

## Developer Contribution Summary

Sect No.	Road No.	Road Name	Road Sections	Lgth (km)	Dev. Contribution (@ the PV Base Yr.)					
					Reduced Pvt Life		Rehab (\$)		Mtce (\$)	
					To	From	To	From	To	From
1		Razorback Road	A	1.074	0.2%	1.5%				\$4,287
2			B	0.464	0.2%	1.5%				\$1,852
3			C	0.49	0.2%	1.7%				\$1,956
4			D	0.906	0.2%	1.5%				\$3,617
5			E	0.079	0.2%	1.6%				\$315
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30										
Totals [1] =				3.0			\$0	\$0	\$0	\$12,027
										\$12,027

Start of Development Traffic = 2022

ESA Increase Trigger = 5.0%

Development Duration = 5 years

Total Tonnage = 230,000 tonnes

Developer Contribution expressed as a Cost per Tonne (@ the PV Base Yr.)

cents / tonne = 5.23

cents / tonne / km = 1.74

Protection Passord for all worksheets = mrd

[1] Includes only road sections that are subject to Development Generated Traffic &gt; 5%

5.0%

### Routine Mtce Contribution Calculation

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Rehabilitation Contribution Calculation	
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	MRD INPUT DATA
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Treasury Discount Rate = 6.0%

Roughness Increase = 3 Counts / yr

Inflation % =	7.0%	Inflation % =	7.0%
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ROAD SECTIONS AND LENGTHS						
Sect. No.	Road No.	Road Name	Road Sections	Ch.	Ch	Length (km)
1		Razorback Road	A	0.0	1.1	1.1
2			B	0.0	0.5	0.5
3			C	0.0	0.5	0.5
4			D	0.0	0.9	0.9
5			E	0.0	0.1	0.1
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Total =						3.0

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<b>MRD INPUT COSTS</b>
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**BITUMEN ROADS REHAB. & MTCE (incl. RESEAL) COSTS**

INPUT COSTS		
Seal Width	Rehabilitation Costs	Annual Routine Mtce.
m	\$ / km	\$ / km
3.6	\$115,000	\$4,700
4	\$127,860	\$5,070
4.5	\$150,360	\$5,720
5	\$160,000	\$6,000
5.5	\$177,500	\$7,900
6	\$195,000	\$9,800
6.5	\$212,500	\$9,450
7	\$230,000	\$9,100
7.5	\$245,000	\$9,700
8	\$260,000	\$10,300
8.5	\$277,500	\$10,650
9	\$295,000	\$11,000
9.5	\$310,000	\$11,600
10	\$325,000	\$12,200
10.5	\$342,500	\$12,550
11	\$360,000	\$12,900
11.5	\$375,000	\$13,500
12	\$390,000	\$14,100
Base year for the above costs =		2007

<b>OTHER INPUT DATA</b>
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- (a) ESA's / HV = 2.9 ESA's/HV (Bruce Hwy)  
= 3.2 ESA's/HV (All Other Roads)
- (b) Roughness Increase = 3 counts per year
- (c) Terminal Roughness\* = 110 NRM (Bruce Hwy)  
= 120 NRM (All other Roads)
- (d) Inflation Rate = 7%
- (e) Discount Rate = 6%
- (f) HV Growth Rate = adopt a constant 3% for all road sections, unless  
(background traffic) agreed otherwise by Central District.

\*Note :- Terminal Roughness is considered to be a more realistic indicator of rehabilitation timing than pavement age or other methods of estimating the life of the existing pavement.

### Estimated Background Traffic ESA'S at Development Start Date ( 2022 )

yrs

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# Vehicle Combination / ESA Calculation 1

<b>Bus / Truck</b> <span style="float: right;">0 0</span>										
	Axles Tyres	Single Single	Single Dual						Totals	
	Legal Loading (t)	6	9						15.00	tonne
	Base Load / ESA	5.4	8.2							
Unloaded	Axle Group Load (t)	4.5	4						8.5	tonne
	ESA's	0.482	0.057						0.54	ESA
Loaded	Axle Group Load (t)	6.00	9.00						15.00	tonne
	ESA's [1]	1.524	1.451						2.98	ESA
Payload =		6.5	tonne					ESA/t Payload =	0.0829	unloaded
Max Legal Payload =		6.5	tonne [2]					ESA/t Payload =	0.4577	loaded

