

Supporting documentation – spreadsheet printouts and summaries

Southern route

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Southern Option Summary

CLIENT: ROADS & MARITIME SERVICES (RMS)
PROJECT: Gerringong to Bomaderry Princess Highway Upgrade
Foxground and Berry Bypass Options Comparison
Southern Option, Duration 42mths

Item	Description	Amount (2012 Dollars)	Comments
1	Public Utility Adjustments	\$3,452,500	
2	General	\$19,382,400	
3	Environmental	\$8,906,631	
4	Noise Mitigation	\$1,108,472	
5	Flood Mitigation	\$170,000	
6	Earthworks	\$102,581,487	
7	Drainage	\$9,508,766	
8	Pavements	\$32,002,523	
9	Structures	\$93,086,863	
10	Local Roads	\$5,545,600	
11	Urban Design & Landscaping	\$10,108,820	
12	Miscellaneous	\$16,221,367	
DIRECT COST TOTAL		\$302,075,429	
CONTRACTOR'S DESIGN COSTS		\$19,079,065	Allowed 4% for TCC
CONTRACTOR'S INDIRECT TIME RELATED COSTS		\$82,164,517	Allowed 27.2% for indirects costs assuming D&C delivery method
CONTRACTOR'S MARGIN		\$40,331,901	Allowed 10% of turnover
TOTAL CONSTRUCTION COST (TCC)		\$443,650,912	
BASE ESTIMATE (Excl. Escalation & Contingency)		\$443,650,912	
CLIENT COSTS & CONTINGENCY			
	Primary testing (RMS)	\$11,091,273	Allowed 2.5% of TCC
	Independent design verification (RMS)	\$6,654,764	Allowed 1.5% of TCC
	Handover (RMS) costs	\$6,654,764	Allowed 1.5% of TCC
	Property (RMS) costs	\$19,300,000	Values provided by RMS
	Client (RMS) costs	\$28,837,309	Allowed as % of TCC
	Contingency P90	\$245,638,359	
Client Costs & P90 Contingency		\$318,176,468	
PROJECT COST (Excl. Escalation & Provisional Sums)		\$761,827,380	
ADJUSTMENT SUMS (Including markup and contingency)			
	E/O Reroute alignment south of STP	\$9,617,669	Southern Option ONLY!
	E/O Island embankment	-\$5,617,969	Southern Option ONLY!
	E/O Realignment of Northern interchange	-\$2,269,780	Southern Option ONLY!
	Changes to vertical alignment to generate extra fill material	-\$55,149,987	Southern Option ONLY!
	E/O Adjustment to Southern Interchange	\$15,131,864	Southern Option ONLY!
TOTAL ADJUSTMENT SUMS		-\$51,180,287.47	
TOTAL PROJECT COST (Excl. Escalation)		\$710,677,093	
PROVISIONAL SUMS (Including markup and contingency)			
	Additional pedestrian bridge	\$0	Northern Option ONLY!
	Land acquisition to allow for future Northbound offload ramp to Woodhill Mountain Road	\$0	Northern Option ONLY!
	E/O Adjustments to Kangaroo Valley Road (KVR) Interchange	\$0	Northern Option ONLY!
	E/O Revised Northbound off-ramp Kangaroo Valley Road (KVR) Interchange	\$0	Northern Option ONLY!

- NOTE: 1. Refer to EXPERT file for detailed estimate:
2. Escalation has been excluded
3. Adjustment Sums items **HIGHLIGHTED** are included in scope of item **HIGHLIGHTED**

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Southern Direct Cost Summary

1 Gerringong to Bomaderry Princess Highway Upgrade
2 Berry Bypass Route Feasibility Strategic Estimate -
Southern Route Option.
3 May Rev4 (Amended ground improvement - Base Case -
Duration 42mths)
 4 Quantities are based on the modified bill prepared by
 AECOM Dated 30th Mar 2012 - Quantities.xlsx
 5 NOTE: Extent of estimate has been amended to Chg 7600
 to 20400 to allow import of site won material from
 Toolijooa Hill cutting
 6
7 Earthworks, Pavements & Structures Chg 7600 to 20400
(12800m)

8 10000 Southern Option

Line	Item	Description	Quantity	Unit	Labour	Material	Plant	Subcontract	Rate	Total
10	10100	Public Utility Adjustments								
11	10110	Water	1.00	Item				252,500	252,500	\$252,500
12	10120	Sewerage	1.00	Item				100,000	100,000	\$100,000
13	10130	Stormwater NOT REQUIRED	1.00	Item						
14	10140	Power	1.00	Item				500,000	500,000	\$500,000
15	10150	Telecommunications	1.00	Item				1,400,000	1,400,000	\$1,400,000
16	10160	Gas	1.00	Item				1,000,000	1,000,000	\$1,000,000
17	10170	Other	1.00	item				200,000	200,000	\$200,000
18		Subtotal Public Utility Adjustments						3,452,500		\$3,452,500
19										

20	10200 General							
21	10210 Mobilisation & establishment	1.00 Item				15,000,000	15,000,000	\$15,000,000
22	10220 Community Liaison	1.00 Item				200,000	200,000	\$200,000
23	10230 Management Plans	1.00 Item				50,000	50,000	\$50,000
24	10240 Traffic Control	1.00 Item				4,132,400	4,132,400	\$4,132,400
25	Subtotal General					19,382,400	19,382,400	\$19,382,400
26								
27	10300 Environmental							
28	10310 Building Condition Reports	42.00 each				25,200	600	\$25,200
29	10320 Site Monitoring	1.00 Item				468,720	468,720	\$468,720
30	10330 Erosion & Sedimentation Control	1.00 Item	1,237,306	283,328	421,387	851,450	2,793,470	\$2,793,470
31	10340 Treat contaminated water & discharge water	1.00 Item				108,500	108,500	\$108,500
32	10350 Maintenance	1.00 Item				28,000	28,000	\$28,000
33	10360 Fauna Control Measures	1.00 Item		60,000		235,000	295,000	\$295,000
34	10370 Other Temporary Works	1.00 Item				5,187,741	5,187,741	\$5,187,741
35	Subtotal Environmental		1,237,306	343,328	421,387	6,904,611		\$8,906,631
36								
37	10400 Noise Mitigation							

38	10410 Properties	9.00 each				135,000	15,000	\$135,000
39	10420 Noise Walls - Solid	1,200.00 m2	201,920	287,985	55,989	427,578	811	\$973,472
40	10430 Noise Wall - Transparent NOT REQUIRED	1.00 m2						
41	Subtotal Noise Mitigation		201,920	287,985	55,989	562,578		\$1,108,472
42								
43	10500 Flood Mitigation							
44	10510 Properties	17.00 each				170,000	10,000	\$170,000
45	Subtotal Flood Mitigation					170,000		\$170,000
46								
47	10600 Earthworks							
48	10610 Clearing & Grubbing	30.00 ha	59,950		316,083	106,998	16,101	\$483,031
49	10620 Topsoil	102,959.00 m3	264,560	12,886	318,761		6	\$596,207
50	10630 General Earthworks	1,984,212.00 m3	4,837,779	42,805,053	16,159,986	12,499,580	38	\$76,302,397
51	10640 Removal & Treatment of Acid Sulphate Soils	25,000.00 m3	177,166	435,228	257,413		35	\$869,807
52	10650 Temporary Access Roads	29,200.00 m2	225,260	674,101	272,124	954,260	73	\$2,125,744
53	10660 Select Material	92,954.00 m3	2,083,090	4,257,079	1,930,468		89	\$8,270,636
54	10670 Batter Stabilisation Works	1,300.00 each				311,880	240	\$311,880
55	10680 Temporary dewatering	1.00 Item	162,500		917,966		1,080,466	\$1,080,466

56	10690a	Stone column ground improvement	78,560.00 m				10,212,800	130	\$10,212,800
57	10690b	Preloading	39,950.00 m3	959,267	48,906	1,320,345		58	\$2,328,518
58	Subtotal Earthworks			8,769,571	48,233,253	21,493,146	24,085,518		\$102,581,486
59									
60	10700 Drainage								
61	10710	Excavation	33,158.00 m3	147,250		464,715		18	\$611,965
62	10720	Precast Reinforced Concrete Pipe (RCP)	22,132.00 m	1,034,136	3,472,015	1,063,247	15,508	252	\$5,584,906
63	10730	Reinforced Concrete Box Culverts (RCBC) NOT REQUIRED	140.00 m						
64	10740	Drainage Pits	531.00 each				1,259,600	2,372	\$1,259,600
65	10750	Concrete lined catch Drains	9,480.00 m	686,022	576,968	22,234		136	\$1,285,223
66	10760	Open Drains	14,320.00 m				146,064	10	\$146,064
67	10770	Rockfilled Gabions & Mattresses	168.00 m2				11,424	68	\$11,424
68	10780	Diversion Drain - Town Creek NOT REQUIRED	400.00 m						
69	10790	Secondary drainage structure - Property underpass	3.00 each	5,145	146,757	7,634	450,048	203,195	\$609,584
70	Subtotal Drainage			1,872,552	4,195,739	1,557,830	1,882,644		\$9,508,766
71									
72	10800 Pavements								
73	10810	Remove existing Princess Hwy pavements	74,100.00 m2	95,090	4,768	144,849	266,760	7	\$511,467
74	10820	Stabilised base layer 275mm	66,705.85 m3	919,820	3,950,620	793,185	1,430,541	106	\$7,094,165
75	10830	Asphalt	125,251.19 Tonne				22,021,451	176	\$22,021,451
76	10840	Cold Milling	13,000.00 m2				51,040	4	\$51,040
77	10850	Subgrade & Sub-pavement drainage	44,700.00 m			2,235,000	89,400	52	\$2,324,400
78	Subtotal Pavements			1,014,910	3,955,388	3,173,034	23,859,191		\$32,002,522

79

80 10900 Structures

81	10910 Toolijooa Road Underbridge Chg 7680	832.00 m2	30,613	705,347	47,337	1,217,479	2,405	\$2,000,777
82	10920a Broughton's Creek Underbridge No1 Chg 9950	3,172.00 m2	88,933	2,158,532	1,632,168	3,559,035	2,345	\$7,438,667
83	10920b Broughton's Creek Underbridge No2 Chg 10700	1,976.00 m2	69,564	1,465,551	1,229,983	2,548,188	2,689	\$5,313,287
84	10920c Broughton's Creek Underbridge No3 Chg 11200	5,200.00 m2	129,949	3,416,637	2,446,586	5,426,212	2,196	\$11,419,383
85	10930 Austral Park Road Overbridge Chg 11500	562.00 m2	283,777	1,489,583	42,167	1,000,179	5,010	\$2,815,705
86	10940 Tindalls Lane Overbridge Chg 14300	774.00 m2	24,909	665,738	435,927	1,307,662	3,145	\$2,434,236
87	10950 Berry Bridge Viaduct Chg 16695	30,888.00 m2	761,074	19,771,947	2,024,607	25,979,454	1,571	\$48,537,082
88	10960 Wharf Road underbridge Chg 17500	572.00 m2	29,633	919,608	59,927	662,429	2,922	\$1,671,597
89	10970 Drainage structure No1 Underbridge Chg 18600	1,300.00 m2	69,721	1,204,917	1,230,207	2,107,620	3,548	\$4,612,465
90	10980 South Coast Railway Underbridge Chg 18900	572.00 m2	29,458	538,221	47,109	1,081,947	2,966	\$1,696,736
91	10990 Berry South Interchange Underbridge Chg 19600	572.00 m2	29,458	538,221	47,109	1,081,947	2,966	\$1,696,736
92	10990a Reinforced Soil Walls	2,800.00 m2	445,189	2,561,892	364,372	78,738	1,232	\$3,450,191

93	Subtotal Structures		1,992,279	35,436,195	9,607,499	46,050,889		\$93,086,863
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94

95 11000 Local Roads

96	11010 Local Roads - Pavement Type 1	33,220.00 m2				2,657,600	80	\$2,657,600
97	11020 Local Roads - Repairs	35,450.00 m2				2,380,500	67	\$2,380,500
98	11030 Existing Princess Hwy Flooding immunity	1.00 Item				507,500	507,500	\$507,500

99	Subtotal Local Roads					5,545,600		\$5,545,600
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100

101 11100 Urban Design & Landscaping

102	11110 Urban Design	1.00 Item				100,000	100,000	\$100,000
103	11120 Landscaping	76,800.00 m2				5,913,600	77	\$5,913,600
104	11130 Vegetation	76,800.00 m2	84,316	2,327,945	156,583	1,526,376	53	\$4,095,220

