

**FACTORS CONTRIBUTING TO THE PERFORMANCE OF THE
ROADS AGENCY LIMPOPO IN TERMS OF ROADS
INFRASTRUCTURE DELIVERY**

By

Molatelo Rapetsoa

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University of Limpopo (Turfloop Graduate School of Leadership) in partial
fulfilment of the requirements for the degree of Master of Development
Programme

SUPERVISOR: DR O MTAPURI

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DECLARATION

I declare that this research report is my independent work. It is submitted in partial fulfilment of the requirements of the degree Master of Development Programme in the Faculty of Management and Law, University of Limpopo (Turfloop Graduate School of Leadership). This work has not been submitted for any degree or examination at this or any other university.

Molatelo Rapetsoa

On this _____ day of _____ 2012

DEDICATION

My profound appreciation to the men and women at the Roads Agency Limpopo from whom I learnt so much about roads; and above all my whole family Bakwena le ditlogolo tsa Mmafeane a Moremi in particular my mother Mokgadi, for all the support they have given me throughout this exciting journey of seeing my work through. As for my close friends, I am forever thankful.

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My outmost gratitude goes to my supervisors, Professor De Villiers and Dr Mtapuri for guidance throughout the research and most importantly to the interviewees, who gave freely of their time and priceless insights on the subject matter. This research would have not been realised without their willingness to cooperate.

ABSTRACT

The overall aim of the study was to investigate the factors contributing to RAL's performance on roads infrastructure delivery in Limpopo Province for the first ten years since its inception. The study also sought to assess RAL's steadiness, looking at its current practices and processes versus key external and internal developmental challenges facing the construction industry, in particular the civil engineering profession.

Descriptive explorative research design using an instrumental case study was used in this research project to achieve the aim of the study. The population comprised all the people and companies involved with the RAL projects in Limpopo Province, including RAL staff, CIBD active registered Civil Engineering Contracting and consulting firms. Unstructured telephonic interviews and a structured questionnaire assisted the researcher to understand factors contributing to RAL's performance in roads.

The study revealed several strengths and weaknesses contributing to RAL's performance, which concerned the agency's nature and composition, level of implementation of its strategies, policies and plans. A clear and implementable quality assurance system must be developed to mitigate all risks associated with project management processes and procedures. Strategies should also be identified on how the agency's performance will progress despite the economic instability and political interferences. Proper strategic planning has thus far proved to be prudent in identifying risks and ways to mitigate them. According to the study RAL, an organisation of its own type specialising in roads infrastructure, its nature and size, its vast experience and knowledge of construction and project organisation and Project managers' experience, competence and commitment to finishing the project with time ,cost and budget, have emerged as key ingredients assisting it in becoming an organisation with its proven record. The study also demonstrated RAL's strength in terms of its communication, control and dedication in managing projects. However too many tenders are issued within a short space of time which makes contractors unable to adequately respond to them. RAL has demonstrated that it is negatively affected by an unstable economic environment. As a result construction materials are always aligned to inflation. To that end RAL should constantly monitor market conditions to synchronize its activities to

rightfully position themselves as these are external factors that are unavoidable, but require a hands-on approach

LIST OF ACRONYMS

ADB	Asian Development Bank
ABE	Affirmable Business Enterprise
ADB	Asian Development Bank
CEO	Chief Executive Officer
CIDB	Construction Industry Development Board
CMTF	Consolidated Metropolitan Transport Fund
COLTO	Committee of Land Transport Officials
COTO	Committee of Transport Officials
CSIR	Council for Scientific and Industrial Research
CSRA	Committee of State Road Auditing
DBSA	Development Bank of South Africa
DOPW	Department of Public Works
DOT	Department of Transport
DORA	Division of Revenue Act
DFA	Development Facilitation Act
ECSA	Engineering Council of South Africa
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rates of Return
EPWP	Expanded Public Works Programme
HDIs	Historically Disadvantaged Individuals
IDP	Integrated Development Planning
ILO	International Labour Organization
JRA	Johannesburg Roads Agency
LDRT	Limpopo Department of Roads and Transport
LICM	Labour Intensive Construction Methods
MEC	Member of the Executive Committee of a provincial government
MTA	Metropolitan Transport Area
NEMA	National Environmental Management Act
NEPAD	New Partnership for Africa Development
NLTTA	National Land Transport Transition Act
NTC	National Transport Commission

NPRA	Northern Province Roads Agency
PGDS	Provincial Growth and Development Strategy
PMS	Pavement Management System
PFMA	Public Finance Management Act
PPPFA	Preferential Procurement Policy Framework Act
RAL	Roads Agency Limpopo
RCB	Roads Coordinating Body
RDP	Reconstruction and Development Programme
RMS	Roads Management System
RTMC	Road Traffic Management Corporation
SADC	Southern African Developing Countries
SANRAL	South African National Roads Agency Limited
SARF	South African Road Federation
SMME	Small, Medium and Micro Enterprises
TMH	Technical Methods for Highway
VCI	Visual Condition Index
VOC	Vehicle Operating Costs

TABLE OF CONTENTS

DECLARATION	1
DEDICATION.....	2
ACKNOWLEDGEMENTS	3
ABSTRACT.....	4
LIST OF ACRONYMS.....	4
LIST OF TABLES.....	11
LIST OF FIGURES	11
CHAPTER 1	12
INTRODUCTION AND BACKGROUND	12
1.1 INTRODUCTION.....	12
1.2 STATEMENT OF THE PROBLEM.....	13
1.3 AIM OF THE STUDY	14
1.4 OBJECTIVES	14
1.5 RESEARCH QUESTIONS.....	15
1.6 SIGNIFICANCE OF THE STUDY	15
1.7 DEFINITION OF CONCEPTS.....	15
1.8 OVERVIEW OF THE REPORT	16
CHAPTER 2	18
LITERATURE REVIEW	18
2.1 Introduction	18
2.2 Legislative Review	18
2.3 Road Network Condition, Management and Service Delivery.....	23
2.4 Roads infrastructure and its effect on development.....	28
2.5 Administrative aspects of the delivery of road infrastructure service.....	30
2.6 The Roads Agency Limpopo overview.....	31
2.7 Implementing agencies' performance dimensions over service delivery.....	34
2.8 Nature and characteristics of the construction industry.....	36

2.9 Factors impacting onto projects success.....	39
2.10 PROJECTS DESCRIPTION.....	43
3.2 Individual Projects Description	44
3.3 Conclusion	49
CHAPTER 3	51
RESEARCH METHODOLOGY	51
3.1 INTRODUCTION.....	51
3.2 RESEARCH METHOD AND DESIGN	51
3.3 DESCRIPTIVE RESEARCH DESIGN.....	52
3.4 STUDY AREA	53
3.5 POPULATION AND SAMPLING	53
3.5 DATA COLLECTION.....	55
3.6 DATA ANALYSIS METHOD.....	57
3.7 ETHICAL CONSIDERATION	59
CHAPTER 4	60
PRESENTATION AND INTERPRETATION OF RESEARCH FINDINGS	60
4.1 Introduction	60
4.2 RESPONDENTS DEMOGRAPHIC PROFILE.....	61
4.3 PRESENTATIONS AND DISCUSSION OF RESEARCH FINDINGS	63
THEME 1: RAL'S POLICIES, GUIDELINES, PROCESSES AND STRATEGIC PLANNING	65
THEME 2: RAL'S STAFF COMPETENCIES.....	69
THEME 3: RAL'S COMMITMENT TO STAFF RETENTION AND DEVELOPMENT	70
THEME 4: PROJECT MANAGEMENT, PROCESSES AND PROCEDURES	72
THEME 5: RAL's COMMITMENT TO RESEARCH AND CHANGING TECHNOLOGY	76
THEME 6: INFLUENCE OF RAL'S ACTIVITIES BY THE EXTERNAL ENVIRONMENT	77
5.4 PRESENTATIONS AND DISCUSSION OF COMPLETED PROJECTS DATA	79
CHAPTER 5	84
CONCLUSIONS AND RECOMMENDATIONS	84
5.1 INTRODUCTION.....	84

5.2.1 Human factor.....	84
5.2.2 RAL's strategic focus and enabling policies	85
5.2.3 RAL, Committed and experienced top driven organisation	85
5.2.4 Staff competencies and incompetence's	86
5.2.5 The implications of ineffective succession planning	86
5.2.6 Human capital development and retention	87
5.2.7 Project management processes and procedures	88
5.2.8 Influence of RAL's activities by external factors	88
5.3 Conclusion	89
REFERENCES	91
APPENDIX A: SURVEY QUESTIONNAIRE	96
APPENDIX 2: FAX REQUESTING PARTICIPATION	105

LIST OF TABLES

Table 01	VCI data of provinces, reflecting percentage of surfaced roads in a poor to very condition
Table 02	Visual Condition Distributions: Limpopo Paved Road Network
Table 03	Project management related factors
Table 04	Human related factors
Table 05	Project management and processes
Table 06	Project procedures

LIST OF FIGURES

Figure 01	Visual Condition Index (VCI)
Figure 02	VCI of all surfaced roads in all provinces showing trends over time
Figure 03	VCI distribution, Limpopo Province Paved Road Network
Figure 04	Respondents role with RAL
Figure 05	Years of engagement with RAL
Figure 06	Projects managed/implemented by RAL
Figure 07	Projects related factors
Figure 08	External factors

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Globally, transport is recognized as an important economic driver and the New Partnership for African Development (NEPAD) also specifically recognizes the role of transport in realizing Africa's economic potential. Road transport is essential for the operation of the Southern Africa Development Community (SADC) economy and for the development of national and regional markets. With a total fleet of over 10 million vehicles in 2002, it provides the dominant mode of freight and passenger transport and carries about 80% of the SADC region's total trade in goods and services. Furthermore, it also accounts for about 20% of the region's cross-border trade (SADC, 2003).

A large percentage of the population in the SADC region lives in rural areas where agriculture is the dominant economic activity. The mode of transport from one country to the other depends on high-quality road infrastructure. In order to address the main socio-economic challenges that South Africa faces (that is on the one hand competing in the global arena, while on the other, redressing the serious imbalances that exist between urban and rural areas regarding, for instance, basic road infrastructure), all role players in the transport arena need to commit themselves to a thorough examination of and rethink about transport, specifically roads. In this context, low-volume roads play a critical function in that they generally provide the only form of access to these communities and provide for the mobility of people and movement of goods from the fields to the market place. A good rural road network is therefore essential for improving rural livelihoods and socio-economic growth and development (DoT, 2004).

The key sectors of the Limpopo's Provincial Growth and Development Strategy are mining, agriculture and tourism (RSA, 2007). For the province to exploit its natural riches successfully, the road network has to be capable of providing access to these

areas. Workers have to be able to commute to work at a reasonable transport cost. Agricultural and tourism potential, mineral deposits and people are spread throughout the province (RAL, 2005). The Road Agency Limpopo (Pty) Ltd (RAL) was established in 1998 with an objective to provide road infrastructure services for the entire province. This establishment was set to improve socio-economic development by linking all excluded communities to economic opportunities (RAL, 2007).

South Africa as a developing country, has the responsibility to deliver developmental programmes successfully. Government infrastructure programmes are mainly implemented through projects including road infrastructure. The study to determine factors impacting on the performance of road infrastructure delivery will enhance socio-economic development in the province. Duncan and Lumain (2006) attest that successful rural road projects have a major impact on communities by contributing to increased incomes and employment as well as delivering improved social services. Better access to markets, administrative and service centers' lead to positive changes in economic activities, which may result in poverty reduction. Elsewhere in the world, people were able to switch from subsistence farming to producing higher value agricultural products, develop small-scale manufacturing and service enterprises, and significant growth in wage labour opportunities was registered. Based on the above background, the researcher was motivated to conduct this research study in order to determine factors impacting on the performance of road infrastructure delivery in Limpopo Province focusing mainly on its provincial roads infrastructure delivery agent, RAL.

1.2 STATEMENT OF THE PROBLEM

South Africa, as a developing country, has the responsibility to deliver developmental programmes such as a reliable road infrastructure, which could assist in the transportation of goods to other countries. Road infrastructure is a necessary condition for economic growth. Infrastructure programmes are mainly implemented through projects. As such, ninety-six percent of Roads Agency Limpopo (RAL) annual allocations are committed to roads infrastructure provisioning which are implemented through projects. RAL has since achieved 100% budget expenditure and has met its set

performance criteria for the ten years of its existence, thus spending its entire annual allocated budget. Hence, its attainment of unqualified external audit reports a very good rating achievement on CSIR's physical technical audit and (RAL, 2008).

However, thus far, there has not been an evaluation to establish the factors or reasons contributing to RAL's steadiness in terms of maintaining its current performance in providing road infrastructure services. The study identifies key issues covering the ten years of RAL's existence, from 1998/09, the year of its inception to 2008/09 financial year. Factors impacting on RAL's steadiness in providing road infrastructure services in terms of human related factors, organizational and personnel and project-nature related factors, project processes and procedures, funding and procurement, project technical management skills, project stakeholder management, project organization structure and external environment factors such as political, economical, social and technological related factors are investigated in this study.

The research product is a comprehensive source of information on strategies, techniques and practices that can be used to accelerate delivery and avoid delays throughout the entire process. This product should encourage Road Agency Limpopo to address its organizational and process issues affecting road infrastructure delivery.

1.3 AIM OF THE STUDY

The aim of the study is to investigate factors contributing to RAL's performance on roads infrastructure delivery in Limpopo Province.

1.4 OBJECTIVES

The objectives of the study are:

1. To identify the factors contributing to RAL's performance in road infrastructure delivery in Limpopo Province.
2. To identify attributes important to RAL's steadiness so that better planning can be done during the processes of road infrastructure delivery in Limpopo Province.

3. To provide RAL with an assessment of its performance and its preparedness for key developmental challenges facing the industry.
4. To establish the extent to which RAL contributes in research and development in order to keep abreast of innovation and the latest technology.

1.5 RESEARCH QUESTIONS

This research was guided by the following main questions:

1. What internal and external factors contribute to RAL's performance in road infrastructure delivery in the Limpopo Province?
2. To what extent do internal and external factors impact on road infrastructure delivery processes?
3. To what extent does RAL contribute to research and development in order to keep abreast of innovation and the latest technology?
4. How does RAL ensure its stability, taking into account its human resource development?

1.6 SIGNIFICANCE OF THE STUDY

The study significantly highlights areas of progress and provides insights into the challenges to RAL's growth, stability and its status in terms of roads infrastructure delivery. Furthermore, it creates a model where others could replicate and benchmark in terms of sustainable provisioning of service delivery. Thus, this study is of practical importance.

1.7 DEFINITION OF CONCEPTS

Project cycle: This covers the entire project cycle, from initiation through detailed feasibility, design, implementation, completion and handover, including contract administration, project control, monitoring and reporting (Young, 1996). In this study project cycle will mean phases including project initiation, planning and design, implementation and completion.

Project management: The application of knowledge, skills, tools and techniques to project activities so as to meet the project requirements (Young, 1996). In this study

project management shall mean the process of managing and implementing of RAL's projects through effective skills, tools, techniques and requirements as set by the project team.

Implementing Agent: An agent with the responsibility to implement infrastructure programme and maintenance on behalf of the department (CIDB, 2006). In this study an implementing agent shall mean RAL, responsible for the provisioning of roads infrastructure services on behalf of the Department of Roads and Transport of Limpopo Province.

Roads Agency Limpopo (RAL): An independent, statutory company registered and established in 1998 in accordance with the Northern Province Roads Agency Proprietary Limited and Provincial Roads Act 7 of 1998 (NPRA, 1998).

1.8 OVERVIEW OF THE REPORT

Chapter 1 : Rationale and overview of the research study

This chapter sets the context of the research problem by introducing the topic under investigation, analyzing the problem, elaborating on the purpose of the study, structure and significance of the study.

Chapter 2: Literature review

Chapter 2 gives theoretical and conceptual framework of possible factors impacting and contributing to the delivery of road infrastructure services while in the meantime, looking into the nature in which these processes operate in the civil engineering industry, particularly construction. The Chapter also includes the description and review of the case study completed projects sourced from RAL's archives.

Chapter 3: Research method and design

Research methodology and design followed in conducting the study is elaborated in this chapter. In addition, it outlines research study context, population and sampling method used, data collection and analysis methods employed in order to draw conclusions and recommendations.

Chapter 4: Presentation and interpretation of research findings

The chapter provides analysis of the answers to the research question. The study findings are presented and interpreted to give meaning to the case studied while allowing the research findings to be interpreted with the existing theories.

Chapter 5: Conclusions and recommendations

Chapter 5 concludes the report based on the findings of the study. Recommendations are made which are indicative of various factors contributing or not contributing to road infrastructure delivery process, particularly in Limpopo Province.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Chapter 1 presented the plan of the study. This chapter outlines the literature and research studies conducted in order to have a theoretical background of what is known and not known related to the study (Brink, 2006). Transportation implementing agencies must continually improve their managerial, organizational, operational effectiveness and project delivery processes aimed at upgrading or renewing transportation facilities and services from conception to completion. Their readiness to deal with the daily challenges of delivering road infrastructure services is a primary indicator of an agency's effectiveness. Transportation projects are developed under programmes intended to implement agency and legislative initiatives including public policy.

The literature review chapter forms the basis of developing the theoretical context (Welman et al, 2007) and conceptualize the legislative processes of road infrastructure delivery, the state of road condition, its effect on development, the construction industry, RAL and its performance given that over 96 % of its annual allocations are committed to roads infrastructure projects. Factors contributing to successful projects are also looked into as a primary method for road delivery.

2.2 Legislative Review

The Constitution of the Republic of South Africa determines the legislative competence (competence to make laws) and the executive competence (competence to exercise executive power, i.e., to implement laws) of government.

2.2.1 National legislation relating to roads (DoT, 2004)

The South African National Roads Agency Limited and National Roads Act (Act No. 7 of 1998) established the South African National Roads Agency Limited (SANRAL) as a statutory company responsible for the planning, design, construction, operation,

management, control, maintenance and rehabilitation of national roads in South Africa. SANRAL is also responsible for financing such roads in accordance with government policy, in accordance with its business and financial plan.

SANRAL reports to the National Minister of Transport, who must approve its annual business and financial plan and must enter into a performance agreement with the agency. The latter agreement sets key performance indicators to be met by SANRAL each year. SANRAL also has powers over toll roads, which are proclaimed by the minister.

