising adverse impacts on the environment. Provided this is achieved by efficient economic returns and adequate financing is provided, it will contribute towards the prosperity of the country.

3.2.3 Project selection

Part of the planning process is the selection of a particular design for a project. The general objectives that will satisfy the socio-economic needs are those that promote mobility, reduce costs, provide reasonable comfort and reduce side effects such as accidents, fuel usage, noise and destruction of the environment. The application of a logical and sound method for comparing road project alternatives is perhaps one of the most difficult tasks in the planning and designing of roads.

To aid the planners in the selection process, use is made of the ECANET program which has been developed for the economic assessment of networks.⁹ It uses discounting methods to produce an assessment in monetary terms of net present worth and comparative ranking by use of benefit/cost ratio for rural road networks. It takes into account user costs, project costs, user benefits and on-user considerations. For a project to be considered

economically viable, it must have a benefit/cost ratio greater than unity at the discount rate. The ECANET method of economic appraisal does not and cannot provide an absolute value. However, it does produce an assessment in quantifiable road user terms which can be used by the decision-maker as an objective basis for selection. It enables him to resist pressure, particularly from political lobbies, for the implementation of favourite schemes which are not cost effective in traffic terms. He can also identify the benefits which will be foregone if schemes are selected for reasons other than economic, for example for strategic, development or defence considerations.

In the Natal Roads Branch it is the function of the Roads Branch Planning Board to carry out the planning activities by selecting those projects which fulfil the criteria laid down in its policy. This Board comprises the Executive Director, Chief Director and heads of the five professional Directorates, together with the head of administrative Sub-Directorate of the Natal Roads Branch. The projects which have value as a capital asset and of a provisioning nature include, upgrading of geometric standards, safety improvements, traffic lights, weighbridges, landscaping, rest areas and tourist facilities. Projects which upgrade the geometric standards dominate the construction budget.

3.3 Programming

The programming activity follows on after policy-making and planning have taken place. Programming involves the development of the road construction programme by selecting the high ranking projects in priority order. In line with the country's national goals, the Roads Branch Planning Board

have decided that the selection process should be based on the economic efficiency of all projects which will lead to the general welfare of the community as a whole. The key issues and elements that are dealt with in formulating the Natal Roads Branch's construction programme are projects, funding and selection, which are now dealt with.¹⁰

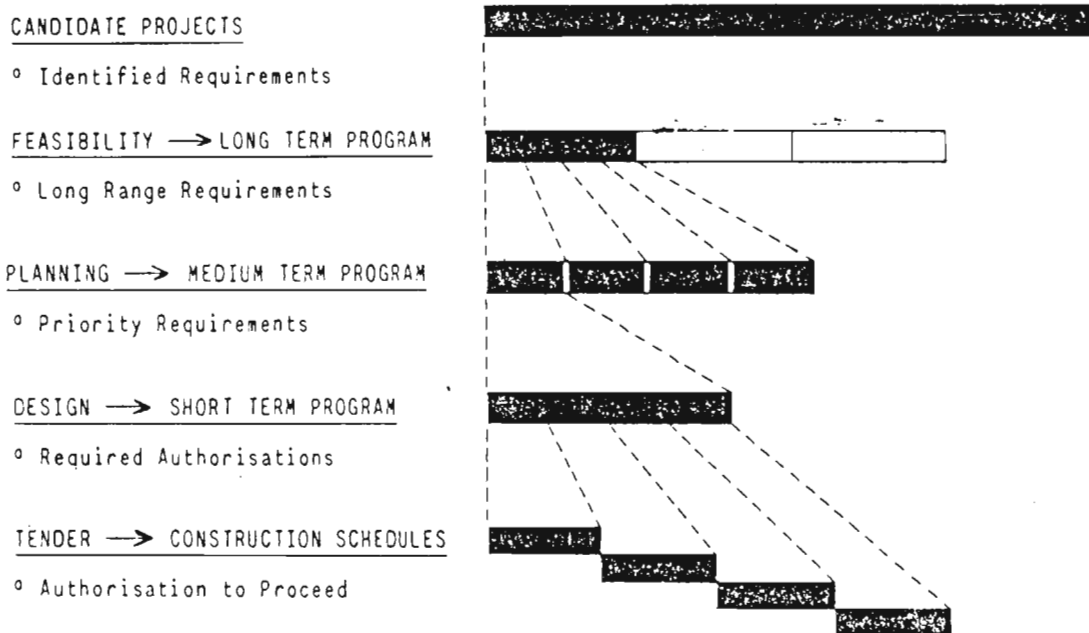
3.3.1 Projects

The result of the planning activity is the creation of projects. The projects are identified from an extensive monitoring process which is carried out to investigate the performance and deficiencies of the existing road network system. The systems which form the monitoring process are the traffic data, accident record and pavement management systems which together with a cost estimate determine whether the problem can be dealt with in the short, medium or long term. Transportation studies provide a valuable input to aid the decision-makers to select the variables and come up with a selection of projects which meet the policies set by the Roads Branch.

The selection of projects for a road building programme is an ongoing process and can best be illustrated by Figure 24.¹¹ As a project progresses through the various stages in the road building programme process, it is ranked according to priority by comparing its efficiency relative to other projects in that stage. The major constraint in the ranking process is the availability of funds. With the possible change in priorities and ranking criteria, it can occur that some projects are enhanced in ranking order whilst others could be held back. As the project approaches the implementation stage, the programming of

projects becomes more complex, as all competing projects have to be carefully ranked according to the current criteria. This process is partly complicated by the demands made by the motoring public for an improved road network, which exceed the available funds for this function.

FIGURE 24 : ROAD BUILDING PROGRAMME PROCESS



3.3.2 Funding

The roads need studies provides a systematic approach to long term planning with the main objective being to estimate the financial requirements to accomplish a particular level of service for the total road system. The roads needs study in 1981 for South Africa showed that Natal should receive 30% of the total rural road fund yet it only obtained 15% of the total appropriation to the four provinces. It is estimated that

the backlog that has developed since 1981 is of the order of R1500 million. It is obvious that the needs will always exceed the available funds, requiring that a strategy be developed whereby the optimum use is made of the limited resources available.

From the statistical data contained in the Draft Estimates for 1988/89, there has been a significant growth in traffic volume as follows :

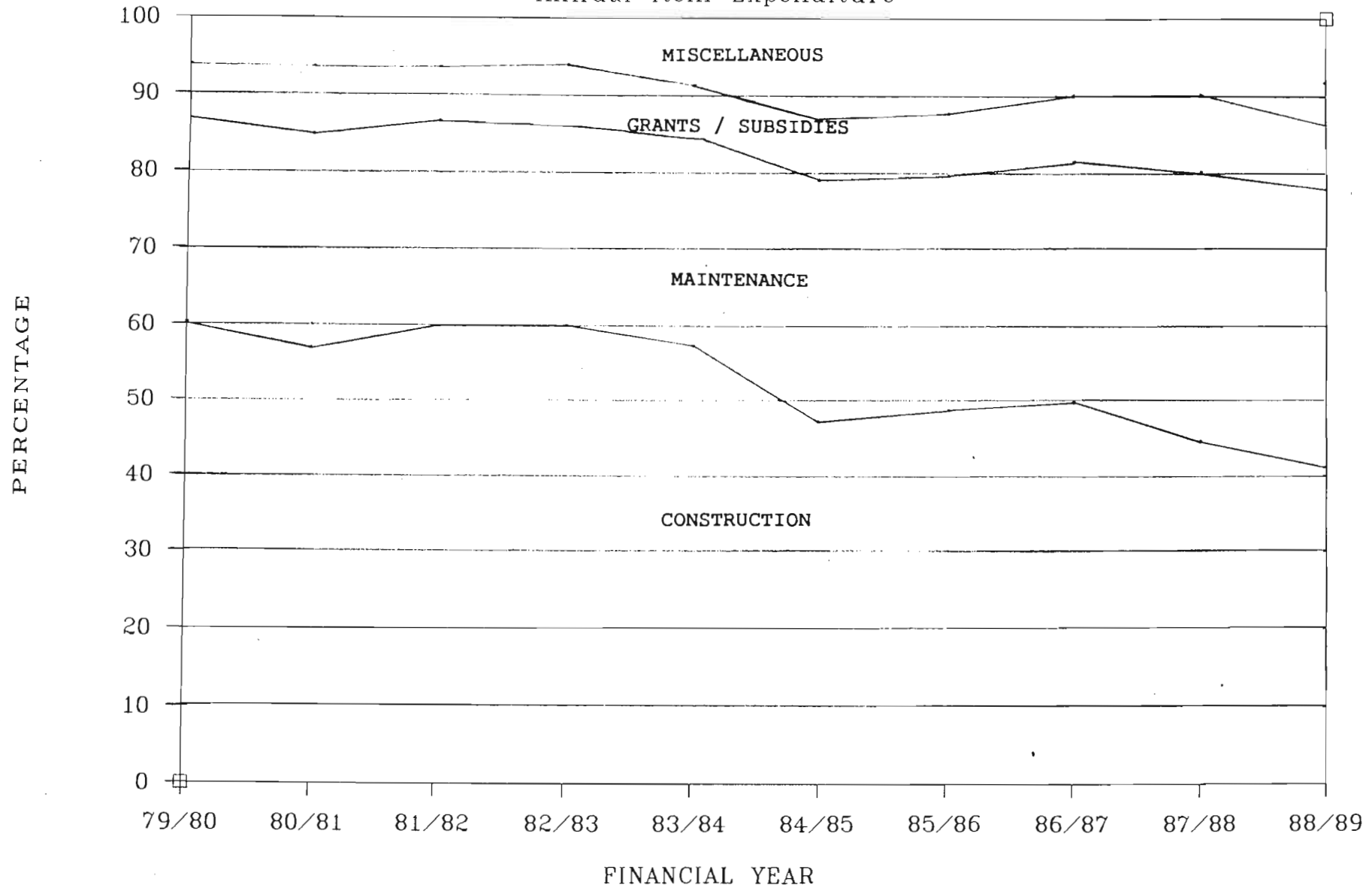
- (i) average growth in total vehicle-kilometers of 6% per annum;
- (ii) increase in traffic on surfaced roads by 2,2% per annum;
- and
- (iii) increase in traffic on gravel roads by 1,6% per annum.

The growth in (i) occurred notwithstanding the setbacks to the overall economy. Using the annual budget statistics from Table 13, and amending the 1988/89 budget to exclude the R13,53m flood relief grant, the allocation of funds to the Branch increased at an average annual rate of 13,5% for the past nine financial years. The estimated inflation rate in the road building industry amounted to 19,8% which exceeds the country's overall inflation rate of 15,5% and more significantly the Branch's allocation rate of 13,5%.

The trend in recent years indicate a worsening in the availability of funds being made available for road provisioning. Using the annual budget statistics for subhead 3L from Table 13 and allowing for the amended 1988/89 budget, it is noted from Figure 25 that the annual proportion of the construction vote relative to the Branch's total

FIGURE 25 : NATAL ROADS BRANCH

Annual Item Expenditure



allocation declined from 60,2% to 41,1% over the past nine years, which is worsened by allowing for the negative provision of annual funds in real terms. With the total funds available reducing in real terms and with an increased requirement for the maintenance of the present road network, the funds made available for construction has had to be reduced as it is the most likely area where a reduction in expenditure can be effected. Should this trend continue, then there will be no growth in the road infrastructure with the functions of the Roads Branch being solely that of a maintenance institution. This will lead to a severe disruption of traffic flow with increased road user costs leading to a negative economic growth.

The Government has undertaken a policy to contain public expenditure to levels commensurate with economic growth, create employment opportunities and provide price stability which can be achieved by limiting expenditure needs to what is affordable. The pessimistic scenario of this policy represents a 20% decline in funds in real terms. The optimistic scenario is the recommendation of the Central Economic Advisory Service to budget according to a 1,5% real decline which is based on providing 45% of the funds to wipe out the present backlog and to provide prospective roads according to growth in traffic. Taking into account the ageing of the road network in Natal which will require progressively more funds, the Roads Branch has based its 10 year programme on a 3% real decline of funds.

3.3.3 Selection

Having identified the list of deserving projects and knowing the amount of funds available, a selection process has to be implemented to determine

the 10 year construction programme. Use is made of the priority rating method of assessing projects as recommended by Treasury which is an indication of the service it provides, and relate this to the standard of facility to be provided. The matrix used by the Natal Roads Branch is given in Table 16.

Each project is identified into one of the 25 categories in the matrix, each having a dual service/facility rating. The decision-maker, which is the Roads Branch Planning Board, evaluates all projects knowing that all projects in one category are compatible having similar sets of parameters and consequences. The outcome is a priority list of all projects.

The next step is to allocate the proportion of available funds into each category. Ideally it is best to construct the projects in the category with priority 1, but this is unrealistic as it could take at least seven years to complete. It is thus desirable to apportion the funds into the different categories in a rational manner which can be achieved by using the construction of line function goals as a guide as these provide a measure of how the objectives are being attained. The proportion in each category can be altered according to the change in trend of financial expenditure relative to the achievement of the objectives over the years. The matrix is then developed by firstly providing for the committed projects and, secondly selecting new projects. The proposed construction programme over the next ten years is then presented to the Executive Committee of the Natal Provincial Administration for approval.

Whatever technique is used to distribute funds for the road construction

TABLE 16 : DISTRIBUTION OF FUNDS FOR THE NATAL ROADS BRANCH

		SERVICE										TOTAL
		Absolute Priority		Essential		Desirable		Advantageous		Dispensable		
		Priority	%	Priority	%	Priority	%	Priority	%	Priority	%	
FACILITY	Primary Roads	1	22	6	18	11	9	16	0	21	0	49
	Secondary Roads	2	18	7	10	12	7	17	0	22	0	35
	Bypasses	3	0	8	0	13	5	18	0	23	0	5
	Tertiary and District	4	5	9	1	14	3	19	0	24	0	9
	Bridges	5	0	10	2	15	0	20	0	25	0	2
	TOTAL %	-	45	-	31	-	24	-	0	-	0	100

programme, value judgement will be required at some stage. This value judgement must be based on facts and should follow a set procedure to ensure that it does not become an intuitive judgement. The technique used must therefore present all the relevant information in such a format that the decision-maker will be able to adjust the variables in line with the objectives of the Natal Roads Branch. The decision-maker is able to justify the expenditure of limited funds on the chosen projects and can be confident that the chosen objectives will be attained. This technique is proving to be most useful in dealing with subjective public and political pressures.

The financial concepts which are prevalent in the construction process, will now be discussed.

4. CONSTRUCTION PROCESS

Once the construction programme has been approved, the implementation phase follows. Throughout the financial year, the expenditure of the construction budget has to be monitored for controlling purposes and to assess the cash flow situation.

4.1 Implentation

The programme of construction work is undertaken departmentally and by the private sector. The work undertaken departmentally is carried out by the three major construction units of the Construction Directorate, and on a smaller scale by the five minor construction units of the Maintenance

Directorate. This amount of work is on the decline relative to that undertaken by the private sector as a result of the Branch's policy of privatising as much work as possible.

In the work that is let out to the private sector, tender documents are prepared according to which contractors submit a price. The conditions and specifications contained in the tender document play a significant role in the pricing strategies of the contractors. The client's track record of how it has administered previous contracts, sometimes by means of an intermediary agent such as a firm of consultants, also has a significant effect on the price. It is common knowledge in the road industry that contractors rate their clients and attach surcharges to their tender prices according to who the client and site supervisor is. This takes place because of either the client's and his representative's incompetence, rigid application of specifications, or delays in making decisions. The Natal Roads Branch is generally rated as one of the top clients by members of the South African Federation of Civil Engineering Contractors, which leads to a more realistic price being tendered for their projects.

With the awarding of contracts, a predicted cash flow statement is submitted and updated at regular intervals. An accurate prediction of the cash flow is necessary as it enables the Branch to decide what additional projects can be implemented. Once the tenders have been received, they are scrutinised. Generally the lowest tender is recommended for final approval by the Executive Committee. Before the tender is awarded, the tenderer's experience, programme and financial stability are scrutinised and a

recommendation is made on these aspects. Once the projects are underway, a close control is kept of how the expenditure is carried out relative to the budget.

4.2 Budget control

With the present system whereby funds are allocated on an annual basis from Treasury, any funds not utilised are returned and cannot be rolled over into the next financial year. This places a need for there to be a system of short term forecasting and control of the cash flow. Such a system for forecasting must be able to control the cash flow by integrating it with the programming function, because programming changes must be promptly reflected in the forecasting of surpluses or shortfalls and to achieve this a cost information system that can provide a steady flow of up-to-date, easily accessible and reliable information, is necessary.

Factors that affect the quality of the forecasting model include such matters as the starting time of projects, project duration, final estimate, cash flow, price escalation, different climatic regions, seasonal variations, extra work, quantity overruns, change in physical and material conditions, and who the contractor is. Various contractors adopt different pricing strategies such as how the rates are loaded although rates which vary significantly from the average rate is not permitted. Also, some contractors are claim conscious and tend to make up their profit in this way. Added to these problems of producing a reliable forecasting model, the projects differ in nature according to being large and small, long and short, constructed departmentally or by contract and

also by nature such as whether the contract is a major earthworks, layerworks, drainage, or structure project. Each of these categories have different cash flow traits.