105	Subtotal Urban Design & Landscaping		84,316	2,327,945	156,583	7,539,976		\$10,108,820
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106

107 11200 Miscellaneous

108	11210 Demolition	1.00 Item				276,500	276,500	\$276,500
109	11220 Minor Concrete Works - K & G & Medians	1.00 Item				1,259,000	1,259,000	\$1,259,000
110	11230 UPVC Ducts	11,066.00 m				1,327,920	120	\$1,327,920
111	11240 Guide Posts	738.00 each				18,450	25	\$18,450
112	11250 Safety Barriers	34,460.00 m	17,763	3,362,460	4,492	735,620	120	\$4,120,335
113	11260 Pavement Markings	1.00 Item				140,040	140,040	\$140,040
114	11270 Signposting	408.00 each				3,715,500	9,107	\$3,715,500
115	11280 Street Lighting	47.00 each				390,900	8,317	\$390,900
116	11290 Fencing	25,600.00 m				1,740,800	68	\$1,740,800
117	11300 Property adjustments	33.00 each				320,430	9,710	\$320,430
118	11310 Heavy Vehicle Rest Area - Austral Park	1.00 Each	16,453	163,138	966,372	1,549,929	2,695,892	\$2,695,892
119	11320 Other	1.00 Item				215,600	215,600	\$215,600
120	Subtotal Miscellaneous		34,216	3,525,598	970,864	11,690,689		\$16,221,367
121	Total Direct Costs - Southern Option		15,207,070	98,305,432	37,436,331	151,126,597		\$302,075,428

Allowance Contractor's Design costs

\$19,079,065

TOTAL

\$321,154,493

OVERHEAD \$122,496,418

41%

SPREAD FACTOR 41%

CHECK! \$443,650,911

Supporting documentation – spreadsheet printouts and summaries

Southern Direct Cost Estimates

Line No.	Comment	Resource Name	Unit	No. Production	Quantity	Rate	Labour	Material	Plant	Subcontract	Total
Line No 11	Water										
Item No 10110			Item		1.000		Contributing				
1	10110 Public Utility Adjustments - Water										
2	Spec: Nil										
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801										
4	Site visit photo: Nil										
5	NOTE: Refer to file Quantities .xlsx for details of quantities										
6	NOTE: Adopt allowance from Aecom - "Don't expect that major main will require protection or relocation. Allow a nominal amount for adjustment of service covers and valves / hydrants"										
7	NOTE: Refer to email on file from R. de Roy (RMS) 8/5/2012										
8	Allow for encasement of existing water main at location of Southern Interchange, size and extent unknown										
9	EE formula - =(150000) Allowance as per Aecom Northern Option	UTILITY ADJUST	Item		150,000.000	1.000				150,000	150,000
10	EE formula - =(1000) m Allowance protection of existing water main	UTILITY CONC ENCASE <150M	m		1,000.000	102.500				102,500	102,500
11	Estimated duration										
12	EE formula - =(0) days										
						252,500.000				252,500	252,500
Line No 12	Sewerage										
Item No 10120			Item		1.000		Contributing				
1	10120 Public Utility Adjustments - Sewerage										
2	Spec: Nil										
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801										
4	Site visit photo: Nil										
5	NOTE: Refer to file Quantities .xlsx for details of quantities										
6	NOTE: Adopt allowance of \$100k for as yet unidentified services										
7	NOTE: Refer to email on file from R. de Roy (RMS) 8/5/2012										
8	No scope										
9	EE formula - =(100000) Allowance	UTILITY ADJUST	Item		100,000.000	1.000				100,000	100,000
10	Estimated duration										
11	EE formula - =(0) days										
						100,000.000				100,000	100,000
Line No 13	Stormwater NOT REQUIRED										
Item No 10130			Item		1.000		Contributing				
1	10130 Public Utility Adjustments - Stormwater										
2	Spec: Nil										

Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 6 NOTE: Adopt allowance from Aecom - No scope
 NOTE: Refer to email on file from R. de Roy (RMS) 8/5/2012
 7 No scope
 8
 9

10	EE formula - =(0) Allowance as per Aecom - No scope	UTILITY ADJUST	Item			1.000		
11								
12	Estimated duration							
13	EE formula - =(0) days							

Line No 14	Power			1.000		Contributing		
Item No 10140			Item					

1 10140 Public Utility Adjustments - Power
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 6 NOTE: Adopt allowance from Aecom - O'head HV power
 NOTE: Adopt allowance from Aecom - O'head LV power "
 Relocate nominal amount of low voltage o'head lines and
 7 poles"
 NOTE: Refer to email on file from R. de Roy (RMS) 8/5/2012
 8 Adjust allowance for HV power to NO SCOPE
 9
 10

	EE formula - =(2*275*1000) Allowance as per Aecom - O'head HV power, 2No locations underground existing							
11	aerial HV @ \$1000/m	UTILITY ADJUST	Item	550,000.000	1.000		550,000	550,000
	EE formula - =(500000) Allowance as per Aecom - O'head							
12	LV power Northern Option	UTILITY ADJUST	Item	500,000.000	1.000		500,000	500,000
13								
14	Estimated duration							
15	EE formula - =(0) days							

				500,000.000		500,000	500,000
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Line No 15	Telecommunications			1.000		Contributing		
Item No 10150			Item					

1 10150 Public Utility Adjustments - Telecommunications
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil

5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Adopt allowance from Aecom - Optus Optic Fibre
 "Allow for adjustment at 12,950. Likely to require adjustment
 6 back to nearest node"
 NOTE: Refer to email on file from R. de Roy (RMS) 8/5/2012
 Allow for 4No adjustments / protection of existing TELSTRA
 7 fibre optic services from construction activities
 8

9	EE formula - =(400000) Allowance as per Aecom - Optus Optic Fibre near ch 12,950	UTILITY ADJUST	Item	400,000.000	1.000	400,000	400,000
10	EE formula - =(250000*4) Allowance as per Aecom - Telstra, 4No @ \$250000/each	UTILITY ADJUST	Item	1,000,000.000	1.000	1,000,000	1,000,000
11	12 Estimated duration						
13	EE formula - =(0) days						
				1,400,000.000		1,400,000	1,400,000

Line No 16	Gas						
Item No 10160			Item	1.000		Contributing	
1	10160 Public Utility Adjustments - Gas						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities NOTE: Adopt allowance from Aecom - "Allow for protecting 150m of main bt Jemena"						
6	NOTE: Refer to email on file from R. de Roy (RMS) 8/5/2012						
7	Adopt Aecom previously advised scope						
8							
9							
10	EE formula - =(1000000) Allowance as per Aecom, Eastern Gas Pipeline protection Chg 13550m Northern Option	UTILITY ADJUST	Item	1,000,000.000	1.000	1,000,000	1,000,000
11	12 Estimated duration						
13	EE formula - =(0) days						
				1,000,000.000		1,000,000	1,000,000

Line No 17	Other						
Item No 10170			item	1.000		Contributing	
1	10170 Public Utility Adjustments - Other						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
6	NOTE: Adopt general allowance						

7							
8	EE formula - =(200000) Allowance as per Northern Option						
9	UTILITY ADJUST	Item	200,000.000	1.000		200,000	200,000
10							
11	Estimated duration						
12	EE formula - =(0) days						
			200,000.000			200,000	200,000

Line No 21	Mobilisation & establishment						
Item No 10210		Item	1.000			Contributing	
1	10210 Mobilisation & Establishment						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Allow to transfer from Indirects estimate						
	NOTE: Allowance for following - Establish site offices,						
	plumber, electrician, phones, site earthworks, fencing, site						
	office hire, abultion hire, sewer pump outs, security, phone						
	charges, electrical charges, stationary, computer charges &						
6	rubbish removal						
7							
8	EE formula - =(15000000) Item	RTA MOB	Item	15,000,000.000	1.000	15,000,000	15,000,000
9							
10	Estimated Duration						
11	EE formula - =(0) Days						
				#####		15,000,000	15,000,000

Line No 22	Community Liaison						
Item No 10220		Item	1.000			Contributing	
1	10220 Community Liaison						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Allow for part-time community liaison person for						
	project duration						
6	NOTE: Post final review "Community very active" Allowance						
	\$200K						
7							
8	EE formula - =(1) Item	RTA COMMUNITY LIAISON	Item	1.000	200,000.000	200,000	200,000
9							
10	Estimated Duration						
11	EE formula - =(0) Days						
				200,000.000		200,000	200,000

Line No 23 Item No 10230	Management Plans	Item	1.000	Contributing		
1	10230 Management plans					
2	Spec: Nil					
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801					
4	Site visit photo: Nil					
5	NOTE: Allow for environmental, earthworks, traffic, OHS & QA plans					
6						
7	EE formula - =(1+1+1+1+1) each	RTA MANAGEMENT PLANS	each	5.000	10,000.000	50,000 50,000
8						
9	Estimated Duration					
10	EE formula - =(0) Days					
				50,000.000	50,000	50,000

Line No 24 Item No 10240	Traffic Control	Item	1.000	Contributing		
1	10240 Traffic Control					
2	Spec: Nil					
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801					
4	Site visit photo: Nil					
5	NOTE: Adopt project duration of 42mths					
6						
7	EE formula - =(42) mths Construction general			42.000		
8						
9	EE formula - =(LQ7*4*20*10*110) Allowance traffic control crews - 4No 20day/mth, 10hr/day @ \$110/hr	RTA TRAFFIC CONTROL	Item	3,696,000.000	1.000	3,696,000 3,696,000
10	EE formula - =(40*180) Allowance temporary signage - 40No @ \$180/each	RTA TRAFFIC CONTROL	Item	7,200.000	1.000	7,200 7,200
11	EE formula - =(400*180) Allowance installation temporary barriers - 400m @ \$180/m	RTA TRAFFIC CONTROL	Item	72,000.000	1.000	72,000 72,000
12	EE formula - =(12800*2*4*3) Allowance para web fencing - 12800m @ \$4/m, allowed to replace twice	RTA TRAFFIC CONTROL	Item	307,200.000	1.000	307,200 307,200
13	EE formula - =(50*1000) Allowance provide temporary access to property drive ways - 50No @ \$1000/each	RTA TRAFFIC CONTROL	Item	50,000.000	1.000	50,000 50,000
14						
15	Estimated Duration					
16	EE formula - =(0) Days					
				4,132,400.000	4,132,400	4,132,400

Line No 28 Item No 10310	Building Condition Reports	each	42.000	Contributing		
1	10310 Building Condition Reports					
2	Spec: Nil					

Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Allow for 33No properties that require property
 6 adjustments + 9No that require noise mitigation
 NOTE: Will need to carry out initial & final inspections &
 7 produce reports eg. x2
 8

9	EE formula - =(33+9) each			42.000			
10							
11	EE formula - =(#LQ9*2) each	RTA BUILDING REPORT	each	84.000	300.000		25,200 25,200
12							
13	Estimated Duration						
14	EE formula - =(0) Days						
				600.000		25,200	25,200

Line No 29	Site Monitoring			1.000	Contributing		
Item No 10320		Item					
1	10320 Monitoring						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Adopt project duration of 42mths						
6							
7	EE formula - =(42) mths Construction general			42.000			
8	EE formula - =(24) mths Piling			24.000			
9							
	EE formula - =(#LQ7*2) mths Noise / Vibration general 2No						
10		CONS NOISE	month	84.000	1,200.000		100,800 100,800
11	EE formula - =(#LQ7*3) mths Water quality 3No	CONS WATER QUALITY	month	126.000	1,800.000		226,800 226,800
12	EE formula - =(#LQ7*2) mths Dust 2No	CONS AIR POLLUTION	month	84.000	880.000		73,920 73,920
13	EE formula - =(#LQ8*4) mths Piling only 4No	CONS GROUND VIB	month	96.000	700.000		67,200 67,200
14							
15	Estimated Duration						
16	EE formula - =(0) Days						
				468,720.000		468,720	468,720

Line No 30	Erosion & Sedimentation Control			1.000	Contributing		
Item No 10330		Item					
1	10330 Erosion & Sedimentation Control						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						

NOTE: Adopt allowance from Aecom - Silt Fencing "Make an allowance of 2.5 times the project length
 NOTE: Adopt allowance from Aecom - Hay Bales "Make an allowance of 4 bales per 100m"
 NOTE: Adopt allowance from Aecom - Sedimentation Basins "Allow for 31 construction sed basins (Marked-up on drawing)upstream of watercourses"
 NOTE: Adopt allowance from Aecom - PitTraps "Assume there are no existing pits"
 NOTE: Adopt allowance from Aecom - No Go Zone "Not applicable"