The Act also makes provision for SANRAL to be able to enter into agreements with provinces and municipalities. For example, SANRAL may do work on provincial or municipal roads at the province's or municipality's cost. The Act also provides for various aspects in relation to national roads, such as advertising that is on, or visible from, such roads, as well as access to, and exits from, such roads. The main relevance of the *National Road Traffic Act* (Act No.93 of 1996) provides guidance in relation to road signs and markings, which are specified in the Regulations.

The Road Traffic Management Corporation (RTMC) Act (Act 20 of 1999) provides for the establishment of the Road Traffic Management Corporation (RTMC). This body is a juristic person consisting of: a shareholders' Committee with representatives from all the three spheres of government; a CEO; a board to which the Shareholders' Committee may delegate functions; managers of functional units, and professional, technical and administrative support staff. The national and provincial governments may transfer assets and liabilities to the RTMC. Transaction fees will fund it for the sale of its services, by penalties and fines paid to it as an issuing authority and by monies appropriated by parliament. The Members of Executive Committees in the provinces (MECs) responsible for road traffic may enter into agreements with the RTMC in terms of which the RTMC will take over road traffic functions allocated to the particular MEC.

The Transport (Co-ordination) Act (Act No 44 of 1948), as amended by the Transport Deregulation Act (Act No. 80 of 1988), provides for the establishment and workings of the National Transport Commission (NTC), with the Director General: Transport as its chairman, and exercising powers conferred upon it from time to time by the Minister by

notice in the Government Gazette.

2.2.2 National legislation relating to planning

The National Land Transport Transition Act (*NLTTA*) (Act No. 22 of 2000) provides for a municipality, or two or more municipalities (by agreement between them), to voluntarily form a transport authority. A transport authority may form an agreement with relevant participating municipalities to take over municipal road functions and to apply measures to limit damage to the road system in its area. It also provides for the development of integrated transport plans that must include roads. Land transport planning must be integrated with the land development process and transport plans in the municipal sphere, and constitute the transport component of integrated transport plans. In this regard, the NLTTA states that district and local municipalities must reach agreement with regard to how their transport planning functions will be divided.

The Urban Transport Act (Act No. 78 of 1977) provides for the "planning and provision of adequate urban transport facilities" (i.e., mainly infrastructure). The Act provides for the proclamation of metropolitan transport areas (MTAs). When such an area is proclaimed, the Act makes provision for a municipality in the area to be designated and to act as the core city. The core city undertakes various functions related to transport, mainly in connection with infrastructure (facilities). The core city also administers a local fund for the area, called a Consolidated Metropolitan Transport Fund (CMTF).

The Act also permits any local authority that has an MTA in its area to impose certain types of levies in accordance with an applicable and approved transport plan. The major portion of the Act was assigned to the provinces, on October, 13, 1995.

The Development Facilitation Act (DFA) (Act No. 67 of 1995) is an overarching act designed to facilitate and speed up the implementation of reconstruction and development programmes and projects in relation to land. Its main importance is that it sets out general principles governing land development countrywide. These principles are binding, apply to all land development in the country and have a bearing on road planning and development.

The Draft Spatial Planning and Land Use Management Bill (2011). The Department of

Rural Development and Land Reform published the Draft Spatial Planning and Land Use Management Bill for public comment on May, 13, 2011. The Bill will replace the Development Facilitation Act No 76 of 1995, Removal of Restrictions Act No 84 of 1967, Physical Planning Act No 88 of 1967 and other related laws. The Bill will impact on all national, provincial and pre-1994 pieces of legislation on land use management and land development. It proposes an integrated system of land use planning and management, regulated on a national basis, and divided into Integrated Development Plan (IDP)-based on local spatial planning and a uniform set of procedures for land development approvals. If a change in land use is in line with the relevant spatial plan, no consent will be required. If not, the uniform procedures for obtaining approval, integrated with environmental legislation, will apply.

The National Environmental Management Act (NEMA) (Act No 107 of 1998), which replaced the Environment Conservation Act, 1989 (Act No. 73 of 1989) provides for the control of identified activities, which may have a detrimental effect on the environment. These activities are listed in Government Notice R1182 on September, 05, 1997. One of the activities is the building or upgrading of roads. The Act also prevents such activities until written authorization is obtained from the relevant environmental authorities. Such authorization, which may be granted subject to conditions, will only be considered once there has been compliance with the regulations. Government Notice R1183 sets out the procedures and documentation that need to be complied with in undertaking an Environmental Impact Assessment (EIA). Government Notice R1184 deals with designation of the competent authority, which may issue authorization for the undertaking of identified activities.

In Appendix G, a summary of Environmental Management (EM) in the context of road provisioning is given, including discussions on:

- Integrated Environmental Management (IEM);
- Strategic Environmental Assessment (SEA)
- Environmental Impact Assessment (EIA), and
- Environmental Auditing (EA).

2.2.3 National financial legislation

Road financial issues at the national, provincial and local spheres are controlled by a number of national legislative instruments. Some of the most important of these are:

- The Constitution, in terms of which, for example, a province may impose certain taxes, levies and duties, and flat rate surcharges on the tax bases of a number of taxes, levies and duties imposed by national legislation;
- The Central Energy Fund Act (Act No. 30 of 1979), which provides for the payment of money into the Central Energy Fund, the imposition of a levy on fuel and for the utilization of that levy;
- The Public Finance Management Act (PFMA) (Act No. 1 of 1999), which aims to regulate financial management in the national and provincial spheres of government and which also governs financial accountability. Various sets of Treasury Regulations have been published under the PFMA. They provide, among other things, for certain procedures to be followed in the case of Public Private Partnerships (PPPs);
- The Division of Revenue Act (Act No. 5 of 2002), which provides for the equitable division of nationally collected revenue in a financial year.
- The Provincial Tax Regulation Process Act (Act 53 of 2001) which, in general, regulates the process for the introduction of provincial taxes and provides for a specific process and timing for national government to consider requests from provinces. In the supporting Memorandum to the Bill that preceded the Act, considerable attention was paid to distinguishing taxes from user charges. This Memorandum also provides the views of the Department of Finance.

2.2.4 Provincial Roads and Planning Legislation

When the nine provinces came into being, they inherited the Roads Ordinances of the former four provinces, as well, as a number of other Ordinances relating, for example, to local government and town planning, and townships.

The Advertising on Roads and Ribbon Development Act (Act No. 21 of 1940) has mostly been assigned to the provinces in terms of the Constitution has thus acquired

the status of a Provincial Act. However, it applies to all of the provinces, until amended or excluded by provincial legislation. It provides, inter alia, for the restriction of access to certain land from certain roads. Other provinces have their own respective legislation governing provincial roads.

The Northern Province (Limpopo) Roads Agency Limited and Provincial Roads Act (Act No. 7 of 1998) establishes a Provincial Roads Agency to take over the responsibility for all aspects related to provincial roads in the province. The Board of Directors of the Agency is appointed by the MEC for Roads and Transport, and reports to that MEC. The Provincial Roads Agency has powers to enter into contracts with SANRAL, municipalities and private persons, to build and maintain roads. The Act also provides the MEC with powers to establish toll roads and collect tolls.

Provincial legislation relating to planning other than transport planning consists of ordinances such as the Town Planning and Townships Ordinance (Ordinance 15 of 1986) and the Division of Land Ordinance (Ordinance 20 of 1986) which apply in the area of the former Transvaal. Similar ordinances exist in the other provinces. The various Local Government or Municipal Ordinances also have provisions relating to provincial streets. When a township is established, streets and open spaces fall under the jurisdiction of the local authority. In the case of category B and C municipalities, this will be the local municipality, unless the road is one contemplated in section 84(1)(f) of the Local Government Municipal Structures Act (Act No. 1170 of 1998).

2.3 Road Network Condition, Management and Service Delivery

The general maxims related to good management also hold true for road networks. Hence, the need for current validated information with which to support efficient management decision support systems is essential for the effective management of a road network, at both the strategic as well as the operations level. It facilitates good governance outcomes and optimal service delivery.

2.3.1 Present condition of the road network in South Africa, (DoT, 2006)

The general state (or condition) of a gravel or paved road network system is usually described in terms of a Visual Condition Index (VCI) and is normally reflected in the

Pavement Management System (PMS). The VCI of a road network is ideally quantified annually (or bi-annually) and, if given over time, it shows the trend in road conditions. The VCI uses a five-point scale, i.e. Very Good, Good, Fair, Poor, and Very Poor, as defined in document Technical Methods for Highway (TMH) 9, which is well established road pavement engineering methodology in South Africa. The higher the VCI, the better the service delivered to the public in terms of accessibility and safety, as well as of vehicle operation costs (VOC) and overall economy. Referring to Figure 1, the VCI is obtained from the information in the PMS. In principle, the VCI key performance indicator can be measured for paved and un-paved (gravel or earth) roads.

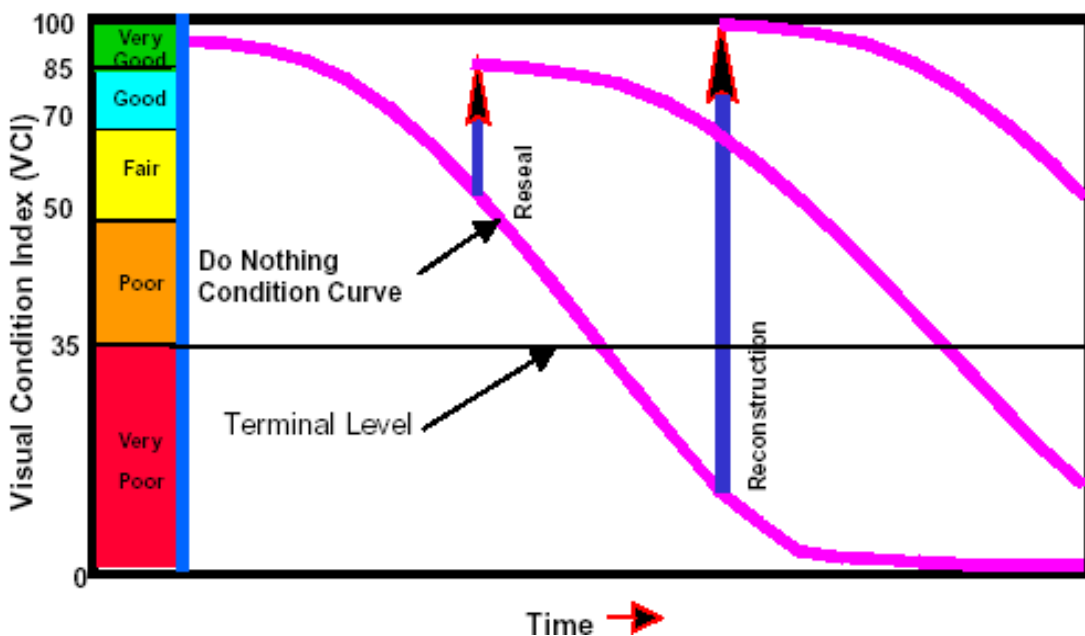


Figure 1: Change in Road Network condition over time

Figure 1 indicates the normally accepted reduction in VCI over time for any road pavement. It is clear that normal road deterioration will occur because of normal traffic use and environmental factors. However, the rate of deterioration could be drastically increased by factors such as overloading or heavy rains. The condition of the road can be improved with normal maintenance activities such as crack sealing, diluted emulsion treatment and resealing, especially if done timeously (preventative maintenance). Once a terminal level of VCI is reached, rehabilitation of the facility, implying one or other forms of reconstruction, is needed.

2.3.2 Provincial Road Condition Statistics

The condition and trends of the South African surfaced road network (about 56 464 km) based on past and current best information from a desk study by the CSIR, and also defined by the VCI for all the provinces for 1999/2000/2001/2002, is illustrated in Figures 02, and Table 01. In Figure 02, the VCI of the road network for each province is given on a comparative basis.

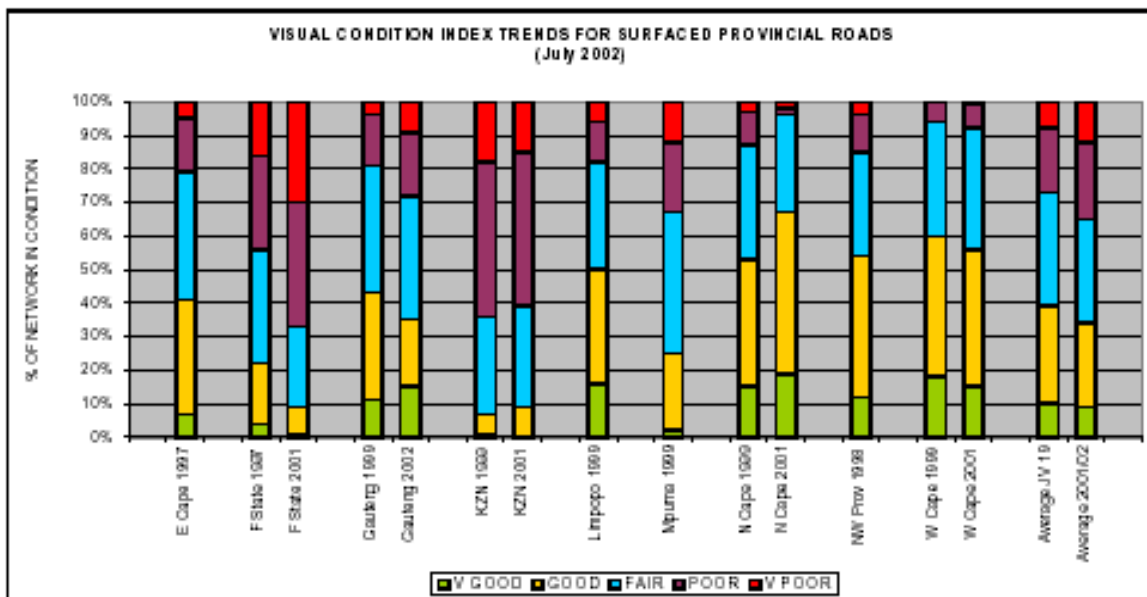


Figure 02: VCI of all surfaced roads in all provinces showing trends over time

Table 01: VCI data of provinces, reflecting the percentage of surfaced roads in a poor to very poor condition (1997 to 2002) (DoT, 2006).

PROVINCE	Percentage of Roads in Poor to Very Poor Condition (1997/2002)					
	1997	1998	1999	2000	2001	2002
Eastern Cape	21	-	-	-	-	-
Free State	44	44	44	59	67	-
Gauteng	28	16	19	31	27	28
KwaZulu-Natal	55	58	65	68	61	-

DATE OF SURVEY	1997	1998	1999	2000	2001	2002
Limpopo	5	7	-	18	-	-
Mpumalanga	-	-	33	-	-	-
Northern Cape	-	-	13	-	4	-
North-West	-	15	-	-	20	-
Western Cape	3	6	6	10	8	-

(-): No data available from authority.

2.3.3 Discussion of the condition of the surfaced provincial roads

Reference is made to Figure 02 and Table 01. The figures for 1997 to 1999 are from report CR-2001/9 (2001). To afford a basis for evaluation it should be kept in mind that it is generally acceptable to have 5 to 10 per cent of a road or road network in a "failed" or "very poor" condition for a limited period before remedial action is executed. Limpopo Province started off in 1997 with a very acceptable 5 per cent of its road network being in a "poor" condition. Although surveys were not carried out every year since then, it may be noted that this figure increased by 13 per cent, to an unacceptable 18 per cent in 2000 according to the Department of Transport, (2006).

Equally, a study conducted by CSIR (2007) indicates that surfaced roads were generally in a good condition. About 30 % of the network was rated as very good and about 36% being rated as good, but lack of continuous funding on a yearly basis made the scenario change (CSIR, 2007). In agreement, RAL Acting CEO indicated that the depreciation value of the roads asset amounted to R3 billion and for RAL to catch up with the minimum maintenance requirements, a minimum of R1billion will be required for three consecutive years (RAL, 2010).

Table 02 - Visual Condition Distribution: Limpopo Paved Road Network

Condition	% Length per year				
	1996	1997	2000	2004	2007
Very good	10%	14%	16%	23%	30%
good	62%	50%	34%	37%	36%
Fair	23%	29%	32%	29%	25%
Poor	3%	4%	12%	8%	6%
Very poor	2%	3%	6%	2%	1%

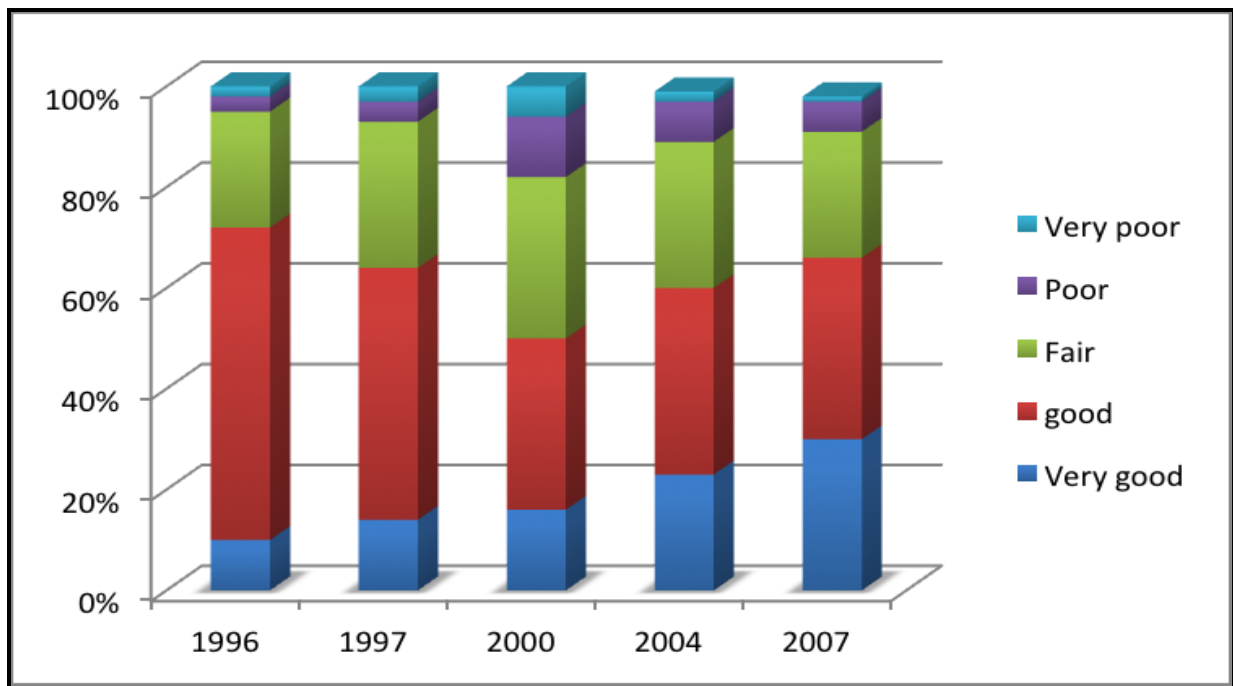


Fig 03 VCI distribution, Limpopo Province Paved Road Network

In terms of the VCI scale, it is apparent from Figures 02 and 03 that approximately 35 percent of the surfaced provincial roads are in a poor to very poor state. This percentage is somewhat higher than the 33 per cent reported in an earlier study (in 2000) by the Automobile Association (AA) and approximately similar to those reported in the previous DoT study of March 2001 (CR-2001/9). According to the data in the present report, a notable deterioration has occurred - approximately 3 per cent of the road network has moved from "poor" to "very poor". Between July 2007 and the year

2010, the total has grown from 7 to approximately 22 percent (RAL, 2010). To put this into perspective, it should be borne in mind that in 1996, only about 5 percent of the provincial rural road network was in "poor" to "very poor" condition. This trend certainly warrants concern. It is clear that at this rate the province will soon find itself - if it is not there already - in the indefensible position in which more funding and construction resources than can be mustered in the province will be necessary to rectify the situation. The general consensus is also that the condition of gravel (or unsealed) roads is far worse than that of surfaced roads. Pavement Management Systems for unsealed roads still needs to be implemented in accordance with the guidelines given in TMH 12.