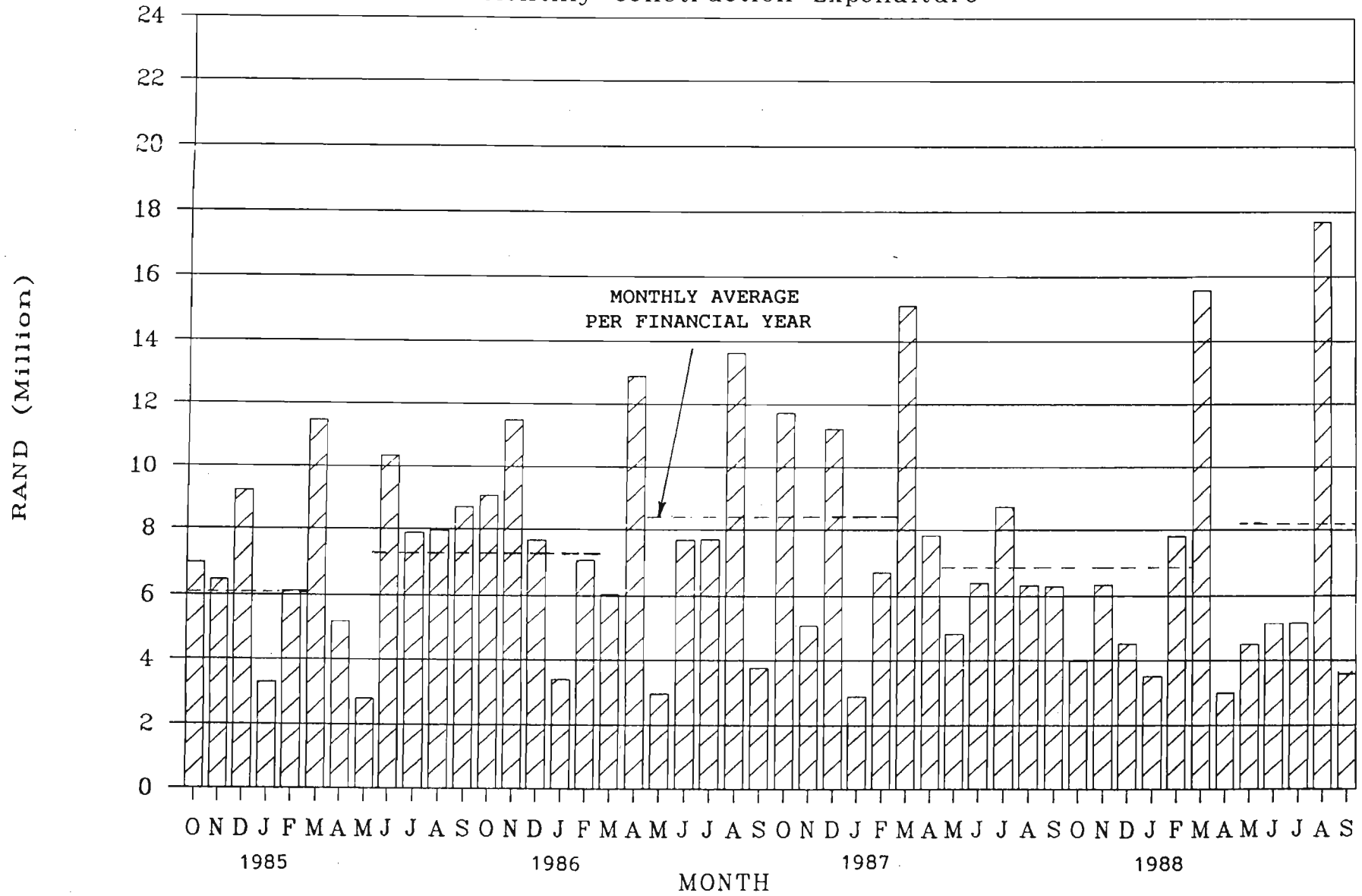
A means of controlling the cash flow, is by placing restrictions on the value of monthly pay certificates but this would lead to higher prices and severe criticism. The whole system of budget control depends on having a cost information system which is both effective and provides a timeous record of committed costs, and together with a good forecasting model will lead to better management of the budget.

To investigate the effect that the abovementioned factors can have on the monthly expenditure of the construction budget, reference is made to Figure 26 which illustrates this expenditure for the past four years for the Natal Roads Branch on the provincial road network.¹³ The trends which can be identified on a general basis are as follows:

- (i) each financial year the expenditure is slow as the details of the budget are only confirmed in July leading to hesitancy;
- (ii) monthly costs are reflected in the costing the month after the work is performed such as for January, as December is a low pay month which is the accepted builders holiday; the exception is March when payments are processed before the end of the financial year;
- (iii) difference in actual versus allocated expenditure in the 3L subhead where differences are balanced mainly in the 3K maintenance subhead; and

FIGURE 26 : NATAL ROADS BRANCH

Monthly Construction Expenditure



- (iv) high March expenditure as the budget is balanced by the purchase of materials and services, and consequent low April expenditure.

The budget control procedures that the Natal Roads Branch attempt to implement are hindered by the present costing system whereby costs are manually compiled. Details of the expenditure incurred are often available only six weeks after they have been incurred. The present costing system provides for the apportionment of expenditure on men, machines and materials to the detailed construction activity. It is this time consuming and laborious process which creates the delay. However, this information which the costing system provides is useful and realistic, as it provides middle and lower management details on unit costs enabling them to ensure that the correct construction procedures are being carried out, such that optimum use is made of the available resources. The most critical aspect of the construction budget, is the time taken for top management to be advised of the current expenditure commitment. Here the total expenditure on the 3L subhead is what top management needs. This is easily provided if use was made of apportioning the costs directly to 3L as a total cost, and only thereafter apportioning these costs to the various items, projects and activities, in this order instead of the converse which is the current costing procedure.

The availability of funds for the national road network has been affected by numerous factors. These include changes in policy of how funds are provided. Funds were previously provided from the national road fund which is now controlled by Treasury. The flow of funds into the national road

fund varied according the price of fuel, usage of fuel and the levy rate. The cost of projects had similar trends as for the provincial roads. With the eroding and consequent loss of control of the national road fund, the Department of Transport embarked on a policy of providing toll roads whereby the road users would finance the cost of the road. This has been taken further on the N3 between Cedara and Keeversfontein which is presently being financed by Tolcon completely as a private project. They, in turn earn a return on their investment by setting a toll levy. It has been decided that the toll levy should not exceed 75% of the perceived benefit that the motorists gain by using the toll road instead of the existing alternative route which must be reasonable. Interpretations of how the perceived benefit is calculated varies and is conflicting. The authorities and tolling companies calculate the benefit by considering the vehicles average cost per kilometer over its lifetime. However, road users perceive their cost to be only the running repairs consisting of fuel and services and excludes annual expenditure of licence fees, insurances and depreciation which are not related to the distance travelled by the vehicle. This interpretation is supported. The supply and demand will ultimately determine what the toll levy should be.

5. SUMMARY

In order to provide a road network that meets the requirements of the road user in terms of safety and economic efficiency, the road authorities require a substantial amount of funds. The country's national goals provide the basis according to which the policy-making function is carried

out. Once the objectives have been set, then various projects are identified which the planners set about designing. Economic efficiency largely determines which projects are selected for the planning process. As the projects progress through the various stages from conception to the actual implementation, they are regularly ranked according to the current requirements. The next stage is the actual programming of deserving projects which the Roads Branch do according to a priority rating system whereby projects are identified within a matrix according to the standard of facility provided in relation to the service it provides. However, a favourable mix is chosen which best meets the line function goals of the Branch. This programming procedure chooses projects according to economic efficiency and is not influenced by subjective public and political opinion.

The rate at which construction projects are built is largely determined by the availability of funds which it was seen as showing a marked reduction in real terms over the past nine years. There are many factors which affect the cash flow of the construction budget. To aid the decision-maker to maintain control of this budget, he needs to make use of a forecasting model suitably supported by a good cost information system. Records have shown that there are inherent trends in the cash flow profile which can be predicted, allowing for the cash flow to be closely controlled. It was noted that the Roads Branch have a manual costing system which takes up to six weeks for the expenditure on the construction 3L subhead to be made available. The costing system needs to be computerised, and also costs need to be apportioned initially directly to the 3L subhead, and thereafter to the particular item, project and activity in this order and

not conversely as is presently the case. This will enable top management to have the details of the construction budget within a few days, and be able to take prompt action where necessary. Having timeous details on the item, project and activity costs, will enable the middle and lower management to take the appropriate action to ensure that the optimum use is being made of the available resources.

To assist the funding of the national road network, the authorities have adopted a policy of providing toll routes in line with the user-pay principle. This seems the future funding policy of the Government which does not find favour with the general public. The public would support such a scheme if the toll fees were set at more realistic levels commensurate with how they perceive their benefits to be. This system of financing the development of the national road network is based on a sound principle and is supported, providing the toll fees are kept at realistic rates.

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8. MAINTENANCE OF THE ROAD NETWORK : A FINANCIAL PERSPECTIVE

1. INTRODUCTION

The economic and social well-being of the country depends on an effective transportation system. Benefits from an improvement in the transportation system accrue to users and non-users alike. These benefits include reduced economic or social cost, or some other advantage not present before, and may include business or land values and greater accessibility to various land users. Some benefits are difficult to quantify but reduction in user cost arising from the improvement can be computed. User costs include vehicle operating costs, travel time costs and accident costs. Vehicle operating costs alone far outweigh the cost of keeping the transportation facility in good condition, whilst travel time and accidents represent significant social and economic costs.

Road maintenance aims at preserving the integrity of the road for the benefit of the users. Maintenance includes routine repairs and elementary work, but also the essential task of periodic upgrading because a road deteriorates under traffic loads and climatic effects.

This chapter investigates the financing function of the maintenance of the road network with particular reference to the activities of policy-making, planning and programming. A discussion follows on the maintenance process. Initially it is appropriate to look at the activities which are carried

out in the maintenance of the road network system. Some of the interpretations made have been based on personal experience and acquaintance with the subject.

2. NATURE OF ROAD NETWORK MAINTENANCE

Roads, along with other engineering structures, deteriorate with time. The rate at which this takes place depends on a number of factors the most important being, original pavement design, volume and weight of traffic, material types, climatic conditions and the maintenance policy that is applied. To preserve the road which is a capital asset, it is necessary to carry out a variety of maintenance activities the nature of which is determined by the maintenance category.

2.1 Maintenance categories

The maintenance of the road network in broad terms comprises all the activities that are undertaken to preserve and keep the road in a safe and acceptable level of service condition. These activities are not only restricted to the actual road prism, but includes the maintenance of the whole road reserve which the Natal Provincial Administration or the Republic of South Africa has the ownership of. It also includes land which has had to be expropriated as it became redundant following the expropriation of land for a road or access road. In protecting its ownership rights, the Roads Branch also has a legal right to exercise its authority on landowners adjacent to the road reserve in terms of the acts or ordinances. Examples hereof include regulations and rules pertaining to

drainage, development and advertising.

Maintenance action reduces the rate of deterioration of a road, lowers the cost of operating vehicles on the road by providing a smooth running surface, and keeps the road open on a continuous basis by preventing it from becoming impassable. The maintenance action required depends on the type of activity necessary and can be categorised into one of the four maintenance categories known as the "Four R's", namely routine, reseal, rehabilitation or reconstruction.¹ The optimum strategy of selecting which type of category, each increasing in complexity and cost, to select depends on the traffic history, climatic conditions, design standards, previous maintenance experience and the present condition of the road.

(a) Routine

Routine action is directed towards maintaining a satisfactory condition of the various elements of the road. Activities may be planned to be undertaken routinely, or in response to routinely recurring needs. Examples of planned activities undertaken routinely include opening of drains prior to rainy season, blading of a gravel road, repairing of road markings, cutting of vegetation after rainy season, and control of noxious plants. Examples of routinely occurring maintenance needs in response to occurrences include repairs to potholes, and repairs to both guardrails and signs after being damaged in an accident. This category includes restorative action necessary such as urgent repairs to the road infrastructure or repairs carried out after a large storm. Routine activities are also performed in one of three groups according to firstly, those carried out on a fixed programme irrespective of the engineering

characteristics of the road or traffic volume, secondly the frequency of which depends on traffic, topography and climate, and thirdly being urgent work which relates to a description of traffic.

(b) Reseal

Here periodic action is directed towards restoring an element to a condition which will extend its life or assist the road user. The type of reseal carried out depends on the surface of the road. Regravelling of an unpaved road reinstates the strength of the surface layer, preserves all-weather service and reduces vehicle operating costs. For paved roads the surface receives a thin stone, sand or rubber layer which is bound with a bitumen or tar product. This surface treatment protects the surface and extends the life of the pavement but there is no significant reduction in vehicle operating costs.

(c) Rehabilitation

This refers to the rehabilitation of paved roads which is directed towards upgrading the condition of elements in the road to improve its standard. Rehabilitation generally refers to repairs to the surface by means of a premix overlay which improves the riding quality by filling in hollows and provides additional or restores the structural strength of the pavement. This rehabilitation work leads to higher vehicle speeds and reduced vehicle operating costs.

(d) Reconstruction

This category is the most expensive and disruptive to traffic. Reconstruction work is necessary when the pavement layers have

deteriorated. This work is done by a combination of activities which include reworking the in-situ material, recycling or modifying the existing layer by adding new binders and the addition of new pavement layers in the form of natural material, asphalt or concrete. Road betterment in the form of providing additional road width and traffic lanes, is included in this category.

The division between the four categories of maintenance must not be viewed as being clear-cut, as often the scale of the particular action rather than the action itself, may decide the category. A look is now made of the main factors which influence the need for maintenance of the road network.

2.2 Factors influencing maintenance

The main factors that have an influence on the maintenance requirements of the road network include the nature of the traffic, pavement design, climatic condition and the maintenance policy that is implemented. The vehicular traffic on the road is by far the major cause of road deterioration.

(a) Traffic

Each vehicle that passes over a road causes a small, but significant deformation of the road pavement. The cumulative effect of these axle loadings gradually leads to permanent deformation and surface deterioration. The National Institute for Transport and Road Research have provided interesting statistics which show the effect that traffic volume and weight have on a road.² Legislation was passed in terms of the Roads Traffic Ordinance, 1966 (Ordinance 21 of 1966), to control the axle

loading of vehicles. To provide a balance between road building costs and transport economy, the legal axle limit was set at 8200 kilograms and one such axle is called an E80 as the axle exerts a force on the road of approximately 80kN. Related aspects such as tyre pressure and tyre spacing affect the interpretation of the legal axle load.

It is the actual repetition of the axle weight which causes damage to the road, however, the damage caused by an axle increases exponentially relative to the increase in axle weight. For example, an axle carrying twice the legal load causes 18 times as much damage as a legal load, whilst cars which have a low axle weight have a negligible damaging effect to the road. The damage to the road is caused by the following vehicles :

Cars	- 1%
84% Legally loaded heavy vehicles	- 42%
16% Overloaded heavy vehicles	- 57%

Relating the illegal loads to legal loads, it is then calculated that this constitutes 26% of the total estimated cost of damage caused by all heavy vehicles. Overloading of vehicles is thus a serious problem and the annual cost of repairing the damage to roads in Natal caused by this is estimated at R10 million.

Increases in traffic volumes also have a significant effect on the life of a road pavement. A normal annual growth rate of 2% is provided for in the design. However, in the past six years there has been an annual growth of 19% in the equivalent E80 axles caused mainly by the effect of the national transport policy, such as deregulation and privatisation. The funds made available to the road authorities has not kept pace with this

traffic growth.

(b) Pavement design

Numerous factors affect the design of the pavement such as quality of materials available and the nature of the terrain. Natal has a poor source of materials and is very hilly with a generally high water table. These adverse conditions adversely affect the type of service that can be provided.

(c) Climate condition

The weather also plays a significant role in affecting the condition of the road pavement. Throughout Natal the conditions vary from being cold and icy in the Drakensberg area, to being hot and wet at the coast. Natal generally has a high annual rainfall which together with the large and hilly catchment areas of the rivers, is susceptible and vulnerable to floods.

(d) Maintenance policy

The fourth main factor which has an influence on the maintenance requirements of a road network, is the policy strategy adopted. The policy is made relative to the level of service that is provided. Ideally more funds should be allocated to those roads which lead to optimum economic efficiency of the overall transportation system. Subjective political and public opinion should not affect the policy adopted. The policy is also effected by the availability of funds for which the Maintenance Directorate has to compete with the other directorates.

Having investigated the concepts of what constitutes road maintenance and the factors that affect it, the financing of road maintenance is now discussed.

3. FINANCIAL BASIS FOR ROAD NETWORK MAINTENANCE

The assets comprising the transport infrastructure constitutes productive resources according to their future employment. Past investment is of no concern when evaluating these resources and there should be no compunction about abandoning an infrastructure which cannot deliver benefits at least equivalent to the marginal costs of its retention. To evaluate the productivity of the transport infrastructure requires public administration to be specifically directed towards the economic co-ordination of investment in the transport infrastructure according to the needs of the road user. The transport infrastructure is worth preserving as a productive asset if it can contribute to the future well-being of the country. The financial basis of the functional activity of road maintenance, which is a line function, will now be discussed with reference to the inter-related activities of policy-making, planning and programming. This functional activity is essential if the investment in the road infrastructure is to be preserved for continued economic use.

3.1 Policy-making

The factors affecting the supply of funds for the maintenance of the road network are similar to those encountered in the provision of this facility. The supply of funds is largely determined by Treasury who

allocate funds according to the national priorities and policies as determined by the Government. Whilst it is possible to withhold funds for the provision of an improved road network system, it is not desirable for an inadequate supply of funds to be made available for the preservation of the existing road infrastructure where it is economically advantageous. Thus, the policy set at political level has a pronounced effect on the level of service of the road network that is made available to the road user.

