Addressing Socio-Economic Development Challenges Through Road Infrastructure Projects

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CONTENTS

INTRODUCTION

BACKGROUND

- Transport exist to **achieve broader societal and economic functions** (e.g. access to markets, connecting places of productions to markets).
- In South Africa Roads transport over **90% of freight**, in weight terms.
- The construction of roads also offers **employment and economic opportunities**, both for local communities and the wider area.
- Once completed, roads facilitate improved access to social amenities, economic opportunities, travel time savings, etc.
- However, roads also separate neighbouring communities, introduce conflict points that lead to increased crashes.
- These are just some of the benefits and costs, that need to be quantified, in assessing project viability, feasibility and net impacts.

RESEARCH STUDY

I conducted a research study using SPSS statistical tool for descriptive statistics, regression, and correlation analysis:

- To measure the impact that road infrastructure has on socio-economic development, that speaks to governments' objectives such as poverty alleviation and job creation.

DATA ANALYSIS AND FINDINGS

Correlations

		Road infrastructure projects challenges	Value of Ex-post assessement	Construction Impacting Factors	Stakeholders Participation	Socio-economic develpment
Road infrastructure projects challenges	Pearson Correlation	1	.870**	.980**	.925**	.951**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	40	40	40	40	40
Value of Ex-post assessement	Pearson Correlation	.870**	1	.826**	.799**	.884**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	40	40	40	40	40
Construction Impacting Factors	Pearson Correlation	.980**	.826**	1	.927**	.937**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	40	40	40	40	40
Stakeholders Participation	Pearson Correlation	.925**	.799**	.927**	1	.896**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	40	40	40	40	40
Socio-economic develpment	Pearson Correlation	.951**	.884**	.937**	.896**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	40	40	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

There is a strong and positive correlation of **95.1%, 88.4%, 93.7%** and **89.6%** between the variables (constructs 1 – 4).

DATA ANALYSIS AND FINDINGS cont.

Correlations

		Ex-post assessment	Road infrastructure project	Socio-economic develpment
Ex-post assessment	Pearson Correlation	1	.905**	.933**
	Sig. (2-tailed)		<.001	<.001
	N	40	40	40
Road infrastructure project	Pearson Correlation	.905**	1	.944**
	Sig. (2-tailed)	<.001		<.001
	N	40	40	40
Socio-economic develpment	Pearson Correlation	.933**	.944**	1
	Sig. (2-tailed)	<.001	<.001	
	N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

There is a strong and positive correlation of **93.3%** and **94.4%** between the variables.

DATA ANALYSIS AND FINDINGS cont.

ANOVA[a]