It is again noted that, ideally, not more than 5 to 10 percent of the roads networks should be in a poor to very poor condition (according to the VCI performance indicator) for a limited period before remedial action is executed (DoT, 2006).

2.4 Roads infrastructure and its effect on development

Dr Malcolm Mitchell, Executive Director of South African Road Federation (SARF) during his opening address at the 2008 SARF conference in Cape Town identified good roads as one of the most important aspects of society that could contribute to the African Renaissance. Furthermore, roads contribute to poverty alleviation by promoting growth through the provision of infrastructure in corridors that connect nations and provide access to land-locked countries. He further noted that roads generally, after education, are an important catalyst for a country's development. A well maintained road network is of paramount importance in the economic and social growth of any country. Some 80% of general freight movements, (i.e. excluding coal, and iron ore) in South Africa take place on roads. The role of good roads in the improvement of social conditions in Africa is readily apparent (Mitchell, 2008).

Transport plays an important dual role in the economy, both as a direct provider of services and as a catalyst for economic integration, redistribution and development. The South African road network is a major asset that gives the country a significant competitive advantage (NDOT, 2004). The road system is fundamental to the economic and social fabric of any country and the backbone of the African transport system. For

the roads sector to prosper, a strong focal point to promote the total roads sector needs to be established. Roads contribute to poverty alleviation both by providing infrastructure for transport services to move goods and people, and by providing access to rural populations to markets and social facilities.

Road systems can be broadly divided into “economic” and “social” networks. The “economic networks” essentially are the primary and secondary road networks that carry substantial traffic and on which the vast majority of the transport activities take place, but which normally represent less than 20% of the total network length. To contribute to poverty alleviation these networks must be kept in such condition that the sum total of vehicle operating and road infrastructure costs are at a minimum. “Social road networks roughly are the rural road networks that carry only a small share of the total traffic load, but which extend to more than 80% of the total network length. These networks must provide reliable all-season access to the rural populations in order to enable them to reach markets and social facilities. The emphasis here is on basic access rather than reduction of transport cost, to reduce the isolation of rural dwellers and hence assist them to get out of poverty (Mitchell, 2008).

The International Labour Organization (2007) also attests to the fact that investments in rural roads have significant potential for the use of local resources to create decent jobs, support the local economy and strengthen local commerce and have, therefore, important implications for poverty reduction and local economic and social development. The direct consequence of investing in rural roads is the generation of jobs, incomes and business opportunities, particularly if the development and maintenance of these rural roads is targeted in favour of local resource-based methods. Longer lasting impacts such as improved access to goods and services and production and productivity enhancing impacts further contribute to sustainable poverty reduction and local economic and social development. Impacts however will only be sustainable if the roads are maintained (ILO, 2007).

The Asian Development Bank, (2006) indicates that a basic requirement for a successful road project is that it should attract sufficient traffic so that project benefits will exceed project costs. In its study, the bank reveals that all road projects examined attracted traffic levels in line with their designed capacity. In most cases, traffic

exceeded the appraisal forecasts as a result of rapid growth in vehicle ownership and use. All successful road projects lowered vehicle-operating costs and reduced journey times. This contributed to improved economic efficiency. The savings in operating costs and time contributed to economic internal rates of return (EIRRs) that were mostly well above the 12% hurdle rate. Rehabilitation projects had especially high EIRRs sometimes over 100% although this was sometimes because previous investments had not been properly maintained and had, therefore, not realized their potential economic returns (ADB, 2006).

Improved roads led to increases in the availability of privately operated passenger bus services and trucking operations in the project areas. This was most marked for rural roads, where road improvement sometimes resulted in the introduction of reliable transport services for the first time. Expressways also generated transport service improvements, but these were more incremental in nature. In most successful projects, at least part of the benefits of lower transport costs were passed on from operators to users in the form of lower unit charges. This varied depending on the extent of competition among transport service operators. The benefits of shorter journey times automatically went to users (ADB, 2006).

2.5 Administrative aspects of the delivery of road infrastructure service

One of the options available to government to effect improvements on service delivery is the creation of government enterprises or agencies. This option involves setting up of public enterprises at arm's length from the public service to deliver specific services. They often exist and operate as agencies independent of government, normally under the direct control of the board, and with their own enabling legislation. Since the election of the new democratic government in 1994, there has been a drive to transform the public service into an efficient and accountable service delivery instrument, termed Service Delivery Innovation (SDI). Roads were given the utmost priority. Therefore, the core function of the Department of Transport (DoT) was to ensure that the basic transport needs of all South Africans are met. The DoT then, with parliamentary approval, created South African National Road Agency Limited (SANRAL) in 1998 to

carry out the National road Network function (DOT, 2004).

The South African National Roads Agency Ltd (SANRAL) is a registered company. The Minister of Transport is the sole shareholder. SANRAL was established by an Act of Parliament in 1998 with the purpose of maintaining and developing South Africa's national road network. SANRAL was formerly known as the National Roads Agency (NRA, 2005). Similarly in the same year; Roads Agency Limpopo (Pty) Ltd (RAL) was established with the objective of providing road infrastructure services, which would enhance the socio-economic development of Limpopo Province. In fulfilling its responsibilities, the agency focuses on linking districts, connecting previously excluded communities to the mainstream of the provincial road network, connecting areas with large concentration of settlements to areas of social development and linking communities with centres of public administration and economic opportunity (RAL, 2007).

2.6 The Roads Agency Limpopo: An overview

The Roads Agency Limpopo (Pty) Ltd was established under an Act of parliament as a provincial road authority mandated to own and manage the provincial roads network in the province. It was founded under the Northern Province Roads Agency and Proprietary Act of 1998 and duly registered under the Companies Act, No 61 of 1973 and was called the Northern Province Roads Agency. This was later changed, in 2003, to the Roads Agency Limpopo, as it is currently known and registered (RAL, 2008). The Roads Agency Limpopo owns and manages over 21 859km provincial road network. Of the 21859km, 6 539km is tarred road and the remaining is gravel and dirt road. RAL is tasked with the planning, design, construction and control of usage of these roads. It is also required to prevent the deterioration of surfaced roads, to conduct selective routine maintenance and to surface priority roads. The agency is headed by a Chief Executive Officer, who reports to a board of directors, and in terms of the Act, a member of the board. The agency consists of a small team of 70 professionals and managers who are responsible for day-to-day operations. Road works are outsourced to service providers (civil engineering consultants and contractors) in projects form, which are managed and monitored by the Roads Agency team of engineers (RAL, 2008).

According to RAL (2007), the board of directors are answerable to the shareholder, who is the Member of Executive Council (MEC) for the Department of Roads and Transport of Limpopo Province. The Board is responsible for ensuring that the agency remains a going concern and that its business thrives. It must further ensure that it does so in full compliance with the values of acceptable corporate behaviour. Key functions of the agency's board, amongst others include the following (RAL, 2007):

- Approval and monitoring of RAL policies;
- Formulation and monitoring of an organization-wide delegation of authority framework;
- Ensuring adequate systems of financial and operational controls;
- Ensuring that an adequate budgeting and planning process exists and that performance is monitored against budgets and plans,
- Reporting to the shareholder, the MEC.

The roads agency's strategic mission is set "to provide road infrastructure services in order to improve socio-economic development in Limpopo" while its vision is to "strive to be the most competent and progressively active agency in the provision of provincial road infrastructure". Together with the vision and mission, core values and strategic objectives were identified to give the organization a character that reflects its effectiveness, commitment and excellence to its mandate (RAL, 2008).

The project delivery process is the key function of the agency, which constitutes a larger chunk of its annual commitments. The process includes planning, design, programming, construction, and commissioning. Accelerating delivery entails addressing environmental review issues in a timely manner, acquiring rights-of-way from multiple property owners, developing context-sensitive solutions in design, securing approvals from numerous government departments, satisfying various community concerns, monitoring project-delivery timeframes, assuring that project development resources such as construction materials are available when needed, and identifying and reducing impediments to faster decision making. Usually a majority of their projects are completed within the same year of construction period while some take up 2 to 3 financial years in the development phases. Many projects take far longer either because

of their size and nature or significant community, environmental, or property-acquisition issues, which must be resolved first. Delayed projects increase congestion and project expenses, adversely affect safety, impose social costs, and impede economic development. It is these reasons that the agency also strives to complete the annual programme within the stipulated time, which is normally by the end of the financial year (RAL, 2006 & 2007).

2.6.1 RAL's performance over its mandate

RAL and many other organs of state are the instruments and means that render services to the people they serve. These organs of state are provided with the necessary mandate to provide a range of services and the means to do so through the annual budgetary processes. RAL's annual budget allocations have ascended from R320 million to R1.117 billion between its inception year in 1998 and 2008. RAL for its eight years of existence has satisfied 100% budget expenditure, thus spending its entire annual allocated budget. Complimented by unqualified external audit reports and CSIR's physical technical audit with a very good rating. In addition RAL has upgraded more than 890km of roads from gravel to tar, maintained roads of 2459km in total and built more than 33 bridges within ten years of its existence, and an average of 96% of RAL annual budget allocations are committed towards road infrastructure delivery (RAL, 2001-2008).

Like many other government entities, the Roads Agency Limpopo (RAL), as mandated to deliver road infrastructure services, has set its institutional performance to include three aspects which all must be satisfied to qualify for a sterling performance, thus the entire annual allocations have to be spent, an unqualified external audit report and CSIR's physical technical audit of at least a very good rating for the quality roads constructed. RAL has achieved these in an unbroken record over ten years. Although factors contributing and impacting on RAL's sustainability and growth are not yet known or established, however, South Africa is estimated to have an infrastructure backlog of close to R200 billion largely inherited from the distorted apartheid social planning and economic rationalization (Mlambo-Ncquka, 2008). Limpopo Province is estimated to be experiencing a R1, 2 billion rand backlog on road maintenance and construction (LDRT,

2007). The other challenge faced by government is that of under spending of budgets even though government has committed itself to increase infrastructure spending which is constrained by lack of capacity (CIDB, 2004).

2.7 Implementing agencies' performance dimensions over service delivery

Performance generally is concerned with enabling and empowering the organization to take charge of its own responsibilities and also to have the opportunity to improve its standard of delivering its mandated service. The performance of the Roads Agency Limpopo should equally so be addressed to shape up the institutional and individual performance.

In defining key performance areas Nel et al , (2006) demonstrate that emphasis should be placed on measurability. Progress with attaining goals linked to the operational plans and performance agreements of staff should be rigorously monitored and reported upon, at least on a quarterly basis. This should be the opportunity to identify problems that may impact on delivery and solutions to redirect delivery. Performance Agreements help in the management of relationships between employers and employees. When delivery is poor as a result of human factors, timeous intervention related to skills development and motivation should be initiated. In general, outcomes of personal performance assessment must be linked to the outcomes of the institutional delivery rating. Rewards should only be allocated to above-average performers, while under-achievers should be disciplined where skills development and motivation fail. Ultimately, the focus should be on getting under achievers to shape up or ship out (Nel et al, 2008).

There are two dimensions of service delivery improvement. The first is institutional performance. The focus here is improved performance in the application of policies, efficient systems, processes, organization, technology, infrastructure (including way finding and signage) and resources. The second dimension is at the individual performance level. Here, there has to be accountability that is linked to job descriptions and delegation of authority, education and training, commitment to delivering services, ethical conduct, effective placement in both back and front office, and appropriate performance management in areas of rewards and discipline (Nel, 2006).

The other important service delivery improvement tool is training, learning and knowledge management. If staff has inappropriate skills levels they will struggle to deliver services or to identify opportunities for improvement. In a rapidly changing environment (ranging from changes in process to changes in technology) the potential for skills development must be anticipated. Skills development's primary focus must narrowly aim at enhancing skills needed for the job at hand, with multi-skilling as a secondary aim. Continuous learning helps staff keep abreast of new developments in the industry and best practices that may be applied in their work environment. In relation to empowerment and delegation of authority, best management practice dictates that decision-making authority should be as close to the point of service delivery as possible (Nel, 2006).

Monitoring and evaluation must still take place in order to determine if the objectives of delegation of authority have been attached, and to determine how to fix possible problems. The other important tool is diligent complaints management. A complaint provides an opportunity to learn and improve service delivery. A learning organization learns from its mistakes. Analysis of complaints provides information on service delivery trends and areas requiring attention for improvement. All complaints must be attended to as quickly as possible because it provides in-depth feedback on service delivery issues for purposes of diagnoses as well as remedial action. This ,in turn, supports trends analysis for purposes of planning. Accessible complaints management systems ensure that the full spectrum of service delivery issues, in both front and back offices, can be tested (Nel, 2006).

The last tool is information management. Relevant planning relies on appropriate, correct and up-to-date information. It is important to use as much information as possible from as many information sources as possible to determine service delivery trends, shortfalls and gaps. The integrity level of information in databases must be as high as possible. Information should be validated, measured and useless inputs (garbage in garbage out) eliminated. Information management is the cornerstone of monitoring service delivery progress against targets. There has to be a manipulation of information to develop exception reports key in this process (Nel, 2006).

2.8 Nature and characteristics of the construction industry

The civil engineering construction industry focuses on the development of infrastructural works. Davis (1991) identified four primary areas distinctive of the contracting sector. The first area being the construction of roads, railways, bridges and tunnels, the second being the erection of harbours, docks, waterways, dams, reservoirs and sea defence and land reclamation works. The third area focuses on the energy industry and the construction of power stations, transmission lines and electricity sub-stations, lastly, the construction of plants for water treatment and waste management.

The construction industry creates and maintains the built environment that underpins all modern human endeavour, economic growth and social development (CIDB, 2004). The built environment is the reflection of a developmental progress as well as the physical foundation for economic and social advance into the future. It is the construction Industry that creates and maintains this foundation in a process that must deliver value to clients and society. The construction industry, as part of the business sector, is one of the main instruments in the task of working for a better life. It is an engine of reconstruction and development. Without the participation of, and the expertise and capacity of the construction industry and its related professions, backlogs obstacles will be difficult to overcome (Zuma, undated).

RAL operates and renders its mandate within the framework of the construction industry and it is the nature of the construction industry that makes it distinct from others and susceptible to failure. Thus different business environments are presented and discussed hereunder.

2.8.1 Effects of the business and economic environment on the industry

Close monitoring of the business environment is crucial in a contracting firm's strategic planning, given the highly sensitive nature of the industry. A small shift in the interest rate often dictates development intentions of important clients (Langford and Male in Rwelamila and Lobelo, 2000). Monitoring market conditions allows construction organizations to synchronize their activities with their environments thus enabling them

to right size their resources.

Through the banking system, the government controls the credit and interest rates, thus influencing the construction industry a great deal. Therefore, the demand for construction products is largely influenced by the government's monetary policy. Hence, any increase in interest rate and mortgage rate can dramatically reduce investment and demand for the services from the industry. Newcombe et al. (1990) and Kangari (1990) all support this view that government fiscal policy affects patterns in government expenditure and income, while the monetary policy affects the supply of money and credit facilities (i.e., Interest rates). Therefore, the fiscal policy on one hand affects the construction industry directly through the demand for new buildings and works, while on the other hand, the monetary policy indirectly affects changes in interest rates (i.e., any increases reduce the demand for construction) (Rwelamila and Lobelo, 2000).

Douglas, (1985) emphasizes the analysis of peaks and troughs in the economic cycle as being relevant to the industry, in that the company's level of success is affected and dependent on the outcome of these cycles.

2.8.2 Importance of cash flows in the construction industry

Growth in the industry necessitates the injection of capital, given that at a certain point in time fund requirement will exceed fund generation (Hsing-Hui, 1989). The financing of construction projects may be external and internal to an organization. Internal sources, include the contractor's retained earnings from previous projects or investments; depreciation income obtained through depreciating assets, thus the depreciable amount being claimed from the government through tax savings; and disposal of the contractors assets through their sale. External source include large amounts of external finance through bank loans and other financing mechanisms. Escalating material prices coupled with high interest rates have forced management of construction firms to focus on the control and flow of money as being critical to their survival. Moreover, the terms of payment stipulated in the contractual conditions and the escalation formulae (on contracts with escalation) require a great deal of expertise to apply, coupled with the task of ensuring promptness in the submission and payment of bills to ensure that the

cash flow situation is controlled and improved upon (i.e. , Preventing the possible erosion of profit) (Ryder, 1978).

2.8.3 Unavailability of working capital and guarantees

The development of the emerging sector continues to grapple with a range of supply-side constraints such as access to finance, sureties, credit, entrepreneur skills and cash flow management. The perception of the banking sector is that the construction industry is a high-risk industry. The performance guarantees and finance at times are under-priced both locally and internationally by banks in relation to the risk factors and therefore subjected to tighter controls. This state of affairs which remains an obstacle to obtaining credit and finance affecting many emerging contractors and sometimes to a certain extent the established ones (CIDB, 2004). Hindle (1991) also asserts that this analysis allows management to detect and react to changes in demand for their services. Thus, there is an apparent neglect in the marketing of construction services during boom times, given that work and capital is easily obtained, whereas in a recession, work and capital is scarce and the marketing of construction services become important.

