

**TRAFFIC IMPACT ASSESSMENT
FOR THE PROPOSED
UITVAL
COMMERCIAL DEVELOPMENT
INDAKA LM [UTHUKELA DM]**

AUGUST 2014

PREPARED FOR:



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Report No R2014/20/P0126

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1. INTRODUCTION

David McFarlane and Associates cc were requested by Bosch Stemele to undertake a Traffic Impact Assessment (TIA) for a proposed commercial development known as Uitval, situated in the Indaka Local Municipality [UTHukela District Municipality]. This report documents the findings of this assessment.

2. THE PROPOSED DEVELOPMENT

The proposed commercial development is situated in a rural area to the east of the town of Ladysmith, the location as shown on Figure 1. The site is bounded by P32 to the south, not far from the intersection with P359, as shown on Figure 1.

A schematic layout of the proposed commercial development is as shown on Figure 2. This development is to be phased in over 3 phases, as summarised in Table 1 below.

TABLE 1: PROPOSED DEVELOPMENT SIZE

PHASE	FLOOR AREA	ACC FLOOR AREA
1	5,022m ²	5,022m ²
2	1,581m ²	6,603m ²
3	972m ²	7,575m ²

The area is highly public transport orientated, with a bus and taxi rank on the adjacent property with both vehicular and pedestrian linkages to be provided between the two, as shown on Figure 2.

Parking provision at facilities like this is normally around 3 bays per 100m². Some 191 parking bays are to be provided initially on the site, more than sufficient for phase 1.

3. EXISTING TRAFFIC SITUATION

The existing background traffic on P32 came from two 8 day electronic counts undertaken on either side of Uitval in 2012, the locations of which are shown on Figure 3 with full details given in Appendix. As can be seen, traffic volumes are very low.

4. TRIP GENERATION AND DISTRIBUTION

Standard references used in South Africa for the trip generation of a shopping centre are based on shopping centres in high income areas with high levels of private car usage. In this case, with a high component of public transport, the trip generation rate will be lower. From surveys of similar shopping centres in the Province [Mandeni for example] it has been found that the trip generation rate is typically 35% to 45% of similar sized shopping centres in high income areas. For this particular site there is also the added benefit of being positioned next to an established bus and taxi rank, which will further reduce the traffic generation. In this study, it was assumed that the trip generation rate would be 30%.

Based on the above, the assumed trip generations are as summarised in Table 2 below.

TABLE 2: TRIP GENERATION

PHASE	SIZE [m2]	PEAK	TRIP RATE [per100m2]	TRIPS		
				IN	OUT	TOTAL
Phase 1	5,022m2	PM	2.9	73	73	146
		SAT	4.8	120	120	240
Phase 2	6,603m2	PM	2.7	90	90	180
		SAT	4.4	145	145	290
Phase 3	7,575m2	PM	2.5	95	95	190
		SAT	4.2	160	160	320

The distribution of trips was assumed to be 50% east and 50% west. For shopping centres, it is normal to assume a high proportion of traffic visiting the site is existing traffic already on the road, with some [typically around 50%] being new [or primary] trips, which was assumed will be the case for this development.

5. TRAFFIC IMPACT

If one takes the worst case of some 130vph per direction as background traffic along P32 at the proposed access point to the Uitval shopping centre, then add the additional shopping centre trips for the worst case [phase 3 or full development], the predicted future traffic would be as shown on Figure 3. Such volumes would not meet the warrant of requiring a right turn refuge lane, so a *Provincial standard type B1 access intersection layout was assumed.*

The impact of these traffic loadings on the proposed access was assessed, the results of which are summarised in Table 3 below.

TABLE 3: PROPOSED ACCESS INTERSECTION PERFORMANCE

PEAK	OVERALL I/S		WORST MOVEMENT	
	DELAY	LOS	DELAY	LOS
PM	6.3sec	A	9.1sec	A
SAT	7.8sec	A	9.9sec	A

This analysis indicates that conditions at the access point will be very comfortable.

6. SUMMARY OF FINDINGS

The findings of this assessment are as summarised below:

- Existing traffic volumes in the area along P32 are low.
- Such volumes would not meet the warrant of requiring a right turn refuge lane at the proposed access point, so a ***Provincial standard type B1 access intersection layout was assumed.***
- Accesses to the proposed development will operate under comfortable conditions at a high LOS, even for the full future phases of the development.

7. RECOMMENDATIONS

Our recommendation [from a traffic impact view point only] is that the proposed commercial development be allowed to proceed with no specific mitigation requirements in terms of road capacity upgrades.