  

<b>Tandem Truck</b> <span style="float: right;">0 OO</span>										
	Axles Tyres	Single Single	Tandem Dual						Totals	
	Legal Loading (t)	6	16.5						22.50	tonne
	Base Load / ESA	5.4	13.8							
Unloaded	Axle Group Load (t)	4.5	5						9.5	tonne
	ESA's	0.482	0.017						0.50	ESA
Loaded	Axle Group Load (t)	6.00	16.50						22.50	tonne
	ESA's [1]	1.524	2.044						3.57	ESA
Payload =		13.0	tonne					ESA/t Payload =	0.0384	unloaded
Max Legal Payload =		13.0	tonne [2]					ESA/t Payload =	0.2745	loaded

  

<b>Semi-Trailer</b> <span style="float: right;">0 OO OOO</span>										
	Axles Tyres	Single Single	Tandem Dual	Tri Dual					Totals	
	Legal Loading (t)	6	16.5	20.00					42.50	tonne
	Base Load / ESA	5.4	13.8	18.5						
Unloaded	Axle Group Load (t)	4.5	5	6.5					16	tonne
	ESA's	0.482	0.017	0.015					0.51	ESA
Loaded	Axle Group Load (t)	6.00	16.50	20.00					42.50	tonne
	ESA's [1]	1.524	2.044	1.366					4.93	ESA
Payload =		26.5	tonne					ESA/t Payload =	0.0194	unloaded
Max Legal Payload =		26.5	tonne [2]					ESA/t Payload =	0.1862	loaded

  

<b>B-Double</b> <span style="float: right;">0 OO OOO OOO</span>										
	Axles Tyres	Single Single	Tandem Dual	Tri Dual	Tri Dual				Totals	
	Legal Loading (t)	6	16.5	20.00	20.00				62.50	tonne
	Base Load / ESA	5.4	13.8	18.5	18.5					
Unloaded	Axle Group Load (t)	4.5	5	6.5	6.5				22.5	tonne
	ESA's	0.482	0.017	0.015	0.015				0.53	ESA
Loaded	Axle Group Load (t)	6.00	16.50	20.00	20.00				62.50	tonne
	ESA's [1]	1.524	2.044	1.366	1.366				6.30	ESA
Payload =		40.0	tonne					ESA/t Payload =	0.0132	unloaded
Max Legal Payload =		40.0	tonne [2]					ESA/t Payload =	0.1575	loaded

  

<b>Road Train 1</b> <span style="float: right;">0 OO OOO OOO OOO</span>										
	Axles Tyres	Single Single	Tandem Dual	Tri Dual	Tri Dual	Tri Dual			Totals	
	Legal Loading (t)	6	16.5	20.00	20.00	20.00			82.50	tonne
	Base Load / ESA	5.4	13.8	18.5	18.5	18.5				
Unloaded	Axle Group Load (t)	4.5	5	6.5	6.5	6.5			29	tonne
	ESA's	0.482	0.017	0.015	0.015	0.015			0.55	ESA
Loaded	Axle Group Load (t)	6.00	16.50	20.00	20.00	20.00			82.50	tonne
	ESA's [1]	1.524	2.044	1.366	1.366	1.366			7.67	ESA
Payload =		53.5	tonne					ESA/t Payload =	0.0102	unloaded
Max Legal Payload =		53.5	tonne [2]					ESA/t Payload =	0.1433	loaded

[1] If the "payload" is more or less than legal, "axle group loadings" are proportioned based on the legal and the unloaded tonnages.

[2] Calculated from the max legal loads & generic unloaded (tare) weights for each axle group of the HV.