2.8.4 Skills Demand and supply

The South African construction industry is just coming out of a significant phase of decline that has seen limited investment in human capital development and the migration of available skills, leading to shortages of skills in the industry. The announcement of a large government infrastructure-spending programme in 2005, such as the construction of the Gautrain Rapid Rail Link and the provision of infrastructure for the 2010 FIFA Soccer World Cup, have highlighted the skills shortages, and necessitated timely interventions to ensure the delivery of a number of infrastructure development projects. While there may be sufficient numbers employed, many of the individuals in the sector lack the critical skills, knowledge and experience to effectively manage and ensure the delivery of infrastructure in terms of requisite standards of cost, quality and time. Such capacity constraints are all the more important, (CIDB, 2007).

2.9 Factors impacting onto projects success

For organizations such as RAL, or any other private company and transportation departments, adopting a new approach to procure road infrastructure services for delivery of construction projects requires significant organizational changes; and modifications to both work processes and existing organizational structures may be needed. Adjustments encompassing many different aspects of the organization's interests must occur for the change initiative to be successfully put into practice. Establishing factors impacting on infrastructure programmes and projects delivery would not only expedite, but also efficiently and effectively enhance service delivery processes.

Various attempts were made by different researchers to determine factors contributing to project success delivery in construction and, still a number of factors have been proposed. Some are common, but there is no general agreement on the variables (Chan et al., 2004). The construction industry is dynamic in nature due to the increasing uncertainties in technology, budgets and development processes. Nowadays, projects are becoming more complex and difficult. The project team usually faces unprecedented changes. The study of projects success and the critical success factors are considered to be a means to improve the effectiveness of projects delivery (Chan et al., 2004).

According to Gao et al., (2002), project success is most commonly associated with factors. Hypothetically, if project processes were implemented using all the key factors related to project success, the project outcome should be a predictable success. Young (2000) also attests that "Success depends on who is measuring; the perception of success is dependent on who has established some metrics and then making the measurements". In the same vein, Chua et al. in Hughes et al. (2004) state, "the ability to identify key attributes of project success is important to project owners, engineers and contractors. Understanding the attributes of success contributes to the efficient execution of the construction project".

There exists a body of thought of the opinion that project success occurs when the

project meets the technical performance specifications or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people in the parent organization, key people in the client organization, key people on the project team, and key users or clientele of the project effort, then the project is considered an overall success. They noted this definition as a “perceived success of a project” (Baker et al., 1997).

In a synergic study conducted by Chan et al., (2004) in highways projects, those factors that could predict the success of a project were identified and grouped into five main categories. These include: human related factors, project related factors, project procedures/procurement, project management actions and external environment. A number of variables influencing the success of project implementation were identified following a thorough review of various articles. These are discussed below.

2.9.1 Project-Related Factors

According to Chan et al., (2004) project scope is a useful predictor for construction time. The importance of project scope factors is echoed by other researchers in Chan et al., (Akinsola et al., 1997; Songer and Molenaar 1997; Belout 1998; Chua et al. 1999; Dissanayaka and Kumaraswamy 1999; Kumaraswamy and Chan 1999). The attributes used to measure this factor are the type of project, nature of project, length of highway project, complexity of project, and size of project.

2.9.2 Procurement-Related Factors

A number of researchers identified the importance of procurement factors (Pocock et al., 1997a, 1997b; Walker 1997; Kumaraswamy and Chan 1999; Walker and Vines 2000. Dissanayaka and Kumaraswamy, 1999) They generally defined the scope of procurement as the framework within which construction is brought about, acquired or obtained. Therefore, two attributes are used to measure this factor. They are procurement method (selection of the organization for the design and construction of the project) and tendering method (procedures adopted for the selection of the project team and in particular the main contractor) (Chan et al., 2004).

2.9.3 Project Management Factors

Project management action is a key for project success and by using the management tools, the project managers would be able to plan and execute their construction projects to maximize the project's chances of success. Then, the variables in project management include adequate communication, control mechanisms, feedback capabilities, troubleshooting, coordination effectiveness, decision making effectiveness, monitoring, project organization structure, plan and schedule followed, and related previous management experience (Belout 1998; Chua et al., 1999; Walker and Vines, 2000 in : Chan et al.,1999). A number of attributes will affect this factor, including the communication system, control mechanism, feedback capabilities, planning effort, organization structure, safety and quality assurance programme, control of subcontractors' works, and finally the overall managerial actions.

2.9.4 Project Participants-Related Factors

Chua et al.(1999) defined project participants as the key players, including project manager, client, contractor, consultants, subcontractor, supplier, and manufacturers. Walker . (1995) considers the influence of client and client's representative as a significant factor on construction time performance. The client-related factors are concerned with client characteristics, client type and experience, knowledge of construction project organization, project financing, client confidence in the construction team, owner's construction sophistication, well-defined scope, owner's risk aversion and client project management (Chan and Kumaraswamy ,1997; Songer and Molenaar , 1997; Dissanayaka and Kumaraswamy ,1999).

In the same vein, Lomas (2008) highlights the paramount international trends in project organization companies that require that; the client must lead and be supported by a professionally qualified team from inception. The client must clearly define the project imperatives to the design team. The design team is to be chosen on best value knowledge and ability, not lowest price. Early contractor involvement, quantification and equitable appointment of risk are essential to meet final budgets. Projects are to be financially robust and meet environmental and sustainability criteria. Confrontational

conditions of contract should be replaced by collaborative methods of working, and companies should be encouraged to become preferred employers and creating new production processes, organising management and site activities along to support the supply chain (Lomas, 2008).

According to Chan and Kumaraswamy. (1997) ,designers play a vital role as their work is involved from inception to completion on a project. Considering that design team-'s work can be affected by design team experience, project design complexity, and mistakes/delays in producing design documents. The main contractor and subcontractors start their main duties when the project reaches the construction stage. The variables include contractor experience, site management, supervision and involvement of subcontracting, contractor's cash flow, effectiveness of cost control system and speed of information flow (Dissanayaka and Kumaraswamy ,1999).

The project manager is another key stakeholder in a construction project ,and his competence is a critical factor affecting project planning, scheduling, and communication. Variables under this factor consist of the skills and characteristics of project managers, their commitment, competence, experience, and authority (Chua et al. ,1999). A construction project requires team spirit; therefore team-building is important among the different parties. Team effort by all parties to a contract owner, architect, construction manager, contractor, and subcontractors is a crucial ingredient for the successful completion of a project (Hassan, 1995). The attributes of this factor can be mainly divided into two categories: one is related to client, another is the project team. Forthe first group, it includes client's experience and ability, nature of client, size of client organization, client's emphasis on cost, time and quality, and client contribution to the project. For the second group, it includes project team leaders' experience and skills, project team leaders' commitment on time, cost and quality, project team leaders' involvement, project team leaders' adaptability and working relationship, and the last one is support of the project team leaders' parent companies (Chan et al., 2004).

2.9.5 External Factors

Various researchers support “environment” as a factor affecting the project success (Akinsola et al., 1997; Kaming et al. ,1997; Songer and Molenaar ,1997; Chua et al., 1999; Walker and Vines, 2000) further describe “environment” as all external influences on the construction process, including social, political, and technical systems. The attributes used to measure this factor are economic environment, social environment, political environment, physical environment, industrial relations environment, and the level of technology advanced.

2.10 PROJECTS DESCRIPTION

2.10.1 Introduction

The Roads Agency Limpopo does plan and execute over fifty projects of a different nature and size throughout the province on an annual basis. The design and construction phases of these projects are outsourced to consulting and construction firms supervised by RAL team of engineers. The projects mainly consist of preventative maintenance, road upgrading and bridge construction. The projects involve upgrading of roads from dirt and gravel to sealed/surfaced state. The projects are carried out either using labour intensive or conventional construction methods, which primarily involve machinery and plant. Conditions of surfaced roads are reinstated either by full reconstruction or resealing and repairing. Construction and maintenance of bridges and as well as rehabilitation of the entire road infrastructure are implemented to provide and maintain a reliable safe network (RAL, 2008).

RAL has from its inception in 1998/09 to 2008/09, planned and implemented over 570 projects of different sizes and nature. Twelve percent of these were projects executed using labour intensive construction methods, 10% consisted of bridge construction, 38% of road upgraded from gravel or dirt to surfaced/tarred state, and lastly 40% was preventative maintenance done to surfaced/tarred network (RAL, 2009). An overview description of four identified projects of different nature and size retrieved from the Roads Agency Limpopo’s archives is presented and discussed hereunder as case

studies to investigate the performance of RAL (RAL, 2008).

3.2 Individual Projects Description

3.2.1 NPRA/T288/2004 (RAL, 2005)

Project name: Upgrading and surfacing of a section of road D4250 between Apel and Veeplaats in Sekhukhune District, Limpopo Province

Project value: R34 445 430.00

Contract period: 13 months

Year implemented: 2004

Description:

The project involved the upgrading and surfacing 15,62km of gravel road of section D4250 District road using conventional a method which mainly machinery based. The road is in the Sekhukhune District of Limpopo province. The project entailed the construction of the permanent roadway comprising of surfaced single carriageway rural road width of 2 x 3,7m lanes and 2,0m shoulders on both sides. Drainage structures were provided for in the form of culverts, sub-soil and surface drainage on the identified areas. Bus stops were provided at selected locations along the route. The road pavement structure composed of the following:

- 150mm thick stabilized natural gravel base course(C3)
- 150mm thick stabilized natural gravel sub-base (C4)
- 150mm thick upper selected sub-grade(min G7)
- 150mm thick lower selected sub-grade(min G8)
- Surfaced with 19, 0/6,7mm aggregate modified binder double seal.

The contract was awarded to an eighty (80) % Previously Disadvantaged Individual (PDI) construction owned company for the contract period of thirteen (13) months. The Contractor was able to complete the specified work within the set period without any amendment to the contract period. A number of frustrations and delays were experienced during the implementation stage, which was mainly due to the late delivery of material such as concrete box culverts as these were mainly sourced from a sole supplier. Relocation of services by service authorities such as electrical and telephones

lines took longer than anticipated.

The project had set Contract Participatory Goals in terms of the government Reconstruction and Development Programme (RDP) that were to be achieved by the appointed contractor as part of the contract, of which respectively performed as follows;

- The local Community Liaison Officer (CLO) was appointed as a link between the project and the beneficiaries/community for the entire duration of the project.
- The project steering committee (PSC), comprising members from the local community and the ward councillor was established. The main function of the PSC was to address problems that might be experienced between the contractor and the community. It further assisted in mediating labour related disputes experienced during the project execution and as well as acquiring labour for the contractor. Monthly meetings were held and chaired by the CLO who further reported to the technical site meeting.
- Employment of local labour was arranged through the CLO's labour desk assisted by the PSC. An average of 65 people was employed on a monthly basis. The value of work undertaken by local labour amounted to R1 163 001, 50 which was equivalent to 4, 34% of the set 5 % target.
- Affirmable Business Enterprises (ABE) were engaged, although this aspect was insubstantially supported in this contract. Only 0, 6% of the 10% set target of the awarded contract budget to the total of R 2 677 025, 40 was achieved. This basically indicates that not enough amount of work was allocated for subcontracting.
- A total of nine Historically Disadvantaged Individuals (HDI) supervisory staff was employed on the contract out of a complement of eleven supervisory staff members. The HDI staff represented 81, 8% of the total supervisory staff component and exceeded the minimum set target of 10%.
- Training was also done on site while the work progressed in order to transfer skills to local labour. The training conducted consisted of core technical, leadership, entrepreneurial and generic skills. More than 22 people were trained in these aspects.

3.2.2 RAL/T372/2004 (RAL, 2005)

Project name: Rehabilitation of road D978 from Tzaneen to Deerpark in Mopani District of Limpopo Province

Project value: R15 759 300.00

Contract period: 07 months

Year implemented: 2004

Description:

The project entailed rehabilitation of road D978. The major works involved repairing of distressed areas along this surfaced/tarred route by patching, reconstructing or resealing road surface using conventional methods which involved a lot of plant and machinery, while trying to engage the use of labour on lighter activities such as constructing and cleaning of drainage structures. The main works undertaken included the following:

- Patching: Surfacing and base repairs were carried out in identified areas. These entailed saw cutting of these identified areas, removal of material to the required depth and reinstatement of the road surface with an asphalt base and surfacing.
- The existing gravel shoulders were reinstated to a width of 2.0m. The work also included the clearing and grubbing of existing shoulders, ripping and re-compacting of the material. Then the final shaping was done to the required levels.
- The upper layers of the existing layers were reconstructed to a 200mm depth, resurfacing the reconstructed sections with a 13.2mm single stone seal. All road markings and signage were reinstated. Drainage measures were also provided, in a form of culverts, side drains, kerbs, concrete lined drains and bridges.

The contract was awarded for seven months. However, it was extended by twenty-three days due to the high rainfalls experienced during the construction phase. Additional funds were also allocated for the contract for extra works. Another significant problem experienced was by local traffic disobeying road construction signage, such as Go and Stop signs.

The project's Contract Participatory Goals were mostly met in this project. The

contractual commitment towards local labour employment was 5% of the awarded R14 759 357.08. The Contractor spent a total value of R1 023 997.80 on local labour and was above the set target by 0.53%.

Affirmable Business Enterprises were considerably supported in this contract. The Contractor achieved 3% above the 10% set target of the awarded contract budget, thus a total of R 2 026 318.96 was spent. This indicated that a considerable amount of work was allocated to affirmable business enterprises in view of empowering upcoming ones. Three of the five supervisory staff component was HDI's. The HDI staff represented 60% of the total supervisory staff component and exceeded the 10% minimum set target.

3.2.3 RAL/GL/T563/2008 (RAL, 2009)

Project name: The maintenance of various Gundu Lashu Roads in Sekhukhune District of Limpopo Province

Project value: R4 810 648.11

Contract period: 06 months

Year implemented: 2008

Description:

The project mainly constituted labour intensive methods of construction. Over four roads were identified linking villages within Sekhukhune District. The villages included Mphanama and Ga-Maila, Sehutsaneng and Marishane. The main scope of works undertaken included the following:

- Repairing of the routes surfaces and base patches;
- Repairing of edge breaks and edge beams;
- Construction of gabions and stone pitching;
- Re gravelling of gravel shoulders;
- Construction of 6,7/13,2mm double seal;
- Re-construction of sections of roads and
- Provisioning and reinstating of road markings and signage.

The project's overall Contract Participatory Goals were partially met;

- The Contractor employed a total of four supervisory staff members which represented 80% of the total component. The target was set at 50%.He did well in this aspect.
- Affirmable Business Enterprises were not considerably supported in this contract. The target was set for R305 640.00.The contractor did not reach his commitment on ABE's empowerment and he only spent R210 400.00. This was translated to 5.55% almost less than half of the 10, 6% set target.
- Labour target was also set to be 35% of the awarded contract amount. The contractor did not reach his committed labour content of R680 000.00.The final figure was R311 733.00 which was also way below the 35% target. The project did not even meet half of its labour intensive programme's objective.
- A total of 15 persons were given training on both generic and entrepreneurial skills.

The project's workmanship was acceptable, although the contractor's lead team struggled in terms of project administration, as a result the project progressed very slowly and it was mostly behind schedule. The Contractor barely adhered to the project programme. This saw the contract being extended by four months over and above the six-month contract period. The project was awarded to a pre-classified "emerging contractor". This probably contributed to the contractor's cash flow maladministration and as such at most labourers were not paid on time as he struggled financially.

3.2.4 RAL/T400/2006

Project name: The Repair,Reseal and Fogspray of Road D2531 from Houtbosdorp to Magoebaskloof in the Capricorn District of Limpopo Province

Project value: R3 988 183.48

Contract period: 05 months

Year implemented: 2006

Description:

The project's scope of work consists of the repair, reseal and fogspray of road D2531 from Houtbosdorp to Magoebaskloof in the Capricorn District of Limpopo Province. The works extended over an approximate distance of 10km of which 8.12km is surfaced.

The project only concentrated on the surfaced portion. The main activities undertaken included the following:

- Clearing and grubbing of road reserve from shrubs and bushes;
- Cleaning and clearing of drainage structures;
- Repairing road surface by resealing and patching at selected areas;
- Repairing and construction of edge breaks and edge beams;
- Re gravelling of gravel shoulders;
- Laying of asphalt and 13,2mm single seal at almost the entire road;
- Re-construction of pavement layers at identified sections of roads; and
- Provisioning and reinstating of road markings and signage.

The project's overall Contract Participatory Goals were partially met mainly due to the nature of the project. It required and involved a lot of machinery. Labour intensive work related activities were minimal, which limited the engagement of local labour. The contractor only spent 2, 3% towards labour of the 10% set target while spending 36, 9% on Affirmable Business Enterprises. Local suppliers were mainly used to supply construction cement, concrete, food and diesel. No provisioning was made for training on this project; however the contractor was encouraged to offer local labour in-house training.

No significant social problems were experienced during the project implementation phase with the exception of technical related ones. Hot weather temperatures in the area also affected application of bitumen products.

3.3 Conclusion

The projects described signified an apparent and hassle-free project implementation phase in terms of both project financing and technical progress, with the exception of labour intensive based ones. Labour intensive projects are mainly allocated to emerging contractors as part of Gundu Lashu, RAL's empowerment programme. Projects implemented under this programme indicate a significant challenge in terms of the main aspects of the project implementation phase, which saw the project being completed almost 180% after the time had lapsed due to the inability of the contractor to finance the project and lack of technical information. In addition, social empowerment aspects of

the Contract Participatory Goals were also not satisfactorily attained in most of the conventional projects.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This third chapter describes the research method and design that was followed during the study. In addition, the chapter outlines the study's context, population and sampling method, data collection methods and the data analysis methods used to organize the collected data in order to draw conclusions and make sense of the research findings (Brink, 2006). The ethical standards adhered to throughout the study and measures against which the study could be evaluated for trustworthiness are further justified.

3.2 RESEARCH METHOD AND DESIGN

The qualitative descriptive, explorative research method using an instrumental case study was used in this research project to achieve the aim of investigating factors impacting on RAL's performance on roads infrastructure delivery in Limpopo Province of South Africa. The descriptive, explorative research design using an instrumental case was seen as appropriate for answering the research questions for this study. De Vos et al. (2006) defined an instrumental research case study as the exploration and description of the case which takes place through in-depth data collection methods, involving multiple sources of information that are rich in context, which can include interviews, documents and archival records. The instrumental case study is further defined by De Vos et al. (2006) as one which is used in order to gain a better understanding of a public issue, and further facilitates the gaining of knowledge about public issues and coming up with solutions based on the findings of the investigation.