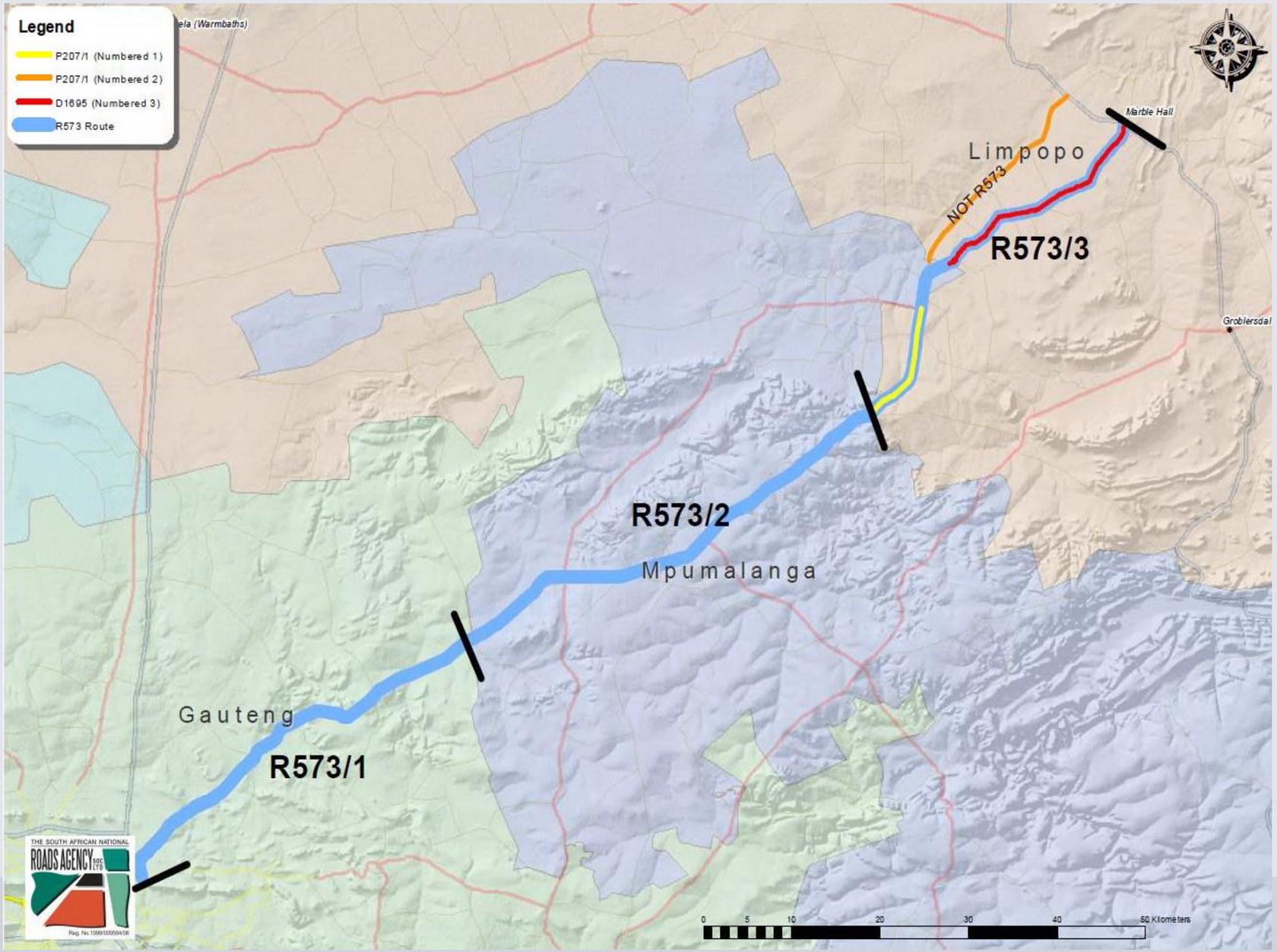
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.577	2	19.789	228.966	<.001[b]
	Residual	3.198	37	.086		
	Total	42.775	39			

a. Dependent Variable: Socio-economic develpment

b. Predictors: (Constant), Road infrastructure project, Ex-post assessment

The analysis of variance (ANOVA) confirms that the relationship between road infrastructure project, ex-post assessment and socio-economic development is not only **strong** and **positive** but is also **significant** with the P-value less than **1%.**

CASE STUDY: MOLOTO ROAD



BACKGROUND

Public Transport:

±40 000 daily commuters

97% are transported by bus

<u>Extent of the Minibus taxi service</u>

Number of Minibus taxis operation in the region

- Mpumalanga - 825 taxis;
- Limpopo - 1488 taxis; and
- Gauteng - 1256 taxis.

PROBLEM STATEMENT

- Road safety
- Inclusive mobility (balance between mobility and accessibility)

PROBLEM STATEMENT (CONT)

Road Safety - Network Safety Score (2021 – before upgrades)

PROBLEM STATEMENT (CONT)

Road Safety - Network Safety Score (2024 – with currently completed upgrades)

PROBLEM STATEMENT (CONT)

PROBLEM STATEMENT (CONT)

Road Traffic Management Corporation

ARRIVE ALIVE

CALL CENTRE 0861 400 800
BE SAFE. BUCKLE UP.

Estimated costs of crashes in South Africa - 2015

Total Cost of Crashes - 2015

R 142,951 Billion

3,4 % of GDP 2015 SARB 2015 -03

Unit Cost per Road Traffic Incident (RTI)

Death	Serious Injury	Slight Injury	No-Injury
(R million)			
3 916187	423 858	11 352	1 085

Unit Cost per Road Traffic Incident (RTC)

Fatal crash	Major Injury Crash	Major Injury Crash	Damage Only Crash
(R million)			
5 435 261	165 664	152 244	48 533

Fatal Crash and Fatality Ratios

As per published 2015 Cost of Crashes

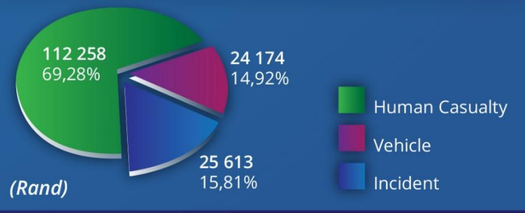
Fatal -to Major Crashes:	1:3,6
Fatal -to Minor Crashes:	1:3,6
Fatal -to Damage Only Crashes:	1:58,2
Fatalities to Serious Injuries:	1:4,6
Fatalities to Slight Injuries:	1:14,9
Fatalities to No-Injuries:	1:105,2