The executive policies of determining what funds should be made available for road maintenance, are made by top management, which in the Roads Branch consists of the Executive Director, Chief Director, heads of the five professional Directorates, and head of the administrative Sub-Directorate. The proposals are then submitted via the Provincial Secretary to the province's Executive Committee for approval. The Chief Engineer as head of the Maintenance Directorate, determines the administrative policies on how the work should be done and also on which type of maintenance preference is to be given to. The field supervisors then formulate the operational policy which relates to the actual carrying out of the maintenance activities such that it meets the administrative policies of this Directorate. The broad policy and line function of the Maintenance Directorate is,

"the maintenance of the national and provincial road network to a safe and acceptable level of standard, with the economic utilisation of resources".

Once the maintenance policy has been stated, the planning activity follows whereby the maintenance requirements are investigated and solutions put forward.

3.2 Planning

To attain the goals set out in policy-making, planning is required whereby a search is made for an approach, process or function whereby the policy goals can be realised effectively and economically. Planning can thus be described as a function consisting of a series of interrelated processes which need to be carried out in a specific sequence.

The end product of the planning process is the plan which specifies the best executive action towards attaining the policy goal. The planning process will be discussed with particular reference to design concepts of the pavement management system and the maintenance management system.

3.2.1 Pavement management system

The aim of the pavement management system is to produce a structurally balanced pavement which will carry the traffic with a high confidence for the structural design period in the prevailing environment at an acceptable service level without major structural distress. The pavement can be strengthened to carry the traffic over the full economic analysis period by means of various rehabilitation or reconstruction measures. Different designs are assessed on their present worth value relative to the long term benefit. The basic inputs which are needed to determine the pavement design include selection of road category, traffic statistics, design criteria, materials and the nature of the environment.

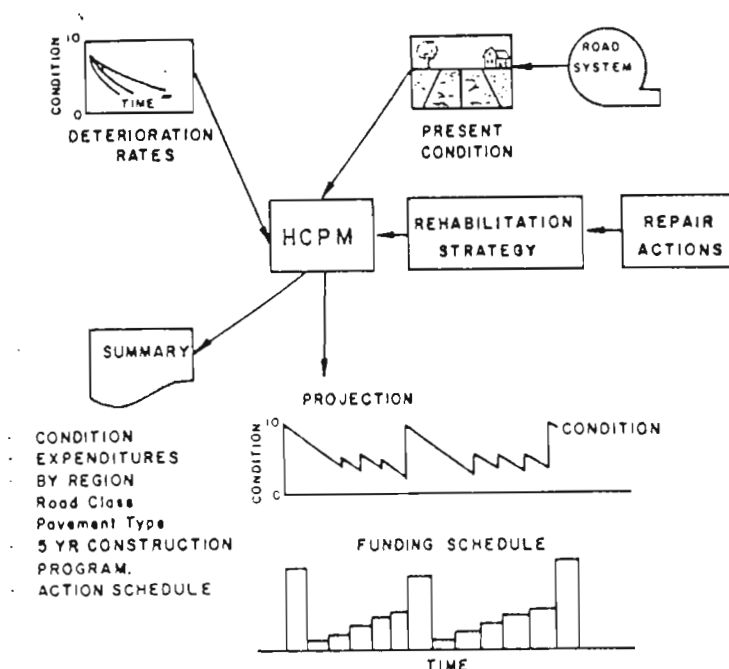
In deciding whether to retain or scrap an existing road network or part of it, Floor considers four rules.³ In projecting the productive use of the existing road network, it is both practical and appropriate in accordance

with public accounting to base the rules on the long term marginal cost of making the network available, in comparison with the imputed benefits of doing so. The rules are as follows:

- (i) there are no economic grounds for retaining the network when it has benefits less than the marginal cost of maintaining it in the short term;
- (ii) network should be retained if the benefits are expected to exceed the long term marginal costs;
- (iii) network should be retained if the benefits exceed the long term marginal costs providing these exceed the short term marginal costs; and
- (iv) network should be rebuilt if the short term marginal costs of maintaining it exceed the long term marginal costs of a new facility.

The characteristics of a road with reference to its condition and the amount of funds invested in it is illustrated in Figure 27.⁴ The condition of the road is rated on a scale of 0 to 10 with the upper limit being the best condition. As time progresses, so the condition deteriorates gradually whilst the routine maintenance is carried out costing more and more each year. When a reseal is done, it provides a slight improvement in the road condition. Eventually the condition of the road deteriorates to an unacceptable condition such that it becomes necessary to do a rehabilitation or reconstruction process on the road. This costs a lot of money and restores the road to a condition 10. The annual routine maintenance costs less initially and increases gradually thereafter.

FIGURE 27 : HIGHWAY CONDITION PROJECTION MODEL



The Research Directorate makes use of the pavement management system which has been formalised. It consists of having an inventory of all the roads within the network and classifies them according to standard. A record is then kept of the constituents of the road, which together with the traffic statistics provides a means of assessing the performance of the road. Regular visual and field tests are carried out on the existing road network to determine its condition and expected life. Based on these findings a recommendation is made on which design criteria to adopt in the form of which of the four maintenance categories, referred to as the "Four R's", to adopt. It often occurs that a combination of these categories is used to make the optimum use of the limited funds. This provides a holding action for the road which provides short term benefits, but ultimately will lead to a need for a reconstruction process. The pavement management

system investigates all the roads in the network annually, updating the current records. The roads are listed on a priority basis whereby roads are selected for maintenance repairs according to the available funds.

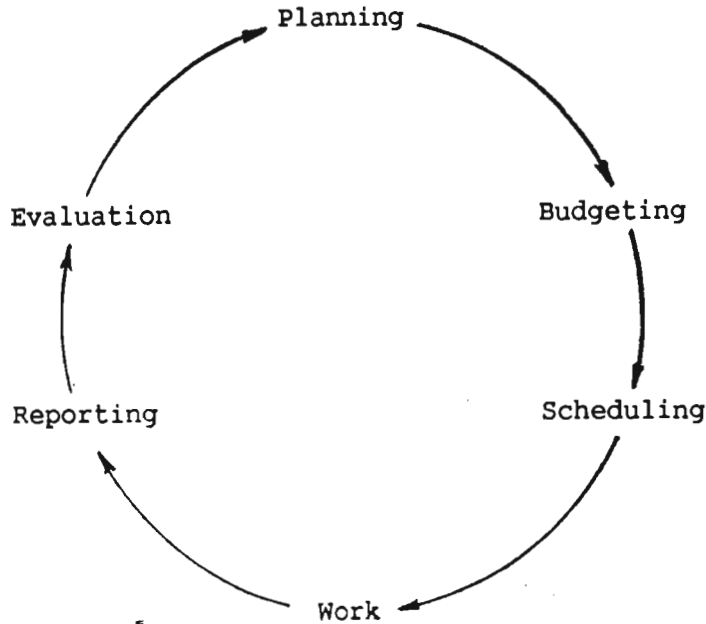
3.2.2 Maintenance management system

Most maintenance engineers are having to cope with increasing network of roads and higher expectations regarding the standard of service offered. With funds becoming scarcer, the maintenance engineer has to continually try to do more maintenance with less money. The essential problem in managing maintenance more efficiently, is that the operations are decentralised. There are a number of maintenance gangs which form a zone within an area, which in turn are part of a district which are then answerable to head office. To aid the routine maintenance activities to be efficiently and effectively performed, a maintenance management system has been devised whereby the work can be planned, organised and controlled in a systematic manner. The processes which constitute a maintenance management system are shown in Figure 28.⁵ These processes are carried out in a continuous sequence. Experience has shown in the United States of America that where the maintenance management system has been implemented, there has been a reduction in maintenance costs by 20% to 30% through improved efficiency.

Before the maintenance management system can be implemented there are three basic elements which have to be detailed as they form the framework of this system, namely inventory, maintenance activities and standards. These three elements are described as follows:⁶

(a) a road inventory provides a record of all the features of a road

FIGURE 28 : MAINTENANCE MANAGEMENT SYSTEM



system which require maintenance. The features include accesses, encroachments, bridges, pipes, guardrails, roadmarking details and drains all of which are logged with reference to the road chainage and illustrated on a strip plan;

(b) the list of maintenance activities are identified and include cleaning of pipes, vegetation control, black-top patching, grading of gravel roads, signs and roadmarking. Work measurement units should be determined for each activity as this provides the basis for the costing of each activity. A priority rating is also indicated for each activity to indicate whether the work is urgent, to be placed on the medium term programme or must be done as part of the routine programme; and

(c) the standard according to which the work is carried out of which there are three types, namely quality, quantity and performance. The quality standard specifies when an activity has to be performed based on the condition of the asset, for example do local patching when the deformation exceeds 20mm. Care should be taken that these standards do not have legal significance which could lead to claims against the road authorities. The quantity standard identifies the amount of work and resources to meet the quality standard. The performance standard, also called maintenance standards, for an activity identify the appropriate gang size, the equipment and material to be used, step by step description of how to do the work, and also the expected output of the gang in the work measurement unit relative to a time scale.

The first phase of the maintenance management system is the planning phase which is carried out at different levels of management. Planning in broad terms look at all the routine maintenance activities which have to be performed annually such that the road network meets the predetermined quality standards. More precise planning is carried out at the operational level where the resource needs are determined. Once the planning activity has been completed, the programming activity commences and consists of a number of phases.

3.3 Programming

Following on policy-making and planning, one has programming which is a set of specific actions which have to be undertaken to reach a specific goal or implement a plan. The model of the programme must quantify the goal, detail alternative actions, select the best action and detail the

functions which have to be executed to fulfil the goal. The two phases of budgeting and work scheduling make up the programme activity.⁷

3.3.1 Budgeting

The budgeting phase is carried out in four steps. The first step in the calculation of the resources necessary to complete the annual work load with reference to the performance standards. Step two is the application of the unit cost to the resource requirements which gives the financial budget. In the third step approval is sought for the budget. Budget requests may have to be revised several times before final approval is obtained. The advantages of a performance budget are in the main, that the budget is justified on the basis of actual needs and realistic figures and also that politicians and decision-makers can be informed what the effect would be of budget cuts. The fourth step involves apportioning the authorised funds to the maintenance districts and areas.

3.3.2 Work scheduling

Work scheduling is the phase whereby the annual work programme is translated into action. The Maintenance Directorate of the Natal Roads Branch has the following annual work programmes:

- (i) 3-year pavement management system which comprises resealing, rehabilitation and reconstruction;
- (ii) 3-year gravelling;
- (iii) 3-year minor structures; and
- (iv) annual and seasonal routine work.

Work schedules provide the short term plans to carry out the above

programmes, for effectively organising the work teams and gangs. The short term plans vary in length and could be set monthly, weekly or daily depending on the nature and urgency of the work. A certain amount of flexibility needs to be provided in these schedules to allow for inclement weather and unforeseen events. Ultimately the gangs will have to be instructed and supervised on a daily basis.

Once the work is completed, it is essential to evaluate the work performance as this provides an effective means of controlling the work. Properly designed reports provide management with the means to exercise control over expenditure, work accomplishment, unit costs, plant utilisation, personnel use and material use. The reporting and evaluation of work performed conclude the cycle of phases which make up the maintenance management system. The implementation of a maintenance management system has a number of advantages, namely effective use of funds, reduced cost, increased productivity, uniform standards, improved quality of work, and readily available information.

The maintenance management system, based on the principles of planning by objectives and control by exception, can offer the above advantages. It is the maintenance engineer's responsibility to secure adequate funds necessary to accomplish the work according to the performance standards. He has to allocate the resources to the various work districts and develop the most effective organisation structure by objectively investigating alternate methods of doing the work. The task of implementing a maintenance management system should not be underestimated. It requires commitment from top management and the support of field staff. Strict

project management principles should be employed to obtain meaningful results in a fairly short period of time. It is most important for maintenance engineers to have a positive attitude towards providing a good service and constantly striving to improve the tools available to the work force, to enable them to perform their function effectively and efficiently.

Having investigated the inter-related activities of policy-making, planning and programming which provide a basis on which the functional activities of road network maintenance can be dealt with reference to the financial implications, a broad outlook will now be provided on how the maintenance process is performed by the Natal Roads Branch.

4. MAINTENANCE PROCESS

As stated previously the purpose of maintenance is to retain the integrity of the asset for the benefit of the road users and, therefore, to the advantage of the whole community. This section provides a broad outlook of the organising and financial control of the provincial and national road network in Natal.

4.1 Implementation

The Roads Branch of the Natal Provincial Administration and the Department of Transport is responsible for the maintenance of the provincial and national road network respectively. The Department of Transport does not have its own resources to carry out its maintenance function and thus

relies on the Natal Roads Branch to carry out the routine maintenance procedures whilst the other three categories of maintenance are carried out by contractors by tender. An exception to this is the maintenance of a portion of the N3 between Cedara and Keeversfontein which a private consortium, called Tolcon, is responsible for the maintenance of. Tolcon raises funds in the form of tolls to offset its investment.

The maintenance of the national and provincial road network in Natal is controlled and managed in five districts, each by a District Engineer. The district is divided into three maintenance areas, each controlled by a Roads Superintendent and comprising about 1000km of gravel and blacktop roads. The area is usually sub-divided into two or three maintenance zones under the control of an Assistant Roads Foreman. Each zone has a grader gang who look after the gravel roads, and a blacktop gang who look after the surfaced roads. Other maintenance gangs include drainage, litter, landscaping, traffic counting, guardrail and signs. Each area also has a gravelling and betterment unit who regravell roads and also upgrade the road at the same time by carrying out minor geometric improvements. Other routine maintenance activities are also undertaken by the private sector, where additional resources are needed, or specialist tasks have to be undertaken. These include road patching, road stud installation, weed spray, noxious plant control, tree felling and road painting.

From Table 12 in Chapter 6 the maintenance budget allocation for provincial roads for 1988/89 is provided under subhead 3K. The distribution of funds to the six items with a brief description of each and its proportion of the total 3K allocation is :

3K1 - routine maintenance	R38,9m	45%
3K2 - regravelling	R16,6m	19%
3K3 - reseal, rehabilitation, reconstruction	R28,5m	33%
3K4 - minor structures	R 1,8m	2%
3K5 - access to national monuments	R 0,3m	-%
3K6 - road safety projects	<u>R 1,0m</u>	1%
	TOTAL	<u>R87,3m</u>

N - routine maintenance on national roads R 8,4m

The field organisation undertakes the routine maintenance under 3K1 and N, and also the 3K2, and 3K4, 3K5 and 3K6 work. The 3K3 work is done by contract with the Maintenance Directorate supervising the reseal work, whilst the Construction Directorate supervise the rehabilitation work. With many of the routine maintenance activities let out to the private sector, together with materials purchased, plant hired and other services obtained from the private sector, a fair amount of privatisation is utilised by the Maintenance Directorate. With the staff restrictions imposed by Central Government and annual increase in length of road network to be maintained, use has had to be made of private contractors to carry out the work. However, a number of functions have had to be kept in house because of by their nature it is not practical nor possible to prescribe specifications for the work to be done by contract. Also, certain emergency work might have to be done which is best done with the Roads Branch's own resources.

The Natal Roads Branch has achieved a fair degree of success to date with

its implementation programme of a maintenance management system. It is the most advanced road authority in South Africa in this field. The field record of road inventory is complete and has virtually all been transferred onto strip plans. The Estcourt and Pietermaritzburg Districts are ahead with the actual implementation of the maintenance system in that detailed production and work description records are being kept and processed by a computer. The other three Districts have not yet reached this stage but will do so once the initial learning curve is at an advanced stage. However, use is made of computerised stores records, and performing work according to the performance standards, for which standards have already been set for most of the activities.

The budget control measures that are utilised by the Maintenance Directorate, are now outlined.

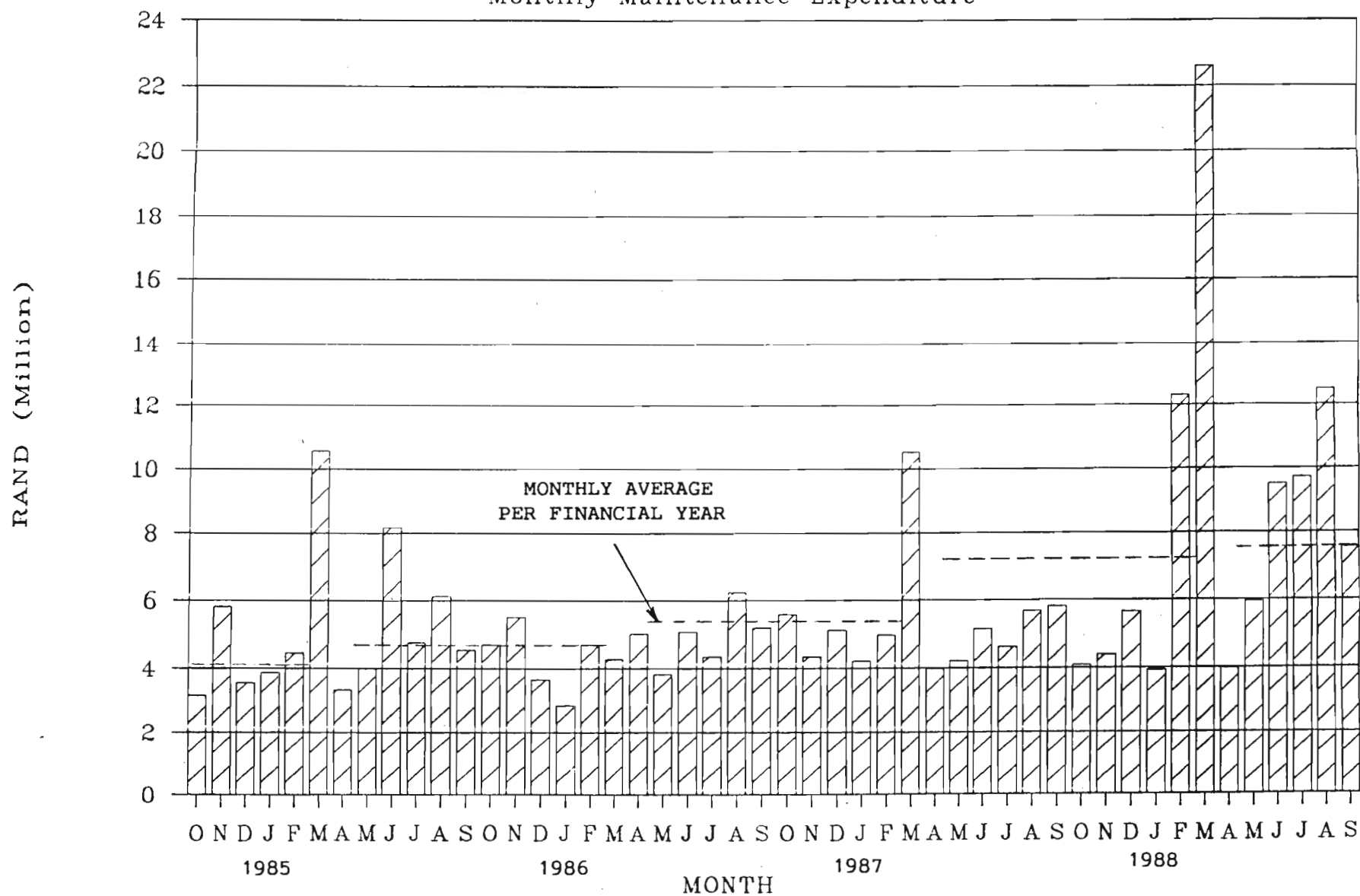
4.2 Budget control

Maintenance work is an ongoing process although there could be seasonal peaks caused mainly through the weather conditions which affect the work done, or it is necessary for specific activities to be performed. There is no significant fluctuation of expenditure in the routine maintenance work which is carried out all year round, even during the traditional building holiday in December, during which period routine work still carries on.