For this study, data were obtained by circulating questionnaires to all the participants purposively involved with the RAL projects Limpopo Province that is all RAL staff involved with project management, all CIBD active registered civil engineering contracting and consulting firms in Limpopo Province and lastly social consulting firms

involved in road projects in the province. Furthermore, a follow-up unstructured telephonic interview with the respondents was conducted during the research project, which assisted the researcher to understand the responses. A study of reports of completed projects was conducted in order to make a comparison with the responses from active stakeholders so that a body of knowledge regarding the actual factors contributing to RAL's performance could be made.

Furthermore, the qualitative approach assisted the researcher in exploring and analyzing success factors and challenges of implemented projects. Maree (2007) states that qualitative researchers are interested in the holistic approach that assists them to collect in-depth information. Descriptive statistics were used to analyze the data. The presentation of quantitative data was based on the use of Microsoft Excel to process and analyse the data. Results of the study are presented in this report using descriptive statistics, tables, bar graphs and pie charts. Information obtained from the research study was compared with what elicited from actual, completed projects and reports gleaned from the literature in the preceding chapter. The approach assisted in establishing a common ground as to what factors contribute to completion of projects.

3.3 DESCRIPTIVE RESEARCH DESIGN

A descriptive research design was used by the researcher ,participants were given the opportunity to rate and explain factors impacting on RAL's performance. A qualitative descriptive research design further assisted the researcher to obtain complete and accurate information about the factors impacting on RAL's performance on roads infrastructure delivery (Denzin & Lincoln, 2000). The researcher was interested in the process, meaning, understanding the data and took a neutral and unbiased approval in recording and analyzing responses as described by the participants.

According to Maree (2007) the application of descriptive research assists the researcher in obtaining information from various cases, individual, situation, groups, interaction or the social object being studied. Cormack (2001) supports this notion by pointing out that the aim of descriptive research design is to discover new facts about a situation, cases,

people, activities, events, or the frequency within which certain events occur. In this study an instrumental case was used to investigate facts about events, which occur in RAL's performance on roads infrastructure delivery in Limpopo Province.

3.3.1 Explorative research design

The exploratory design was used in this study to gain insight and understanding of the case under study. The aim of exploratory research is to establish the facts, to gather new data, to determine whether there are new patterns in the data and to gain new insights into the case studied (De Vos, 1998). The researcher used probing by asking follow up questions to allow the participants to clarify areas which were not clear to the researcher during the one-on-one unstructured interview sessions so as to gather extensive data regarding the case being studied until data saturation was reached (Welman, Kruger & Mitchel, 2008). The exploratory research design facilitated that the researcher gained insight and an understanding of the case (De Vos, 1998). The researcher associate her own ideas based on the case before entering the study field to avoid bias from own ideas influencing the manner in which probing questions were going to be asked during the interview sessions (Maree, 2007).

3.4 STUDY AREA

The study area is Limpopo Province given that the Roads Agency Limpopo (RAL) operates within the borders of Limpopo Province. RAL undertakes functions of planning, design, construction, maintenance and control usage of all the provincial roads, spanning 21 859km, of which 6 530km is tarred, and the remaining portion is gravel and dirt road (RAL, 2007).

3.5 POPULATION AND SAMPLING

Population is defined by Brink (2006) as a complete set of persons that possess some common characteristics that is of interest to the researcher. In this study the target population was:

- One hundred and twenty-four (124) RAL's completed projects from the three

consecutive financial years : 2005/06, 2006/07 and 2007/08;

- Sixty-five (65) RAL staff: engineering and corporate services, finance and information management.
- One hundred and one (101) CIBD active registered civil engineering construction firms in Limpopo Province eligible to be contracted for RAL road projects; and
- One hundred and ten (110) RAL database of civil engineering, environment and social consulting firms involved in road projects

3.5.1 Sampling

Non-Probability purposive sampling method was used in this study because it allowed the researcher to include participants in the study based on knowledge the participant had about the case being studied (Brink, 2006). De Vos (1998) argues that purposive sampling is based on the judgment of the researcher by choosing the sample that has elements, which are of interest and represent the whole population that should be studied. Participants were chosen based on the judgment of the researcher in that the participants have the characteristics that the researcher wants regarding the case (De Vos et al., 2006).

The participants who were included in the study were people involved with the RAL projects in Limpopo Province, that is all RAL staff involved in road projects, all CIBD active registered civil engineering construction and consulting firms in Limpopo Province and lastly social consulting firms involved in road projects in the province. Furthermore, this enhanced the trustworthiness of the study as the participants had a better understanding of the field. The sample for this study comprised the following:

- Four completed projects, as case studies and having achieved inter-related objectives of project management and valued at, R6million, R17million, R32 million and R52million were studied, respectively;
- Ten RAL management and staff, particularly in the engineering division, and limited only to those with project management and built environment experience;
- Ten civil engineering contracting firms with at least 4 road projects with RAL;

- Ten civil engineering consulting firms with at least a minimum of four road projects with RAL; and
- Ten social consulting firms with at least a minimum of four road projects with RAL.

3.5 DATA COLLECTION

3.5.1 Preparation of the participants' prior data collection

De Vos (2001) argues that preparation of the data collection can be successful if the relevant stakeholders are involved in the process because they possess background information about the nature of the research field. This was helpful to the researcher in data collection as all stakeholders involved in the study were relevant to the topic and fully involved in RAL roads infrastructure delivery process. It included its core project management unit engineering division, civil engineering construction and consulting firms.

The questionnaire was kept simple and straight forward, and the language employed was at a level commensurate with the survey population in attempting to increase the response level. Informed consent was obtained from each participant before they could participate in the study. The aim and objectives of the study were outlined to every participant before commencing with the interviews. Participants were informed about the procedure to be followed during both the structured and unstructured interview sessions. The participation expected during interview sessions were outlined to the participant before they could voluntarily accept to participate. They were informed that their real names and companies would not be used during the study as suggested by Seale et al. (2004).

3.5.2 Data collection process

Survey questionnaires were sent out and followed up by unstructured telephonic interviews during the research project. This assisted the researcher to understand responses as described by the participants themselves. Participants were given an opportunity to describe factors impacting on RAL's performance on roads infrastructure delivery in Limpopo Province. De Vos et al (2006) describe the unstructured one-to-one

interview session as sessions whereby the researcher gets to understand participants' worldview as interpreted by themselves by attaching meaning to daily occurrences.

The survey questionnaire was circulated to all active RAL staff and service providers. It allowed the participants to indicate in an appropriate block with varying degrees of belief, factors impacting on RAL's performance. The questionnaire was based on a survey done by Norwegian University of Science and Technology (2000) on a related subject matter. The questionnaire made an allowance for commentary, where the respondents could cite other factors and reasons than those stated attributable to the factors contributing to performance of RAL. Of the 40 questionnaires sent out, only 29 (72,5%) were returned. The response was relatively good as more than half of the respondents provided the required information including additional commentary in the appropriate section. The following participants took part in the data collection process:

- Ten RAL management and staff, particularly in the engineering division, and limited only to those with project management and built environment experience;
- Ten civil engineering contracting firms with at least 4 road projects with RAL;
- Ten civil engineering consulting firms with at least a minimum of four road projects with RAL, and
- Ten social and environmental consulting firms with at least a minimum of four road projects with RAL.

3.5.3 Communication technique used during data collection

Good interpersonal attitude and skills were important during the interview sessions, in order to obtain relevant information about the study without threatening or annoying the participants because they were important assets in this study. The researcher showed a non-judgemental attitude when communicating with all participants during telephonic interview sessions as suggested by Waston et al (2008).

Examples of communication techniques that were used by the researcher during the telephonic interview sessions are as follows:

- **Time** was provided to participants to describe their ideas and they were not interrupted in any way before finishing what they intended to share.
- The researcher restated the participant's descriptions into simple words without adding new ideas to the message in order to **paraphrase** it while giving them a chance to confirm their ideas.
- **Tracking** was done by the researcher by showing interest and encouraging the participants to say more by following the content and the meaning of their conversation as suggested by Henning, Van Rensburg & Smit (2007).
- **Using silence** allowed both participants and interviewer to think, and motivate the participants to talk more in line with Henning, Van Rensburg & Smit (2007) .
- **Probing** assisted the researcher to stimulate the participants to provide additional information to clarify what should be described in full and also to clarify answers given according to Babbie & Mouton (2009).

3.6 DATA ANALYSIS METHOD

In analysing the questionnaires, the approach that was followed was first to present factors contributing to the performance of RAL in terms of roads infrastructure delivery along with varying degrees of belief of options (i.e., strongly agree, agree, unsure, disagree and strongly disagree). The varying degrees options were totalled separately under each factor. The choice option totals were expressed as a percentage of the total number of respondents. The quantitative data were processed using Microsoft Excel. Results of the study are presented in this report using descriptive statistics, tables, bar graphs and pie charts. The total number of respondents who participated in the study is 29. A typical example of results distribution is presented in Table 03.

2.2 Project Management	Agree		Unsure		Disagree		Total n= 29 (%)
	n	%	n	%	n	%	
Communication system	28	95,65%	0	0,00%	1	4,35%	100,00%
Control mechanism	28	95,65%	1	4,35%	0	0,00%	100,00%
Feedback capabilities	25	86,96%	3	8,70%	1	4,35%	100,00%
Planning effort/input	26	82,61%	2	8,70%	1	8,70%	100,00%
Consultation with stakeholders	22	73,91%	4	13,04%	4	13,04%	100,00%
Consensus building (among stakeholders)	20	65,22%	6	21,74%	4	13,04%	100,00%
Developing an appropriate organization structure	22	73,91%	5	17,39%	2	8,70%	100,00%
Implementing an effective health and safety program	22	73,91%	5	17,39%	2	8,70%	100,00%
Implementing an effective environmental	25	86,96%	2	4,35%	2	8,70%	100,00%
Implementing an effective quality assurance program	22	73,91%	6	21,74%	1	4,35%	100,00%
Control of sub-contractors works	13	39,13%	7	26,09%	9	34,78%	100,00%
Overall project managerial actions	24	82,61%	5	17,39%	0	0,00%	100,00%

Table 03: Project management related factors

For qualitative data, follow up unstructured telephonic interview sessions were transcribed verbatim with the aim of producing a detailed and systematic recording of issues that were addressed during these in-depth interview sessions. This is in line with what Maree, (2007) advocates. Qualitative data were analyzed qualitatively through Tesch's (cited in Creswell, 1994) open coding qualitative data analysis method which involved the following steps:

1. The researcher studied the responses from telephonic interviews to check the sense of the whole meaning, internalize the content and then transcribed the notes verbatim. The researcher carefully read through all the transcripts to get a sense of the field notes as a unit.
2. The researcher asked self the following questions with regard to the data collected: What is it about? What is the underlying meaning? The researcher jotted down ideas in the margin as they came based on the transcribed data. The researcher asked the following questions that are related to the data:
 - What do the data say?
 - What categories indicate the event?
 - What category or characteristics within the category indicate this event?

- What kind of concepts can I use to describe this?
3. After the researcher had completed the task, a list of all topics covered were listed, clustered together in similar topics, and wrote topics in columns as major topics and leftovers.
 4. The researcher found the most descriptive wording to topics and turned them into categories; a total of ten themes and seventeen sub-themes were reduced by grouping them together based on similar ideas. Lines were drawn between the themes and sub-themes to show interrelationships
 5. The data which belonged to each of the themes and sub-themes were assembled and analysis performed.

3.7 ETHICAL CONSIDERATION

The following ethical standards were adhered to during the study:

- Informed consent was obtained from each participant before they could participate in the study by signing the appropriate consent form.
- The aim and objectives of the study were explained to every participant before commencing with interview sessions.
- The research was planned and executed in a way that fostered justice, beneficences and excluded harm and exploitation of participants, in that:

The participants were told that they could terminate their participation in the research study if they felt that they could not continue. The participants were made aware that they were not obliged to answer any questions if they felt it was violating their rights, for example, to confidentiality. Furthermore, participants were informed that their names and companies would not be linked to the comments given and would not be used throughout the study in line with Matheson, (2007). Pparticipants were treated with integrity by being honest with them. The participants were made aware that the results and recommendations of the study would be used exclusively for academic purposes and to expand knowledge in the area of study. They were also informed that field notes would be written during interview sessions.

CHAPTER 4

PRESENTATION AND INTERPRETATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the research findings of the study conducted on factors impacting on RAL's performance in terms of roads infrastructure delivery in Limpopo Province, South Africa. The sample for this study as pointed out in the last chapter was purposefully selected from the people who are involved with the RAL projects in the Limpopo Province, that is all RAL's engineering division staff involved in road projects, CIBD active registered civil engineering construction and consulting firms and lastly Social Consulting firms involved in road projects of the Limpopo Province. In order to obtain the necessary information on the subject matter, a literature survey was carried out, circulation of structured questionnaires to all the above mentioned respondents, followed by unstructured interviews with respondents and lastly from projects completion reports retrieved from RAL's archives.

The questionnaire was designed with the intention of drawing out responses, towards establishing the principal factors contributing to RAL's performance in terms of roads infrastructure provisioning. It was assumed that the respondents would be sufficiently familiar with the factors stated. The questions were kept simple and straightforward and the language employed was at a level commensurate with the survey population in an attempt to increase the response level. The questionnaire allowed the respondent to indicate in an appropriate box with varying degrees of belief, the perceived factors contributing to RAL's performance. The questionnaire also allowed for commentary, where the respondent could cite reasons for his rating and list other factors than those stated. Of the 40 questionnaires sent out, only 29 (72,5%) were returned. The response was fairly good as more than half of the respondents provided the reasons and additional information on the factors contributing to the performance of RAL in terms of roads infrastructure delivery.

4.2 RESPONDENTS DEMOGRAPHIC PROFILE

This section presents data on respondents' demographic profile, years of experience, number of projects managed or implemented, at the same time specifying respondents' particular roles.

Figure 04: Respondent's role with RAL

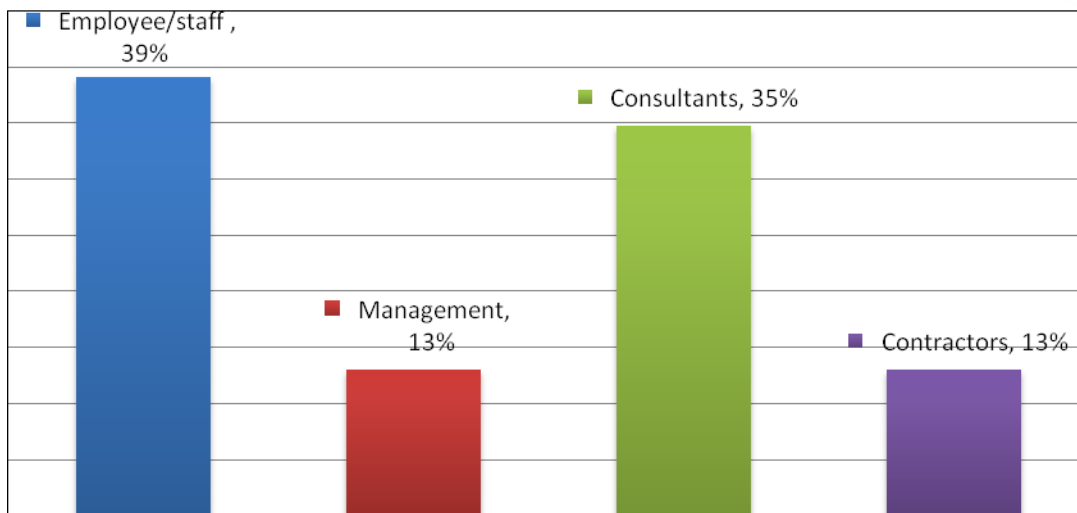


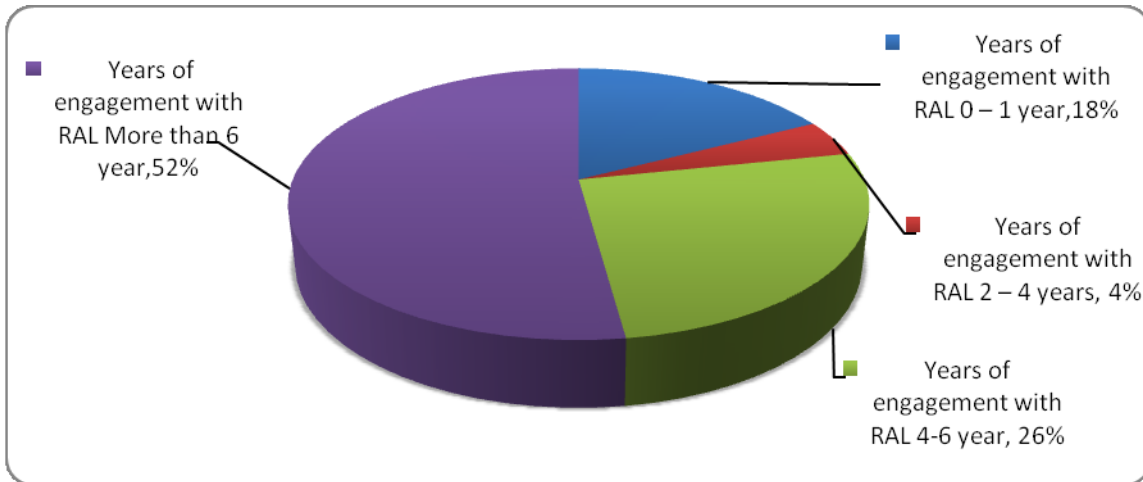
Figure 04 represents a balance between RAL staff and management with its main service providers being contracting parties, that is consulting and construction firms. This relatively represents a fair split between respondents. The 48/52% representativeness of the sample stratified between RAL staff and consultants/contractors minimized bias of the study as suggested by Babbie and Mouton (2001).

4.2.1 Years of engagement with RAL

Figure 05 below shows that over 52% of the respondents have been engaged with RAL for more than 6 years, 26% for 4 -6 years, 4% for 2 – 4 years and lastly 17% have just started working with RAL with less a than year of engagement. This gives a relatively good indication that the majority of the respondents have adequate experience working for RAL, especially considering that 78% of the respondents have more than 4 years of experience. Under 17% of the respondents are just at the entry level. Overall, this gives

a good representation which gives credence to the study.