Est. Crashes and Casualties

Proportionalities & adjusted for 5% underreporting

Number of All Crashes:	832 431
Number of Fatal Crashes:	11 144
Number of Major Crashes:	40 117
Number of Minor Crashes:	132 609
Number of Damage Only Crashes:	648 560
Number of Fatalities:	13 591
Number of Serious Injuries:	62 520
Number of Slight Injuries:	202 509
Number of No-Injuries:	1 429 794

Total Cost of Crashes per Category



RTCs Vehicle Repair Costs

RTCs Human Casualty Costs

Cost Element	Fatal	Major	Major	Damage
Lost productivity:	2 878 177	217 253	29 504	2 094
Pain & Suffering:	2 123 994	287 173	47 509	-
Med. Treatment:	147 143	110 656	37 681	-
Funeral:	16 613	-	-	-
Workpl. Reoccup.:	68 638	2 949	-	-
Total *(Unit Cosl Rand):*	5 234 565	618 031	109 694	2 094

RTCs Incident Costs

Cost Element	Fatal	Major	Major	Damage
EMS Response:	3 042	2 765	-	-
Legal:	101 623	101 623	-	-
Vehicle Related:	3 107	3 197	3 469	4 251
RTC Management:	10 176	5 101	2 030	2 030
Infrastructure Damage:	1 596	1 637	2 023	2 508
Delay, Congestion: & Emissions:	61 547	13 140	13 140	10 829
Total *(Unit Cosl Rand):*	181 092	127 462	20 662	19 618

AMIVTAC

PROBLEM STATEMENT (CONT)

ROAD SAFETY IMPLECATIONS:

- Eliminate right turn movements with median barrier
- Introduce s-curve (chicane) to reduce approach speed at roundabouts
- Introduce formal bus/taxi stops
- Restrict pedestrian interaction to dedicated crossings
- Introduce staggard pedestrian crossing to only cross one traffic stream at a time
- Pedestrian crossings located near roundabouts where speeds are lower
- Reduce conflict points through access management and control (closure of illegal and unsafe access)
- Introduce streetlighting

PROBLEM STATEMENT (CONT)

Inclusive mobility and access (cars, trucks, buses, pedestrians, cyclists, residents and businesses

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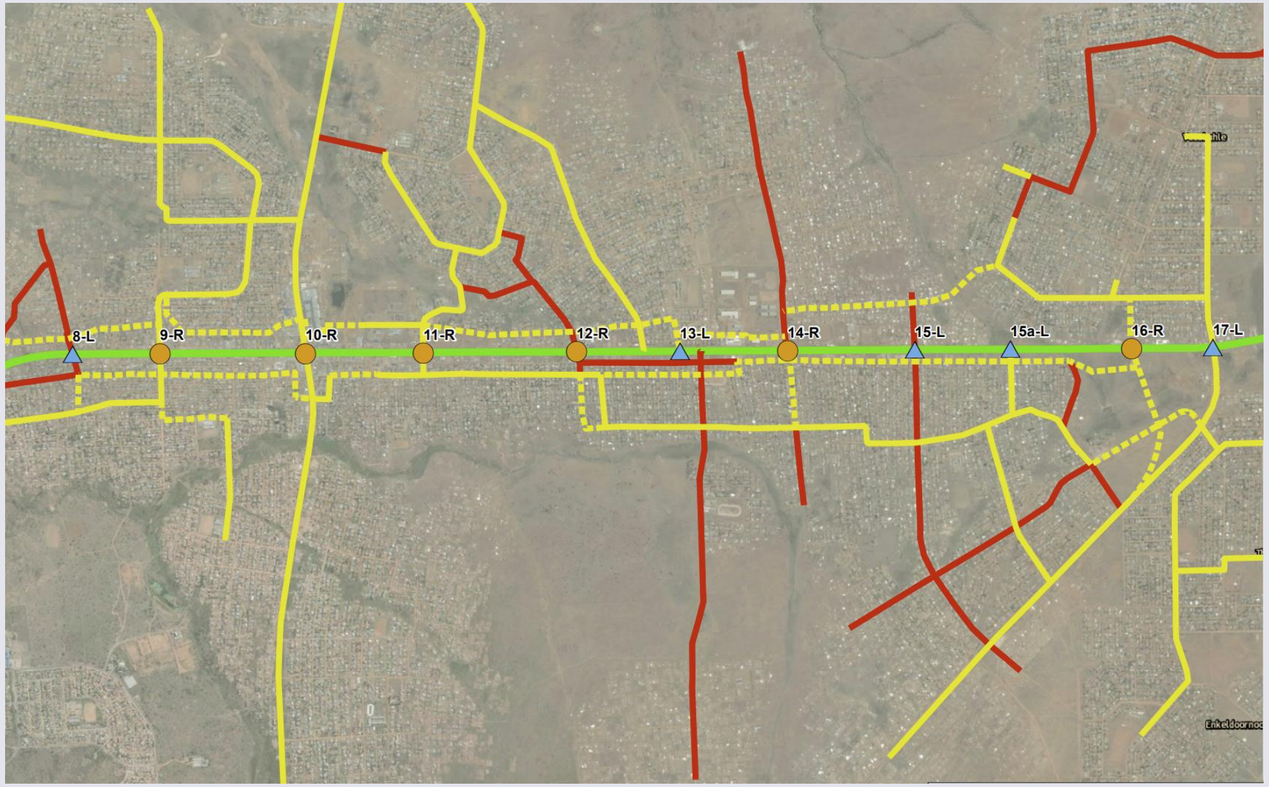
SOLUTIONS