D G McFarlane Pr Eng



REV.	FOR INTERNAL REVIEW	DESCRIPTION	DATE	APPROVED
1			06/08/14	

DRG. NO. REFERENCE DRAWING



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UITVAL SHOPPING CENTRE
 GENERAL LAYOUT PLAN

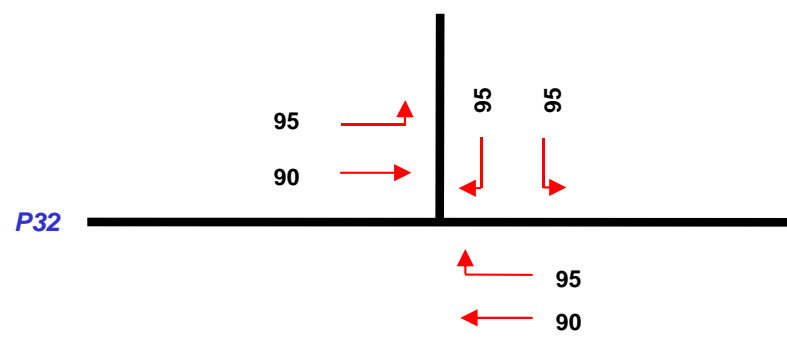
SCALE	1:500	DATE	06/08/14
DRAWING NUMBER	10120/002/001 A1	REVISION	1



FIGURE 3: TRAFFIC COUNT LOCATIONS



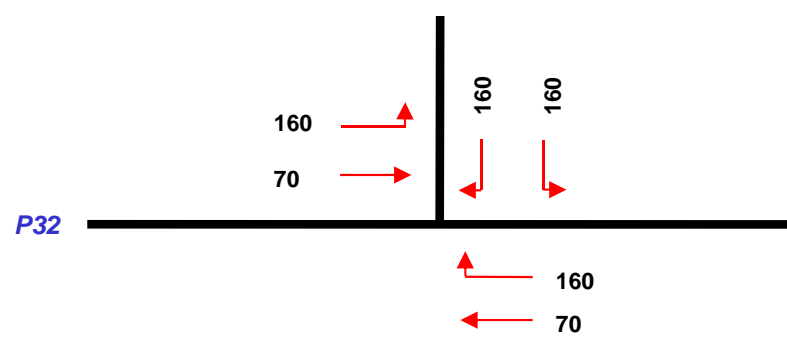
UITVAL
SHOPPING CENTRE



PM PEAK



UITVAL
SHOPPING CENTRE



SATURDAY PEAK

FIGURE 4 : FUTURE TRAFFIC



APPENDIX
Traffic Count Data

TRAFFIC HIGHLIGHTS OF SITE 230008				
1.1	Site Identifier		230008	
1.2	Site Name		P32 Stn 2	
1.3	Site Description		At Km 45	
1.4	Road Description	Route : Road : P32 Section :	Distance : 44.7km	
1.5	GPS Position		30 11 09.9E -28 27 46.8S	
1.6	Number of Lanes		2	
1.7	Station Type		Permanent	
1.8	Requested Period		2012/12/03 - 2012/12/12	
1.9	Length of record requested (hours)		240	
1.10	Actual First & Last Dates		2012/12/03 - 2012/12/12	
1.11	Actual available data (hours)		210	
1.12	Percentage data available for requested period		87.6	
		To Vaalkop	To Ladysmith	
			Total	
2.1	Total number of vehicles	3046	3058	6104
2.2	Average daily traffic (ADT)	348	349	697
2.3	Average daily truck traffic (ADTT)	23	21	44
2.4	Percentage of trucks	6.5	6.0	6.3
2.5	Truck split % (short:medium:long)	92 : 3 : 5	91 : 4 : 5	92 : 3 : 5
2.6	Percentage of night traffic (20:00 - 06:00)	6.9	5.7	6.3
3.1	Speed limit (km/hr)			80
3.2	Average speed (km/hr)	56.6	63.0	59.8
3.3	Average speed - light vehicles (km/hr)	57.4	63.3	60.4
3.4	Average speed - heavy vehicles (km/hr)	44.1	57.9	50.7
3.5	Average night speed (km/hr)	58.5	66.6	62.2
3.6	15th centile speed (km/hr)	54.5	54.5	54.5
3.7	85th centile speed (km/hr)	61.9	79.9	72.0
3.8	Percentage vehicles in excess of speed limit	1.3	14.1	7.7
4.1	Percentage vehicles in flows over 600 vehicles/hr	0.0	0.0	0.0
4.2	Highest volume on the road (vehicles/hr)		2012/12/04 08:00:00	95
4.3	Highest volume in the North (vehs/hr)		2012/12/09 18:00:00	43
4.4	Highest volume in the South (vehs/hr)		2012/12/04 08:00:00	52
4.5	Highest volume in a lane (vehicles/hr)		2012/12/04 08:00:00	52
4.6	15th highest volume on the road (vehicles/hr)		2012/12/08 11:00:00	62
4.7	15th highest volume in the North direction (vehs/hr)		2012/12/05 10:00:00	34
4.8	15th highest volume in the South direction (vehs/hr)		2012/12/05 13:00:00	33
4.9	30th highest volume on the road (vehicles/hr)		2012/12/04 11:00:00	58
4.10	30th highest volume in the North direction (vehs/hr)		2012/12/07 09:00:00	29
4.11	30th highest volume in the South direction (vehs/hr)		2012/12/05 09:00:00	30
5.1	Percentage of vehicles less than 2s behind vehicle ahead			
6.1	Total number of heavy vehicles	199	184	383
6.2	Estimated average number of axles per truck	2.3	2.4	2.3
6.3	Estimated truck mass (Ton/truck)	12.7	13.4	13.0
6.4	Estimated average E80/truck	0.7	0.8	0.7
6.5	Estimated daily E80 on the road			32
6.6	Estimated daily E80 in the North direction			16
6.7	Estimated daily E80 in the South direction			16
6.8	Estimated daily E80 in the worst North lane			16
6.9	Estimated daily E80 in the worst South lane			16
6.10	ASSUMPTION on Axles/Truck (Short:Medium:Long)			(2.0 : 5.0 : 7.0)
6.11	ASSUMPTION on Mass/Truck (Short:Medium:Long)			(10.9 : 31.5 : 39.8)
6.12	ASSUMPTION on E80s/Truck (Short:Medium:Long)			(0.6 : 2.5 : 2.1)