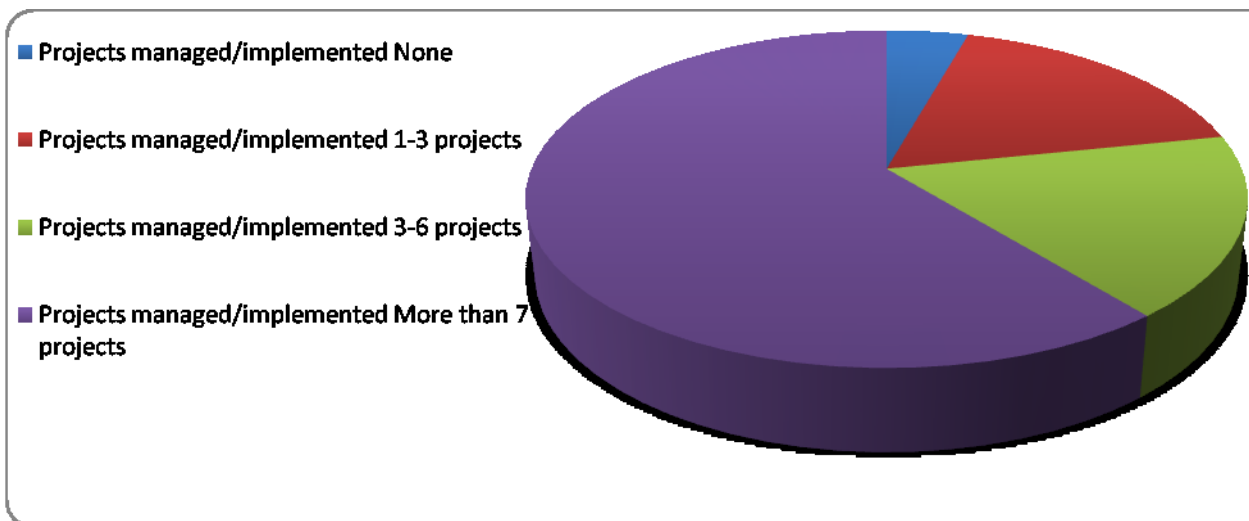
Figure 05: Years of engagement with RAL



4.2.2 Projects managed/implemented with RAL

The majority of respondents (61%) who participated in the study have implemented or managed more than 7 projects with RAL, while fewer than 21% had implemented less than 3 projects. RAL projects range from R3 million to R87 million (RAL, 2006), which means that 61% of the respondents have executed an average of more than R45 million worth of projects as demonstrated in Figure 06 below.

Figure 06 : Projects managed/implemented by RAL



4.3 PRESENTATIONS AND DISCUSSION OF RESEARCH FINDINGS

The approach followed was to first present factors contributing to the performance of RAL in terms of roads infrastructure delivery in terms of options (i.e., strongly agree, agree, unsure, disagree and strongly disagree). These options were totalled separately under each factor and separated from the commentary sections. The option totals were expressed as a percentage of the total number of respondents. A summation of these totals is determined for each choice option of the factors by merging the information into three columns. The new columns are now headed “agree”, “unsure” and “disagree”.

4.3.1 Human related factors

Human-related factor is important in accomplishing deliverables in a harmonious and tension-free environment, and can also be considered one of the critical success factors. If the client’s representatives, engineers and the contractor’s representative try to dominate each other to show supremacy, the success of the planned project could be in jeopardy. The human factor helps to smooth out progress. From the data in Table 04 it is apparent that almost all human related factors contribute to RAL’s performance. Noteworthy is the factor, ***RAL’s emphasis on low construction cost*** which registered 57%. Low construction costs would mean low margins, declining turnover of projects and static overhead costs affecting primarily the main contractor. This can create conditions, which may lead to a point where the main contractor’s overheads exceed overhead recovery from work done thus increasing the chances of the main contractor going under and at the same time threatening the quality of the end product (Rwelamila and Lobelo, 2000).

Table 04 Human related factors

Human related factors	Agree		unsure		Disagre		Total (n= 29) (%)
	n	%	n	%	n	%	
RAL's experience; (means whether it is a sophisticated or specialized client)	29	100,00%	0	0,00%	0	0,00%	100,00%
Nature of RAL (client)(means whether it is a private or public entity)	23	78,26%	6	21,74%	0	0,00%	100,00%
Size of RAL as an organization	22	73,91%	5	17,39%	2	8,70%	100,00%
Labour relations and favourable working conditions within RAL	21	69,57%	5	17,39%	4	13,04%	100,00%
RAL's emphasis on low construction cost	16	56,52%	5	17,39%	8	26,09%	100,00%
RAL's emphasis on high quality of construction	29	100,00%	0	0,00%	0	0,00%	100,00%
RAL's emphasis on speedy construction processes	28	95,65%	1	4,35%	0	0,00%	100,00%
RAL's ability to brief	21	73,91%	7	21,74%	1	4,35%	100,00%
RAL's ability to make decisions	27	95,65%	1	0,43%	1	4,35%	100,43%
RAL's ability to define roles	23	78,26%	4	13,04%	2	8,70%	100,00%
RAL's contribution to planning and design	24	82,61%	4	13,04%	1	4,35%	100,00%
RAL's contribution to construction phase	28	95,65%	1	4,35%	0	0,00%	100,00%
RAL's PM experience and competence	29	100,00%	0	0,00%	0	0,00%	100,00%
Technical skills and capability of the Project Manager	28	95,65%	1	4,35%	0	0,00%	100,00%
Planning skills of the Project Manager	22	73,91%	6	21,74%	1	4,35%	100,00%
Organizing skills of the Project Manager	22	73,91%	6	21,74%	1	4,35%	100,00%
Coordinating skills of the Project Manager	22	73,91%	7	26,09%	0	0,00%	100,00%
Motivating skills of the Project Manager	21	69,57%	8	30,43%	0	0,00%	100,00%
Project Manager's commitment to meet Cost	27	91,30%	2	8,70%	0	0,00%	100,00%
Project Manager's commitment to meet Time	27	91,30%	2	8,70%	0	0,00%	100,00%
Project Manager's commitment to meet Quality	27	91,30%	2	8,70%	0	0,00%	100,00%
Project Manager 's early and continued involvement in the project	22	73,91%	6	21,74%	1	4,35%	100,00%
Project Manager adaptability to changes in the project plan	24	82,61%	2	8,70%	2	8,70%	100,00%
Project Manager's working relationship with project team	25	86,96%	4	13,04%	0	0,00%	100,00%
Support from Project Manager's parent company(RAL)	27	95,65%	0	0,00%	2	4,35%	100,00%
Provision of resources from Project Manager's parent company(RAL)	24	82,61%	1	4,35%	4	13,04%	100,00%
Project team's past and proven experience (<i>team means Consultant, Contractor & others</i>)	25	86,96%	2	8,70%	1	4,35%	100,00%
Project team's early and continued involvement with key beneficiaries	23	78,26%	5	17,39%	1	4,35%	100,00%
Project team's working relationship with key beneficiaries	24	82,61%	5	17,39%	0	0,00%	100,00%

On the one hand, the most prominent factors that all the respondents agree on as contributing to RAL's performance were ***RAL's experience, RAL's emphasis on high quality of construction and RAL's PM experience and competence*** (100%). The human-related factors are concerned with client characteristics, client type and experience, knowledge of construction project organization, project financing, client confidence in the construction team, owner's construction sophistication, well-defined

scope, owner's risk aversion and client project management (Chan and Kumaraswamy 1997; Songer and Molenaar ,1997; Dissanayaka and Kumaraswamy 1999). These are also critical to RAL's performance.

On the other hand, using qualitative data, respondents indicated comparative and contrasting views with regard to the factors that influence RAL's performance in Limpopo Province. The information that they shared was that RAL has the best managers at the top management level whose strategic plans in terms of project planning, procurement processes and implementation strategies are rated as first class strategies. A respondent confirmed this by indicating that, "*RAL is a top driven organization*" and another saying "*RAL has a core of elderly experienced staff members who are the backbone of the company and are unlikely to change employment as they are at their advanced level*". This comment clearly meant that they had gained invaluable experience in the engineering profession and also remained loyal to the organization".

The contradictory view from the respondents was that some of the project managers were lazy and lacked the requisite skills in implementing the strategic plans formulated at the top level. However, some participants indicated that some of the project managers were good.

The following themes and sub-themes emerged during data analysis of unstructured telephonic interviews.

THEME 1: RAL'S POLICIES, GUIDELINES, PROCESSES AND STRATEGIC PLANNING

Hill et al in Nel et al. (2008) regard strategic planning as a top management function. A strategy evaluates and develops the organization's purpose, mission, and overall objectives and policies to place the organization in an advantageous position in its operating environment. Change management is a largely conceptual function which requires thinking about the future.

In the current study, participants revealed that the policies, guidelines and processes, which RAL follows, are up to world standards. Additionally participants indicated that the RAL top management draws the strategic plans which are competitive and up to international level. This is evidenced by the respondent who said, “*Senior officials of RAL work hard in creating good structures in the organization*”. In support of the above, another respondent said “*RAL management has been the best in their planning, procurement, implementing first class work based on their policies*”.

It is evident that the performance of RAL rests upon its top management as they have proven to possess adequate experience. A respondent who indicated that RAL has its core staff members who are elderly people confirmed this. This is temporarily good for an short-term organizational stability, however it is bad if the company only rests upon aged personnel, especially if there are no adequate succession planning which it has been in most cases indicated by respondents to say most project managers lack the requisite skills and there are at the middle management level. If proper succession planning is not in place this will eventually collapse the organization. CIDB, (2007) reiterated that client delivery capacity must be addressed and specifically public-sector delivery. While there may be sufficient numbers employed, many of the individuals in the public sector lack critical skills, knowledge and experience to effectively manage and ensure the delivery of infrastructure in terms of requisite standards of cost, quality and time. The provision of mentorship is still very essential. A mentorship programme is necessary to supplement for inexperience and insufficient track record to assure the public sector delivery bodies of reduced business risk.

In consensus, Gibson et al (undated) point out that for an owner organization, the adoption of a new approach to procure services needed in the delivery of a construction project requires comprehensive change, including significant modifications to both the work processes and the existing organizational structure. These adjustments encompass many different aspects of the owner’s responsibilities. For the change initiative to be successful, the modification to these project domains must be thorough. Owners must correctly identify the dimensions of the needed change in the delivery cycle to implement this type of paradigm shift; such a perspective allows the owner to establish new work relationships with contractors, suppliers, and consultants.

International trends in project organization companies must be led and be supported by a professionally qualified team from inception (Lomas, 2008).

Sub-theme 1.1: Commitment and experienced top-level management

The success of an organization is based on two cornerstones: efficiency and effectiveness. The efficiency of an organization means doing things the right way and effectiveness means doing the right things, which is primarily determined by setting goals for the organization (Nel et al, 2008). The findings of this study show that there is commitment by the top management to achieve the set goals as indicated by a respondent who said *“RAL performs well because its top management is competent and it has less red tape than other government departments”*. For the success of any management system, commitment of top management is essential. This commitment should be seen throughout the organization as is in this case.

Sub-theme 1.2: Lack of commitment versus commitment by project managers

The findings reflected that there is, on the one hand, lack of commitment to the implementation of projects, while on the other hand, some project managers are committed to their work. This is supported by the quote from of the respondent who indicated that

RAL has many project managers; some are useless some are good and some are not experienced. The problem is that they do not understand that commitment alone is not sufficient but also action is required.

While most of the participants believe that if support is given in terms of mentoring and involving project managers throughout the project cycle, this will assist them to perform their best, as this following quote suggests

With adequate internal support by top RAL's management and well-groomed project managers (competent, experienced and motivated) RAL can handle any project successfully.

Looking at RAL's organizational structure, project planning and design and project execution are separate units, which appears to be a contributing factor. A respondent

who indicated that there should be synergy between project planners and implementers also confirmed this. Belassi and Tukul(1996) view the project manager as another key stakeholder in a construction project and his competence is a critical factor affecting project planning, scheduling, and communication Furthermore, variables under this factor consist of the skills and characteristics of project managers, their commitment, competence, experience, and authority (Chua et al., 1999).

There is an indication that “*RAL is a top driven organisation*” and “*senior officials of RAL work hard in creating good structures in the organization*” as alluded to by respondents. This call for top management to consider the involvement and performance standards of lower level staff, mainly constituted by project managers (RAL, 2006), is critical in striking a balance in terms of commitment and experience. Nelson (1999) suggests the following for motivation of staff:

- Provide new challenges through job rotations;
- Encourage staff to take the initiative in providing better products and services to customers;
- Assign a mentor to a staff member, to internalise the values and the attitudes of the organization;
- Make them feel part of the team. They also have affiliation needs and want to feel accepted in the organization. Invite staff to attend formal and informal meetings;
- Provide the right training and resources, and
- Provide orientation as well as training related to the successful execution of jobs.

RAL has not successfully ascribed to Nel’s staff motivation principles; hence it is evident that it opted for a top bottom approach with less or no alteration to the traditional organizational culture.

THEME 2: RAL'S STAFF COMPETENCIES

Sub-theme 2.1: Inexperienced versus experienced personnel

When making selection, placement or promotion decisions, it should be ascertained whether there is a fit between the employee and the job, and a fit between the employee's motivation and the job/organization according to Nel et al,(2008). Staff competencies are some of the factors which lead to good or poor performance of RAL as evidenced by the results. While other employees are competent, RAL has a problem of inexperienced employees. This was affirmed by one participant who said "while some are good, *some are useless, some are not experienced*". To solve this problem another participant suggested:

For them to succeed in the management of projects they should be competent and experienced in what they are doing. They should have experience, the necessary skills not what we see happening.

Another participant who gave a counter said, "RAL is very strong regarding its dedication and involvement in its efforts to make its staff members competent". After all, leaders should, at all times, keep the professional development of subordinates in mind and help them to increase their maturity styles (Nel at al., 2008). Consistent with that is engagement, which is a very contemporary concept in motivation. It focuses on the all involved psychological commitment of an employee to the role he or she fulfills in the organization, and taps into employees' motivation to try harder and put in an extra effort. Engaged employees express themselves physically, cognitively, and emotionally while they perform their jobs and roles (Nelson and Quick, 2006). Employees cannot engage in a highly structured environment with little room for creativity, independence and personal responsibility. Phelps and Brossoit (2007) see the key elements of engagement as having the right employees in the right jobs, leaders with the right skills, and supportive systems and strategies.

THEME 3: RAL'S COMMITMENT TO STAFF RETENTION AND DEVELOPMENT

Human resources development and retention emerged as the central part of RAL, which was indicated by the respondents during the interview sessions. To that end, RAL does create an enabling environment for its staff by offering competitive salary packages as part of its retention strategy. It is, however, doing little in terms of human skills maintenance and development as alluded to by a respondent who indicated that PMS assessment outcomes are not implemented in staff training and development. This is also confirmed and indicated in the 2008/09 RAL annual report that most of its middle to top management earn annual packages way above half a million with competitive benefits which include medical aid, pension, annual and performance bonuses, travel and housing allowances (RAL, 2009).

Sub-theme 3.1 Staff recruitment and retention of scarce skills plan

Whether you perceive money as a motivator or not depends on what you perceive as motivation. The study revealed that RAL offers competitive salaries, which it is believed attracts and secures scarce skills. One respondent indicated "RAL's reputation of paying its staff well makes it attractive to all including professionals." Another asserted that "RAL offers competitive salaries, skills development and team building sessions to boost the morale of staff at all times" . However, money alone cannot be viewed as the sole motivator. RAL has managed to retain its elderly and experienced staff because of its stable environment and competitive salaries. This was confirmed by a respondent who stated, "*elderly experienced staff members are the backbone of the company and are unlikely to change employment at their advanced age which allows young staff members to come and leave without affecting the performance of the company*". In the same vein, Nel et al., (2008) argue that the X generation, being the young employees are unstable in nature and they are explorative and very opinionated, hence they hardly stay in one job for a considerable amount of time as they are always up for new or different challenges.

Herzberg in Nel et al. (2008) argues that motivation is an internal, inward-directed desire to achieve a primary goal. An employee exerts a high effort to accomplish goals that will make him or her feel good. Herzberg's two factor theory states that extrinsic

awards such as pay, benefits, working conditions or company policies do not motivate people; they merely bring performance to an acceptable level (Herzberg in Nel et al, 2008). However, one of the respondents still thinks that “*A good working environment with a good salary package*” is key to RAL for attracting and retaining scarce skills. Intrinsic awards such as responsibility, growth and opportunities motivate an employee to high levels of performance. Lawler (1996) reasons that if money as a reward causes dysfunctional behavior, it obviously affects behavior, and therefore also performance. According to him the effect of money as a motivator depends largely on the pay system used in the organization. When pay systems are not designed well, they either do not motivate or motivate the wrong behaviour.

Sub-theme 3.2: Financial support to staff development

It was evident from the study results that RAL assists its employees with regard to capacity development. One participant indicated that “*RAL is affording their staff members with opportunities to develop their skills and does assist them financially by awarding them with bursaries to further their studies*”. RAL encourages its members to learn by creating a positive conducive learning environment. The creation of an encouraging environment was outlined as follows by another participant who indicated that “*RAL encourages its staff members to continuously attend courses, seminars and any other relevant training to update them with what is happening in line with the main objectives of RAL*”.

Sub-theme 3.3 Performance management system

Performance management can be defined as a holistic approach and process towards effective management of individuals and groups to ensure that their shared goals as well as the organizational strategic objectives are achieved. RAL has a performance management system (PMS) in place, which respondents, however, said is not being effectively and efficiently implemented because the system has not been able to neither identify nor respond to individuals training needs. It is further believed that the PMS system is implemented for compliances sake and the outcomes are not observed, hence it is not able to respond to personnel development plans.

THEME 4: PROJECT MANAGEMENT, PROCESSES AND PROCEDURES

The study revealed that there are several processes that are followed during the execution of RAL activities and five sub-themes emerged under this theme, that is, project management process, project procedures, procurement processes, tendering processes and lastly unfairness in the allocation of projects to the companies. All the sub-themes are discussed below.

Sub-theme 4.1: Project management processes

The findings of the study reveal in table 05 that RAL has strong project management skills. A participant indicated during the interview session with the participant who said, “RAL is very strong regarding their communication, dedication and in managing the projects”. To the contrary, another participant had a different opinion: “A quality assurance programme is needed to ensure effective project management skills because at present there is none. This should be progressive and be in line with the projects life span”. Project management is essentially the art of project control, with the continuing goal of keeping the project on time and within the budget. This is often the interactive process of keeping the project within technical scope (i.e., not adding work to the project outside that which was originally planned), within the budget negotiated for accomplishment of the project tasks, moving along according to the predetermined schedule, and balancing the risks associated with changes in any of these areas and how they affect the accomplishment of the overall goal of the project (Wienclaw, 2008).