12	EE formula - =(20400-7600) m Total corridor length			12,800.000					
	EE formula - =(32+122+76+200+1188+22+50+22+22) m								
13	Length bridges & Viaduct			1,734.000					
14	EE formula - =(LQ12*2.5) m Silt Fencing length			32,000.000					
15	EE formula - =(LQ12*4/100) each Hay Bales			512.000					
16	EE formula - =(31) each Sedimentation Basins			31.000					
17	EE formula - =(0) each Pit Traps								
18	EE formula - =(0) each No Go Zone								
19	EE formula - =(7) each			7.000					
20									
21	A. Silt Fencing								
22	EE formula - =(LQ14) m	SILT FENCE	m	32,000.000	59.256	1,208,885	265,920	421,387	1,896,191
23									
24	B. Hay Bales								
25	EE formula - =(LQ15) each	HAY BALE OUTLET	each	512.000	89.510	28,421	17,408		45,829
26									
27	C. Sedimentation Basins								
28	EE formula - =(LQ16*750*30) Allowance, 750m3/each @ \$30/m3 for excavation	RTA EROSION & SED	Item	697,500.000	1.000			697,500	697,500
29	EE formula - =(LQ16*300) Allowance, 1No per structure @ \$300/each for Inlet spillway	RTA EROSION & SED	Item	9,300.000	1.000			9,300	9,300
30	EE formula - =(LQ16*150) Allowance for removal of structures at completion of project @ \$150/each	RTA EROSION & SED	Item	4,650.000	1.000			4,650	4,650
31	EE formula - =st(27:30,#LQ16) each					22,950.000		711,450	711,450
32									
33	D. Shaker Bays								
34	EE formula - =(LQ19*20000) Allowance rumble grid and wash down facilities	RTA EROSION & SED	Item	140,000.000	1.000			140,000	140,000
35									
36	Estimated Duration								
37	EE formula - =(0) Days								

2,793,470.219 1,237,306 283,328 421,387 851,450 2,793,470

Line No 31	Treat contaminated water & discharge water								
Item No 10340		Item		1.000		Contributing			
1	10340 Treat contaminated water & Discharge water								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801								

4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Allowance per structure for duration of construction
 6 duration
 7

8	EE formula - =(31) each			31.000			
9	EE formula - =(42) month Project duration			42.000			
10	EE formula - =(LQ8*1000*LQ9/12) Allowance per						
11	structure @ \$1000/each per Annum	RTA EROSION & SED	Item	108,500.000	1.000	108,500	108,500
12							
13	Estimated Duration						
14	EE formula - =(0) Days						
				108,500.000		108,500	108,500

Line No 32	Maintenance			1.000		Contributing	
Item No 10350			Item				
1	10350 Maintenance						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
	NOTE: Allow for maintenance to Sedimentation Basins on an						
6	annual basis						
7							
8	EE formula - =(16) each Temporary sediment control basins			16.000			
9	EE formula - =(42) month Project duration			42.000			
10							
11	EE formula - =(LQ8*500*LQ9/12) Allowance @ \$500/each for maintenance temporary sediment control basins per Annum	RTA EROSION & SED	Item	28,000.000	1.000	28,000	28,000
12							
13	Estimated Duration						
14	EE formula - =(0) Days						
				28,000.000		28,000	28,000

Line No 33	Fauna Control Measures			1.000		Contributing	
Item No 10360			Item				
1	10360 Fauna Control Measures						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
	NOTE: Adopt allowance from Aecom - Fishery Crossings						
6	"Assume that no additional fishery crossings are required"						

NOTE: Adopt allowance from Aecom - Fauna Crossings "2
7 required 1.5m box cluvert - Toolijooa ridge and Tindalls Ln"
NOTE: Adopt allowance from Aecom - Fauna Rope Bridges

8
9

10	EE formula - =(0) each Fishery Crossings							
11	EE formula - =(2*50) m Fauna Crossings			100.000				
12	EE formula - =(17) m Fauna Rope Bridges			17.000				
13								
14	EE formula - =(#LQ11) m Single cell 1.5x1.5 RCBC	RTA RCBC 1500X1500	m	100.000	1,500.000		150,000	150,000
	EE formula - =(10*1500*2*2) each Allowance end wall							
15	structures @ 10m3/each	MISC MAT	Item	60,000.000	1.000	60,000		60,000
	EE formula - =(#LQ12*5000) Allowance \$5000/each for							
16	fauna rope bridges	MISC SCON	Item	85,000.000	1.000		85,000	85,000
17								
18	Estimated Duration							
19	EE formula - =(0) Days							

295,000.000	60,000	235,000	295,000
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Line No 34	Other Temporary Works							
Item No 10370			Item	1.000	Contributing			
1	10270 Other Temporary Works							
2	Spec: Nil							
3	Dwg: Nil							
4	Site visit photo: Nil							
5	NOTE: Typically temporary works should be 3% of direct costs							
6	NOTE: Allows for any temporary structures, rework etc required with the staging							
7	NOTE: Temporary bridging structures required at Broughton's Creek Underbridges No1, 2 & 3 to allow for transportation of earthworks materials has been incl. within this allowance							
8								
9	EE formula - =(296887688) Amount direct costs			296,887,688.000				
10	EE formula - =(#LQ9*0.03) DC @ 3%			8,906,630.640				
11	EE formula - =(3718890) Allowance for environmental works above			3,718,890.000				
12	EE formula - =(#LQ10-#LQ11) Allowance E/O temporary works	MISC SCON	Item	5,187,740.640	1.000		5,187,741	5,187,741
13								
14	Estimated Duration							
15	EE formula - =(0) Days							

5,187,740.640	5,187,741	5,187,741
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Line No 38	Properties							
Item No 10410			each	9.000	Contributing			
1	10410 Noise Mitigation - Properties							

2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 3 02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Adopt allowance from RMS - J. Watson Email
 6 19/4/2012
 7

8	EE formula - =(9) Item	RTA NOISE PROPERTIES	each	9.000	15,000.000				135,000	135,000
9										
10	Estimated Duration									
11	EE formula - =(0) Days									

15,000.000	135,000	135,000
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Line No 39	Noise Walls - Solid									
Item No 10420		m2		1,200.000		Contributing				

1 10420 Noise Walls - Solid
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 3 02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Adopt allowance - "600m noise wall adjacent to Pulman Street"
 6
 7

8	EE formula - =(600) m			600.000						
	EE formula - =((#LQ8/6)*4) m length of bore pile foundations,									
9	Allowed 4m length, 6m cts			400.000						
	EE formula - =(#LQ8/6) each No of pile caps, allowed 6m cts									
10				100.000						
	EE formula - =((#LQ8/6)*8*37.3/1000) tonne weight of									
11	200UB37.3 posts, allowed 8m length			29.840						
	EE formula - =(#LQ8*4) m2 area of solid precast panels,									
12	height 4m			2,400.000						
13										

14	EE formula - =(#LQ9) m	BORED PILE 600	m	400.000	620.000				248,000	248,000
15	EE formula - =(#LQ10) each	NW PILE CAP	each	100.000	326.384	18,947	9,985	2,152	1,555	32,638
16	EE formula - =(#LQ11) tonne	NW GALV POST INS	tonne	29.840	7,902.180	58,030	147,888	17,407	12,477	235,801
17	EE formula - =(#LQ12) m2	NW SOLID INS	m ²	2,400.000	190.430	124,944	130,112	36,431	165,546	457,032
18	EE formula - =st(14:17, #LQ12) m2				405.613	201,920	287,985	55,989	427,578	973,472
19										
20	Estimated Duration									
21	EE formula - =(#LQ8/50) Days Allowed 50m2 per day									

811.227	201,920	287,985	55,989	427,578	973,472
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Line No 40	Noise Wall - Transparent NOT REQUIRED									
Item No 10430		m2		1.000		Contributing				

1 10430 Noise Walls - Transparent
 2 Spec: Nil

Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 6 NOTE: Adopt allowance from Aecom - NOT REQUIRED
 7
 8

9	EE formula - =(0) Allowance as per Aecom - No scope	NW TRANS INS	m ²	395.161		
10						
11	Estimated duration					
12	EE formula - =(0) days					

Line No 44	Properties					
Item No 10510		each	17.000	Contributing		

1 10510 Flood Mitigation - Properties
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Allow for some form of flood mitigation works to the existing 17No low lying properties at intersection of existing
 6 Princess Hwy & Tannery Road
 7
 8

9	EE formula - =(17) each	RTA FLOOD MITIG	each	17.000	10,000.000	170,000	170,000
10							
11	Estimated duration						
12	EE formula - =(0) days						

				10,000.000	170,000	170,000
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Line No 48	Clearing & Grubbing					
Item No 10610		ha	30.000	Contributing		

1 10610 Clearing & Grubbing
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Allow for increased area, as per discussions at
 6 intermediate review 21/3/2012
 NOTE: Generally only light clearing required - existing pastures. Some heavy clearing required around Connollys Creek, Schofields Road & atop the ridge, say 33% of total
 7 area
 NOTE: Allowed traffic control on heavy clear & grub. Assume 0.5ha/day. Productivity light clear & grub 1.0ha/day
 8

NOTE: Refer Email from R. de Roy (RMS) 8/5/2012 need to
 9 allow for removal of individual large trees 30No
 10

11	EE formula - $=((0.1*6000*50)/10000)$ ha Total corridor area			3.000					
12	EE formula - $=(30)$ ha			30.000					
13	EE formula - $=(#LQ12*0.6667)$ ha Light clear & grub			20.001					
14	EE formula - $=(#LQ12*0.3333)$ ha Heavy clear & grub			9.999					
15	EE formula - $=(#LQ13+#LQ14)$ ha			30.000					
16	EE formula - $=(30)$ each Individual large tree removal			30.000					
17									
18	EE formula - $=(#LQ13)$ ha	EWKS CLEAR & GRUB LIGHT	ha	20.001	9,359.300	33,308	153,888		187,195
19	EE formula - $=(#LQ14)$ ha	EWKS CLEAR & GRUB HEAVY	ha	9.999	18,885.632	26,642	162,195		188,837
20	EE formula - $=(#LQ16*3000)$ Allowance \$3,000/each	MISC SCON	Item	90,000.000	1.000			90,000	90,000
21	EE formula - $=(#LQ14*10)/0.5$ hr Allowed for 0.5ha/day, 10hr/day each site	TRAF CREW 2MEND	hr	199.980	85.000			16,998	16,998
22									
23	Estimated duration								
24	EE formula - $=(#LQ13/1.0)+(#LQ14/0.5)$ days			39.999					
					16,101.036	59,950	316,083	106,998	483,031

Line No 49 Item No 10620	Topsoil			m3	102,959.000	Contributing			
1	10620 Topsoil								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801								
4	Site visit photo: Nil								
5	NOTE: Refer to file Mass Haul Southern Bypass with Plant Rev0 .xlsx for details of quantities NOTE: Allow to strip on average 150mm depth from footprint of road corridor and haul to stockpile for future use								
6	NOTE: Assume CAT 623E elevating scraper used to remove topsoil. Allow stockpile sites at 1000m cts along road corridor								
7									
8									
9	EE formula - $=(102959)$ m3 Volume of topsoil strip & stockpile				102,959.000				
10									
11	EE formula - $=(80)$ m3/hr Allowed productivity				80.000				
12	EE formula - $=(#LQ9/#LQ11)$ hr	SCR CAT623E	hr	1,286.988	206.550	78,699	7,529	179,598	265,827
13	EE formula - $=(#LQ12)$ hr Spotter	LAB CIVIL	hr	1,286.988	55.510	71,441			71,441
14	EE formula - $=(#LQ12*0.5)$ hr Allowed 50% EE formula - $=(#LQ12*0.5)$ hr Allowed 50% to manage	TK WCART 30KLT	hr	643.494	202.788	39,350	1,014	90,129	130,492
15	stockpiles	DOZER CATD6H	hr	643.494	144.099	39,350	4,344	49,033	92,726
16	EE formula - $=(#LQ15)$ hr Spotter	LAB CIVIL	hr	643.494	55.510	35,720			35,720
17									
18	Estimated Duration								
19	EE formula - $=(#LQ12/10)$ Days				128.699				