From the costing records of the Roads Branch, the monthly expenditure under subhead 3K for the past four years is shown in Figure 29.^a A few trends are noticed and worth commenting on. There has been a gradual annual increase in the total expenditure on road maintenance. In the past

FIGURE 29 : NATAL ROADS BRANCH

Monthly Maintenance Expenditure



10 financial years the maintenance subhead expenditure has increased relative to the total Roads Branch vote, from 26% to 37% and is illustrated in Figure 25. Referring back to Figure 29, it is noted that there is an abnormal peak normally at the end of each financial year. A closer look at this shows that the expenditure on item 3K3, which are those activities of reseal, rehabilitation and reconstruction done by contract, has been the main cause of this trend. This is partly due to the costing procedure of delays being made in the processing of accounts.

In recent years Natal has been subjected to severe flooding. The severity of the floods is best illustrated by the special allocation of funds appropriated by Treasury for flood relief repairs to the provincial road network, in the following two related flood periods:

- (i) Domoina in February 1984 and subsequent flooding by Imboia and other heavy rains - R18,5 million; and
- (ii) September 1987 and February 1988 - R140 million (estimate).

The more recent flood was certainly more devastating in financial terms. The cost of services increased by an estimated 50% in some categories as a result of the supply/demand problem. The persistent wet weather subsequent to the actual floods, hindered progress on the maintenance work, and added significantly to the cost of work. This also had an adverse effect on normal contract work which was also affected by a lack of available resources, which had been allocated for priority flood relief work. The question has been asked by many people whether the road design standards are adequate. It is found that there has to be a compromise between design

standards and the cost of projects, which ultimately is decided by the amount of funds available. Certain design criteria are adopted which best suits the situation. Also, the expertise of design engineers has shown tremendous advancement in recent years.

Referring to the funds made available for the maintenance of a road network, a report by the South African Road Federation has revealed interesting statistics.⁹ Out of the total cost of a road infrastructure, 15% is spent on the infrastructure itself consisting of expenditure on the provision, maintenance, administration and policing of this facility, whilst the balance amounting to 85% is the actual road haulage costs, comprising fixed and running costs. Thus, for a reasonable investment in a road infrastructure, it can have enormous benefits to the road user, including cost saving, improved safety and time saving. The World Bank has calculated that about 1,8% of the replacement asset value of the road infrastructure, should be spent on routine road maintenance to keep it at an acceptable level of service and preserve its asset value. In the 1988/89 financial year only 0,8% has been allocated for routine maintenance of the provincial and national road network comprising about 6000km of surfaced roads and 9500km of gravel roads, which is estimated to have a current replacement asset value of R6000 million. The effect of this policy by Central Government who controls the funds, is evident in portions of the provincial and national road network which does not conform to the prescribed and economical road standards. The situation is drastic such that consideration is being given to rip up existing blacktop roads and revert them back to gravel roads. This would lead to a loss in overall benefit to the community, but is necessary if the optimum use is

to be made of the available funds.

With the lack of adequate funds provided for road maintenance, it is necessary that appropriate budget control measures are utilised. The implementation of the maintenance management system will do much to offset this shortage as it provides a means of carrying out the maintenance activities more effectively and efficiently. It is essential that the expenditure is closely monitored to ensure that the budget is being utilised to the best advantage. The Maintenance Directorate has developed a regular reporting system of reporting on expenditure. Detailed revised estimates are compiled every four months, whilst weekly globular estimates are presently being done. This latter function has become necessary as the Roads Branch's manual costing system only provides the actual costs that have been incurred, up to six weeks later to top management. The costing system provides for costs to be recorded daily but current costs are calculated on a monthly basis. The costing system used here is the same as that used by the Construction Directorate. The introduction of a computerised costing system will do much to improve the management of funds.

The resources needed for the maintenance of a road network are very diverse and complex in nature, and as it covers a wide area, it makes management of these resources difficult. The nature of this line function determines that the management of it should be decentralised. However, present circumstances show that still not enough authority has been delegated to the District Engineers to perform their functions adequately. This situation was officially reported on in 1938 in the findings of the

Commission of Inquiry into the Administration of the Provincial Roads Department. It was recommended that an adequate devolution of authority was needed to enable the District Engineers to carry out their duties successfully and to maintain discipline amongst their staff. The Commission also recommended that promotion opportunities should be provided for engineers in the field, to enable them to aspire to a higher level of management. This will enable the more experienced engineers to advance to the level of District Engineer, and who accordingly would have the required level of authority to manage the increased devolution of functions that are being decentralised. At present, there are a number of financial and staff procedures which are only delegated to head office and lead to inefficient administration. These include delegations of purchasing materials and services out of contract and termination of service of all employees. These restrictive measures only hinder the process of effective administration. However, the Roads Branch is presently reviewing additional functions which it can delegate to the District offices. It is here and in the Area offices where the problems are encountered, and where the Branch is first faced with problems and complaints from the general public. This review process forms part of the investigations being carried out on the Functional Evaluation Programme of the Roads Branch under the control of the Commission for Administration.

5. SUMMARY

Any asset that has been acquired requires regular maintenance to preserve its asset value. It is not feasible for an asset to retain its serviceable

characteristics unless very high and expensive standards are set. To aid the role of the maintenance engineers, the design engineer should be innovative with their designs and be aware of the problems being faced by the maintenance work force. The increase in traffic on South African roads far exceed the budgets being provided for the maintenance of this asset which is increasing annually in length. This imbalance is a world wide phenomenon.

The Natal Roads Branch has had to make do with an inadequate supply of funds to perform its maintenance function. There are a number of reasons why this situation prevails and include Government's policy of giving preference to defence, education and housing, and curbing public expenditure, a lack of and awareness by officials of the benefits of a sound maintenance policy where the benefits that accrue to society as a whole, are not that visible.

Statistics have shown that about 1,8% of the replacement asset value of a road network should be used for the routine maintenance of roads to enable it to preserve its asset value. The current allocation of funds for the maintenance of the provincial and national road network in Natal only amounts to 0,8% of its replacement asset value estimated at being R6000 million for the approximate 6000km of blacktop roads and 9500km gravel roads. With vehicle operating costs amounting to 85% of the total road infrastructure cost, an investment for the improvement in standards of the provision and maintenance of a road network, will reap large benefits for the road users.

To help the Roads Branch make optimum use of the limited supply of funds, it is in the process of implementing a maintenance management system which has led to savings in the order of 20% to 30% when implemented in other countries. This system is a useful aid to the maintenance engineer as it provides a method for the proper planning, organising and control of maintenance activities. How these activities are performed, was discussed relative to the inter-related activities of policy-making, planning and programming. With funds becoming scarcer, effective budget control measures are needed to ensure that the funds are being used to the best advantage. Use of a maintenance management system leads to more effective and efficient use of resources as it provides standards of work to be performed and monitors the result by assessing the utilisation of men, machines and materials by calculating the production and unit cost rates. The development of improved maintenance practices is an ongoing process.

An essential part of this process is the development of a computerised costing system which the Natal Roads Branch is planning. However, the need for this system is urgently needed and requires that the implementation process be speeded up. The manual costing system has been based on sound accounting principles and can thus be computerised with minor adjustments being made necessary. Also, the costing procedure needs to be revised to allow for costs to be apportioned initially directly to the 3K subhead, and thereafter to the particular item, project and activity in this order and not conversely as is presently the case. This will enable top management to have the details of the maintenance budget within a few days, and be able to take prompt action where necessary. Having timeous details on the item, project and activity costs, will enable the middle

and lower management to take the appropriate action to ensure that the optimum use is made of the available resources.

The resources needed for the maintenance of a road network are very diverse and complex in nature, and as it covers a wide area, it makes management of these resources difficult. The nature of this line function determines that the management of it should be decentralised. However, the present circumstances that prevail show that still not enough authority has been delegated to the District Engineers to perform their functions effectively and efficiently. This situation was officially reported on in 1938 in the findings of the Commission of Enquiry into the Administration of the Provincial Roads Department. The recommendation was made for an adequate devolution of authority to be granted to the District Engineers, and also that promotion opportunities should be provided for engineers in the field, who accordingly would have the required level of authority to manage the increased devolution of functions that are being decentralised. This matter is currently under review in the Functional Evaluation Programme of the functions of the Natal Roads Branch. This review process is required to be speeded up, to enable an early implementation of the recommendations.

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9. NEW BUDGETING AND CONTROL STRATEGIES

1. INTRODUCTION

The road authorities face a difficult problem in trying to render a satisfactory service of the provision and maintenance of a road network that meets the requirements of the road user. The problem revolves around the availability of adequate funds provided by Treasury who do not rate the development of the road infrastructure highly on the list of national priorities based on the recommendations of the Central Economic Advisory Services. The national priorities have been set according to the political policy of the Government who then develop an economic policy which is deployed through the Economic Development Programme and the National Physical Development Plan. Transport, and more specifically roads, is a necessary prerequisite to the success of these plans.

This chapter looks at providing a few methods whereby more can be achieved with the available funds and also how to obtain additional funds such that the standards of facility provided, can better satisfy the demands made of the road infrastructure to meet the requirements of these development plans. The subject matter covers funding sources, the financing policy, road network policy, budget control and privatisation and deregulation. The recommendations made have been based on personal observations and also from literature covering this subject.

2. FUNDING SOURCES

The main source of funds for the provision and maintenance of the national and provincial road network is the general State budget through the State Revenue Fund from Treasury. Other sources are the national road fund, loans and privatised roads. These are described to show what benefits can be obtained for the development of the road infrastructure.

2.1 Treasury

The formula used for the allocation of road funds to the provincial authorities has as major variables, the previous level of the province's expenditure on roads, the number of vehicles registered and the length of road network.¹ In recent years, various factors, including the excising of large areas from certain provinces, and the registration of vehicles in the province with the lowest registration and licensing fees, have combined to render this formula not indicative of the road financial needs of the provincial administrations. Until recently, Treasury allocated funds to each province in a globular amount. It was then left to the provincial authority to distribute its funds according to its own priorities to the various votes. There has, thus, been an improvement such that funds allocated for roads by Treasury are directly channelled to the funding of the road infrastructure.

With the politicians determining the distribution policy of funds from Treasury, it is best left to them to explain the shortfall of funds made available for roads in preference to other priorities. Following the deterioration of the road network as a result of the September 1987

floods, and subsequent heavy rains, the Natal Roads Branch has adopted a more professional approach in presenting their budget for funds by providing more substantive evidence for the need to have more funds allocated for roads. This includes providing statistical data of traffic growth and benefits to be gained for the road user by means of reports and visual material on television. With the road authorities having to compete for funds with the other sectors in economy, this approach can only have a beneficial effect on the decision-making of the politicians. It is anticipated that the formation of the South African Roads Board will lead to a better deal for the road authorities in control of the national and provincial road network. It is intended that this Board would be representative of these five road authorities and be in a better position than Treasury to determine the needs of the four provincial administrations, with national roads now being their responsibility.

The Government has recently implemented an improved licensing structure for all vehicles whereby the heavy vehicles, who do the most damage to roads, now pay a much higher licensing fee. This, however, does prejudice the small operator who uses his vehicle for a limited mileage. It would have been preferable for the collection of this income to be made by a levy on fuel used, as this would best satisfy the user-pay principle whereby the more the vehicle is used, the more the operator contributes to the levy. This is in line with the Government's current economic policy of ensuring that the user should as far as possible pay for the services received.² When this principle is applied for the provision of roads, it means that road users would be taxed in such a way as to cover the cost providing the road system. The Government in 1987 adopted the

recommendations made by the National Transport Policy System on this user-pay principle. Thus, the road user payments, consisting of licence fees and fuel levy, should cover the costs incurred in providing the road system. This forms the foundation of determining how much revenue to collect to satisfy the optimum requirements of a road network which is both safe and economically viable.

2.2 Dedicated road fund

Until recently, a National Road Fund existed for many years for the funding of the national road network. This fund was a dedicated one whereby funds collected was dedicated for the funding of roads. A levy was raised on the sale of petrol and diesel for commercial use to operators who use the road network, and is a realistic means of collecting funds for road purposes. Treasury determined the levy rate and also how much income was derived from the sale of fuel as the consumption hereof is a state secret. By monitoring the funds accruing to the national road fund, which is affected by the fuel levy and volume of traffic, the Department of Transport was able to plan the national road network accordingly. Projects throughout the country were built according to their priority rating from money collected from all road users.

However, on 1 April 1988 Treasury took over the administration of the national road fund as it insisted on maintaining control of the collection of all public money. The fuel levy was an easy means of collecting money from the general public for use on other priorities not necessarily related to roads. This is rumoured to have taken place in the proposed fuel price increase of January 1989 which will be used to fund the

increase in salaries being granted to the Public Service on 1 January 1989.

The dedicated road fund is a fair and realistic means of collecting money for the preservation and development of the road infrastructure. The general public would be in a position to exercise support or disapproval of the fuel levy rate according to the standard of facility that they are prepared to pay for. This is especially so when the cost of providing and maintaining a road network only amounts to 15% of the total transportation costs as seen in Chapter 8. Thus, for a nominal increase in fuel levy, there can be many benefits accruing to the road transportation sector.

2.3 Loans

The next type of funding source, is the floating of bonds for the financing of a road. This has successfully been used to finance the national toll roads situated on the N2 at Tsitsikamma and the N3 at Mariannhill. The Department of Transport has full control of both these toll roads and repays the loans from tolls collected. Essentially the principle is one of acquiring a loan to finance a road enabling it to be built at an earlier date such that it can be most advantageous to the road user. Alternatively, the road would only be provided at a later date once adequate funds have been collected from the general public. The facility of obtaining loans from the open money market is not available for the provincial administrations. However, if at all possible to obtain, it can have good financial benefits where loans can be obtained at rates lower than the inflation rate.

This method of obtaining loan funds is particularly suited to a developing country where capital is required in so many sectors of the economy. Road infrastructure is unfortunately a sector which does not always enjoy fiscal support, as noted by the real decline in State road funds. Loan funds provide a means of implementing economically viable toll projects earlier than would otherwise be the case. In June 1983 the National Road Act, 1971 (Act 54 of 1971) was amended to facilitate the levying of tolls on national roads. In terms of this Act a road toll project has to be a portion of a national road and be declared as such.

2.4 Privatised roads

An extension of the loan funds obtained by the Department of Transport for the funding of portions of the national road network, is the privatisation of roads which provides a means whereby roads can be built sooner. The advantages seen in privatisation are that funding will not primarily be a State responsibility, different funding sources can be utilised, a new private industry will be established, economics of stage construction can be employed more effectively, road management is introduced, and the funding of maintenance and expansion is not entirely dependent on Government funds.³ The issue of toll roads will now be discussed in more detail.

2.4.1 Toll roads

The fundamental issue of toll financing is that it is applied according to what the road user is prepared to pay to use the facility, and essentially is able to afford. It certainly assists in achieving a level of transport funding which is affordable by the country. Toll financing provides a

means whereby the private companies can charge motorists a fee to use the road, and accordingly recover the costs of providing this road. With the gradual reduction in funds being made available for roads, the Government saw this method of privatising portions of the road network, as a means of improving the existing national road network at a much earlier date, and is in line with its policy of privatisation and user-pay principle.

With funds for roads becoming scarcer and in line with the Government's current policy of privatisation, concessions have been provided whereby sections of the national road network have been privatised and will be managed by two groups of consortiums, namely Tolcon and Tollway. They will be responsible for the functions pertaining to the financing, construction, maintenance and operation of these sections and as a reward will levy a toll on the motorists who use this facility, providing a means of obtaining a return on their investment. The concession period has been set at 25 years and is renewable for a similar period.