Table 06 : Project management and processes

2.2 Project Management	Agree		Unsure		Disagree		Total n= 29 (%)
	n	%	n	%	n	%	
Communication system	28	95,65%	0	0,00%	1	4,35%	100,00%
Control mechanism	28	95,65%	1	4,35%	0	0,00%	100,00%
Feedback capabilities	25	86,96%	3	8,70%	1	4,35%	100,00%
Planning effort/input	26	82,61%	2	8,70%	1	8,70%	100,00%
Consultation with stakeholders	22	73,91%	4	13,04%	4	13,04%	100,00%
Consensus building (among stakeholders)	20	65,22%	6	21,74%	4	13,04%	100,00%
Developing an appropriate organization structure	22	73,91%	5	17,39%	2	8,70%	100,00%
Implementing an effective health and safety program	22	73,91%	5	17,39%	2	8,70%	100,00%
Implementing an effective environmental	25	86,96%	2	4,35%	2	8,70%	100,00%
Implementing an effective quality assurance program	22	73,91%	6	21,74%	1	4,35%	100,00%
Control of sub-contractors works	13	39,13%	7	26,09%	9	34,78%	100,00%
Overall project managerial actions	24	82,61%	5	17,39%	0	0,00%	100,00%

Sub-theme 4.2: Project procedures

The study reveals that there is a lot of unfair practices, as one participant highlights: “Distribution of work amongst service providers is not done in a fair way, you find that a single company is involved in multiple projects whilst there are companies on the data base without work”. The respondents suggested it during the interview sessions that RAL’s project procedures for appointing consulting engineers should be improved. Table 06 points out that allocation of work to consulting firms for design and supervision is not that satisfactory which scored below 70% as compared to work allocation to contractors which scored fairly above 80%.

Table 07 Project procedures

2.3 Project procedures	Agree		Unsure		Disagree		Total
	n	%	n	%	n	%	%
Procurement method and procedures(Selection of the organisation for design and supervision)	20	65,22%	7	26,09%	2	8,70%	100,00%
Tendering method and procedures(Selection of the main contractor)	25	86,96%	2	8,70%	1	4,35%	100,00%

Sub-theme 4.3: Procurement processes

It was suggested by the participants during the interviews that the procurement processes (selection of the organization for design and supervision) of RAL should be improved by following a fair procurement system. A participant who said, *“RAL could improve with regard to the procurement system and that it must be fair and be followed to the letter explained this. And we have faith that if this can be done, this can work”*. Designers play a vital role as their work spans from project inception through completion. Chan and Kumaraswamy(1997) argue that design team-related factors consist of design team experience, project design complexity, and mistakes/delays in producing design documents. RAL would then have to look into an acquisition strategy that should be developed during the conceptual design phase of the project and integrated with the risk management programme.

Sub-theme 4.4: Tendering processes

It was pointed out that the tendering process (selection of the main contractor) that was used is correct, whereas the procurement process left much to be desired. However, respondents pointed out that there was one key apprehension that affects the tendering process *“There are too many tenders which are brought in within a short space of time”* which should be spaced throughout the year said another participant. RAL does its annual planning of over fifty projects eight months prior to the next financial year and as such the tendering process is also conducted within a space of two to three months. This period appears to be strenuous to contractors as they are probably unable to respond to the huge amount of bids. Acharya and Lee (2004) attest that success of construction projects greatly depends on the flexibility of the contractors. Usually, problems centres on their activities. A contractor with the right attitude always takes complex matters with ease and obeys the engineers' instructions. Whereas a greedy and difficult contractor always looks for loopholes in the contract document and other working conditions, so that he can maximize profit by minimizing work. The fact that a perfect contract document and perfect design of structures is almost impossible, ultimately invites various negative consequences during the implementation phase. Again, the contractor has come to the project to earn profit, so, we cannot pressure him

and attribute all design faults to him. But unless and until the contractor possesses flexibility, success in a project cannot be achieved. So there is only one critical construction success factor, which is to give sufficient time during the designing of a project. Any other factors can be considered in *support* of the design (Acharya and Lee, 2004),

Sub-theme 4.5: Project related factors

It is further believed as indicated in Figure 07 that the project will be executed more successfully if the project has clear goals and objectives (95.65 %); if it has a realistic budget and programme (91.30%) and the nature and scope of project (86,96%) is well defined from its inception.

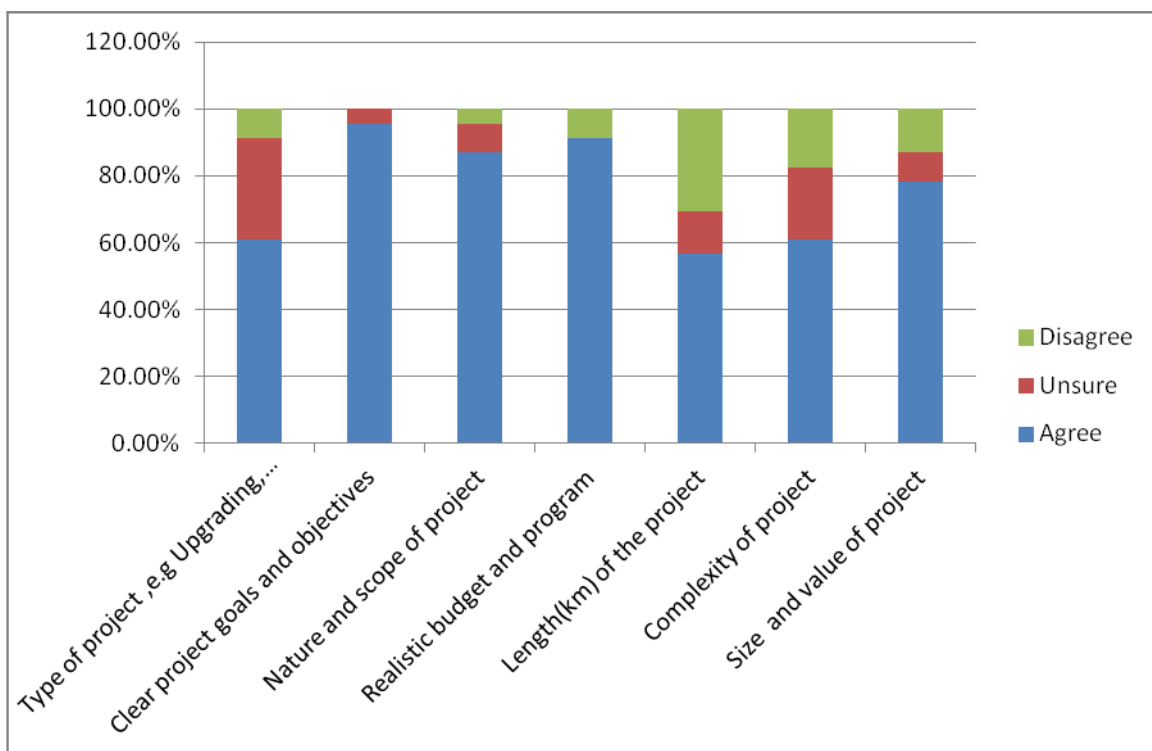


Figure 07: Project related factors

Many of the project designers have been found designing a project from secondary information. This is the point of departure for construction problems and the stopping of the project. In much of the literature, there is evidence that the “changed site condition”

is a prominent factor in delaying a project and a source of construction conflict (Thomas and Ellis, 2002; Barrie and Paulson, 1992).

THEME 5: RAL'S COMMITMENT TO RESEARCH AND CHANGING TECHNOLOGY

The present study reveals that RAL has not established an internal research unit. Instead, the service is outsourced whenever the need arises. There is an indication of engaging other research bodies such as CSIR in responding to the latest trends in the construction industry. There were two sub-themes, which emerged under this theme, that is, RAL's involvement with national and international stakeholders and lack of RAL's involvement in research activities, which are discussed below.

Sub-theme 5.1: RAL's involvement with national and international stakeholders

RAL showed involvement in the national and international construction industry, this was confirmed by a participant who said, "*RAL keeps itself linked with the industry and other stakeholders. Additionally, RAL attends industry conferences and also participates in current debates*". Some of RAL staff members serve in various structures of the Department of Transport, which were established mainly to formulate and strengthen planning and delivery of roads and transport related issues. For instances, RAL staff participate in Roads Co-coordinating Body (RCB) which streamlines and coordinates service delivery planning and implementation and ensures integration across all spheres of government. CISR is being involved on a yearly basis to do technical evaluations of RAL's delivered and completed roads projects and RAL has on numerous occasions attended national and international roads and transport related conferences where latest issues concerning the industry are presented and discussed (RAL, 2009).

Sub-theme 5.2: Lack of RAL's involvement in research activities

The current study reveals that RAL does not have a dedicated personnel or business unit exclusively dealing with research activities. A participant who said "*No we do not*

conduct research because the size and the nature of the company do not warrant this at this stage” confirmed this. Indeed, this can be confirmed in RAL’s organogram, which indicates a fairly averaged sized staff component without any provision and/or responsibilities, related to research and development (RAL, 2009). This clearly indicates that research and development is outsourced whenever there is a need, meaning that there is no staff at the moment dedicated to look at this aspect.

THEME 6: INFLUENCE OF RAL’S ACTIVITIES BY THE EXTERNAL ENVIRONMENT

The external environment influences RAL and this was indicated by the participants during the interviews. Two sub-themes emerged from this theme that is political and economic environmental factors. The sub-themes will be outlined in detail below.

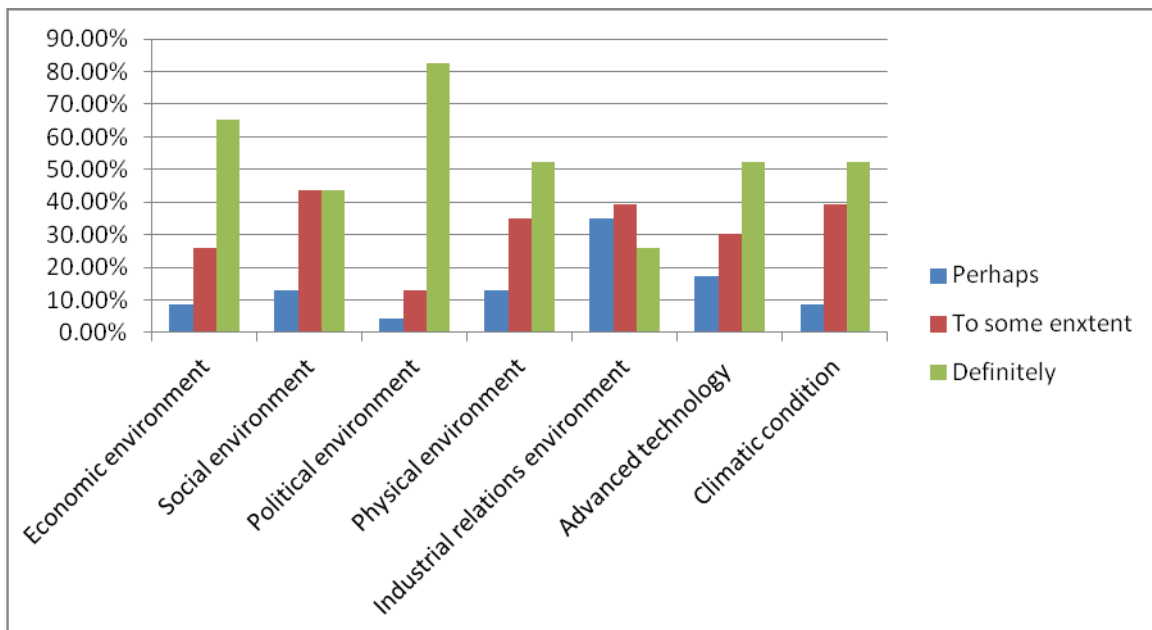


Figure 08: External factors

Sub-theme 6.1: Political factors

RAL ‘s survival is primarily dependent on the state of political stability and economic environment. Political factors were highlighted as key external factors, which influence the performance of RAL, followed by the economic environment. To support this line of argument, one participant said;

“We are strongly concerned regarding political intervention since the new administration came after the election in April 2009. This had a negative impact on the RAL delivery process and has huge consequences to the economy of Limpopo Province”.

In agreement City Press news paper dated 9 August 2009 reported that the MEC of Roads and Transport, Ms. Pinky Kekana halted R300million worth of roads projects, which were advertised, before her coming into the office. An opposition party, COPE, accused Kekana that the tendering process was being meddled with in order to award roads tenders to friends and associates of Premier Cassel Mathale.

A month later, on 30th August 2009 City Press reported that it was not the first time RAL’s affairs were being meddled with for no apparent reason. “Immediately after his appointment in 2006, former Roads and Transport MEC in the province, Justice Pitso, suspended multi-million rand tenders for three months claiming that that the agency had paid contractors for work not done. However, a team appointed to investigate the allegations later cleared the agency. The debate in political interference continues in local and national media that MEC Kekana is interfering with RAL’s delivery processes for no good motive. Rudolph Phala and Elias Nong, members of the legislature kept on reiterating: “Are we not killing the chicken that lays eggs and leaving the rotten ones” (Sowetan, 2009). A month after this problem surfaced, board members started to resign as ordered by the MEC Kekana (Observer, 2009). The resignations impacted negatively on the running of the agency, as it carries the oversight responsibility for the functioning of the agency. It is delegated to perform amongst others functions, steering the strategic direction, control and stakeholder governance of RAL. Not only will all these functions not be performed, but in a sense the situation will create unpredictability and anxiety in the personnel component, which eventually can lead to RAL’s under-performance.

Sub-theme 6.2: Economic environment, positive versus negative influence

It was indicated by the participants that there are both positive and negative influences from external factors on RAL’s execution of activities. As such, a participant confirmed that *“The factors listed are external factors and will definitely have both positive and negative impact on the RAL delivery processes”*. The then premier Sello Moloto

appointed independent civil engineers to probe whether RAL was building more expensive roads than their counterparts in other provinces. A comparison with other provinces revealed that Limpopo's agency was building quality roads at reasonable prices" (City Press, 2009). This, in a way, can be a confirmation that any dramatic economic hikes impact negatively on the rand value of the kilometre cost to maintain and build a road. Construction materials have always been subjected and aligned to inflations. For instance, any rise and fall in the price of crude bitumen/ oil products' impacts heavily on the construction cost. However, a stable economic environment is crucial in the construction industry given the highly sensitive nature of the industry. A small shift in the interest rate often dictates development intentions of important clients (Langford and Male in: Rwelamila and Lobelo, 2000). Monitoring market conditions allows construction organizations to synchronize their activities with their environments thus enabling them to right size their resources.

RAL has, on numerous occasions ,indicated that the kilometre value of tarred/surfaced road is badly affected by economic interest hikes, thus influencing the construction industry a great deal (RAL, 2008). Therefore, the demand for construction products is largely influenced by the government's monetary policy. Hence, any increase in interest rate and mortgage rate can dramatically reduce planned investment and demand for the road infrastructure services from the industry. Newcombe et al. (1990) and Kangari (1990) all support this view that the government's fiscal policy affects patterns in government expenditure and income, while the monetary policy affects the supply of money and credit facilities (i.e., interest rates). Therefore, the fiscal policy on the one hand affects the construction industry directly through the demand for new buildings and works, while on the other hand, the monetary policy indirectly affects changes in interest rates (i.e., any increases reduce the demand for construction) (Rwelamila and Lobelo, 2000).

5.4PRESENTATIONS AND DISCUSSION OF COMPLETED PROJECTS DATA

Each case studied in this report was assessed to determine the reasons or enablers for its completion and processes that led to it. The cases assessed represented four

different sizes and the nature of projects executed by RAL. The following themes and sub-themes emerged during data analysis of the RAL's completed projects data.

Theme 5.4.1 Upgrading and surfacing of roads from gravel to tar

The study findings indicate that among the completed projects there were projects that upgraded roads from gravel to tar, which were completed in different areas in Limpopo Province by RAL. For example, the project which involved upgrading and surfacing 15,62 km of gravel road, section of road D4250, where conventional methods were used that are mainly machinery based in the Sekhukhune District of Limpopo Province.

The study findings brings to light that RAL's emphasis on high quality construction, project manager's experience and competency and project team's past and proven record have probably led to the project being completed within the contract period .In the same vein, a member of the project steering committee attested that RAL is an experienced organization as compared to other government departments and it has also employed competent consultants and contractors, hence the project was delivered with less problems. Even though the community members are excited about the tarred road, their concern remains that motorists are now inconsiderate of the speed limits, which puts their children and live stock in danger.

Theme 5.4.2 Rehabilitation of roads

The study findings indicated that the rehabilitation of roads focuses on repairing the distressed areas along this surfaced/tarred route by patching, reconstructing or resealing surfaced roads using conventional methods which involved a lot of plant and machinery, while trying to engage the use of labour on lighter activities such as constructing and cleaning of drainage structures.

The study findings indicate that contract Participatory Goals in terms of the government Reconstruction and Development Programme (RDP) were not entirely met in this contract. One of the goals is to support Small Medium Business Enterprises (SMME), which, in most cases, was not entirely supported in the project. The contractor in SMME development target achieved 3% of the 10% set target. Most of the set contract

participatory goals, in particular those dedicated for social empowerment of the designated group, were not met probably due to the fact that project objectives and goals were not managed throughout the entire process.

According to the data from this study, managing of contracts had challenges as a contract was awarded for seven (7) months; however, it was extended by twenty-three days due to high rainfall experienced during the construction phase. Additional funds were also allocated for the contract for extra works. Another significant problem that was experienced was that local traffic disobeyed road construction signage such as Go and Stop signs. This case indicates how a poor project plan and implementation can have a knock-on effect on the project deliverables. The need for project team to strategically plan and manage for the implementation of the project deliverables needs to be emphasized to avoid unnecessary time related costs and non-financial setbacks. It is also worth noting that the affected community members gave praise to the maintained road as *“it is now clear of bushes and grass, the road is now safe as it is potholes free and white lines are visible during the night”*, remarked a community member.

Theme 5.4.3: Repair, reseal and fogspray of surfaced roads

RAL had an initiative that its entire surfaced road network should be periodically maintained in order to sustain its road inventory. The programme consisted of repairs, reseals and fogsprays of various roads e.g Road D2531 from Houtbosdorp to Magoebaskloof in Capricorn District, which was implemented during the 2006/07 financial year.