8-L
9-R
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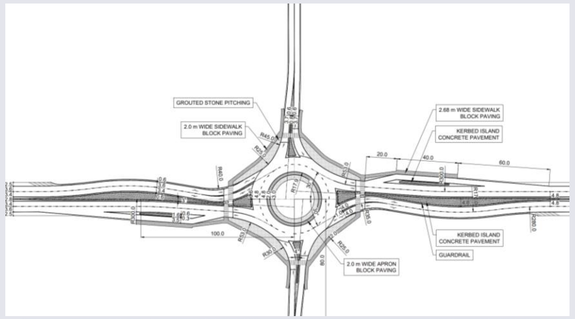
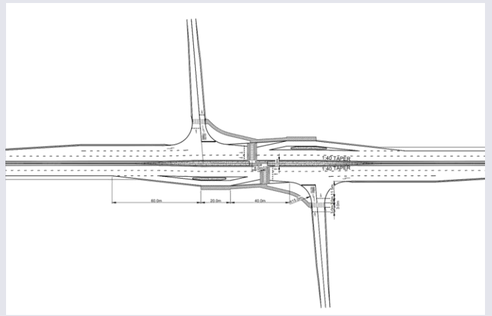

GROUTED STONE PITCHING
2.0 m WIDE SIDEWALK BLOCK PAVING
2.68 m WIDE SIDEWALK BLOCK PAVING
KERBED ISLAND CONCRETE PAVEMENT
KERBED ISLAND CONCRETE PAVEMENT
GUARDRAIL
2.0 m WIDE APRON BLOCK PAVING



CONTRACT PARTICIPATION GOALS TARGETS

TARGETED ENTERPRISE UTILISATION

25 Local sub-contractors are employed with **R 37 936 231** expenditure.

>51% BLACK OWNED 100%	WOMEN 5% (FCV)	YOUTH 5% (FCV)	MILITARY VETERANS 1% (FCV)	DISABILITY 0.5% (FCV)	CIDB 1 or 2 @ 1% (FCV)	CIDB 3 or 4 @ 1% (FCV)
R 129,272,514.00	R 21,545,419.00	R 21,545,419.00	R 4,309,083.80	R 2,154,541.90	R 4,309,083.80	R 4,309,083.80
R 30,797,688.69	R 16,331,579.86	R 0.00	R 0.00	R 0.00	R 254,234.10	R 0.00
24%	76%	0%	0%	0%	6%	0%

CPG PROGRESS SUMMARY				
Description	Percentage participation	Value	% TO DATE	Value to date
FINAL CONTRACT VALUE (BILL-PC SUM)		**R 430 908 380,00**	-	
% Targeted Labour	8%	R34 472 670,40	30%	R 10 383 648,59
i) WOMAN labour component	30%	R10 341 801,12	23%	R 2 358 505,59
ii) YOUTH labour component	30%	R10 341 801,12	37%	R 3 791 236,61
% Targeted Enterprises	30%	R129 272 514,00	18%	R 23 034 284,42
CONTRACT PARTICIPATION GOAL (CPG)		**R163 745 184,40**	-	

ECONOMIC BENEFITS OF THE ROAD UPGRADE

Thanks

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