2.4.2 Advantages and disadvantages of toll roads

The advantages of a toll road project are as follows:

- (i) toll financing enables deserving projects to be built at an earlier date;
- (ii) toll financing is deflationary, whereas an increase in fuel levy is inflationary as this general increase would lead to the whole country increasing their tariffs on goods sold;
- (iii) only the road user pays the toll and is thus the most equitable form of financing to the road user; and

- (iv) the fuel system of financing is one where the present generation pays for the benefits enjoyed by future generations, whereas with toll financing the future generations also pay.

The disadvantages of a toll financing scheme are:

- (i) cost of collection of toll fees is much higher than in the fuel levy system and can be in the order of 15% of the toll fee;
- (ii) imposing a toll discourages some road users who then use the alternative route and consequently lowers the rate of return on the capital invested which is a disadvantage to the national economy; and
- (iii) other road projects in the country were funded by levies raised from all motorists, whereas now only the users of the toll road would finance the project.

When viewing the advantages and disadvantages of a toll financing system, the former views have preference, but the advantages can be lost if an unrealistic toll fee is set.

2.4.3 Toll fee

The three commonly used travel parameters are time, distance and cost. The income on a toll road depends on the toll fee and the traffic volume. The cost of using a toll road is often referred to as a "behavioral" or "perceived" cost since it is the cost which is assumed to affect the decision-making process of the trip maker. The perceived cost is

subjective and differs from the economic cost which is the real cost consumed in travel and transport. The perceived cost for passenger cars is the fuel and travel time cost whilst for goods vehicles it also includes the financial cost of travel. Private motorists tend to ignore the annual cost of depreciation, finance charges, insurance and licence fees as these are not distance related, in preference for the marginal cost of travel which is only the fuel and servicing cost. Legislation has permitted the toll fee to be set at 75% of the perceived saving in using the toll road in preference to the alternative route. The occasional road user might be attracted to a toll road, but regular road users would avoid using the facility if his perceived benefit is much less than the toll fee. There is also a tendency to not taking time saving and road safety into account when comparing options.

2.4.4 Toll roads in Natal

Tolcon is responsible for the operation of the N3 route between Cedara and Alberton. The tolls being levied presently at Mooi River and Keeversfontein appear excessive, as they do not reflect the savings perceived by the average motorist who only consider their marginal cost of travel to be the fuel and servicing costs. However, users in the business sector include the cost of time which makes a significant difference. Tolcon have undertaken to finance this whole toll route which is primarily why it has set high toll levies, although the levy is less than the 75% of the perceived saving which it is allowed to claim. Tolcon's investment in rehabilitating the Cedara to Frere section and maintenance only of the Frere to Keeversfontein section, provides a basis for charging tolls on these sections as well; but this forms part of the overall financial

package made between the National Transport Commission and Tolcon. However, Tolcon is taking advantage of charging almost the total toll fee allowed amounting to 75% of the perceived benefit, on the Cedara to Frere section on which it spent about R68m on rehabilitation. The toll fee was calculated on the benefits a motorist would enjoy in not having to use the existing substandard alternative road which is 20km longer. Tolcon acted merely according to the terms of their agreement with the Department of Transport, which allowed them to toll an existing facility. Tolcon has a commitment of incurring expenditure in the amount of R1400m in the next 25 years on upgrading and maintaining 169km of the N1 and 438km of the N3, as shown in Figure 20 in Chapter 6. To enable Tolcon to recoup its investment and finance its current operations, they are charging almost the maximum allowable toll fees. However, the opinion is that Tolcon should only recover its investment of R68m on the Cedara to Frere section as this is an existing road which the public has already paid for. The Department of Transport is currently reviewing its policy to reduce the toll fee to this acceptable level, but it will have to compensate Tolcon accordingly.

There is also a toll road situated on the N3-1 at Mariannhill, and is known as the Field's Hill bypass. This road is the responsibility of the Department of Transport who financed the provision of this facility, partly from a loan. The toll fee that has been set, is to finance the redemption of this loan. The fee is much lower than the other toll road projects, but the circumstances are different. Here, the project costs were lower, alternative route is not much longer, and the traffic volumes are much higher. Only the operation of the toll plaza is privatised, with all revenue accruing to the State fund. No other toll roads are planned

for Natal, although this has been mooted at great length. The N2 on the north and south coast, are not financially viable as toll roads when considered as a whole system, as their revenue would not be able to support the capital cost. As an alternative, it would be possible to toll these roads and charge the maximum possible toll fee, such that it remains attractive to motorists, and any shortfall in funds to complete these roads, could be obtained from Treasury.

Taking all factors into account, the implementation of the toll road system will have positive advantages for the overall community as it is an ideal system of the user-pay principle, and also it provides a good road at an earlier date than would normally be the case. It is evident that there has to be much public relations work to advise the public of the benefits of a tolled road. Motorists using the toll road for business purposes can treat the toll as tax deductible, making the toll road more attractive.

Other funding sources which are of a minor nature include recovering the accident costs from the motorist concerned and also increasing the contributions made by private developers to improve the public road network to satisfy the increased traffic demands caused by the development. Both these costs are in general treated as a cost for the government as it is the function to provide roads as a social service for the benefit of the community as a whole.

When selecting a funding strategy there are five interrelated criteria which should be considered, namely yield and stability, ease of collection

and administration, impact on investment, equity and legality. Public administration concerns itself with optimising the revenues collected from various sources by keeping the cost of administration as low as possible.

3. FINANCING POLICY

The road industry is but one of the sectors in the overall economy. To enable investors to be attracted to the road industry, the road authorities must ensure that the financing policy that it adopts, best meets the requirements of these investors who otherwise would be attracted to the other sectors which include mining, agriculture, manufacturing and industrial. The road industry being one of the most capital intensive in the civil engineering industry, is most susceptible to financial fluctuations. The road industry relies on a large quantity of unskilled and skilled labour to perform the actual physical work. With the prevalent financial fluctuations in the road industry, the employment figures of this group of labour vary significantly whilst the managerial group is relatively stable. The scenario of the road industry is consequently one of high risk and low return. By adopting a sound financing policy, much can be achieved by the road authorities to provide a stable industry. The policy will be looked at with reference to the budget procedure, contract policy, legislation and devolution of authority.

3.1 Budget procedure

The budget procedure whereby funds are appropriated annually for the particular financial year, makes it difficult to have accurate road

building programmes. The lengthy process between the initial planning of a road programme for a particular year and the actual approval of expenditure for the project, can take up to ten months. The budget is normally finally approved in June whilst the financial year has already commenced on 1 April. This has a dual adverse effect on the proper planning and implementation of a road programme, firstly the public functionaries responsible for the preparation of the road programmes are delayed through uncertainty, and secondly the public officials, consultants and contractors who carry out the implementation of the programme need adequate advance notice to obtain the necessary resources to do the work.

The fluctuation and reduction in funds for road improvements have meant that the road authorities have had to consider the options available to ensure that a reasonable road system is maintained. An unfortunate result of this reduction in road projects is that it leads to a reduction in the available expertise in this field and when there is an upsurge in funds, the public institutions are unable to make use of the funds. To ease the uncertainty it is proposed that projects of a capital nature should have specific funds allocated to it over a three-year cycle, and also that there should be a roll-over of funds between financial years.

In the first instance, the capital projects lead to an increase in the value of road assets so have a benefit for the road user. By providing funds over a three-year cycle, enables the public officials to adequately plan the implementation of road projects. This will lead to added security for all the institutions and organisations involved in the planning and

implementation of improvements to the road network. It has happened all too frequently that tenders are called for projects, and these have been submitted when suddenly due to a lack of funds the tender is not awarded. When tenders are called for again, the previous lowest tenderer is at a disadvantage as his price will be used to his disadvantage. Before tenders are called for there should be a guarantee that funds are available. The only reason that a tender is not accepted should be if the price differs significantly from the estimate.

The present situation is such that the Natal Roads Branch have adopted the policy of preserving the existing road infrastructure and accordingly allocated funds for road maintenance as a priority, and thereafter allocated the remainder of funds to construction. This policy is supported in that it is essential to preserve the existing road network as in the long term it is more costly to try and reinstate a collapsed road system.

The second proposal of permitting a roll-over of funds between financial years, will lead to better control and use of funds. The numerous problems that occur in trying to balance the budget annually, cover a wide field and include adverse weather, inaccurate and delayed cost reports, unstable labour force, and a failure by contractors and suppliers to meet the scheduled delivery dates. As the financial year approaches the end, there is always a mad scramble to balance the books as the present financial legislation does not permit funds to be carried over or brought forward between financial years. Any funds not expended have to be returned back to Treasury who then utilise these funds on all its institutions. It is recommended that 10% of the annual allocation be allowed to roll over

either way between financial years. This will lead to better management of the available funds and will ensure that there will be better control on the effective use of the funds.

Thus, by providing a facility to have funds allocated for capital projects over a three-year cycle, and providing a 10% roll-over of funds either way between financial years, will do much to improve the planning and control of the use of funds. It will also lead to more regular and smoother expenditure of funds and the abnormal monthly expenditure on the provincial road network near the financial year-end as noted in Figure 25 for construction in Chapter 7 and in Figure 28 for maintenance in Chapter 8, will be avoided.

3.2 Contract policy

There is no doubting that a sound set of contract documents and specifications leads to better value for money. There has been continued consultation held between the South African Federation of Civil Engineering Contractors and the Committee of State Road Authorities in accepting a conditions of contract document which will suit all road authorities.⁵ At present there are many varying conditions of contract documents which the various public institutions and local authorities use, and this only leads to conflicting standards and misinterpretation of the conditions of contract.

The policy of how contract payments are made, has a significant effect on the pricing strategy of a contractor. The constituents of the contract document which affect the price, are the value of establishment allowed,

composition of the price adjustment formula, monthly pay certificates and retention monies. Loading of the establishment price to receive high initial payments and an imbalance in rates are not permitted. The Natal Roads Branch have adopted a policy of processing the monthly pay certificates within days and have also released the full retention of money held on completion of a project in lieu of a bank guarantee to cover any work to be done during the maintenance period. This has led to lower prices tendered on the Branch's projects relative to other clients who can take up to 90 days to process their payments. However, recent developments in the pay procedures of the Provincial Accountant indicate that the pay period could be as long as 30 days which is not supported.

There is no doubt that civil engineering contracting is a high risk business. In fairness to both parties, it is not unreasonable for the client to seek ways and means of maximising his security against non-performance. However, on the other hand, the contractor will endeavour to maintain a healthy cash flow. The General Conditions of Contract document generally specifies the retention to be held by the client who also has other security in the form of bonds, common rights and unpaid work. The retention money withheld is not meant to be used to supplement the employer's finance requirements but should be held in trust. The building industry provides for the retention to be kept in an interest bearing account in the favour of the contractor, whilst the civil engineering industry does not. It is apparent that this is not permitted as the public sector is not prepared to adopt this system. No doubt the contractors price this shortfall into the tender price.

The Civil Engineering Advisory Council has recommended to all employees that an unconditional guarantee be used in place of a surety bond.⁶ The Council considered that the use of such unconditional guarantees, as an alternative to retention sums, would be anti-inflationary. The cost of raising surety bonds and unconditional guarantees is much less than allowing for the withholding of retention money, which advantage would be passed onto the client.

The contract price adjustment formula, known as the Haylett formula, attempts to compensate the contractor for a rise in price due to escalation. The formula gives a different weighing ratio to each of the labour, plant, materials and fuel cost components depending on the nature of the project. A problem with this formula is that it uses the average increase of a range of products and could vary significantly from the current price. However, provision is made to pay for specialist materials such as bitumen on a rise and fall basis, as this product is subject to severe price changes due to availability on the foreign market and fluctuation in the dollar/rand exchange rate. This method is preferred and can be extended to other contracts where key materials form a major part of a contract, such as for roadline painting.

Essentially a contract pay procedure should be adopted such that it protects the security of the investment for the client, but also permits an adequate cash flow for the contractor to enable him to meet his commitments. Ultimately, any positive policy can only benefit the client, who will have more funds at its disposal.

3.3 Legislation

The economic measures implemented by the Central Government has an effect on the road industry. The measures which have led to a negative effect include the higher import surcharge on capital equipment and spares, increase in general sales tax, and the fuel price increase which will through the direct and indirect effects push up the cost of road construction and this in turn, will reduce the amount of work which can be undertaken from the limited funds which are available. The present general sales tax (GST) system is to be replaced with an invoice method value-added tax (VAT) with effect from next year.⁷

The implementation of the VAT system will lead to the taxation of construction activities although no credit will be allowed for tax paid on capital goods. With the GST system the contractor pays tax on the inputs, which overall provides a lower cost for a project. Ideally it would be advantageous to zero-rate all capital projects. To ease the effect of the legislation measures, road authorities are recommended to adjust their operations to make use of tax avoidance which permits the use of legal measures to reduce their tax liability. Examples hereof include the usage of claiming a fuel rebate on construction activities and utilising hauling contracts to specifically transport material. Under the GST system no tax is paid on the hire of machines which specifically transport material on a cubic meter-kilometer rate as this is regarded as a service, whereas if the machines are hired on an hourly basis, then general sales tax is payable, notwithstanding that the same operation is being undertaken.

A new means of terminating current road programmes is the use of sunset

laws passed by legislation. This technique has been successfully used in the United States of America and provides a means of improving the performance of the government and the accountability of bureaucrat.^a In the past, self-examination has focused on management by objectives, decentralisation and reorganisation, and prior to this on rational decision-making and systematic planning. Current trends focus on resource allocation through zero-base budgeting and also legislative and program evaluation through regulatory reform and sunset laws. A sunset law is a special kind of law which automatically terminates government programmes, regulations or other laws after specified time periods unless the legislatures decide to reintroduce the programmes. If these are not reviewed or acted upon, then they will automatically be terminated. Sunset is not meant to replace the executive management and evaluation functions, but rather to supplement them with a rigorous parliamentary review. Examples of sunset laws which could be introduced to provide an improved means of managing the road infrastructure, include use of cheap labour to provide job opportunities, abandonment of toll roads if excessive traffic uses the alternative route leading to a higher accident rate, and specific tax incentives to boost development, all three for a specified period. The use of sunset laws is a useful technique to enable road programmes to be more effective and efficient.

3.4 Devolution of authority

In line with the Government's policy of the devolution of functions to the lowest level of authority possible, the Natal Roads Branch is implementing the decentralisation of numerous functions to the offices of the District Engineers in the Maintenance Directorate. To enable these functions to be

performed effectively and efficiently, there also has to be a devolution of authority. It is thus essential for the more experienced engineers to be employed here, by providing promotion opportunities in the field. They would then have the required level of authority to carry out the work which has been delegated to the District offices. The financial delegations should accordingly be amended, to enable purchasing decisions for goods and services, to be made as close as possible to the source where the work is being implemented.

The road authorities should accordingly make better use of its available funds by attempting to amend its financing policy, which will lead to a more stable civil engineering industry and subsequent reduction in projects costs.

4. ROAD NETWORK POLICY

South Africa is a country which has a population having standards which vary between those of the First World and Third World. To best make use of the resources available, there is a need for amending the road standards to best satisfy the expectations of the community. South Africa is known to have one of the highest standard of rural road network in the world. By amending the geometric standards, more can be achieved with the same amount of resources. However, this must not be sacrificed at the expense of providing an economic and safe facility. The effect which stop-gap funding has on the road infrastructure and how best use can be made of the limited resources, is discussed with reference to the policy to be adopted

for the development of the road network.

4.1 Stop-Gap funding

There is a saying which states that the public has to pay for good roads, whether they have them or not. The retired Director of Roads for the Cape, Mr. de Kock, outlined measures that can be carried out in the short, medium and long term to prevent the complete collapse of the road system.⁹ Roads have two major design parameters, namely materials design to obtain structural strength and geometric design to provide a road alignment. Depending on the available funds, which in recent years has followed a process of being stop-gap funding, measures can be implemented to improve or retain these two design criteria. The initial reaction is to apportion funds to preserving the road surface in preference to providing improved geometric standards. This philosophy cannot be faulted, but can lead to a dangerous situation whereby the road is not safe and has a lower level of service.

With the rapid development of urbanisation and subsequent industrial growth, the policy of stop-gap funding cannot be supported. A plea is made for the politicians to understand the plight of the road authorities to realise that it is essential to not only maintain and upgrade the existing road system, but that new roads are also needed to meet the demands of the community. Improved road standards will lead to savings in transport and in the general economy.

4.2 Use of limited resources

The problem of limited resources for infrastructure development is a

world-wide phenomenon, but particularly in a developing country, and South Africa is regarded as such. Getting the most out of limited resources is an important aim at any time, but it is more important in times of economic stringency. This is the problem facing the road authorities. The former Director of Roads for Natal, Mr. R.B. Hindle, recommended that there are various strategies that can be adopted to tackle this problem in a meaningful way, and with the modern techniques available involving computerisation, these strategies can be improved and refined to ensure greater efficiency.

The most important strategies are as follows:¹⁰

- (i) optimum programming of major works;
- (ii) cost effective design and specification of new works;
- (iii) traffic engineering improvements;
- (iv) appropriate and timely resurfacing of blacktop roads;
and
- (v) efficient maintenance management.

The Natal Roads Branch are on the way to implementing these strategies. To provide for improved traffic flow, numerous low cost road safety projects have been implemented together with other geometric improvements of slip-lanes and refuge islands. The implementation of the maintenance management system is progressing at a satisfactory pace but needs to be hastened along once the learning curve has been completed. The availability of funds affect the programming of major works and the resurfacing of blacktop roads. There is a need for more cost effective designs and specifications.

The current policy on road matters can be improved in certain areas. The national road fund only finances work on the declared national road network, notwithstanding the fact that the Province's road network has to carry this traffic where the national road network has not yet been developed. Examples hereof are the alternative provincial roads used on the N2, N3 and N20. It is felt that the national road fund should finance the routine maintenance of these provincial roads. Also, more emphasis can be placed on developers and local authorities accepting more responsibility in the financing of the national and provincial road network, where their developments have a direct influence on the road network, notwithstanding the observation made earlier that the provision and maintenance of the public road network is a social service for the benefit of the overall community, and should accordingly be financed by the Public Service.