5,791	264,560	12,886	318,761	596,207
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Line No 50 Item No 10630	General Earthworks		m3	1,984,212.000	Contributing					
1	10630 General Earthworks									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
	NOTE: Refer to file Mass Haul Southern Bypass with Plant									
5	Rev1 .xlsx for details of quantities									
	NOTE: Refer to file Mass Haul Southern Bypass with Plant									
6	Rev1.xlsx for details of earthworks method									
	NOTE: Mass haul calculations exclude allowances for									
7	preload material									
	NOTE: From geotech report majority of material in Toolijooa									
8	cutting, C3 is latite and will require blasting									
	NOTE: Ripping of cuttings allowed for with the relevant Plant									
	Fleet items below. assumed depth 300mm with CATD10R									
9	dozer									
10										
11	EE formula - =(0) m3 Topsoil									
12	EE formula - =(1884027) m3 Placed material			1,884,027.000						
13	EE formula - =(100185) m3 Unsuitable material			100,185.000						
	EE formula - =(0) m3 Temporary diversion material IMPORT									
14										
15	EE formula - =(0) m3 Select material IMPORT									
16	EE formula - =(LQ12+LQ13+LQ14+LQ15) m3 TOTAL			1,984,212.000						
17										
	A. Plant Fleet No1 - Unsuitable, 35t excavator, Truck & dogs,									
18	CATD6H dozer & 15klr water cart									
19	EE formula - =(100185) m3 Excavation			100,185.000						
	EE formula - =(2617.7) hr Total truck hours, Allowed									
20	maximum number 6			2,617.700						
21	1. Excavation									
	EE formula - =(LQ19/230) hr Allowed 230m3/hr									
22	productivity	E35	hr	435.587	146.790	26,636	2,548	34,755		63,940
23	EE formula - =(LQ20) hr	TK TRUCK&DOG	hr	2,617.700	130.000			340,301		340,301
24	EE formula - =(LQ22) hr	DOZER CATD6H	hr	435.587	144.099	26,636	2,940	33,191		62,767
25	EE formula - =(LQ22*0.5) hr Allowed 50%	TK WCART 15KLT	hr	217.794	122.463	13,318	343	13,010		26,672
26	EE formula - =(LQ22) hr Spotter	LAB CIVIL	hr	435.587	55.510	24,179				24,179
27	EE formula - =st(21:26,LQ19) m3				5.169	90,770	5,831	421,258		517,859
28	2. Place & compact									
	NOTE: Allow 50% to Stock Bunds with nominal compaction									
	& 50% to stockpile with NO compaction									
30	EE formula - =(LQ22*0.5) hr	DOZER CATD6S	hr	217.794	150.000			32,669		32,669
31	EE formula - =(LQ30) hr Spotter	LAB CIVIL	hr	217.794	55.510	12,090				12,090
32	EE formula - =(LQ22*0.5) hr	E35	hr	217.794	146.790	13,318	1,274	17,378		31,970
33	EE formula - =(LQ32) hr Spotter	LAB CIVIL	hr	217.794	55.510	12,090				12,090
34	EE formula - =(LQ22*0.5) hr Allowed 50%	TK WCART 15KLT	hr	217.794	122.463	13,318	343	13,010		26,672
35	EE formula - =st(28:34,LQ19) m3				1.153	50,816	1,617	63,057		115,490
36	EE formula - =st(18:34,LQ19) m3				6.322	141,585	7,449	484,315		633,349

37	EE formula -=(#LQ22/10) days																			43.559
38	B. Plant Fleet No2 - Latite material from C3 ROCK, 100t excavator, CAT 773 trucks, 30klt water cart & CAT 14G grader																			
40	EE formula -=(578704) m3 Excavation																			578,704.000
	EE formula -=(8084.3) hr Total truck hours, Allowed																			
41	maximum number 6																			8,084.300
42	EE formula -=(#LQ40*0.8) m3 Allowance drill & blast																			462,963.200
	EE formula -=(121836+42713+21353+2222+308645+96408+44228+5593																			
43	m3 Volume fills F3, F4, F5, F6, F7, F7b & F7c																			642,998.000
44	1. Excavation																			
	EE formula -=(910*2*8) m2 Allowance presplit to batters																			
45	cutting C3	PRE SPLIT BATTERS	m ²	14,560.000	68.000															990,080
46	EE formula -=(#LQ42) Allowance Drill & Blast	RTA DRILL & BLAST	m ³	462,963.200	15.000															6,944,448
	EE formula -=(#LQ40/419) hr Allowed 419m3/hr																			
47	productivity	E100	hr	1,381.155	368.601	84,458	9,323	415,315												509,095
48	EE formula -=(#LQ41) hr	TK CAT773	hr	8,084.300	270.753	494,355	10,914	1,683,582												2,188,850
49	EE formula -=(#LQ47) hr	GRADER CAT14G	hr	1,381.155	176.499	84,458	8,080	151,234												243,772
50	EE formula -=(#LQ47*0.5) hr Allowed 50%	TK WCART 30KLT	hr	690.578	202.788	42,229	1,088	96,724												140,041
51	EE formula -=(#LQ47) hr Spotter	LAB CIVIL	hr	1,381.155	55.510	76,668														76,668
52	EE formula -=st(44:51,#LQ40) m3																			19.169
																				782,167
																				29,404
																				9,291,303
																				990,080
																				11,092,954
53	2. Crush excavated material																			
	NOTE: Assume will need to crush excavated material so that																			
54	it is suitable to be placed as general fill																			
	NOTE: Assume crusher plant productivity of 50tonne/hr will																			
55	need multiple number - 3No?																			
56	EE formula -=(#LQ40) m3																			578,704.000
	EE formula -=(#LQ56*2.5*1.1) tonne Allowed																			
57	2.5tonne/m3 for Latite, 10% waste	CRUSH SCREEN SEC	tonne	1,591,436.000	5.000															7,957,180
	EE formula -=(#LQ56/125m3) hr Allowed wheeled loader																			
58	to load Hwy tippers 125m3/hr	LOADER CAT966F	hr	4,629.632	115.000															532,408
59	EE formula -=(#LQ58) hr Spotter	LAB CIVIL	hr	4,629.632	55.510	256,991														256,991
60	EE formula -=st(53:59,#LQ56) m3																			15.114
																				256,991
																				532,408
																				7,957,180
																				8,746,579
61	3. Place & compact																			
	NOTE:Allow to compact material in fills F3, F4, F5, F6, F7, F7b & F7c with CAT825, smooth drum roller & 30klt water																			
62	cart																			
63	EE formula -=(#LQ43*2/419) hr, 2No	COM CAT825C	hr	3,069.203	199.858	187,682	17,955	407,768												613,405
64	EE formula -=(#LQ63) hr Spotter	LAB CIVIL	hr	3,069.203	55.510	170,371														170,371
65	EE formula -=(#LQ63) hr	ROL CA51	hr	3,069.203	111.270	187,682	8,977	144,849												341,509
66	EE formula -=(#LQ63*0.5) hr Allowed 50%	TK WCART 30KLT	hr	1,534.602	202.788	93,841	2,417	214,940												311,198
67	EE formula -=st(61:66,#LQ43) m3																			2.234
																				639,576
																				29,349
																				767,558
																				1,436,483
68	EE formula -=st(40:66,#LQ40) m3																			36.765
																				1,678,734
																				58,753
																				10,591,269
69	EE formula -=(#LQ42*3/10000) days																			8,947,260
																				21,276,016
70	C. Plant Fleet No3 - C4 to C12 Sandstone cuttings + Initial stages of stage construction, 65t excavator, CAT 740 trucks, CAT D10R dozer, CAT 14G grader & 30klt water cart																			
71																				
72	EE formula -=(381836) m3 Excavation																			381,836.000

EE formula - =(7221.5) hr Total truck hours, Allowed										
73	maximum number 12		7,221.500							
EE formula -										
=(41691+9278+1877+38547+7994+39071+34945+2740+782										
1+64845+8225+3519+12280+492+1264+38062+49225+6006										
+56377) m3 Volume fills F8, F9, F10, F11, F12, F13, F14S,										
74	F15S, F16S, F17S & F18S		424,259.000							
75 1. Excavation										
EE formula -										
=(1030+240+250+340+320+210+30+370+475)*2*8) m2										
76	Allowance presplit to batters cuttings C4 to C12	PRE SPLIT BATTERS	m ²	52,240.000	68.000				3,552,320	3,552,320
EE formula - =(#LQ72/365) hr Allowed 365m3/hr										
77	productivity	E65	hr	1,046.126	239.708	63,971	7,061	179,733	250,765	
78	EE formula - =(#LQ77) hr Allowed dozer to pre-rip	DOZER CATD10R	hr	1,046.126	326.832	63,971	12,710	265,227	341,908	
79	EE formula - =(#LQ73) hr	TK ARTIC40	hr	7,221.500	187.233	441,595	9,749	900,761	1,352,105	
80	EE formula - =(#LQ77) hr	GRADER CAT14G	hr	1,046.126	176.499	63,971	6,120	114,549	184,640	
81	EE formula - =(#LQ77*0.5) hr Allowed 50%	TK WCART 30KLT	hr	523.063	202.788	31,985	824	73,262	106,071	
82	EE formula - =(#LQ77) hr Spotter	LAB CIVIL	hr	1,046.126	55.510	58,070				58,070
83	EE formula - =st(75:82,#LQ72) m3				15.310	723,562	36,464	1,533,531	3,552,320	5,845,878
84 2. Place & compact										
NOTE:Allow to compact material in fills F8, F9, F10, F11,										
F12, F13, F14S, F15S, F16S, F17S & F18S with CAT825,										
85 smooth drum roller & 30klt water cart										
86	EE formula - =(#LQ74*2/419) hr, 2No	COM CAT825C	hr	2,025.103	199.858	123,835	11,847	269,051	404,733	
87	EE formula - =(#LQ86) hr Spotter	LAB CIVIL	hr	2,025.103	55.510	112,413				112,413
88	EE formula - =(#LQ86) hr	ROL CA51	hr	2,025.103	111.270	123,835	5,923	95,574	225,332	
89	EE formula - =(#LQ86*0.5) hr Allowed 50%	TK WCART 30KLT	hr	1,012.551	202.788	61,918	1,595	141,820	205,333	
90	EE formula - =st(84:89,#LQ74) m3				2.234	422,001	19,365	506,445	947,811	
91	EE formula - =st(72:89,#LQ72) m3				17.792	1,145,563	55,830	2,039,976	3,552,320	6,793,689
92	EE formula - =(#LQ77/10) days			104.613						
93										
D. Plant Fleet No4 - C4 to C12 Sandstone cuttings + Final										
stages of stage construction, 35t excavator, Truck & dogs,										
94 CAT D10R dozer & 15klt water cart										
95	EE formula - =(273647) m3 Excavation			273,647.000						
EE formula - =(5221.0) hr Total truck hours, Allowed										
96	maximum number 6		5,221.000							
EE formula -										
=(27794+6186+1251+25698+5329+26047+23297+1827+521										
4+43230+5484+2346+8187+328+842+25375+32817+4004+3										
7584+68882+46069+21211) m3 Volume fills F8, F9, F10,										
F11, F12, F13, F14S, F15S, F16S, F17S, F18S & F20S and										
97	unsuitable replacement		419,002.000							
98 1. Excavation										
EE formula - =(#LQ95/230) hr Allowed 230m3/hr										
99	productivity	E35	hr	1,189.770	146.790	72,754	6,960	94,931	174,646	
100	EE formula - =(#LQ99) hr Allowed dozer to pre-rip	DOZER CATD10R	hr	1,189.770	326.832	72,754	14,456	301,645	388,855	
101	EE formula - =(#LQ96) hr	TK TRUCK&DOG	hr	5,221.000	130.000				678,730	678,730
102	EE formula - =(#LQ99*0.5) hr Allowed 50%	TK WCART 15KLT	hr	594.885	122.463	36,377	937	35,537	72,851	
103	EE formula - =(#LQ99) hr Spotter	LAB CIVIL	hr	1,189.770	55.510	66,044				66,044
104	EE formula - =st(98:103,#LQ95) m3				5.047	247,930	22,353	1,110,843	1,381,126	
105 2. Place & compact										

NOTE: Allow to compact material in fills F7, F8, F9, F10, F11, F12, F13, F14S, F15S, F16S, F17S, F18S & F20S and unsuitable replacement with CAT825, smooth drum roller &

106 15klt water cart

107	EE formula - =(#LQ97*2/230) hr, 2No	COM CAT825C	hr	3,643.496	199.858	222,800	21,314	484,068	728,182
108	EE formula - =(#LQ107) hr Spotter	LAB CIVIL	hr	3,643.496	55.510	202,250			202,250
109	EE formula - =(#LQ107) hr	ROL CA51	hr	3,643.496	111.270	222,800	10,657	171,953	405,410
110	EE formula - =(#LQ107*0.5) hr Allowed 50%	TK WCART 15KLT	hr	1,821.748	122.463	111,400	2,869	108,827	223,096
111	EE formula - =st(105:110,#LQ97) m3				3.721	759,250	34,841	764,847	1,558,938
112	EE formula - =st(93:110,#LQ95) m3				10.744	1,007,180	57,194	1,875,690	2,940,064
113	EE formula - =(#LQ99/10) days			118.977					

