

**AN ECONOMIC IMPACT ASSESSMENT OF TOLL ROADS, WITH  
SPECIFIC REFERENCE TO THE IMPACT ON ALTERNATIVE ROADS  
BETWEEN THE PUMULANI AND HAMMANSKRAAL TOLL GATES**

**BY**

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## DECLARATION

I hereby declare that:

**AN ECONOMIC IMPACT ASSESSMENT OF TOLL ROADS, WITH SPECIFIC REFERENCE TO THE IMPACT ON ALTERNATIVE ROADS BETWEEN THE PUMULANI AND HAMMANSKRAAL TOLL GATES** Is my own work, and that all the sources used and quoted have been indicated and acknowledged by means of complete references and that this dissertation was not submitted by me for a degree at another university.

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Signature

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Date

## ACKNOWLEDGEMENTS

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## **ABSTRACT**

The erection of tollgates along the N1 freeway has triggered a great deal of interest. As a result of the toll fees, traffic has been diverted to alternative roads. This study investigates how traffic diverted from the toll road affect the welfare of users of the alternative road.

The literature review provides a theoretical framework of economic impact assessment and road pricing. Furthermore, the literature study reviews previous studies of a similar nature and compare them with the findings of this study.

There is no conclusive evidence that diversion of traffic from the N1 causes congestion on the R101 and has a negative impact on the economy of the region. On the contrary, evidence suggests that there was an initial diversion of traffic when the toll came into operation but that is slowly filtered back after six months.

In the application of the RED model, economic benefits are derived from user benefits, which is a function of savings in VOC's and time of normal and generated traffic on a road or saving due to an improvement in road safety, resulting from improved roads. A decrease in traffic has a measurable effect on vehicle travel speeds and travel time only when the roads are significantly congested.

In the case of scenario 1 (including diversion), frequent maintenance needs to be performed under increased traffic. Increased traffic due to "diverted traffic" causes congestion in accidents and travelling time, which is a cost to the economy. Under scenario 2 (excluding diversion), it is assumed that ADT will return to normal. Due to lower levels of congestion and travelling times would be faster, while maintenance costs and accident rates would decrease. Scenario 2 is selected as being economically the most feasible option.

It is clear that the R101 cannot cope with the current levels of traffic and congestion. One can speculate about the causes of the congestion but in order to derive at a solution to the problem more research needs to be done on the cause of the congestion in order to resolve the problem.

## **KEYWORDS**

Road user charging

Road pricing

Toll road

Economic impact assessment

Cost benefit analysis

User pay principle

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## ABBREVIATIONS

ATA	ANTI TOLLROAD ASSOCIATION
ADT	AVERAGE DAILY TRAFFIC
BCR	BENEFIT COST RATIO
BOT	BUILT OPERATE TRANSFER
BPCC	BAKWENA PLATINUM CORRIDOR CONSORTIUM
CBA	COST - BENEFIT ANALYSIS
CSIR	COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
EIA	ECONOMIC IMPACT ASSESSMENT
ERR	ECONOMIC RATE OF RETURN
HDM	HIGHWAY DESIGN AND MAINTENANCE STANDARD MODEL
MPB	MARGINAL PRIVATE BENEFIT
MPC	MARGINAL PRIVATE COST
MRS	MARGINAL RATE OF SUBSTITUTION
MRT	MARGINAL RATE OF TRANSFORMATION
MSB	MARGINAL SOCIAL BENEFITS
MSC	MARGINAL SOCIAL COSTS
NPV	NET PRESENT VALUE
NRA	NATIONAL ROAD AGENCY
RED	ROAD ECONOMIC DECISIONS
SADC	SOUTHERN AFRICAN DEVELOPING COUNTRIES
SDI	SPATIAL DEVELOPMENT INITIATIVE
SPSS	STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES
VOC	VEHICLE OPERATING COSTS

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