Financing alone cannot solve the problems of the country's road network. Every effort has to be made to use the various techniques available to achieve optimum results in programming, design, traffic engineering, pavement management and maintenance management. A dynamic and optimistic outlook will go a long way towards achieving these results. Careful targeting of the research effort can accelerate the search for innovation, which is the key factor in making the best use of the limited resources. But, it requires the presence of the most experienced and proactive management staff to remain within the road authority institution to guide the search for, and use of the most innovative techniques of preserving and developing the road network in Natal.

5. BUDGET CONTROL

During the present time of economic austerity, the Government is faced with declining revenues and political constraints on increasing taxes. As the budget reflects the policy of the Government, then political policy is in fact budget policy. The road programmes set up in the budget are accordingly a reflection of the national priorities. Top management sets about performing the technique of policy-making to determine which projects to place on the road programme. The budget has to be presented in such a way that it can be used as a tool by top management for testing the results against the objectives set and expectations cherished at the time the political decisions were made. Thus, the budget has to be controlled and with modern computerisation systems this task is made easier as discussed here.

5.1 Control

Budget control is not used in the sense of the power to decide, but means watching the implementation of decisions through follow-up and feed-back, and relating effects and consequences to aims and expectations. With the decline in real terms of money made available for the implementation of road programmes, there has had to be a restraint in public expenditure. Whilst in some cases the restraint in expenditure has been the result of more rational use of human resources through improved productivity, the decline in funds is mainly attributed to the Government being forced to cut down on public expenditure to match the revenue received. The expenditure to be incurred is only decided after due consideration of the resource availability. Control of public current expenditure is an

integral part of budgeting. Within the context of control the following separate processes are observed:

- (i) expenditure has to be matched with revenue;
- (ii) allocation between competing road projects;
- (iii) budget implementation; and
- (iv) post-budget evaluation.

Budget execution is an important means for the translation of government activities into reality. The primary goal of effective cash management is to make cash available when needed. It requires, among others, assessment of trends of expenditure, advance information about the timing of expenditure, forecasts of cash requirements, and the monitoring of the appropriation account programme by programme. In order to assess whether budget execution has been achieved with acceptable economy efficiency and effectiveness, value for money has become an important yardstick for judging budgets and development programmes. Financial stringency has given added urgency to this approach. It requires information systems to be established reporting both on performance and on expenditure. For the latter aspect, the development of an electronic data system is essential within the Natal Roads Branch. The techniques and measures adopted to control expenditure, have to reflect the circumstances of the road programmes according to the style of the administrative and organisational arrangements.

The existing costing system of the Natal Roads Branch has been developed on sound principles whereby costs are apportioned to the particular projects including overheads, transport fees and other incidental

expenses. The only costs not apportioned are those incurred at head office. It is considered that this would be the next logical step. For 1988/89 the head office overhead costs are estimated to be R7,5 million and represents 3,0% of the budget as reflected in Table 12 in Chapter 6. The overhead cost component of the line functions of the Construction and Maintenance Directorates should be apportioned to the subheads 3L and 3K, respectively.

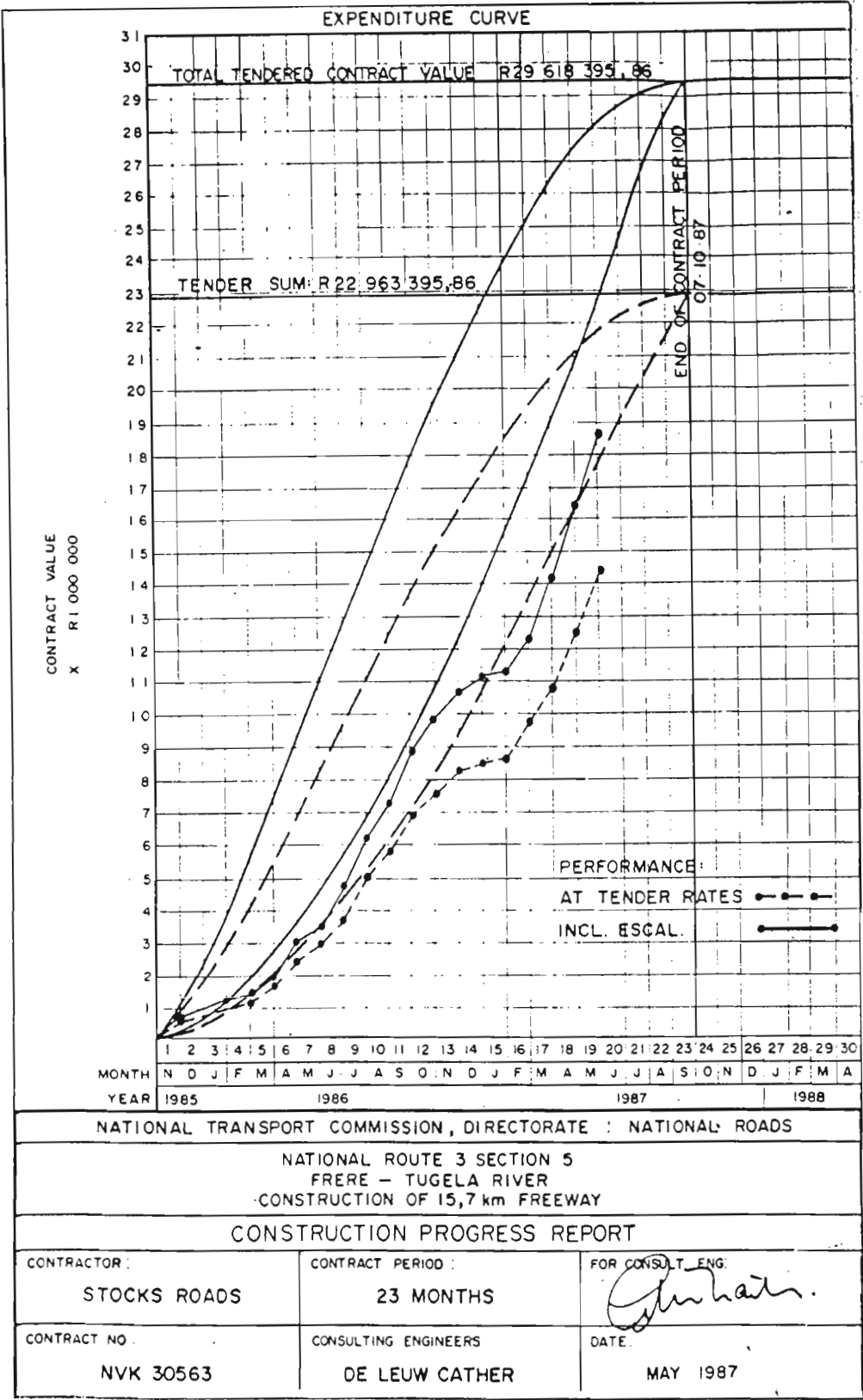
However, the costing procedure needs to be revised to allow for costs to be apportioned directly to the particular subhead under the costing categories of expenditure on men, machines, materials and services purchased from the private sector. Thereafter, these costs could be apportioned to the particular item, project and activity in this order, and not conversely as is presently the case. This will enable top management to have details of the current subhead expenditure within a few days, whilst middle and lower management would have access to the item, project and activity expenditure details shortly thereafter, providing the costing is computerised.

Preliminary additional budget control measures can be implemented by running a dual costing system and use of the S-curve expenditure graph. In the dual costing system, costs are kept separately. As orders are processed, the value thereof should be dealt with as a committed expense although the financial transaction would only in reality be treated as expenditure once the delivery of the goods or service has been made. Use of the forward committed cost record enables management to plan future financial transactions, providing a means of better budget control. At

financial year-end, the estimated committed expense will equal the actual expenditure as the funds are not transferable between financial years. This entails having to revise the estimated committed expenditure relative to those goods and services which can be delivered before year-end.

The second simple technique of maintaining budget control is the use of the S-curve shown in Figure 30.11 The S-curve is the envelope within which contract expenditure is expected to remain. The upper and lower limits are developed from experience and may be varied according to the nature of the project. For projects which are correctly managed and implemented, then the expenditure profile would remain within the envelope. Expenditure on civil engineering projects traditionally follow a S-curve shape. Initially, expenditure is slow whilst the contractor gets established on site. As the contract progresses, so the tempo of work also increases. Road projects generally have a steep increase in expenditure when the more expensive constituents of the layerworks and surfacing are constructed. This is followed by a tapering off of activity whilst the final finishing touches are performed. A deviation out of the envelope on the lower limits indicates slow progress and necessitating greater input of resources. Here the budget would be underspent. Conversely, a deviation out of the envelope on the upper limit indicates fast progress due to a greater input of resources which will lead to a possible shortfall of available funds in the budget. This is common in a depressed economy where there are few jobs available, resulting in contractors putting their spare resources into a particular project. The cumulative summation of all expenditure profiles provides a useful tool for top management to control the cash flow position, which is best done by computer.

FIGURE 30 : EXPENDITURE CURVE OF N3-5 PROJECT



5.2 Computer systems

One of the major inventions of all times is that of the computer. It has enabled calculations of varying problems to be determined relatively quickly. To aid top management to control the budget effectively, it is essential for the Natal Roads Branch to computerise its costing. It will then be possible to have more accurate and up-to-date information of the current financial position. The system can further be extended to record the projected cash flow of contracts and monitor this with actual expenditure. There are various software packages available which are suited to the cost control of projects and are also able to prepare a programme and schedule of projects. It is also possible to prepare budgets from input information on the project details, relating to the usage of men, machines and materials. This then provides data on how many projects can be undertaken. The usage of computers can be further developed to create a network of information control which is based on having computer systems as close as possible to the source of the expenditure. This would be at the particular project or area office where work is managed. The computer has done much to improve and provide accurate information of the progress of projects together with budgets, which then aids the public functionaries to better manage the available funds.

With the budget being a statement of the political policy, it needs to be properly controlled to ensure that the programmes that are planned are executed with the optimum use of resources. Good management of the budget based on sound accounting principles, will lead to better use being made of the available funds.

6. PRIVATISATION AND DEREGULATION

There is a wide acceptance of the premise that privatisation and deregulation are in many respects closely related processes. Nevertheless, the two concepts are clearly distinguishable. Both the reduction of the role of the public sector in the economy and minimum interference by the State, promote the optimal functioning of market mechanisms and self-regulation. Whereas privatisation deals with the role of the State as a participant in the economy, deregulation is the process through which measures taken by the State to regulate transactions between private parties are brought into line with the objectives of its deregulation policy. The effect which these two processes may have on the management of the rural road network is now discussed with particular reference to the White Paper on Privatisation and Deregulation in the Republic of South Africa.¹²

6.1 Privatisation

When Louis XIV of France asked the private sector what they expected of an effective and efficient public sector, their reply was "laissez nous faire", which translated means "let us get on with it".¹³ However, Louis XIV did not take this advice and instead instituted a system of controls and subsidies, the long term consequences of which, was the holocaust of the French Revolution. On the other hand, Britain, which did follow the laissez faire policy at the time, became one of the richest and most powerful nations. Economic history seems to prove that public administrators can do more for the general well-being of their country -

as opposed to the private sector - by doing less.

6.1.1 South African economy

The growth of the Public Sector in South Africa is not unique and is common amongst the industrialised countries of the Western World as well as many developing countries. This has been caused by the need to provide services to a fast growing population in changing circumstances which have been influenced by a number of external and internal events which have had an increasingly negative effect on the South African economy. These events include the oil crisis in the seventies, fluctuating exchange rates affecting the gold price, development of Third World debt problem in the eighties which exerted a marked influence on the international capital movements, and South Africa's own political policy.

The participation of the South African Government in the economy is reflected, inter alia, by the public expenditure as a percentage of the gross domestic product which in 1985 amounted to 38,1% with 26% of this being at Central Government level. This has been necessary to enable the Government to implement its political policies of giving priority to expenditure on defence, housing and education. Inflation has also had a profound effect on the South African economy. In the eighties the inflation rate was about 14% whilst in other major countries it was about a third of this figure. The United Kingdom, in particular, tackled the prime causes of inflation with a fair measure of success by means of fiscal and monetary measures and also a policy of privatisation. It realised that the root causes of inflation included overregulation, expenditure beyond a country's financial means, inflationary monetary

policies, and taxation which stifled initiative. These factors discourage savings and investment and promoted low productivity. Fixed investment in the public sector has been low due to funds being needed to pay interest on public debt, subsidies, finance State corporations and enterprises. At the same time, there has been a marked concentration of financial power and take-over of successful enterprises in the private sector. In the period 1981 to 1984, 54% of net investment in the private sector was made in the finance, insurance, fixed property and business service sector, whilst only 17% was channelled into the production sectors of manufacturing, mining and agriculture the expansion of which is so necessary for the creation of employment opportunities.

6.1.2 Privatisation process

Against the above economical and political background, South Africa is in an ideal position to pursue a route of increased privatisation which can be defined as:¹⁴

"the systematic transfer of appropriate functions, activities or property from the public to the private sector, where services, production, and consumption can be regulated more efficiently by the market and price mechanisms".

The privatisation process forms part of a strategy whereby firstly, the public sector's involvement in the economy can be limited or reduced so that more capital, means of production and opportunities can be made available to the private sector; and secondly, the private sector is given the opportunity to develop and grow optimally and with minimum State intervention and regulation. The purpose of privatisation is to improve the performance of the economy in the following manner:

- (i) effective use of production factors;

- (ii) optimal functioning of market forces; and
- (iii) increasing the percentage of net fixed investment in the private sector.

The methods whereby privatisation can be implemented are :

- (i) sale of public sector enterprises and assets;
- (ii) partnerships;
- (iii) leasing of business rights;
- (iv) contracting out; and
- (v) discontinuation of a service or activity.

The Government can see little long-term advantage in totally alienating the assets of a public sector monopoly. One of the envisaged benefits of privatisation is the deregulation of markets currently dominated by the public sector in order to establish a number of enterprises and thereby create competition in the market. Privatisation is not an end in itself, but forms part of the policy and strategy intended to achieve economic development and growth. Functions which are so intimately related to the public interest that they require performance by public officials, will not be privatised. An example hereof is defence of the country, although it is possible that some of the activities forming the function, could be privatised, such as the supply of military vehicles. Initial reactions are that services and products will apparently cost more after privatisation, but this will not ipso facto be a reason for not privatising it. The cost of goods and services provided by the public and private sectors often differs due to the real cost not being reflected due to hidden costs, subsidies, discounted interest rates and tax liability.

Privatisation of a function or activity will accordingly be implemented in the following cases :

- (i) does not entail a real risk to State security;
- (ii) does not defeat the constitutional, social or ecological objectives served by the function or activity;
- (iii) must be reconcilable with the policy of competition; and
- (iv) be to the long-term benefit of the taxpayer or community in general.

With privatisation there will be increased participation of the private sector in the economy, and this will lead to a broader tax base, thus generating additional income to finance the essential state programmes. The effect which privatisation can have on the road network is now dealt with.

6.1.3 Effect on road network

The provision and maintenance of the national and provincial road network is to remain a public function and the responsibility of Central Government. The National Transport Commission and four Provincial Administrations will retain control of the rural network. However, there are a number of activities which have been, and will still be privatised to fulfil the aims of the Government.

A major recent development is the formation of two concessionaires, namely Tolcon and Tollway, consisting each of a consortium of private companies, who will carry out most of the activities pertaining to the management of a few sections of the national road network. These entrepreneurs will be

responsible for the financing, construction, maintenance and operation of these sections of the road network. The reward which these concessionaires will receive for performing these activities, will be in the form of a toll levied on motorists. The toll has been set at a maximum limit of 75% of the perceived benefit. The period of this concession is to be 25 years and is renewable for a further similar period. The implementation of this type of concession satisfies most of the criteria of a need for privatisation except that it does not increase competition in the market as these two concessionaires are closed group of companies. The most advantageous benefit of this system, is that the road needs can be fulfilled at an earlier date.

The Natal Roads Branch has already privatised many of its activities. Realising the advantages of this policy, it made a significant move made in this direction in the previous decade. The activities include a portion of the design of roads and bridges, survey, materials testing and the provision and maintenance of the road network. Even on projects carried out with its own resources, most of the materials and services are rendered by the private sector such as fencing, drainage, layerworks, wearing course, guardrails and various roadside features.

Where previously in the Natal Roads Branch there were four major construction units in the Construction Directorate and five minor construction units in the Maintenance Directorate, there is proposed to be two major construction units, three minor construction units and two rehabilitation units. The changes are to be as follows:

- (i) major : closure of Unit 1 in Kelso in 1986 followed by

Unit 3 in Port Shepstone in 1993. Unit 4 at Greytown to be moved to Vryheid in 1992;

(ii) minor : Amanzimtoti D4 to close in 1989 and in 1992 the Talana A4 will be taken over by Unit 4; and

(iii) rehabilitation : a small rehabilitation unit is to be formed in Durban and Port Shepstone in 1989.

The Natal Roads Branch is the most privatised of the four provincial administrations and presently performs about 40% of its work in-house. The target for construction is set at 30%. The Natal Roads Branch has adopted this approach as it has had to supplement its own resources of man and machine, by employing togt labour and privatising many activities to fulfil its role of preserving the national and provincial road network in Natal which has increased in length from 14000km in 1978 to about 15500km in 1988.