114

E. Plant Fleet No5 - Staged construction with imported fill, 35t Excavator, Truck & dogs, CAT D6H dozer, CAT 14G grader

115 & 15klt water cart

116	EE formula - =(0) m3 Excavation								
	EE formula - =(0) hr Total truck hours, Allowed maximum								
117	number 5								
118	EE formula - =(0) m3 Volume fills								
119	EE formula - =(737327) m3 Volume IMPORT			737,327.000					
120	EE formula - =(#LQ118+#LQ119) m3 Placed fill volume			737,327.000					

121 1. Excavation

	EE formula - =(#LQ116/230) hr Allowed 230m3/hr								
122	productivity	E35	hr	146.790					
123	EE formula - =(#LQ122) hr Allowed dozer to pre-rip	DOZER CATD6H	hr	144.099					
124	EE formula - =(#LQ117) hr	TK TRUCK&DOG	hr	130.000					
125	EE formula - =(#LQ122) hr	GRADER CAT14G	hr	176.499					
126	EE formula - =(#LQ122*0.5) hr Allowed 50%	TK WCART 15KLT	hr	122.463					
127	EE formula - =(#LQ122) hr Spotter	LAB CIVIL	hr	55.510					
128	EE formula - =st(121:127,#LQ116) m3								

129 2. Imported Material - Replace unsuitable & General fill

	EE formula - =(#LQ119*2.2*1.05) tonne Imported fill								
130	Allowed 2.2tonne/m3, 5% waste	QAR GENERAL FILL	tonne	1,703,225.370	25.000		42,580,634		42,580,634

131 3. Place & compact

NOTE: Allow to compact material in fills F17S, F18S & F19S

132 with CAT825, smooth drum roller & 30klt water cart

133	EE formula - =(#LQ120*2/419) hr, 2No	COM CAT825C	hr	3,519.461	199.858	215,215	20,589	467,588	703,392
134	EE formula - =(#LQ133) hr Spotter	LAB CIVIL	hr	3,519.461	55.510	195,365			195,365
135	EE formula - =(#LQ133) hr	ROL CA51	hr	3,519.461	111.270	215,215	10,294	166,099	391,609
136	EE formula - =(#LQ133*0.5) hr Allowed 50%	TK WCART 30KLT	hr	1,759.730	202.788	107,608	2,772	246,472	356,851
137	EE formula - =st(131:136,#LQ120) m3				2.234	733,403	33,655	880,160	1,647,218
138	EE formula - =st(116:136,#LQ120) m3				59.984	733,403	42,614,289	880,160	44,227,852
139	EE formula - =(#LQ133/10) days			351.946					

140

141 F. Ripping of cutting floors - C2 to C13S, Dozer CATD10R

142	EE formula - =(267560) m2 Area floors in cuttings			267,560.000					
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143

	EE formula - =(#LQ142/300) hr Allowed 300m2 per hr for								
144	300mm depth ripping	DOZER CATD10R	hr	891.867	326.832	54,538	10,836	226,117	291,491
145	EE formula - =(#LQ144) hr Spotter	LAB CIVIL	hr	891.867	55.510	49,508			49,508
146	EE formula - =(#LQ144*0.5) hr Allowed 50%	TK WCART 30KLT	hr	445.933	202.788	27,269	702	62,459	90,430
147	EE formula - =st(141:146,#LQ142) m2				1.612	131,314	11,539	288,576	431,428

148

149 Estimated Duration

EE formula - =(#LQ37+#LQ69+#LQ92+#LQ113+#LQ139)

150 Days

757.983

38.455 4,837,779 42,805,053 16,159,986 12,499,580 76,302,397

Line No 51	Removal & Treatment of Acid Sulphate Soils									
Item No 10640		m3	25,000.000	Contributing						
1	10640 Removal & treatment of Acid Sulphate Soils									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Likelihood of occurrence of Acid Sulphate Soils withir the Northern Option alignment is considered LOW.									
6	NOTE: Assume excavation already covered in previous Item 10530 General Earthworks. Allow to haul to cutting - approx 5000m for treatment with lime @ kg/m3 and then haul to suitable fill for encapsulation within the embankment.									
7	NOTE: Allow for unsuitable volume suggested in FBB									
8	Quantities.xlsx									
9	NOTE: Refer to email from H. Buys (Aecom) 11/5/2012									
10	amended volume of PASS to 25000m3									
11	EE formula - =(25000) m3 Allowed volume of Acid Sulphate Soils									
12	A. Treatment with Lime									
13	EE formula - =(#LQ10*1.8*25/1000) tonne Allowed treatment 25kg CaCo3 per tonne of soil, 1.8tonne/m3	QUICK LIME	tonne	1,125.000	190.000	213,750	213,750			
14	EE formula - =(#LQ10/60) hr Allow grader to windrow ASS material and mix with CaCo3, 60m3/hr	GRADER CAT14G	hr	416.667	176.499	25,479	2,438	45,624	73,541	
15	EE formula - =(#LQ14) hr	TK WCART 15KLT	hr	416.667	122.463	25,479	656	24,891	51,026	
16	EE formula - =(#LQ14) hr Spotter	LAB CIVIL	hr	416.667	55.510	23,129	23,129			
17	EE formula - =(13:16,100) Allowance for inefficiency of operation					74,088	216,844	70,515	361,446	
18	EE formula - =st(12:17,#LQ10) m3				28.916	148,175	433,688	141,030	722,893	
19	B. Haul to embankment for encapsulation, Allowed 6No trucks									
20	EE formula - =(#LQ10/230) hr Allowed 230m3/hr									
21	productivity	E35	hr	108.696	146.790	6,647	636	8,673	15,955	
22	EE formula - =(#LQ21*6) hr	TK TRUCK&DOG	hr	652.174	130.000	84,783			84,783	
23	EE formula - =(#LQ21) hr	DOZER CATD6H	hr	108.696	144.099	6,647	734	8,282	15,663	
24	EE formula - =(#LQ21*0.5) hr Allowed 50%	TK WCART 15KLT	hr	54.348	122.463	3,323	86	3,247	6,656	
25	EE formula - =(#LQ21) hr Spotter	LAB CIVIL	hr	108.696	55.510	6,034	6,034			
26	EE formula - =st(20:25,#LQ10) m3				5.164	22,651	1,455	104,984	129,090	
27	2. Place & compact									
28	EE formula - =(#LQ21*0.5) hr	DOZER CATD6S	hr	54.348	150.000	8,152			8,152	
29	EE formula - =(#LQ28) hr Spotter	LAB CIVIL	hr	54.348	55.510	3,017	3,017			

30	EE formula - $=(\#LQ21*0.5)$ hr Allowed 50%	TK WCART 15KLT	hr	54.348	122.463	3,323	86	3,247	6,656
31	EE formula - $=st(27:30,\#LQ10)$ m3				0.713	6,340	86	11,399	17,825
32	EE formula - $=st(19:30,\#LQ10)$ m3				5.877	28,991	1,541	116,383	146,915
33	EE formula - $=(\#LQ21/10)$ days			10.870					
34									
35	Estimated Duration								
36	EE formula - $=(\#LQ14/10)+(\#LQ21/10)$ Days			52.536					
					34.792	177,166	435,228	257,413	869,807

Line No 52 Item No 10650	Temporary Access Roads	m2	29,200.000	Contributing
1	10650 Temporary access roads			
2	Spec: Nil			
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801			
4	Site visit photo: Nil			
5	NOTE: Staged construction of the works will be necessary in a number of locations because of a common alignment with the existing Princess Hwy.			
6	NOTE: Temporary pavements will be required for the stage construction works with cross overs & traffic control measures for traffic currently using the existing Princess Hwy			
7	NOTE: Allow 30m of extra temporary pavement for each cross over			
8	NOTE: Adopt typical temporary pavement design from similar Pacific Hwy upgrade projects, G10 Annexure A, Design travel speed: 80km/hr			
9	NOTE: Adopt temporary pavements design as follows: Traffic lanes 2No 3.5m width, shoulders 1.5m width, sealing of shoulders - Yes, Wearing surface AC14 40mm thk, emulsion curng coat, Base 150mm thk heavily bound, Subbase 150mmr thk heavily bound and 7mm spray seal to the subgrade			
10	NOTE: Assume ALL materials for temporary pavements will be IMPORT. NO allowance to load & haul site won material from crushing plant location Chg 12500 to temporary pavement locations			
11	NOTE: Removal of temporary pavement, allow to excavate and disposal of asphalt materials off site, crush rock materials on site, maximum 5km haul			
12				
13	EE formula - $=(1.5+3.5+3.5+1.5)$ m Width temporary pavement		10.000	
14	EE formula - $=(12350-12050)$ m		300.000	
15	EE formula - $=(12850-12700)$ m		150.000	
16	EE formula - $=(13100-13000)$ m		100.000	
17	EE formula - $=(13800-13350)$ m		450.000	
18	EE formula - $=(14900-14700)$ m		200.000	
19	EE formula - $=(15800-15200)$ m		600.000	
20	EE formula - $=(20400-19400)$ m		1,000.000	
21	EE formula - $=(4)$ each Cross over points		4.000	
22	EE formula - $=(30)$ m Length per Cross over		30.000	

23	EE formula -=(#LQ21*#LQ22) m Total length of cross overs			120.000						
24	EE formula - =(#LQ14+#LQ15+#LQ16+#LQ17+#LQ18+#LQ19+#LQ20+#LQ23) m			2,920.000						
25	EE formula -=(#LQ13*#LQ24) m2 Temporary pavement area			29,200.000						
26	EE formula -=(#LQ25*0.15) m3 Volume Subbase			4,380.000						
27	EE formula -=(#LQ25*0.15) m3 Volume Base			4,380.000						
28	EE formula -=(#LQ26+#LQ27) m3 Total volume			8,760.000						
29										
30	A. Imported Material - Temporary pavements									
31	EE formula -=(#LQ28*2.2*1.05) tonne Imported fill Allowed 2.2tonne/m3, 5% waste	QAR GENERAL FILL	tonne	20,235.600	25.000			505,890		505,890
32										
33	B. Temporary pavements - Install									
34	EE formula -=(#LQ25) m2	EWKS S/G250	m ²	29,200.000	0.822	6,484		17,520		24,004
35	EE formula -=(#LQ25) m2 Emulsion seal	A PRIME	m ²	29,200.000	2.000				58,400	58,400
36	EE formula -=(#LQ28/230) hr Allow load Subbase & Base material	E35	hr	38.087	146.790	2,329	223	3,039		5,591
37	EE formula -=(#LQ36) hr Spotter	LAB CIVIL	hr	38.087	55.510	2,114				2,114
38	EE formula -=(#LQ36*7) hr Allowed 7No trucks	TK TRUCK&DOG	hr	266.609	130.000			34,659		34,659
39	EE formula -=(7) each Allowed to establish stabilisation plant to site	EWKS STAB MOB	each	7.000	1,950.000				13,650	13,650
40	EE formula -=(#LQ25*2) m2 Insitu stabilisation of Subbase & Base coarse material	EWKS STAB MIX150	m ²	58,400.000	1.910				111,544	111,544
41	EE formula -=(#LQ28*2.2*30/1000) tonne Allowed 2.2tonne/m3, 30Kg/tonne dosage	QUICK LIME	tonne	578.160	190.000			109,850		109,850
42	EE formula -=(#LQ25*2/100) hr Allowed place & compact 100m2/hr	GRADER CAT14G	hr	584.000	176.499	35,712	3,416	63,947		103,075
43	EE formula -=(#LQ42) hr	ROL SP56	hr	584.000	113.452	35,712	1,708	28,836		66,256
44	EE formula -=(#LQ42) hr	ROL CA51	hr	584.000	111.270	35,712	1,708	27,562		64,981
45	EE formula -=(#LQ42*2) hr Grade checkers / spotters	LAB CIVIL	hr	1,168.000	55.510	64,836				64,836
46	EE formula -=(#LQ42) hr	TK WCART 15KLT	hr	584.000	122.463	35,712	920	34,887		71,518
47	EE formula -=(#LQ25) m2	A 7MMSEAL	m ²	29,200.000	1.800				52,560	52,560
48	EE formula -=(#LQ25*0.04*2.4*1.05) tonne Allowed 2.4tonne/m3, waste 5%	A AC14 DG	tonne	2,943.360	180.000				529,805	529,805
49	EE formula -=st(33:48,#LQ25) m2				44.960	218,609	117,826	210,450	765,959	1,312,843
50										
51	C. Remove temporary pavements									
52	EE formula -=(#LQ28+1787)/185) hr Allowed 185m3/hr	E65	hr	57.011	239.708	3,486	385	9,795		13,666
53	EE formula -=(#LQ52) hr Spotter	LAB CIVIL	hr	57.011	55.510	3,165				3,165
54	EE formula -=(#LQ52*7) hr Allowed 7No trucks	TK TRUCK&DOG	hr	399.076	130.000			51,880		51,880
55	EE formula -=(#LQ48) tonne Tip fees for asphalt	TIP INERT RECYCLE	tonne	2,943.360	30.000				88,301	88,301
56	EE formula -=st(51:55,#LQ25) m2				5.377	6,651	385	61,675	88,301	157,011
57										
58	D. Other									
59	EE formula -=(100000) Allowance temporary linemarking	MISC SCON	Item	100,000.000	1.000				100,000	100,000
60	EE formula -=(50000) Allowance temporary signage	MISC MAT	Item	50,000.000	1.000			50,000		50,000
61	EE formula -=st(58:60,#LQ25) m2				5.137			50,000	100,000	150,000