The programme uses intense mix of machinery which has also shown less achievement of Contract Participatory Goals mainly set to support previously disadvantaged individuals as required in terms of the Reconstruction and Development Programme (RDP) objectives. RAL emphasis on speedy construction processes might, in a way, be neglecting some of the RDP's social developmental objectives in lieu to timeous completion of projects. In many of RAL conventional projects that are delivered within an acceptable contractual period, less is attained on contractual social aspects. With all these challenges RAL has in 2008/2009 financial year reported that from 2002/03 to 2008/09 in its 308 projects valued at over R4, 7 billion it empowered over 282 SMME's

estimated at R2, 76 billion and through its Contractor Development Programme and Gundo Lashu it has devoted this initiative entirely to the Historically Disadvantaged Individuals (HDI) benefiting 79 projects valued at R202 million for 7 years (RAL, 2009). However the reported figures are not indicative of targets, meaning that it is not clear if RAL is sufficiently meeting social targets during its roads infrastructure delivery processes.

Theme 5.4.4: Maintenance and upgrading of roads using Labour Intensive Construction Methods (LICM)

RAL has an emerging contractor empowerment programme, Gundo Lashu, which seeks to introduce the previously disadvantaged individuals to the construction industry while at the same time responding to the aims and objectives of Expanded Public Works Programme (EPWP) and Division of Revenue Act (DORA). According to the Department of Public Works, (2005) EPWP is one of the government's short to medium term programmes aimed at alleviating and reducing unemployment. To achieve this, the RAL provided 24 HDI companies with training on road construction using labour intensive construction methods. The upgrading and maintenance of low volume access roads within villages were re-orientated to involve the use of an appropriate mix of community based labour with preference for labour over machinery. Through this programme, many projects were implemented and jobs created. One of the projects executed under this banner was the maintenance of various roads in Sekhukhune District (RAL, 2009).

The study findings reveal that many social and technical problems were experienced when executing projects. For instance, in many cases labourers were not paid on time, sub-standard end products were part of the programme, projects were delivered outside the contractual construction period and contractor's inability to manage both the project and cash flows. A clear augment was also put forward by community members indicating that these types of projects were clearly meant to benefit some contractors not the community as they indicated discontent towards the end products. One participant pointed out to that *"RAL is very inconsiderate, as it has failed to plan better roads for the community as compared to other communities. It built cheaper roads here*

whereas in some areas it built better ones” remarking a councillor in one of the villages. This means that the programme was not well received and that its goals and objectives were not clarified to the community from the onset.

The guideline for implementing EPWP programme puts emphasis on the fact that labour intensive construction methods can be employed where technically and economically feasible and without compromising the quality of the end product (DoPW,2005) .The question still remains, if all these activities can be achieved through the use of LICM:

- Re gravelling of gravel shoulders
- Construction of 6,7/13,2mm double seal
- Re-construction of sections of road,

The above-mentioned activities constituted the scope of completed projects in the financial year 2008/09.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter reviews whether the aim and objectives of study have been met. The chapter will further appraise whether the Roads Infrastructure service delivery system can be established based on the findings of the study. Based on the findings, the study highlighted interesting outcomes, general consensus on new and existing ideas while demonstrating significant conflicting ideas specific to the infrastructure industry. The following conclusions and recommendations were drawn from the study.

5.2.1 Human factor

Human factors are mostly important in managing and accomplishing deliverables in a tension free environment and have been considered as key attributes in RAL's performance. A tension-free environment helps smooth out processes in any organization. For project management organizations, emphasis on low construction costs emerged to be one factor indicated by respondents to contribute to RAL and its clientele's failure, at the same time threatening the quality of the end product. Most importantly, emphasis on better and high quality construction is key. According to the study RAL, an organisation of its own type specialising in roads infrastructure, its nature and size, its vast experience and knowledge of construction and project organisation and Project managers' experience, competence and commitment to finishing the project with time ,cost and budget, have emerged as key ingredients assisting it in becoming an organisation with its proven record. Most of the agency's senior officials have previously handled similar responsibilities and that also attributed to the agency's swift decision-making and action taking. This also helped the agency to effectively interact with the construction industry invariably instilling a sense of confidence and competence to play an active role in infrastructure delivery. However, the environment in which RAL is operating has not proved to be enabling. It is therefore imperative that an organization should be mindful of the fact that it exists and operates as an open system subjected to

a number of threats and therefore its planning should be re-orientated to intensify its stability.

5.2.2 RAL's strategic focus and enabling policies

Proper strategic planning has thus far proved to be prudent in identifying risks and ways to mitigate them. RAL has attested to the fact that it develops strategic plans that are of international and world standards, hence its attainment of its performance criterion in ten successive years. Enabling policies and processes, strategic planning accompanied by its top management's competency assisted the process. It is the responsibility of RAL's top management to strategically position itself to achieve its set deliverables in order to place the organization at a competitive advantage within the environment it operates. The findings of the study spelled it very clearly that RAL top management's competency and commitment has thus far assisted in streamlining its processes better compared to other government departments. For the success of any organisation, RAL leadership should therefore maintain its holistic and different approach as it has proven that it has given it an added advantage and comprehensive benefits.

5.2.3 RAL, Committed and experienced top driven organization

The study signified an apparent element that RAL is a top driven organization led by competent, elderly experienced leadership who are the backbone of the organization and are unlikely to change employment at their advanced age. This formula has in fact contributed to its performance and possibly created interim stability in the organization; moreover the majority of the core staff employed in this organisation have specialized or have acquired knowledge in the civil engineering in particular and transportation (a field focusing on the study of roads and bridges). Most companies will prefer the possibilities for enhanced performance based on a movement toward a top-bottom approach to business, a strategy that can effectively yield tangible results in a relatively short amount of time. However, many of these companies struggle to identify a transition strategy that is appropriate to their organizations that effectively manage change and impress institutional memory from the senior levels to the lower levels. RAL did not

manage to spread decisive responsibility within all its ranks, hence the majority of its middle management, mostly project managers, are inadequately experienced. RAL should inspire commitment throughout the organization. Staff development and skilling will also bring stability to the organization. The current leadership should further create prospects for interactions and the sharing of lessons learned among staff members.

5.2.4 Staff competencies and incompetence's

RAL has a combination of incompetent and competent staff, this is a common feature in most companies. However, what matters most is how the company strikes a balance between its staff component in terms of information and knowledge management. It is evident that there is a huge disparity between experienced and inexperienced staff, in particular project managers. This implies that those with adequate skills have successfully managed to compensate those in the deficit. The main attributor to this is that looking at the agency's organizational structure, there is no shared relation between the planning and the project execution units. This in a way has not contributed to organisational performance to individuals in terms of the rounded career development. RAL should as well put in place supportive systems and strategies that will keep and maintain the development of subordinates in mind. Project Managers and those who aspire to be Project Managers should be provided with focused training by exposing them to all project planning and implementation tasks and activities. Specific training funds should be set-aside for this purpose. A core group of highly qualified project managers should be developed along with a defined career path to retain these individuals. Involved employees express and challenge themselves freely when they feel accepted and appreciated in the organization.

5.2.5 The implications of ineffective succession planning

The study highlighted ineffective succession planning. Succession planning is required in any organization to prepare employees to ensure suitable supply of successors of current and senior's positions. With succession planning, top management can plan the careers of individuals to optimize the organization and meet individual needs and aspirations (Nel et al., 2008). RAL has since sought for top bottom approach to

business in lieu to organisational performance and rapid results. The approach had, in a way, left out some young and potentially capable employees. And this in a way probably contributed to the young employees leaving the company. Enhancing capacity at lower level staff requires immediate attention by the agency. There is no evidence that currently RAL has a custom succession and mentorship planning. The provision of mentorship is therefore essential if RAL is to maintain its performance criterion in the next ten years to come. A mentorship programme linked to Performance Management System is necessary to supplement the inexperienced and insufficient track record to assure the agency of reduced business risk. Construction skills shortage is currently susceptible to the industry. It has since experienced a decline in the human capital development and migration of engineering skills, leading to shortages of skills in the industry. Therefore RAL should necessitate timely interventions by establishing sustainable pathways to facilitate the development of its key staff, while identifying key-role players responsible for taking the organization forward. This will also ensure its steadiness in roads infrastructure delivery.

5.2.6 Human capital development and retention

RAL plainly created an enabling and stable environment for its staff by offering competitive salary packages coupled with attractive benefits as part of their employee recognition and retention strategy. However, this alone has not managed to retain the majority of its young personnel, which are below the age of 40. Money alone cannot be seen as the sole contributor to staff retention. Additionally, RAL should ascribe to re-orientating staff responsibilities towards contributing more to individual growth and development. This itself will motivate employees to high level of performance at the same time encouraging them to stay for intrinsic rewards. This should also be incorporated with tailored human development plan drawn according to individual training needs and PMS outcomes. Even though RAL has afforded its personnel training opportunities to develop their skills, it has done so without an informed plan. RAL has ineffectively implemented PMS system and as a result staff members feel that is being implemented for compliance reason, this literally mean that any training plan implemented is uniformed and its outcome would not necessarily respond to individual performance gaps. A robust human capital investment plan should be drawn and

informed by the organizational strategy to meet the organisation's long term planning.

5.2.7 Project management processes and procedures

The RAL project processes include project management processes, project procedures, procurement processes and tendering processes. The study demonstrated RAL's strength in terms of its communication, control and dedication in managing projects. The tendering process is also satisfactory. However too many tenders are issued within a short space of time which makes contractors unable to adequately respond to them. RAL should consider spacing the tendering process throughout the year to allow both the client and the bidders' ample time to respond to tendering requirements and processes without negatively affecting organizational deliverables. RAL should also put more emphasis on the control of sub-construction. A clear and implementable quality assurance system must be in place to mitigate to all risks associated with project management processes. The study revealed that the process to select and appoint consulting engineers responsible for design and supervision is not done fairly. Distribution of work amongst qualified service providers should be fair. RAL should also look into an acquisition strategy that should be developed during the conceptual design phase of the project and integrated with the risk management program. Procurement approaches should be tailored to project needs at the same time, evenly distributing work to all eligible consulting firms. Performance metrics and incentives should be used to tie consulting firm performance to desired business results while assisting in the procurement processes.

5.2.8 Influence of RAL's activities by external factors

The upgrading and maintaining of roads backlog is still rather huge and the demand to address it is high. The RAL's service delivery pace is, however, largely dependent on the state of the economic and political stability. It has, on numerous occasions proved that whenever there is an economic or political instability within its environment, this exerts pressure on both its strategic and operational focus. Political disabling environment was found to be the major cause to RAL's instability, followed by economic environment. According to Shakantu (2006) there are many features of the construction

process that make it especially susceptible to corruption. First, the nature of construction projects where contracts tend to be huge and yet companies with financial and technical capability to implement them are few. Secondly, the process of construction lands itself favourably to corruption. It was demonstrated by the media that's all RAL's tendering process are being meddled with for individual gains. Political intervention has thus far proved to frustrate RAL's operations. Barring of political interference is a matter that needs immediate attention. The presence of political interference will minimise service delivery while at the same time increasing the real costs of brought about by unnecessary, imprudent delays and frustrations.

RAL, like many other companies has demonstrated that it is negatively affected by unstable economic environment, which consequently affects the cost of doing its business. As a result construction materials are always aligned to inflation. RAL should constantly monitor market conditions to synchronize its activities to rightfully position themselves as these are external factors that are unavoidable, but require a hands-on approach.

5.3 Conclusion

The challenges and successes that face the transport fraternity require that RAL provides and embraces strategic solutions that enable and empower it to take charge of its own future while improving the standard delivery of its mandated service. Several strengths and weaknesses contributing to RAL performance were evident, which concerned the agency's nature and composition, level of implementation of its strategies, policies and plans to improve the planning, execution and managing of its mandate that of providing mobility of people and goods. RAL has managed to maintain its performance mainly because of being a specialised organization focusing on roads infrastructure delivery. Procurement of consulting services should be developed and tailored according to the agency's strategy and tied to the risk and performance management program while insuring fair distribution of work amongst capable and competent service providers. The greatest uncertainty associated with RAL's steadiness is the extent to which external factors have on RAL operations. Political interference and instability has thus far proven to negatively affect RAL operations.

The Construction industry is dynamic in nature due to the unprecedented challenges in technology, economic environment and development processes. It is therefore important that RAL invest in research to keep itself abreast of technological changes and development and as a means to effectively and efficiently deliver service.

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APPENDIX A: SURVEY QUESTIONNAIRE

Survey Questionnaire for Staff, Management, Consulting and Contracting Firms Engaged with the Roads Agency Limpopo

Interviewer: Molatelo Rapetsoa – (082 442 8807)

Institution: University of Limpopo, Turfloop Graduate School of Leadership

Purpose: Dissertation entitled: Factors Contributing to the Performance of the Roads Agency Limpopo in terms of Roads Infrastructure Delivery

Opening statement to the respondent

Thank you for agreeing to contribute to this research. Your contributions are highly valued and will remain anonymous. Your name or company will not be linked to the comments given. **Please indicate your answer by marking the preferred box.**

1. Engagement with the Roads Agency Limpopo

1.1 How long have been engaged with the Roads Agency Limpopo?

0 – 1 year	2 – 4 years	4-6 years	More than 6 years
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1.2 How are you engaged with the Roads Agency Limpopo?

Employee/staff	Management	Consultant	Contractor
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1.3 How many projects have you implemented/ managed with the Roads Agency Limpopo?

None	1-3 projects	3-6 projects	More than 7 projects
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2. Indicate by ranking factors that you think contribute to the performance of the Roads Agency Limpopo in road infrastructure provisioning

2.1 Human related factors	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
RAL's experience; (means whether it is a sophisticated or specialized client)					
Nature of RAL (client) (means whether it is a private or public entity)					
Size of RAL as an organization					
Labour relations and favourable working conditions within RAL					
RAL's emphasis on low construction cost					
RAL's emphasis on high quality of construction					
RAL's emphasis on speedy construction processes					
RAL's ability to brief					
RAL's ability to make decisions					
RAL's ability to define roles					
RAL's contribution to planning and design					
RAL's contribution to construction phase					
RAL's PM experience and competence					
Technical skills and capability of the Project Manager					
Planning skills of the Project					

Manager					
Organizing skills of the Project Manager					
Coordinating skills of the Project Manager					
Motivating skills of the Project Manger					
Project Manager's commitment to meet Cost					
Project Manager's commitment to meet Time					
Project Manager's commitment to meet Quality					
Project Manager 's early and continued involvement in the project					
Project Manager adaptability to changes in the project plan					
Project Manager's working relationship with project team					
Support from Project Manager's parent company(RAL)					
Provision of resources from Project Manager's parent company(RAL)					
Project team's past and proven experience (<i>team means Consultant, Contractor & others</i>)					
Project team's early and continued involvement with key beneficiaries					
Project team's working relationship with key beneficiaries					

2.1. (a) Please indicate factors other than those listed above. Also give a brief

explanation for your answer above;

2.2 Project Management	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
Communication system					
Control mechanism					
Feedback capabilities					
Planning effort/input					
Consultation with stakeholders					
Consensus building (among stakeholders)					
Developing an appropriate organization structure					
Implementing an effective health and safety program					
Implementing an effective environmental management program					
Implementing an effective quality assurance program					

Control of sub-contractors works					
Overall project managerial actions					

2.2.(a) Please indicate factors other than those listed above. Also give a brief explanation for your ranking above;

2.3 Project procedures	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
Procurement method and procedures <i>(Selection of the organisation for design and supervision)</i>					
Tendering method and procedures <i>(Selection of the main contractor)</i>					

2.3 (a) Please indicate factors other than those listed above. Also give a brief explanation for your ranking above;

2.4 Project-related Factors	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
Type of project ,e.g Upgrading, Maintenance ,Rehabilitation, etc					
Clear project goals and objectives					
Nature and scope of project					
Realistic budget and program					
Length(km) of the project					
Complexity of project					
Size and value of project					

2.4 (a) Please indicate factors other than those listed above. Also give a brief explanation for your answer above;

3. To what extent do these external factors impact on RAL’s road infrastructure delivery processes?

3.1 External environment	Not at all	Perhaps	To some extent	Definitely	Most definitely
Economic environment					
Social environment					
Political environment					
Physical environment					
Industrial relations environment					
Advanced technology					
Climatic condition					

3.2 Please indicate factors other than those listed above. Also give a brief explanation for your answer above;

THIS SECTION IS TO BE ANSWERED BY RAL STAFF AND MANAGEMENT ONLY

4. Human resource development

4.1 What are the trends RAL uses for securing and attracting scarce skills?

4.2 What systems is RAL using to assess its human resource for development purposes?

4.3 How effective are these systems, are they able to respond to the growing and challenging demands within the construction industry?

4.4 How is RAL planning to service and maintain its scarce skilled human resource?

4.5 In your view, how can RAL respond to the human resource development needs and requirements?

5. Research and development

5.1 Does RAL have an established research unit?

- If yes, explain?
- If not, why?

5.2 What are the specific areas of study/research and how are they related with the business's core function?

5.3 How effective and efficient is the unit? Is it able to respond and meet the growing challenging demands of the construction industry?

5.4 What other means does RAL use to keep itself abreast of the latest trends (processes and technology) on road construction?

5.5 In your view, do you think RAL is responding well to the latest trends in the construction industry?

- If yes, explain?
 - If no, why?
-
-
-

THANK YOU FOR ANSWERING THE QUESTIONNAIRE

PLEASE SEND THE COMPLETED QUESTIONNAIRE TO:

- **FAX: 086 585 8996**
- **Email: mrpetsoa@gmail.com**

APPENDIX 2: FAX REQUESTING PARTICIPATION

Fax

To:	From:
Fax:	Pages: Cover + 08 pages
Phone:	Date:
Re:	cc:

Urgent *For Review* *Please Comment* *Please Reply* *Please Recycle*

Good day Colleagues

I am currently conducting a research for a Master's degree in Development. My research topic is **"Factors Contributing to the Performance of the Roads Agency Limpopo in terms of Roads Infrastructure Delivery"**. For the successful completion of the research, individuals/companies like you who have relevant experience and insights are needed. You are therefore kindly requested to assist in completing the questionnaire. Your participation will make valuable contribution towards the expansion of knowledge in this area.

You are assured of the confidentiality and anonymity in the reporting of findings. This is an academic exercise and any data supplied will be used exclusively for that purpose

N.B. Completed questionnaires can be submitted via email Kolatelo.rapetsoa@tzaneen.gov.za OR fax no 086 585 8996 by next Thursday, 26th November 2009.

Thank you for your participation

Molatelo Rapetsoa
082 442 8807