The Natal Roads branch is presently reviewing its functions and activities, in accordance with the provisions of the Functional Evaluation Programme which the Cabinet approved on 12 August 1987 for application in the Public Service.¹⁵ The aim of this functional evaluation programme is to ensure that the functions of the State be limited to functions which are essential and inalienable and which can be performed at an economically and socio-politically acceptable level. The Commission for Administration will as the co-ordinating body, report to the Cabinet on the findings of this programme. The investigations are carried out by a select task group who have to query the justification and extent of all functions in order to determine whether it is possible to abolish,

privatise, scale down the intensity of, deregulate or perform on a self compensating basis a function or, where necessary, any of its constituent activities or tasks.

The recommendations made to date per this programme, indicate that there is scope for the Natal Roads Branch to further pursue its previous aim of privatisation. This is possible by allowing the private sector to perform more of its activities. The most significant change will be in the Maintenance Directorate where the activities currently performed by about 40% of its line functional staff, comprising artisans, operators, drivers and labourers, can be privatised and include road patching, sign erection, traffic counting, drainage repairs, grass cutting and litter removal. However, certain of these functions will be performed in-house on a very small scale to deal with emergencies and lack of supply by the private sector, together with blading of gravel roads. It is important for the Natal Roads Branch to maintain a core of personnel capable of carrying out these activities when needed. To assist with the increased level of supervision needed to control the work contracted out to the private sector, an improved supervisory structure will be provided by the creation and upgrading of posts within the line functional structure of the Natal Roads Branch which has a typical pyramid shape, and is headed by a core of professional engineers. This is ably blended with a matrix organisation of the support functions of technician, road superintendent, survey, materials, mechanical and administrative personnel.

Observations have been made which indicate that certain activities provided by the private sector are more costly than previously provided by

the public although these costs could be deceptive because of differing costing techniques. However, there needs to be a settling stage whereby the private sector can establish an infrastructure from which to operate in. Indications show that there is a positive approach by all concerned in the further privatising of activities related to the road network. A key feature of this process is the improved control of productivity which is defined as the ratio of output to input for a particular activity. It is essential to measure productivity by looking at the efficiency and effectiveness of the activity and function. This follows the principle of "unless the score is kept, it is difficult to know whether one is winning or losing". The private sector which has a profit motive, is better geared towards managing productivity. The effect of deregulation on the road network is now dealt with.

6.2 Deregulation

It is generally accepted that a country's economy cannot function properly without a reasonable measure of regulation. In certain circumstances, however, such regulation may have a restrictive effect on the development of private entrepreneurship, the promotion of competition, and the creation of employment opportunities. In setting new regulatory measures, a number of factors need to be considered such as the necessity of regulation, cost and convenience of complying with the regulations, appropriateness of the standards, and the flexibility with which it can be implemented. Deregulation should be applied wherever possible to bring about freer function of the market forces. Effective competition should prevail in any strategy and should not lead to simply replacing a public monopoly with a private monopoly. Deregulation must in

particular also promote the expansion of the small business sector.

The processes of deregulation is a continuous one, and numerous activities have been deregulated including the removal of influx control, issue of uniform identity documents, opening of business centres to entrepreneurs of all population groups, property ownership rights, abolition of price control of certain goods, and the revision of the permit system for road transport.

The road network in recent years has generally been affected by these deregulation measures. In particular the processes of revised permit system, urbanisation and industrial development, have significantly increased the traffic volume on the road. The rationalisation of uneconomical rail routes has also resulted in more goods being transported by road. Road authorities are accordingly in need of more funds to cope with the effects of deregulation and should make further representations in this regard to Central Government, if a satisfactory level of service is to be maintained on the existing road network.

7. SUMMARY

Road authorities are faced with competing for funds with the other sectors in the economy, according to the list of national priorities which have been set according to the political policies of the ruling National Party. Defence, housing and education have a higher priority than the preservation of the road system although the road network is a key factor

in the overall economical development of the country as it provides a means whereby people and goods can be conveyed, and a means of communication.

The road authorities receive most of their funds from Treasury through the State Revenue Fund. Other sources are from loans, road privatisation and the national road fund. The latter source was a dedicated fund for the funding of the national road network, raised from levies on the sale of fuel to the commercial sector. However, with effect from 1 April 1988, Treasury administers this source and decides how to distribute the funds. It provides an easy means of raising money from the public for financing the Government's programmes. This dedicated road fund is considered to be the most equitable way of collecting funds from the road user as it is directly related to the usage of the road network. The general public would be in a position to exercise support or disapproval of the fuel levy rate according to the standard of facility that they are prepared to pay for. This is especially so, when the cost of providing and maintaining a road network, only amounts to 15% of the total transportation costs. Thus, for a nominal increase in fuel levy, there can be many benefits accruing to the road transportation sector.

With funds for roads becoming scarcer, and in line with the Government's current policy of privatisation, concessions have been provided whereby sections of the national road network have been privatised and will be managed by two consortiums, namely Tolcon and Tollway. They will be responsible for the functions pertaining to the financing, construction, maintenance and operation of these sections, and as a reward will levy a

toll on the motorists who use this facility, providing a means of obtaining a return on their investment.

The fluctuation and reduction of funds made available for road improvements, have made the civil engineering industry one with high risk and low return. This leads to the entrepreneurs seeking better investments opportunities in other sectors of the economy. To provide for the improved planning and control of funds, it is proposed that funds should be allocated for capital projects over a three-year cycle and also provision be made for 10% of the annual budget to be rolled-over between financial years. By having alternative contract pay and guarantee procedures, it will improve the cash flow of the contractor who in turn will pass this benefit onto the road authorities.

Current legislation by the Government affects the funds provided. By amending the financial procedures, the road authorities can use the legislation to their own advantage. ere the implications of the tax laws need to be investigated, as savings could be achieved by amending the contract conditions and procedures, some of which can provide tax relief under the GST or proposed VAT system.

Following on the Government's policy of the devolution of authority to the lowest level possible, the Natal Roads Branch is in the process of implementing the decentralisation of numerous functions to the offices of the District Engineers in the Maintenance Directorate. This is the outcome of the investigation into the functions of the Natal Roads Branch made per the Functional Evaluation Programme which is being implemented at Central

Government level. To complement the system of the devolution of functions to the field offices, there has to be a devolution of authority which can be achieved by employing engineers with greater experience in the maintenance District offices, and accordingly provide them with promotion opportunities in the field.

It is advantageous for the road authorities to seek ways and means of using the limited available resources to the best advantage. A number of strategies are available to ensure improved efficiency and include cost effective designs, optimum programming of work and an efficient maintenance management system. There is a need for the budget to be closely controlled to ensure that the road programmes that are planned are executed with the optimum use of resources. The use of the basic S-curve provides a simple method of controlling the cash flow of contracts, but the best technique is for the information to be processed on computer. There is an urgent need for the development of a computerised costing system in the Natal Roads Branch. The system also needs to be reviewed to costs to be apportioned directly to the particular subhead, and thereafter to the item, project and activity in this order and not conversely as is presently the case. This will allow the management at the various levels to obtain details of the current expenditure in a short time. Up-to-date and accurate information is needed on the road programmes in progress as this will lead to better use of the available funds.

The policy of laissez faire should prevail whereby the private sector is able to get on with doing its job and stimulate the economy. Privatisation and deregulation play a significant role in the functioning of the road

network. There is a need for the reduction of the role of the public sector in the economy and for a minimum interference by the State, to promote the optimal functioning of market mechanisms and self-regulation. The Natal Roads Branch is the most advanced of the four provincial road authorities towards privatising its functions and activities. By implementing the procedures of the Functional Evaluation Programme, it will be further able to pursue its own goal of privatising as many activities as possible. It is seen that the certain deregulation measures have increased the traffic volume on the road network. Additional funds will be necessary to meet this demand if the road authorities are to maintain a satisfactory level of service of the road network which is both safe and economical.

In conclusion, it is advantageous for a central road authority by means of the proposed South African Road Board, to be formed to co-ordinate the road and financing policy of the national and provincial road network. Its role would be to co-ordinate the road financing and planning, and ensure that it is oriented towards the national goals. Road financing should be attuned to what the country can afford, and the available road funds should be equitably and rationally distributed according to the physical planning needs.

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10. GENERAL CONCLUSIONS AND RECOMMENDATIONS

1. GENERAL CONCLUSIONS

The objective of this study was to investigate the financial administration of the road network in Natal. The road network forms an integral part of the social and economic development of the country as it provides a means of moving people and goods, and a means of communication. The road network system is a part of the overall transport infrastructure which encompasses other modes of transport such as rail, sea, air and pipelines. The road network remains the most utilised mode of transport in South Africa. Therefore, it is essential that the planning of new roads to the network be done in liaison with the development policies of the country to ensure that the correct strategies are used.

In the process of obtaining and compiling information it was deemed necessary, for purposes of this study, to review the development of provincial government in Natal. In the early days at the time of the Great Trek in 1835, Natal was founded as a Boer Republic together with the Transvaal and the Orange Free State. However, in 1843 Natal became a British Colony to join the Cape under British rule. On 31 May 1910 these four provinces became the Union of South Africa in terms of the South Africa Act, 1909. Provision was made for separate institutions to deal with the legislative, executive and judicial activities of the State. There was also to be a three-tier system of government, namely central,

provincial and local. The constitution of the Union of South Africa provided for the governments at the second and third level to have their own legislative body, with the Provincial Council passing ordinances and the Municipal Council passing by-laws at these two levels, respectively. On 31 May 1961, in terms of the Republic of South Africa Constitution Act, 1961 (Act 31 of 1961), South Africa gained its own independence and was no longer under British Rule.

In subsequent years the provincial borders in South Africa changed. The four black States of Transkei, Bophuthatswana, Venda and Ciskei (known as the TBVC States), gained independence. On 1 April 1978 East Griqualand was transferred from the Cape Province to Natal due to numerous factors relating to the independence of Transkei. Today, South Africa consists of a union of four provinces and of six self-governing black national states. The latter comprises Gazankulu, KwaNdebele, KwaZulu, Lebowa, Qwa-Qwa and Kangwane.

Within the environment of considerable socio-economic and political changes since the formation of the Republic of South Africa, a new constitutional dispensation was provided for in terms of the Republic of South Africa Constitution Act, 1983 (Act 110 of 1983). Parliament consisted of the Houses of Assembly for Whites, Representatives for Coloureds, and Delegates for Indians, thus providing representation for the different population groups whilst the black group chose to not participate, although their interests are dealt with by the President's Council. The Constitution provides for own affairs which are matters peculiar to a particular group, and general affairs which are matters

affecting all population groups. A further development was the abolishment of the existing Provincial Councils on 1 July 1986 in terms of the Provincial Government Act, 1986 (Act 69 of 1986) which then provided for the administration of provincial matters to be controlled by the Administrator and Executive Committee, who were appointed by the State President. An extension of the third level of government is the development of the Regional Services Council who will administer services of a communal nature on a regional basis.

The above development of government procedure, was in line with the Government's overall constitutional goal that self-determination of every population group should be maintained, while at the same time giving everybody an effective say in the decision making processes affecting own interests. Another feature of the system is that it provides for the devolution of government functions to the lowest level of government. The State departments will focus on the overall planning, co-ordination and monitoring of the country's affairs. The first and second tier of government cannot operate efficiently without an effective third tier of government at local level. Increased communication and co-operation is needed at this third level due to the different population groups separately provided for. With the Government's policy of devolution of power and functions and the abolishment of the provincial system, there will be greater party political involvement at the local level of government.

The role of the government is to provide goods and services to the community. It also has to promote the welfare of the whole community by

stimulating the economy which will increase the wealth of the population. To enable the government to perform its activities it has to have a source of funds. Public financial administration refers to the revenue and expenditure of public institutions which carry out the activities of the Government. The goal of public financial administration is to give effect to the public policy which the Government has formulated. The legislative institutions are in charge of public finance and by their policies are able to control how the money is spent. The executive institutions are responsible for implementing the policies. The Minister of Finance is in charge of the Department of Finance which is responsible for the provision of funds to the public sector. The accounting officer is responsible for the administration of public finance according to the provisions of the Exchequer and Audit Act, 1975 (act 66 of 1975). Audit inspections are carried out by the office of the Auditor-General. In an economy where there is a scarcity of resources, the success with which public finances are administered, will have a positive influence on the social and economic development of the country, providing increased opportunities for its citizens.

In the practice of public financial administration, the public administrator makes use of budgets to carry out his duties. The budget is a means of the Government expressing its political policies in monetary terms. The budget should be the result of well-considered priority decisions to enable the various programmes to be implemented objectively. There are a number of budgeting systems practised, each with their own characteristics, and includes line-item, performance, planning-programming, management by objectives and zero-base budgeting. With funds

becoming scarcer, the public officials have to work with limited means. Thus, the Government needs to utilise its resources effectively and efficiently in striving to attain its goals. As a necessary prelude to the discussion on the purpose of this study namely, the financial administration of the road network in Natal, the classification and development of the road network in Natal was dealt with, in view of the direct relationship this has on the financial impact. A road could be classified into one of the six categories of surface, area, function, geometry, route and authority. For the purposes of this study the investigation was focused on the area category of the rural road network as opposed to the urban road system as the former best describes a road network which consists of a number of major roads linking towns. These roads form an arterial route providing access and opportunities for developing and promoting the economy. With the formation of the Union in 1910, the responsibility for the provision and maintenance of the rural road system, rested with the provincial administrations. With the sources of funds being inadequate, it was not long before roads in some areas were built to higher standards, whilst in other areas the major through-roads were in a poor state through lack of finance and inadequate planning. This formed the background of the need to provide a national road authority. A National Road Board was formed according to the provisions of the National Roads Act, 1935 (Act 42 of 1935), to finance the national road network by means of levies raised on the sale of fuel. The provincial administrations carried out all the work. Due to lack of funds and poor relations, the Board was abolished in 1948 when the National Transport Commission was formed who then performed additional activities pertaining to transport. In terms of the National Roads Act, 1971 (Act 54 of 1971) the National

Transport Commission became a fully-fledged road authority who was fully responsible for the declared national road network. In terms of the Draft South African Roads Board Bill, 1987 a South African Roads Board is to be established to replace the National Transport Commission, with the expected date of implementation still to be decided, pending the outcome of further investigations and discussions being held between the affected parties. It provides for a central road authority to manage the national and provincial road network, and determine the overall road and financing policy.

In Natal, the Roads Branch of the Natal Provincial Administration is responsible for the provincial road network which is about 14600km in length according to the provisions of the Roads Ordinance, 1968 (Ord. 10 of 1968), whilst the National Roads Chief Directorate of the Department of Transport, is responsible for the national road network which is about 900km in length. How they both performed their line functions of the provision and maintenance of the provincial and national road network, respectively, was discussed with reference to the six generic administrative processes of policy-making, organising, financing, staffing, determining work procedure and control. These processes are prevalent in the administration of all public institutions and are considered to be interrelated, inter-dependent and mutually inclusive. The administration of the road network refers to a particular kind of administration prevailing in the Public Service, where it is concerned with the execution of policies covering the road network. These policies have been determined at central and provincial government level and as these have been determined by the legislatures, it follows that the

provision and maintenance of the road network falls within the ambit of public administration, and is dealt with as a general affair matter as it is carried out for the benefit of all the population groups within the community as a whole.

The financial aspects of the provision of the road network was discussed with reference to the interrelated activities of policy-making, planning and programming. In providing a road network, attention is focused on who pays and who benefits. The road network is owned and provided by the Government as a social service for the benefit of many owners who own the vehicles and terminals which rely on the road system. The development of a road system has a significant impact on the economic and social development of the country. Thus, the development of the road system is dependent on the policy directives of the ruling political party, namely the National Party. The provision of a road network system is considered to be a capital asset from which the government does not derive any return, but it leads to the economic and social development of the country, through the opportunities it provides to the community to carry out their personal and business requirements.

In order to provide a road network that meets the requirements of the road user in terms of safety and economic efficiency, the road authorities require a substantial amount of funds. The Government's policy of allocating funds to defence, housing and education as a priority, means that there are limited funds to finance the road network, which has shown a steady decline in real terms in the past nine years. To assist with the funding of the national road network, the Department of Transport has

developed a toll road system whereby private concessionaires are appointed to be responsible for the financing, construction, maintenance and operation of a section of road. Such a toll road has been awarded to Tolcon who will operate the N3 road between Cedara and Alberton. The reward which this concessionaire will receive, is in the form of a toll raised from motorists using this facility. The Department of Transport owns the toll plaza on the N3 at Mariannhill to repay the loan it obtained to finance this project. This system of providing privatised toll roads, is in line with the Government's policy of user-pay principle, and is advantageous in that it provides a means of obtaining a road with a high level of service at an earlier date than would normally be the case. The disadvantages are that motorists who have contributed to the development of the road infrastructure over the years, are now denied the free use of this facility, and also that the collection costs amount to about 15% of the toll levied.

The economic and social well-being of the country depends on an effective transportation system. Road maintenance aims at preserving the integrity of the road network for the benefit of the users and comprises all the activities that are undertaken to keep the road prism in a safe and acceptable level of service condition. The financing of maintenance of the road network was discussed with reference to the interrelated activities of policy-making, planning and programming. The increase in traffic on South African roads far exceed the budgets being provided for the maintenance of this asset which is increasing annually in length. This imbalance is a world wide phenomenon. There are a number of reasons why this situation prevails and include the Government's policy of giving

preference to defence, housing and education, curbing public expenditure and a lack of awareness by public officials of the benefits of a sound maintenance policy where the benefits that accrue to society as a whole are not that visible.