62

63 Estimated Duration

64 EE formula - $=(\#LQ28/1000)$ Days to install

8.760

72,799 225,260 674,101 272,124 954,260 2,125,744

Line No 53 Item No 10660	Select Material		m3	92,954.000	Contributing			
1	10660 Select Material							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Assume 300mm thk layer of select required at top of formation as subgrade for pavement							
6	NOTE: Assumed 4No lane (3.5m width), 10m width central median & 2No 3m width shoulders, approx 30m subgrade width							
7	NOTE: Refer to file Mass Haul Southern Bypass with Plant Rev0 .xlsx for details of quantities							
8	NOTE: From Mass Haul no surplus material from excavation. SMZ will required to be IMPORT							
9								
10	EE formula - $=(20400-7600)$ m Total corridor length			12,800.000				
	EE formula - $=(32+122+76+200+1188+22+50+22+22)$ m							
11	Length bridges & Viaduct			1,734.000				
	EE formula - $=(1.5+3.0+3.5+3.5+3.5+3.5+3.0+1.5)$ m							
	Subgrade width, Incl. 2No shoulders of 1.0m each within the							
12	cntral median of 5m			28.000				
13	EE formula - $=(0.3)$ m Subgrade depth			0.300				
	EE formula - $=(\#LQ10-\#LQ11)*\#LQ12*\#LQ13$ m3 Select							
14	volume			92,954.400				
15	EE formula - $=(0)$ m3 Crushed select volume							
	EE formula - $=(\#LQ14-\#LQ15)$ m3 Shortfall of select material,							
16	IMPORT			92,954.400				
17								
18	A. General subgrade preparation							
19	EE formula - $=(\#LQ10-\#LQ11)*\#LQ12$ m2	EWKS S/G250	m ²	309,848.000	0.822	68,799	185,909	254,707
20								
21	B. Import shortfall of select material							
	EE formula - $=(\#LQ16*2.2*1.1)$ tonne Allowed							
22	2.2tonne/m3, 10% waste	QAR SELECT RSW	tonne	224,949.648	18.500	4,161,568		4,161,568
23								
24	C. Crush, screen, load & haul select fill to site							
	NOTE: Assume crusher plant productivity of 50tonne/hr will							
25	need multiple number - 3No?							
26	EE formula - $=(\#LQ15)$ m3							
	EE formula - $=(\#LQ26*2.2*1.1)$ tonne Allowed							
27	2.2tonne/m3 for sandstone, 10% waste	CRUSH SCREEN	tonne			5.000		
28	EE formula - $=(\#LQ26/230m3)$ hr Allowed 230m3/hr	E35	hr			146.790		
29	EE formula - $=(\#LQ28)$ hr Spotter	LAB CIVIL	hr			55.510		
30	EE formula - $=(\#LQ28*10)$ hr Allowed 10No trucks	TK TRUCK&DOG	hr			130.000		
31	EE formula - $=st(24:30,\#LQ15)$ m3							

32

33 D. Spread & compact

34 NOTE: Allow CAT815 compactor to spread & compact

35	EE formula - =(#LQ14/15), hr Allowed 15m3/hr	COM CAT815C	hr	6,196.960	161.957	378,944	36,252	588,443	1,003,640	
36	EE formula - =(#LQ35) hr	ROL CA51	hr	6,196.960	111.270	378,944	18,126	292,462	689,533	
37	EE formula - =(#LQ35), hr	GRADER CAT14G	hr	6,196.960	176.499	378,944	36,252	678,558	1,093,754	
38	EE formula - =(#LQ35*0.5), hr	TK WCART 15KLT	hr	3,098.480	122.463	189,472	4,880	185,095	379,448	
39	EE formula - =(#LQ35*2), hr Grade checker / Spotter	LAB CIVIL	hr	12,393.920	55.510	687,986			687,986	
40	EE formula - =st(35:39,#LQ14) m3				41.465	2,014,291	95,511	1,744,559	3,854,360	
41	EE formula - =st(18:39,#LQ14) m3				88.975	2,083,090	4,257,079	1,930,468	8,270,636	
42	EE formula - =st(18:39,#LQ20) m2					2,083,090	4,257,079	1,930,468	8,270,636	
43										
44	Estimated duration									
45	EE formula - =(0+155) days Assume 3No crushing plants & 4No fleets of compaction equipment			155.000						
						88.976	2,083,090	4,257,079	1,930,468	8,270,636

Line No 54	Batter Stabilisation Works								
Item No 10670		each		1,300.000		Contributing			
1	10670 Batter Stabilisation Works								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801								
4	Site visit photo: Nil								
5	NOTE: Refer to file Quantities .xlsx for details of quantities NOTE: Refer to email H. Buys (Aecom) 11/5/2012 and comments on file Quantities.xlsx for anchors "Allow a nominal number of rock bolts to allow for block failure - say 1 per 100m2 of cut batter area" Assume rock bolt length 12m								
6	NOTE: NO shotcrete batter protection allowed following conversation with H. Buys Aecom 18/4/2012								
7									
8									
9	EE formula - =(129950) m2 Area of cut batter			129,950.000					
10	EE formula - =(#LQ9/100) each Rock bolt number			1,299.500					
11	EE formula - =(0) m2 Shotcrete area								
12									
13	A. Batter protection								
14	EE formula - =(#LQ10) each	ROCK BOLT GFRB12	each	1,299.500	240.000			311,880	311,880
15	EE formula - =(#LQ11) m2	BATTER SHOT350	m ²		271.004				
16	EE formula - =st(13:15,#LQ9) m2				2.400			311,880	311,880
17									
18	Estimated duration								
19	EE formula - =(#LQ10/5) days Allowed 5No bolts per day			259.900					
						239.908		311,880	311,880

Line No 55	Temporary dewatering								
Item No 10680		Item		1.000		Contributing			

1 10680 temporary dewatering
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-
 3 02-BR-0801
 4 Site visit photo: Nil
 NOTE: Allowance for dewatering of cuttings, Length 5770m

6	EE formula - =(697*7/5) Day Total elapsed duration of							
7	excavation works (Refer Item 10630)			975.800				
8	EE formula - =(3) each No pumps			3.000				
9								
10	A. Dewatering pumps							
11	EE formula - =(LQ7*LQ8) day	P MATADOR/6"	day	2,927.400	69.000		201,991	201,991
12	EE formula - =(LQ7*LQ8*1) hr Allowed 1hr per pump per day supervision	LAB CIVIL	hr	2,927.400	55.510	162,500		162,500
13	EE formula - =(0.2*2*LQ8) week Allowed delivery & pick up each pump 1day	TK CR/12T	week	1.200	1,347.570		1,617	1,617
14	EE formula - =(1000*LQ8) Allowance suction & delivery hoses per pump	MISC PLANT	Item	3,000.000	1.000		3,000	3,000
15	EE formula - =(0.1*75*LQ7*24*LQ8) lt Allowed 0.1lt per kwhr, 24hr operation	FUEL	litre	526,932.000	1.350		711,358	711,358
16	EE formula - =st(11:15,0)					162,500	917,966	1,080,466
17								
18	Estimated duration							
19	EE formula - =(LQ7) days			975.800				
							1,080,465.858	162,500
							917,966	1,080,466

Line No 56	Stone column ground improvement							
Item No 10690a		m		78,560.000			Contributing	
1	10690a Stone column ground improvement							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Further conversation with H. Buys (Aecom) 16/5/2012 amend area of ground improvement to Northern approach to railway bridge ONLY (19640 m2)							
6	NOTE: Refer to email H. Buys (Aecom) 11/5/2012 for proposed details							
7	NOTE: Allow typical 600mm dia columns per 1m2 (0.282m2/m) of plan area for embankments depth <8m							
8	NOTE: Required depth of stone columns in 'Zone 2' material is 4m. We have approx 670m length of embankment in 2No location - Northern approach to railway overbridge (19640 m2) and Northern approach to Southern Interchange (37500 m2)							
9								
10	EE formula - =(19640) m2 Plan area of railway embankment			19,640.000				
11	EE formula - =(37500*0) m2 Plan area of Southern Interchange							

12	EE formula - $=(\#LQ10+\#LQ11)$ m2 Total plan area of embankments			19,640.000				
13	EE formula - $=(\#LQ12*4)$ m Length of stone columns required			78,560.000				
14								
15	A. Stone columns 600mm dia							
16	EE formula - $=(\#LQ13)$ m	STONE COLUMNS 600	m	78,560.000	130.000		10,212,800	10,212,800
17	EE formula - $=(2)$ each	PILE MOB	each	2.000	22,000.000		44,000	44,000
18	EE formula - $=(\#LQ13)$ m Bore column hole	PILE 600 BORE	m	78,560.000	120.000		9,427,200	9,427,200
	EE formula - $=(\#LQ13*88/10/1000)$ tonne Allow temp casing 10 No reuses, 88kg/m 6mm wall thk	PILE CASING TEMP	tonne	691.328	3,500.000		2,419,648	2,419,648
19	EE formula - $=(\#LQ13*0.282*2.7*1.3)$ tonne Stone column fill, 2.7tonne/m3, 30% waste	QAR RENO ROCK	tonne	77,760.259	42.000		3,265,931	3,265,931
20	EE formula - $=(\#LQ13/10)$ hr Allow to place stone 10m3/hr	E20	hr	7,856.000	130.000		1,021,280	1,021,280
21	EE formula - $=(\#LQ21)$ hr Assist	LAB CIVIL	hr	7,856.000	55.510	436,087		436,087
22	EE formula - $=st(15:22,\#LQ13)$ m				130.000		10,212,800	10,212,800
23								
24								
25	Estimated duration							
26	EE formula - $=(\#LQ13/19/10/5)$ days Allowed 19m/hr Will need multiple crews, say 5No			82.695				
							130.000	10,212,800
							10,212,800	10,212,800

Line No 57	Preloading							
Item No 10690b		m3		39,950.000		Contributing		
1	10690b Preload							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Refer to file Quantities .xlsx for details of quantities NOTE: Refer email H. Buys (Aecom) 11/5/2012 - "Assume a 2m preload is applied to the same area as the wick drains. his quantity will need to be excavated on site. Assume 4>m = 1700m length x 50m3/m for 47% of length" following conversation with H. Buys Aecom 18/4/2012							
6	NOTE: Allow for same level of compaction to preload material as usually required for permanent pavement layers							
7								
8								
9	EE formula - $=(1700*50*0.47)$ m3 Preload volume			39,950.000				
10	EE formula - $=(\#LQ9/2.5)$ m2 Topsoil strip area			15,980.000				
11	EE formula - $=(\#LQ10*0.150)$ m3 Topsoil volume			2,397.000				
12								
13	A. Strip & remove topsoil in borrow area							
14	EE formula - $=(160)$ m3/hr Allowed productivity			160.000				
15	EE formula - $=(\#LQ11/\#LQ14)$ hr	SCR CAT623E	hr	14.981	206.550	916	88	2,091
16	EE formula - $=(\#LQ15)$ hr Spotter	LAB CIVIL	hr	14.981	55.510	832		832
17	EE formula - $=(\#LQ15*0.5)$ hr Allowed 50%	TK WCART 30KLT	hr	7.491	202.788	458	12	1,049