TRAFFIC HIGHLIGHTS OF SITE 230009				
1.1	Site Identifier			230009
1.2	Site Name			P32 Stn 3
1.3	Site Description			At Km 67
1.4	Road Description	Route :	Road : P32 Section :	Distance : 67.0km
1.5	GPS Position			30 17 52.7E -28 27 10.8S
1.6	Number of Lanes			2
1.7	Station Type			Permanent
1.8	Requested Period			2012/12/03 - 2012/12/12
1.9	Length of record requested (hours)			240
1.10	Actual First & Last Dates			2012/12/03 - 2012/12/12
1.11	Actual available data (hours)			210
1.12	Percentage data available for requested period			87.6
		To Dival	To Entabeni	Total
2.1	Total number of vehicles	10254	10234	20488
2.2	Average daily traffic (ADT)	1170	1168	2338
2.3	Average daily truck traffic (ADTT)	76	75	151
2.4	Percentage of trucks	6.5	6.4	6.5
2.5	Truck split % (short:medium:long)	76 : 18 : 6	79 : 17 : 4	77 : 18 : 5
2.6	Percentage of night traffic (20:00 - 06:00)	9.8	9.2	9.5
3.1	Speed limit (km/hr)			80
3.2	Average speed (km/hr)	67.1	73.3	70.2
3.3	Average speed - light vehicles (km/hr)	67.8	73.5	70.7
3.4	Average speed - heavy vehicles (km/hr)	56.9	69.8	63.3
3.5	Average night speed (km/hr)	70.3	73.9	72.1
3.6	15th centile speed (km/hr)	54.5	57.1	57.1
3.7	85th centile speed (km/hr)	84.0	94.0	89.9
3.8	Percentage vehicles in excess of speed limit	18.7	32.0	25.3
4.1	Percentage vehicles in flows over 600 vehicles/hr	0.0	0.0	0.0
4.2	Highest volume on the road (vehicles/hr)		2012/12/04 08:00:00	239
4.3	Highest volume in the North (vehs/hr)		2012/12/08 14:00:00	128
4.4	Highest volume in the South (vehs/hr)		2012/12/05 09:00:00	124
4.5	Highest volume in a lane (vehicles/hr)		2012/12/08 14:00:00	128
4.6	15th highest volume on the road (vehicles/hr)		2012/12/07 08:00:00	189
4.7	15th highest volume in the North direction (vehs/hr)		2012/12/05 14:00:00	100
4.8	15th highest volume in the South direction (vehs/hr)		2012/12/05 15:00:00	101
4.9	30th highest volume on the road (vehicles/hr)		2012/12/08 13:00:00	172
4.10	30th highest volume in the North direction (vehs/hr)		2012/12/04 18:00:00	88
4.11	30th highest volume in the South direction (vehs/hr)		2012/12/04 10:00:00	91
5.1	Percentage of vehicles less than 2s behind vehicle ahead			
6.1	Total number of heavy vehicles	666	657	1323
6.2	Estimated average number of axles per truck	2.8	2.7	2.8
6.3	Estimated truck mass (Ton/truck)	16.2	15.7	16.0
6.4	Estimated average E80/truck	1.0	1.0	1.0
6.5	Estimated daily E80 on the road			152
6.6	Estimated daily E80 in the North direction			78
6.7	Estimated daily E80 in the South direction			74
6.8	Estimated daily E80 in the worst North lane			78
6.9	Estimated daily E80 in the worst South lane			74
6.10	ASSUMPTION on Axles/Truck (Short:Medium:Long)			(2.0 : 5.0 : 7.0)
6.11	ASSUMPTION on Mass/Truck (Short:Medium:Long)			(10.9 : 31.5 : 39.8)
6.12	ASSUMPTION on E80s/Truck (Short:Medium:Long)			(0.6 : 2.5 : 2.1)