Statistics have shown that about 1,8% of the replacement asset value of a road network should be used for the routine maintenance of the road network to enable it to preserve its asset value. The allocation of funds for the maintenance of the provincial and national road network in Natal for the 1988/89 financial year, only amounts to 0,8% of its replacement asset value estimated at being R6 000 million for the approximate 6 000 km of blacktop roads and 9 500 km gravel roads. This represents only 45% of the required funds being provided. With vehicle operating costs amounting to 85% of the total road infrastructure cost, an investment for the improvement in standards of the provision and maintenance of a road network, will reap large benefits for the road users. To help the Natal Roads Branch make optimum use of the limited supply of funds, it is in the process of implementing a maintenance management system which has led to savings in the order of 20% to 30% when implemented in other countries. This system leads to more effective and efficient use of resources, as it provides standards of work to be performed and monitors the result by assessing the utilisation of men, machines and materials by calculating the production and unit cost rates.

In South Africa, it is generally agreed by road users and personnel in both the public and private sectors who are involved with roads, that the administration of the provincial and national road network in Natal is

carried out more effectively and efficiently, than in the other three provinces. This is not the result of being granted more funds, but is attributable to the people whose responsibility it is to provide and maintain the road network. A most favourable esprit de corps exists among the people in both the public and private sectors, who have a shared responsibility in the road industry in Natal. With the dwindling in the amount of funds in real terms being made available to preserve and develop the road network, the public functionaries have had to resort to developing new techniques and methods whereby the best value is obtained from the limited resources which are made available. With the needs far exceeding the available resources, innovation has been the key to maintain the road network to a safe standard and acceptable level of service. The dynamic and proactive approach of the top management of the Natal Roads Branch, has been the guiding factor in the search for the optimum usage of the available resources by using innovative methods and techniques.

2. RECOMMENDATIONS

In the final analysis it is observed that much is being done by the Natal Roads Branch and the Department of Transport in their role of being responsible for the provision and maintenance of the provincial and national road network, respectively, towards making the optimum use of the available funds. The road authorities face a difficult problem in trying to render a satisfactory service that meets the requirements of the road user. The problem revolves around the availability of adequate funds provided by Treasury who do not rate the development of the road

infrastructure highly on the list of national priorities, based on the recommendations of the Central Economic Advisory Services. The national priorities have been set according to the political party of the Government who then develop an economic policy which is deployed through the Economic Development Programme and the National Physical Development Plan. Transport, and more specifically roads, is a necessary prerequisite to the success of these plans.

However, there are a few areas where improvements can be made whereby more can be achieved with the available funds and also how to obtain additional funds such that the standard of facility provided, can better satisfy the demands made of the road infrastructure to meet the requirements of these development plans. These are the funding sources, financing policy, road network policy, budget control, and privatisation and deregulation.

(a) Funding sources

Government institutions have an important role in promoting affordable transport and each level of government has its part to play in furthering this aim. High level policy decisions taken at Central Government level in regard to transport policy and also other vital issues that have an indirect effect on transport, have the most profound effect on transport costs. It is necessary for the decisions taken at this level to take this into account and provide the correct investment level in transport infrastructure. The provincial level of government can play its role effectively by adopting suitable road network policies to meet the requirements of the road users who are established within local authorities, who control how the development takes place.

The major source of finance for the funding of the road network is the general State budget through the State Revenue Fund from Treasury. Other sources are the national road fund, loans and privatised roads. The national road fund was previously a dedicated road fund from levies raised on the sale of commercial fuel, but since 1 April 1988 is no longer so, as Treasury now administers this fund and decides how to distribute these finances. It is recommended that a dedicated road fund should be the primary source of financing available for the development and preservation of the road network, as this is the most equitable means of collecting funds from the road user as it is directly related to the usage of the road network. The next type of funding source which is ideally suited to a developing country, is that of a loan which can be redeemed by having a toll on the road. An extension of this principle, is that of privatising sections of the road network to concessionaires. However, this should be restricted to providing a new facility as part of the national road network, and not on an existing facility. There should be better interpretation of the setting of the toll fee which is based at not more than 75% of the perceived savings. Private and business road users differ in their interpretation of the perceived savings as the former tends to look at the marginal costs, whilst the latter also takes time savings into account.

Road authorities are faced with competing for funds with the other sectors in the economy according to the list of national priorities based on the political policies of the Government. The great task of economics is to match limited resources to unlimited wants. In the framework of the

country's overriding needs, this will best be achieved by channelling the available resources into those investments that will yield the highest returns - not on a financial criteria alone, but also in terms of an assured and dynamic future. To use a homely analogy, the task of the public functionaries is by skilled baking, to help bake a bigger cake that will give everybody a bigger and better slice.

(b) Financing policy

The fluctuation and reduction of funds made available for road improvements, have made the civil engineering industry one with high risk and low return. This leads to entrepreneurs seeking better investment opportunities in the other sectors of the economy. To provide for the improved planning and control of funds, it is proposed that funds for capital projects should be allocated on a three-year cycle, and that provision should also be made for 10% of the annual budget to be rolled-over between financial years. This will reduce the sporadic and uncertain expenditure trends inherent in the current budgeting procedure.

It is further proposed that alternative contract pay and guarantee procedures in the form of timely payments and providing bank guarantees, be adopted as it will improve the cash flow problem of contractors who in turn will pass this benefit onto the road authorities. The current legislation can be used to the advantage of the road industry by making representations on the applications of the present general sales tax and proposed value added tax systems, to the finance authorities. These relate to interpretation of transport and rebates on the acquisition of capital goods for use in the civil engineering industry. In line with the

Government's policy of the devolution of functions to the lowest level of authority possible, the Natal Roads Branch also has to provide for the devolution of authority to enable these functions to be performed effectively and efficiently. This can be achieved by employing the more experienced engineers in the maintenance district offices as District Engineers who will then have the required level of authority, by providing promotion opportunities at these offices.

(c) Road network policy

There is an old saying that states that the public has to pay for good roads, whether they have them or not. There are measures in the form of stop-gap funding which can be implemented in the short, medium and long term to prevent the complete collapse of the road system. Roads have two major design parameters, namely materials design to obtain structural strength and geometric design to provide a road alignment. If funds are limited, then intermediary measures can be carried out to retain these two design criteria, but if the stop-gap funding policy is pursued, it can only lead to a dangerous situation whereby the road is not safe and has a lower level of service.

Various strategies are available to tackle the problem of limited resources, and include cost effective design, optimum programming of work, and efficient maintenance management which needs to be hastened along. More emphasis needs to be placed on developers and local authorities on accepting more responsibility towards financing of the road network where they have a direct influence on it. Financing alone cannot solve the problem of the country's road network. Every effort has to be made to use

the various techniques available to achieve optimum results in programming, design, traffic engineering, pavement management and maintenance management. A dynamic and optimistic outlook will go a long way towards achieving these results which can be achieved by the presence of the most experienced and proactive management staff, who are required to remain within the road authority to guide the search for and use of the most innovative techniques of preserving and developing the road network.

It is perhaps appropriate to obtain a more favourable mix of road designs that will best suit the different standards of the population in South Africa which is a mixture of First and Third World standards. This confirms what Mr Eric Louw, the former Minister of Economic Affairs, observed when he stated that:

"people are always talking to me about the high cost of living. I tell them, the problem is not the high cost of living : it's the cost of high living".

(d) Budget control

There is a need for the budget to be closely controlled to ensure that the road programmes that are planned are executed with the optimum use of resources. With the decline in real terms of money made available for road programmes, there has had to be a restraint in public expenditure. While in some cases the restraint in expenditure has been the result of more rational use of human resources through improved productivity, the decline in funds is mainly attributed to the Government being forced to cut down on expenditure to match revenue. Control of public expenditure is an integral part of budgeting. The primary goal of effective cash management is to make cash available when needed. The needs are based on the

information systems which report on the performance and on the expenditure of the road projects. For the information system to be effective it has to be available on computers.

The costing system of the Natal Roads Branch needs to be urgently computerised to enable top management to make better use of the limited available resources. The electronic data processing units should be based as close as possible to the source where the information is provided. Also, the costing procedure needs to be revised, to allow for costs to be apportioned directly to the particular subhead under the costing categories of expenditure on men, machines, materials and services purchased from the private sector. Thereafter, these costs could be apportioned to the particular item, project and activity in this order, and not conversely as is presently the case. This will enable top management to have details of the current subhead expenditure within a few days, whilst middle and lower management would have access to the item, project and activity expenditure details shortly thereafter, providing the costing is computerised. Additional budget control measures can be implemented by using the S-curve expenditure graph for contracts and running a dual costing system, whereby costs are kept separately of orders that have been placed for goods and services, the value thereof are dealt with as a committed expense although the financial transaction would only in reality be treated as an expenditure on delivery.

Having good records follows the simple principle of a game that unless one is keeping score, there is no way of knowing if you are losing or winning.

(e) Privatisation and deregulation

The concepts of privatisation and deregulation are in many respects closely related, but are nevertheless distinguishable and both play a significant role in the functioning of the road network. There is a need for the reduction of the role of the public sector in the economy and for a minimum interference by the State, to promote the optimal functioning of market mechanisms and self-regulation. The Natal Roads Branch is the most advanced of the four provincial authorities towards privatising its function and activities. It has adopted the policy of laissez faire which should prevail, whereby the private sector is able to get on with its job and stimulate the economy. The proposals being made per the Functional Evaluation Programme relating to the privatising of many activities, are supported and should be implemented as soon as possible.

It is seen that certain deregulation measures, have increased the traffic volume on the road network. Additional funds will be necessary to meet this demand if the road authorities are to maintain a satisfactory level of service of the road network which is both safe and economical.

In conclusion, it is advantageous for a central road authority to be appointed as soon as possible to co-ordinate the road and financing policy of the national and provincial road network. At present there are 15 road authorities controlling the rural road network in South Africa. This excludes the contribution to be made by the regional services councils, and also those of the metropolitan board and local authorities who influence the urban road network. With the formation of a central road authority in the form of the proposed South African Roads Board, it will

be possible for the road financing and planning to be co-ordinated and orientated towards the national goals. Road financing should be attuned to what the country can afford and the available road funds should be equitably and rationally distributed according to their physical planning needs. The provision and maintenance of a road network that is both safe and economical, has a positive impact on the social and economic development of the country as it provides a means moving people and goods, and a means of communication. The problem facing road authorities in performing their functions effectively can be summed up in one word - money. However, they should plan their activities accordingly to make the best use of the limited available funds. It was Art Buchwald, the famous newspaper columnist, who once said :

"I don't know if this is the best of times or the worst of times. But I can assure you this : this is the only time you've got".

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ANNEXURE 1 : EXCHEQUER AND AUDIT ACT**No. 66 OF 1975**

To provide for the regulation of the collection, receipt, control, custody and issue of State moneys and the receipt, custody and control of other State property; the raising and repayment of loans by the State; the granting of certain loans from the State Revenue Fund and the terms and conditions in regard to the repayment of such loans; the duties and powers of the Treasury; the granting of certain guarantees to the South African Reserve Bank; the appointment of an Auditor-General and the auditing of certain accounts by him; and matters connected therewith.

1. Definitions—(1) In this Act and any Financial Regulation and Treasury Instruction, unless the context otherwise indicates—

“accounting officer” means a person referred to in section 15;

“additional estimates of expenditure” means the estimates of additional expenditure from the State Revenue Fund submitted to Parliament or the relevant House of Parliament, according to the circumstances, in respect of expenditure on services of the State for the payment of which moneys or sufficient moneys have not already been appropriated by an appropriation Act in the financial year in question;

“appropriation account” means an account mentioned in section 14;

“appropriation Act” means an Act by which the estimates or additional estimates of expenditure from the State Revenue Fund have been approved by Parliament or the relevant House of Parliament, according to the circumstances;

“Auditor-General” means the person appointed as such in terms of section 41;

“Bank” means the South African Reserve Bank mentioned in the definition of “the Bank” in section 1 of the South African Reserve Bank Act, 1944 (Act 29 of 1944);

“credit” means an allocation of an amount of money in the Paymaster-General's Account to an accounting officer;

“estimates of expenditure” means estimates of expected expenditure from the State Revenue Fund on the services of the State during a financial year which are submitted to Parliament or the relevant House of Parliament, according to the circumstances, and includes any estimates of supplementary expenditure on such services during that financial year which it is deemed necessary to provide for after the first-mentioned estimates have been submitted to Parliament or the relevant House of Parliament according to the circumstances but before they have been approved;

“Exchequer Account” means the account mentioned in section 3 (1);

“Financial Regulations” means any regulations made under section 38;

“financial year” means the period from 1 April in any year to 31 March in the next succeeding year;

“external stock” means stock issued outside the Republic;

“internal stock” means stock issued in the Republic;

“part appropriation Act” means an Act contemplated in the first proviso to section 4 (1);

“Paymaster-General's Account” means the account mentioned in section 9 (1);

“permanent capital” means capital not required to be repaid;

“revenue” means all moneys received by way of taxes, imposts or duties and all casual and other receipts of the State, whatever the source, which may be appropriated by Parliament or the relevant House of Parliament, according to the circumstances, and includes moneys borrowed in terms of the provisions of this Act, but does not include the amount of any fine not exceeding R50 imposed upon any person by any court of law, in so far as such amount has not been paid and revenue accruing to the South African Transport Services, the Post Office Fund and a provincial revenue fund;

“security” means any stock or bond certificate, promissory note, debenture, Treasury bill, or document issued as evidence of the borrowing of moneys in terms of this Act, and signed by a person or persons authorized thereto by or in terms of section 19 (4);

“Stabilization Account” means the account established in terms of section 18 (1);

“standard interest rate” means the rate of interest determined in terms of section 26 (1);

“State debt” means money borrowed in terms of any law and which is to be repaid from the State Revenue Fund;

“State moneys” means—

(a) all revenues; and

(b) all other moneys whatever received or held by an accounting officer for, or on account of, the State;

“State property” means any property of the State, the disposal of which is not governed by any other law;

- "State Revenue Account" means the account mentioned in section 2 (1) (a);
- "State Revenue Fund" means the fund established by section 81 of the Constitution;
- "statutory body" means any board, fund, institution, company, corporation or other organization established or constituted by or under any law, in terms of which the accounts thereof are to be audited by the Auditor-General;
- "the Constitution" means the Republic of South Africa Constitution Act, 1983 (Act 110 of 1983);
- "the responsible Minister" in relation to any matter in so far as it relates to or is connected with—

- (a) the State Revenue Account or any law administered by a Minister referred to in section 20 (b) of the Constitution, means the Minister of Finance;
- (b) an Appropriation Account referred to in section 2 (1) (b) established in connection with the administration of matters which are administered by a member of a Ministers' Council or any law which is so administered means the member of such Ministers' Council to whom the administration of the financial affairs of the relevant population group has been assigned.

"Treasury" means—

- (a) except in sections 6 (1) (b), 8, 13 (3) (h), 23, 31, 32, 33, 34, 38 (1) (i), 39 (1) (c) and 42 (9) (c) (i) in so far as they relate or apply to, or are connected with an Appropriation Account referred to in section 2 (1) (b) or any law which is administered by a member of a Ministers' Council, the central financial authority in the Public Service which is vested in the Department of Finance mentioned in the Public Service Act, 1984 (Act 111 of 1984), and whose powers in relation to any matter are exercised by the Minister of Finance or an officer in that Department who, by virtue of a division of work in that Department, deals with that matter;
- (b) for the purposes of the sections mentioned in paragraph (a), in so far as they relate or apply to or are connected as contemplated in that paragraph, the financial authority in relation to the financial affairs of a population group which is vested in the department of State in which those financial affairs are administered, and whose powers in relation to any matter are exercised by the member of the Ministers' Council to whom the administration of the financial affairs of the relevant population group has been assigned or an officer in that department who, by virtue of a division of work in that department, deals with that matter;

"Treasury Instruction" means an instruction issued in terms of section 39;

"vote" means a vote shown in a schedule to an appropriation Act.

(2) Any reference in any law to the Consolidated Revenue Fund shall be deemed to be a reference to the State Revenue Fund.

(3) Any reference in any law to the Controller and Auditor-General shall be deemed to be a reference to the Auditor-General.

(4) Any reference in any law to the Treasury, as defined in subsection (1), shall, subject to the provisions of section 26 of the Constitution, as applied by section 98 thereof, be construed as if section 1 of the Exchequer and Audit Amendment Act, 1984, had not been enacted.

CHAPTER 1

REVENUE, EXPENDITURE AND ACCOUNTING SYSTEM

2. Accounts of State Revenue Fund.—(1) The Treasury shall make provision in its books in respect of the State Revenue Fund for—

- (a) the State Revenue Account established by section 82 (1) (a) of the Constitution; and
- (b) each of the accounts established by section 82 (1) (b) of the Constitution in connection with the administration of matters which are administered by a member of a Ministers' Council to be called—
 - (i) in the case of the Whites, the Appropriation Account: House of Assembly;
 - (ii) in the case of the Indians, the Appropriation Account: House of Delegates; and
 - (iii) in the case of the Coloureds, the Appropriation Account: House of Representatives,

which shall be credited with all revenue accruing to them in terms of this Act or any other law, and from which shall be defrayed all expenditure and be paid any amounts with which they are charged in terms of this Act or any other law.

(2) When the administration of any provision in any law which entrusts to a member of the Cabinet any power, duty or function is, in so far as that provision relates to a population group, under section 26 of the Constitution assigned to a member of the Ministers' Council whose members are members of that population group, the relevant Appropriation Account referred to in subsection (1) (b) shall be credited, as a charge against the State Revenue Account, on the date on which such administration is so assigned or as soon as possible after that date, with a sum of money determined by the Minister of Finance after consultation with the relevant member of the Ministers' Council, and which shall represent the unexpended portion of the sum of money—

- (a) appropriated by Parliament as a charge against the State Revenue Account by an appropriation or other Act for the requirements of the State in connection with the administration of that provision in respect of the financial year in which that date falls.