EE formula - =(#LQ15*0.5) hr Allowed 50% to manage										
18	stockpiles	DOZER CATD6H	hr	7.491	144.099	458	51	571	1,079	
19	EE formula - =(#LQ18) hr Spotter	LAB CIVIL	hr	7.491	55.510	416			416	
20	EE formula - =st(13:19,#LQ11) m3				2.895	3,080	150	3,711	6,940	
21	B. Rip, load & haul to embankment									
EE formula - =(#LQ9/100) hr Allowance to rip and push up										
23		DOZER CATD6H	hr	399.500	144.099	24,429	2,697	30,441	57,567	
24	EE formula - =(#LQ23) hr	E35	hr	399.500	146.790	24,429	2,337	31,876	58,642	
25	EE formula - =(#LQ23*6) hr Allow 6No trucks.	TK TRUCK&DOG	hr	2,397.000	130.000			311,610	311,610	
26	EE formula - =st(22:25,#LQ9) m3				10.709	48,859	5,034	373,927	427,820	
27	C. Place & compact									
29	NOTE: Allow CAT815 compactor to spread & compact									
30	EE formula - =(#LQ9/15), hr Allowed 15m3/hr	COM CAT815C	hr	2,663.333	161.957	162,863	15,580	252,901	431,345	
31	EE formula - =(#LQ30) hr	ROL CA51	hr	2,663.333	111.270	162,863	7,790	125,695	296,348	
32	EE formula - =(#LQ30), hr	GRADER CAT14G	hr	2,663.333	176.499	162,863	15,580	291,631	470,074	
33	EE formula - =(#LQ30*0.5), hr	TK WCART 15KLT	hr	1,331.667	122.463	81,431	2,097	79,550	163,079	
34	EE formula - =(#LQ30*2), hr Grade checker / Spotter	LAB CIVIL	hr	5,326.667	55.510	295,683			295,683	
35	EE formula - =st(30:34,#LQ9) m3				41.465	865,703	41,049	749,778	1,656,529	
36	D. Load & spoil at end of preload period									
37	NOTE: Allow to load and haul preload material to spoil with									
38	5km of site									
EE formula - =(#LQ9/200) hr Allowed 200m3/hr										
39	productivity	E35	hr	199.750	146.790	12,215	1,169	15,938	29,321	
40	EE formula - =(#LQ39*6) hr Allowed 6No trucks	TK TRUCK&DOG	hr	1,198.500	130.000			155,805	155,805	
41	EE formula - =(#LQ39) hr	DOZER CATD6H	hr	199.750	144.099	12,215	1,348	15,221	28,784	
42	EE formula - =(#LQ39*0.5) hr Allowed 50%	TK WCART 15KLT	hr	99.875	122.463	6,107	157	5,966	12,231	
43	EE formula - =(#LQ39) hr Spotter	LAB CIVIL	hr	199.750	55.510	11,088			11,088	
44	EE formula - =st(37:43,#LQ9) m3				5.938	41,625	2,674	192,930	237,229	
45	Estimated duration									
47	EE formula - =(0) days									
						58,286	959,267	48,906	1,320,345	2,328,518

Line No	Excavation	m3	33,158.000	Contributing
Item No 10710				
1	10710 Drainage - Excavation			
2	Spec: Nil			
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801			
4	Site visit photo: Nil			
5	NOTE: Refer to file Quantities .xlsx for details of quantities			
6	NOTE: Adopt allowance from Aecom - "Pavement drainage design has not been completed at this time. Allowing for pipe the full length of each carriageway will be sufficiently conservative to allow for tranverse pavement drainage and interchange ramp drainage"			

NOTE: Adopt allowance from Aecom - "Assume 20 piped
 7 crossings at 55m each"
 8 NOTE: Adopt same ratios as RCP for lengths
 NOTE: Allow for open channel drains to both sides of cuttings
 9
 10

11	EE formula - =(20400-7600) m Length of road corridor	12,800.000
	EE formula - =(32+122+76+200+1188+22+50+22+22) m	
12	Length bridges & Viaduct	1,734.000
	EE formula - =((#LQ11-#LQ12)*2) m Length of drainage	
13	lines	22,132.000
	EE formula - =((15700-14650)*1.5) m3 open drainage length	
14	@ 1.5m3/m	1,575.000
	EE formula - =(((#LQ13*0.6)+(20*55))*0.9*1.05) m3 375mm	
15		13,588.344
16	EE formula - =(#LQ13*0.25*1.05*1.25) m3 450mm	7,262.063
17	EE formula - =(#LQ13*0.075*1.35*1.5) m3 750mm	3,361.298
18	EE formula - =(#LQ13*0.075*1.5*1.75) m3 900mm	4,357.238
	EE formula - =((#LQ14+#LQ15+#LQ16+#LQ17+#LQ18)*1.1)	
	m3 Volume drainage excavation, Incl. 10% allowance for	
	unsuitable	
19		33,158.336
20	EE formula - =(#LQ19*0.8) m3 OTR	26,526.669
21	EE formula - =(#LQ19*0.2) m3 ROCK	6,631.667

22								
23	EE formula - =(#LQ20/15) hr Allowed 15m3/hr OTR	E30	hr	1,768.445	150.000		265,267	265,267
24	EE formula - =(#LQ23) hr Spotter	LAB CIVIL	hr	1,768.445	55.510	98,166		98,166
25	EE formula - =(#LQ21/7.5) hr Allowed 7.5m3/hr ROCK	E30	hr	884.222	150.000		132,633	132,633
26	EE formula - =(#LQ25) hr	E30 HAMMER	hr	884.222	35.000		30,948	30,948
27	EE formula - =(#LQ25) hr Spotter	LAB CIVIL	hr	884.222	55.510	49,083		49,083
	EE formula - =(10000) Allowance mobilise trench box to							
28	site	MISC PLANT	Item	10,000.000	1.000		10,000	10,000
	EE formula - =(#LQ13/7/40) week Allowed typical 7m/hr,							
29	40hr/week	TRENCH BOX MP40L	week	79.043	264.000		20,867	20,867
30	EE formula - =(5000) Allowance lift chains etc.	MISC PLANT	Item	5,000.000	1.000		5,000	5,000
31	EE formula - =(st(23:30,#LQ19) m3				18.456	147,250	464,715	611,965

32								
33	Estimated Duration							
	EE formula - =(#LQ13/70/2) Days Allowed 70m per day.							
34	Assume 2No crews			158.086				

				18.456	147,250	464,715	611,965
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Line No 62	Precast Reinforced Concrete Pipe (RCP)					
Item No 10720		m	22,132.000	Contributing		
1	10720 Drainage - Precast Reinforced Concrete Pipe (RCP)					
2	Spec: Nil					
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801					
4	Site visit photo: Nil					
5	NOTE: Refer to file FBB Quantities .xlsx for details of quantities					

NOTE: Adopt allowance from Aecom - "Pavement drainage design has not been completed at this time. Allowing for pipe the full length of each carriageway will be sufficiently conservative to allow for transverse pavement drainage and interchange ramp drainage"

NOTE: Adopt allowance from Aecom - "Assume 20 piped crossings at 55m each"

NOTE: Allow breakdown as follows - 375mm 60%, 450mm 25%, 750mm 7.5% & 900mm 7.5%

10	EE formula - =(20400-7600) m Length of road corridor			12,800.000							
	EE formula - =(32+122+76+200+1188+22+50+22+22) m										
11	Length bridges & Viaduct			1,734.000							
	EE formula - =(#LQ10-#LQ11)*2) m Length of drainage lines										
12				22,132.000							
13											
14	EE formula - =(#LQ12*0.6)+(20*55)) m	DRA RCP 375CL4	m	14,379.200	153.642	400,691	1,370,199	432,822	5,536	2,209,248	
15	EE formula - =(#LQ12*0.25) m	DRA RCP 450CL4	m	5,533.000	233.327	312,123	659,650	314,599	4,624	1,290,997	
16	EE formula - =(#LQ12*0.075) m	DRA RCP 750CL4	m	1,659.900	532.495	156,559	561,232	163,970	2,129	883,889	
17	EE formula - =(#LQ12*0.075) m	DRA RCP 900CL4	m	1,659.900	723.400	164,763	880,934	151,856	3,219	1,200,772	
18											
19	Estimated Duration										
	EE formula - =(#LQ12/70/2) Days Allowed 70m per day.										
20	Assume 2No crews			158.086							
						252.345		1,034,136		3,472,015	
						1,063,247		15,508		5,584,906	

Line No 63	Reinforced Concrete Box Culverts (RCBC) NOT REQUIRED										
Item No 10730			m	140.000		Contributing					
1	10730 Drainage - Reinforced Concrete Box Culvert (RCBC)										
2	Spec: Nil										
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801										
4	Site visit photo: Nil										
5	NOTE: Refer to file Quantities .xlsx for details of quantities										
	NOTE: Adopt allowance from Aecom - "Single cell 3.0 x 3.0m RCBC" + "2x single cell 2.4 x 1.5m RCBC"										
7	NOTE: Assume NOT REQUIRED										
8											
9	EE formula - =(60) m Single cell 3.0x3.0 RCBC	RTA RCBC 3000X3000	m	60.000	3,000.000				180,000	180,000	
10	EE formula - =(2*40) m Single cell 2.4x1.5 RCBC	RTA RCBC 2400X1500	m	80.000	2,400.000				192,000	192,000	
	EE formula - =(10*1500*2*3) each Allownce end wall structures @ 10m3/each	MISC MAT	Item	90,000.000	1.000		90,000			90,000	
12											
13	Estimated Duration										
	EE formula - =(#LQ9+#LQ10)/5) Days Allowed 5m per day										
14				28.000							

Line No 64	Drainage Pits									
Item No 10740			each	531.000	Contributing					
	1	10740 Drainage - Pits								
	2	Spec: Nil								
		Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-								
	3	02-BR-0801								
	4	Site visit photo: Nil								
	5	NOTE: Refer to file Quantities .xlsx for details of quantities								
	6	NOTE: Prorated length pavement Nth vs Sth options								
	7									
	8	EE formula - =(64) each Gully pits		64.000						
	9	EE formula - =(425) each Grated pits		425.000						
	10	EE formula - =(0) each Junction pits								
	11	EE formula - =(42) each headwalls / pit RCBC		42.000						
	12	EE formula - =(#LQ8+#LQ9+#LQ10+#LQ11) each Total		531.000						
	13									
	14	EE formula - =(#LQ8) each	RTA KERB PIT RCP	each	64.000	2,200.000		140,800	140,800	
	15	EE formula - =(#LQ11) each	RTA KERB PIT RCBC	each	42.000	6,400.000		268,800	268,800	
	16	EE formula - =(#LQ10) each	RTA JUNC PIT	each		2,200.000				
	17	EE formula - =(#LQ9) each	RTA GRATED PIT	each	425.000	2,000.000		850,000	850,000	
	18									
	19	Estimated Duration								
		EE formula - =(#LQ12/5/2) Days Allowed 5day per pit.								
	20	Assume 2No crews		53.100						
					2,372.128			1,259,600	1,259,600	
Line No 65	Concrete lined catch Drains									
Item No 10750			m	9,480.000	Contributing					
	1	10750 - Concrete lined catch Drains								
	2	Spec: Nil								
		Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-								
	3	02-BR-0801								
	4	Site visit photo: Nil								
	5	NOTE: Refer to file Quantities .xlsx for details of quantities								
		NOTE: Adopt allowance from Aecom - "Assume concrete								
	6	lined catch drains are required at the top of all cuts"								
	7									
	8	EE formula - =(9480) m catch drainage length		9,480.000						
	9									
	10	EE formula - =(#LQ8) m	DRA CHANNEL C3	m	9,480.000	135.572	686,022	576,968	22,234	1,285,223
	11									
	12	Estimated Duration								
	13	EE formula - =(#LQ8/500) Days Allowed 500m per day		18.960						
					135.572	686,022	576,968	22,234	1,285,223	
Line No 66	Open Drains									
Item No 10760			m	14,320.000	Contributing					

1 10760 Drainage - Open drains
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 3 02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Refer to file Quantities .xlsx for details of quantities
 NOTE: Adopt allowance from Aecom - "Assume that open drains are required at the base of each fill"
 6
 7

8	EE formula - =(14320) m open drainage length			14,320.000			
9							
10	EE formula - =(#LQ8) m	RTA OPEN DRAIN	m	14,320.000	10.200		146,064 146,064
11							
12	Estimated Duration						
13	EE formula - =(#LQ8/750) Days Allowed 750m per day			19.093			
					10.200		146,064 146,064

Line No 67 Rockfilled Gabions & Mattresses
Item No 10770 **m2** **168.000** **Contributing**

1 10770 Drainage - Rock filled gabions & mattresses
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 3 02-BR-0801
 4 Site visit photo: Nil
 5 NOTE: Allow for reno mattress protection at each headwall
 6