## Vehicle Combination / ESA Calculation 2

Truck + 4 Dog									
		0	00	00	00				
Axles		Single	Tandem	Tandem	Tandem				Totals
Tyres		Single	Dual	Dual	Dual				
Legal Loading (t)		6.5	16.5	13.75	13.75				50.50 tonne
Base Load / ESA		5.4	13.8	13.8	13.8				
Unloaded	Axle Group Load (t)	4.5	5	5	5				19.5 tonne
	ESA's	0.482	0.017	0.017	0.017				0.53 ESA
Loaded	Axle Group Load (t)	6.50	16.50	13.75	13.75				50.50 tonne
	ESA's [1]	2.099	2.044	0.986	0.986				6.11 ESA
Payload =		31.0	tonne					ESA/t Payload =	0.0172 unloaded
Max Legal Payload =		31.0	tonne [2]					ESA/t Payload =	0.1972 loaded

  

		0	00						
Axles		Single	Tandem						Totals
Tyres		Single	Dual						
Legal Loading (t)		6	16.5						22.50 tonne
Base Load / ESA		5.4	13.8						
Unloaded	Axle Group Load (t)	4.5	5						9.5 tonne
	ESA's	0.482	0.017						0.50 ESA
Loaded	Axle Group Load (t)	4.50	5.00						9.50 tonne
	ESA's [1]	0.482	0.017						0.50 ESA
Payload =			tonne					ESA/t Payload =	#DIV/0! unloaded
Max Legal Payload =		13.0	tonne [2]					ESA/t Payload =	#DIV/0! loaded

  

		0	00						
Axles		Single	Tandem						Totals
Tyres		Single	Dual						
Legal Loading (t)		6	16.5						22.50 tonne
Base Load / ESA		5.4	13.8						
Unloaded	Axle Group Load (t)								0 tonne
	ESA's	0.000	0.000						0.00 ESA
Loaded	Axle Group Load (t)	0.00	0.00						0.00 tonne
	ESA's [1]	0.000	0.000						0.00 ESA
Payload =			tonne					ESA/t Payload =	#DIV/0! unloaded
Max Legal Payload =		22.5	tonne [2]					ESA/t Payload =	#DIV/0! loaded

Unloaded Vehicles			
HV Type	ESA / t (payload)	% of HV fleet	Weighed Average
Bus / Truck	0.0829		
Tandem Truck	0.0384		
Semi-Trailer	0.0194		
B-Double	0.0132		
Road Train 1	0.0102		
Truck + 4 Dog	0.0172		
0			
0			

0.0% 0.0000 ESAs / tonne of product "out the gate"

Loaded Vehicles			
HV Type	ESA / t (payload)	% of HV fleet	Weighed Average
Bus / Truck	0.4577		
Tandem Truck	0.2745		
Semi-Trailer	0.1862		
B-Double	0.1575		
Road Train 1	0.1433		
Truck + 4 Dog	0.1972		
0			
0			

0.0% 0.0000 ESAs / tonne of product "out the gate"



Development Generated ESA's per Year

"Base" Annual Tonnage =

46,000

% of "Base" Annual Tonnage  
Annual Tonnage

Development Generated Tonnages (Year by Year)										
1	2	3	4	5	6	7	8	9	10	
2022	2023	2024	2025	2026						
100%	100%	100%	100%	100%	100%	100%	100%	100%		Total
46,000	46,000	46,000	46,000	46,000						230,000

Sect No.	Road No.	Road Section	%	Av. ESA / t		TO(WARDS) - Development Generated ESA's (Year by Year)										Cumul. Dev Traffic ESA's	(AWAY) FROM - Development Generated ESA's (Year by Year)										Cumul. Dev Traffic ESA's
				To	From	1	2	3	4	5	6	7	8	9	10		1	2	3	4	5	6	7	8	9	10	
						2022	2023	2024	2025	2026							2022	2023	2024	2025	2026						
1		A	100.0%	0.0194	0.1862	8.92E+02	8.92E+02	8.92E+02	8.92E+02	8.92E+02						4.46E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03						4.28E+04
2		B	100.0%	0.0194	0.1862	8.92E+02	8.92E+02	8.92E+02	8.92E+02	8.92E+02						4.46E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03						4.28E+04
3		C	100.0%	0.0194	0.1862	8.92E+02	8.92E+02	8.92E+02	8.92E+02	8.92E+02						4.46E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03						4.28E+04
4		D	100.0%	0.0194	0.1862	8.92E+02	8.92E+02	8.92E+02	8.92E+02	8.92E+02						4.46E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03						4.28E+04
5		E	100.0%	0.0194	0.1862	8.92E+02	8.92E+02	8.92E+02	8.92E+02	8.92E+02						4.46E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03	8.57E+03						4.28E+04
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Parked Formula

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