7	EE formula - =(42) each			42.000			
8							
9	EE formula - =(#LQ7*4) m2 Allowed 4m2 per headwall	RENO230	m ²	168.000	68.000		11,424 11,424
10							
11	Estimated Duration						
12	EE formula - =(#LQ7*5/2) Days Allowed 5days per headwall. Assume 2No crews			105.000			
					68.000		11,424 11,424

Line No 68 Diversion Drain - Town Creek NOT REQUIRED
Item No 10780 **m** **400.000** **Contributing**

1 10780 - Diversion Drain - Town Creek
 2 Spec: Nil
 Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801
 3 02-BR-0801
 4 Site visit photo: Nil
 NOTE: Refer to email from G. Smith Aecom 17/2/2012 for details - Town creek diversion & highway bund
 NOTE: Diversion of Town Creek is NOT required for the Southern Option
 6
 7

8	EE formula - =(400) m Length of diversion channel			400.000			
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9	EE formula - =(20513+6568) m3 Cut volume									27,081.000
10	EE formula - =(0+3875) m3 Fill volume									3,875.000
11	EE formula - =(#LQ9-#LQ10) m3 Spoil volume									23,206.000
12	EE formula - =(10) m Multiple cell 5No 2.1 x 2.4m RCBC									10.000
13	A. Drainage diversion channel - Spoil OTR, 35t excavator,									
14	Truck & dogs, CATD6H dozer & 15kl water cart									
15	EE formula - =(#LQ9) m3 Excavation									27,081.000
16	EE formula - =(706) hr Total truck hours, Allowed maximum number 6									706.000
17	1. Excavation									
	EE formula - =(#LQ15/230) hr Allowed 230m3/hr									
18	productivity	E35	hr	117.744	146.790	7,200	689	9,395		17,284
19	EE formula - =(#LQ16) hr	TK TRUCK&DOG	hr	706.000	130.000			91,780		91,780
20	EE formula - =(#LQ18) hr	DOZER CATD6H	hr	117.744	144.099	7,200	795	8,972		16,967
21	EE formula - =(#LQ18*0.5) hr Allowed 50%	TK WCART 15KLT	hr	58.872	122.463	3,600	93	3,517		7,210
22	EE formula - =(#LQ18) hr Spotter	LAB CIVIL	hr	117.744	55.510	6,536				6,536
23	EE formula - =st(17:22,#LQ15) m3									
24	2. Place & compact									
	NOTE: Allow to spoil on nearby pasture with minimal									
25	compaction									
26	EE formula - =(#LQ18) hr	DOZER CATD6S	hr	117.744	150.000			17,662		17,662
27	EE formula - =(#LQ26) hr Spotter	LAB CIVIL	hr	117.744	55.510	6,536				6,536
28	EE formula - =(#LQ26*0.5) hr Allowed 50%	TK WCART 15KLT	hr	58.872	122.463	3,600	93	3,517		7,210
29	EE formula - =st(24:28,#LQ15) m3									
30	EE formula - =st(14:28,#LQ15) m3									
31	EE formula - =(#LQ18/10) days			11.774						
32										
33	B. Multiple cell RCBC - 5No cells									
	EE formula - =(#LQ12*5*1.5) m Allowed 1.5x factor for									
34	multiple cell RCBC installation	RTA RCBC 2100X2400	m	75.000	2,400.000			180,000		180,000
35										
36	C. RIP RAP protection to steep slopes									
	EE formula - =(#LQ8*10*0.5*0.5*2.7*1.2) tonne Allowed 50% of diversion channel length, width 10m, 500mm thk,									
37	2.7tonne/m3, 20% waste	QAR RENO ROCK	tonne	3,240.000	42.000			136,080		136,080
	EE formula - =(#LQ8*10*0.5*1.3) m2 Allowed 30% for laps									
38	& waste	GEO BIDM A44	m ²	2,600.000	1.600			4,160		4,160
	EE formula - =(#LQ37/20) hr Allowed to place 20tonne per									
39	hr	E35	hr	162.000	146.790	9,906	948	12,926		23,780
40	EE formula - =(#LQ39*2) hr Allowed 2No men	LAB CIVIL	hr	324.000	55.510	17,985				17,985
41	EE formula - =(5000) Allowance	MISC MAT	Item	5,000.000	1.000			5,000		5,000
42	EE formula - =(#LQ39*0.5) hr Allowed 50%	TK WCART 15KLT	hr	81.000	122.463	4,953	128	4,839		9,919
43	EE formula - =st(36:42,2000) m2									
44										
45	Estimated Duration									
	EE formula - =(#LQ31+(50/5)+(#LQ39/10)) Days Allowed 5m									
46	perdays for RCBC			37.974						

Line No 69	Secondary drainage structure - Property underpass		each	3.000	Contributing					
Item No 10790										
1	10790 - Secondary drainage structure - Cattle crossing									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Refer to file Quantities .xlsx for details of quantities									
6	NOTE: Adopt allowance from Aecom - "Allow for property underpass RCBC 4.6h x 4.6w" Required at chg 8400, 9475 & 17500									
7										
8	EE formula - =(3) each Number of structures			3.000						
9	EE formula - =(30*#LQ8) m Length			90.000						
10	EE formula - =(6) m Depth of excavation			6.000						
11	EE formula - =(67.2*#LQ8) m3 of excavation			201.600						
12	EE formula - =(4.6*4.6*#LQ8) m3/m Culvert volume			63.480						
13	EE formula - =(#LQ11-#LQ12) m3/m Backfill volume			138.120						
14	EE formula - =(16.3) m3 Approx volume of concrete to end structures			16.300						
15										
16	A, Excavation									
17	EE formula - =(30) m3/hr Productivity OTR			30.000						
18	EE formula - =(5) m3/hr Productivity ROCK			5.000						
19	EE formula - =(#LQ11*0.5/#LQ17) hr Allowed 50% OTR	E30	hr	3.360	150.000		504		504	
20	EE formula - =(#LQ11*0.5/#LQ18) hr Allowed 50% ROCK	E30	hr	20.160	150.000		3,024		3,024	
21	EE formula - =(#LQ11*0.5/#LQ18) hr Allowed 50% ROCK	E30 HAMMER	hr	20.160	35.000		706		706	
22	EE formula - =(#LQ19+#LQ20) hr Spotter	LAB CIVIL	hr	23.520	55.510	1,306			1,306	
23	EE formula - =(#LQ20*0.5) hr Allowance dust control	TK WCART 15KLT	hr	10.080	122.463	616	16	602	1,234	
24	EE formula - =st(17:23,#LQ11) m3				33.599	1,922	16	4,836	6,774	
25										
26	B. Backfill									
27	EE formula - =(#LQ13*0.5) m3 Allowed 50% handplaced	EWKS BF HPLACE	m³	69.060	45.640	1,947	10	1,147	48	3,152
28	EE formula - =(#LQ13*0.5) m3 Allowed 50% Machine placed	EWKS BF MACHINE10	m³	69.060	42.836	1,276	31	1,651		2,958
29	EE formula - =st(27:28,#LQ13) m3				44.238	3,223	41	2,798	48	6,110
30										
31	C. Supply & place culverts									
32	EE formula - =(#LQ9) m	DRA RCBC4600X4600	m	90.000	5,000.000			450,000		450,000
33										
34	D. Other									
35	EE formula - =(#LQ14*1500*2*#LQ8) each Allownce end wall structures	MISC MAT	Item	146,700.000	1.000		146,700			146,700
36										
37	Estimated Duration									
38	EE formula - =(20*#LQ8) Days Allowed 1month per structure			60.000						
					203,194.587	5,145	146,757	7,634	450,048	609,584

Line No 73	Remove existing Princess Hwy pavements									
Item No 10810		m2	74,100.000	Contributing						
1	10810 Removal of existing Princess Hwy pavements									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Refer to file Quantities .xlsx for details of quantities									
6	NOTE: Adopt allowance from Aecom - "Not economical to attempt to retain any existing pavement as new Princess Highway. Demolish all existing pavement where on line"									
7										
8	EE formula - =(#QTY) m2 Area existing pavement to remove		74,100.000							
9										
10	A. Remove temporary pavements									
11	EE formula - =(#LQ8) m2 Allow rip pavement 1000m2/hr	EWKS TYNE S/G	m ²	74,100.000	2.320	86,445	4,335	81,138	171,918	
12	EE formula - =(#LQ8/1000) hr Allowed match excavator to grader prod	E35	hr	74.100	146.790	4,531	433	5,912	10,877	
13	EE formula - =(#LQ12) hr Spotter	LAB CIVIL	hr	74.100	55.510	4,113			4,113	
14	EE formula - =(#LQ12*6) hr Allowed 6No trucks	TK TRUCK&DOG	hr	444.600	130.000			57,798	57,798	
15	EE formula - =(#LQ8*0.05*2.4) tonne Tip fees for asphalt, Allowed 50mm thk typical, 2.4tonne/m3	TIP INERT RECYCLE	tonne	8,892.000	30.000				266,760	
16	EE formula - =st(10:15,#LQ8) m2				6.902	95,090	4,768	144,849	266,760	
17										
18	Estimated Duration									
19	EE formula - =roundup(#LQ8/1000m2/10) Days Allowed 1000m2 per hr			8.000						
					6.902	95,090	4,768	144,849	266,760	511,467

Line No 74	Stabilised base layer 275mm								
Item No 10820		m3	66,705.850	Contributing					
1	10820 Stabilised base layer - 275mm thk								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801								
4	Site visit photo: Nil								
5	NOTE: Refer to file Quantities .xlsx for details of quantities								
6	NOTE: Assume quick lime used as stabilising agent, 30kg per tonne of base material (3% by mass)								
7	NOTE: Allow for insitu stabilisation using mobile plant. Allow 2No layers / passes of approx 150mm depth								
8									
9	EE formula - =(20400-7600) m Total corridor length		12,800.000						
10	EE formula - =(32+122+76+200+1188+22+50+22+22) m Length bridges & Viaduct		1,734.000						
11	EE formula - =(1.0+3.5+3.5+3.0)*2) m Base width		22.000						
12	EE formula - =(0.274) m Base depth		0.274						
13	EE formula - =(#LQ9-#LQ10)*#LQ11) m2 Base area		243,452.000						
14	EE formula - =(#LQ13*#LQ12) m3 Base volume		66,705.848						

15

16 A. Supply Base material - Import

EE formula - $=(\#LQ14*2.2*1.05)$ tonne Allowed

17	2.2tonne/m3, 5% waste	QAR DGB20	tonne	154,090.509	20.000	3,081,810	3,081,810
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18

19 B. Insitu stabilisation of base material

20	EE formula - $=(\#LQ13)$ m2	EWKS S/G250	m ²	243,452.000	0.822	54,056	146,071	200,127
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21	EE formula - $=(\#LQ13)$ m2 Emulsion seal	A PRIME	m ²	243,452.000	2.000		486,904	486,904
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EE formula - $=(7)$ each Allowed to establish stabilisation plant to site, Assume same number as required plant fleet

22	operations	EWKS STAB MOB	each	7.000	1,950.000		13,650	13,650
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EE formula - $=(\#LQ13*2)$ m2 Insitu stabilisation of Base

23	coarse material, 2No layers of 150mm thk	EWKS STAB MIX150	m ²	486,904.000	1.910		929,987	929,987
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EE formula - $=(\#LQ14*2.2*30/1000)$ tonne Allowed

24	2.2tonne/m3, 30Kg/tonne dosage	QUICK LIME	tonne	4,402.586	190.000	836,491		836,491
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EE formula - $=(\#LQ23/200)$ hr Allowed place & compact

25	200m2/hr	GRADER CAT14G	hr	2,434.520	176.499	148,871	14,242	266,576	429,689
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26	EE formula - $=(\#LQ25)$ hr	ROL SP56	hr	2,434.520	113.452	148,871	7,121	120,209	276,201
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27	EE formula - $=(\#LQ25)$ hr	ROL CA51	hr	2,434.520	111.270	148,871	7,121	114,896	270,888
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28	EE formula - $=(\#LQ25*2)$ hr Grade checkers / spotters	LAB CIVIL	hr	4,869.040	55.510	270,280			270,280
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29	EE formula - $=(\#LQ25)$ hr	TK WCART 15KLT	hr	2,434.520	122.463	148,871	3,834	145,432	298,137
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30	EE formula - $=st(19:29,\#LQ14)$ m3			60.150	919,820	868,810	793,185	1,430,541	4,012,355
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31	EE formula - $=st(19:29,\#LQ13)$ m2.			16.481	919,820	868,810	793,185	1,430,541	4,012,355
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32

33 Estimated Duration

34	EE formula - $=roundup(\#LQ25/10/7)$ Days			35.000					
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106.350	919,820	3,950,620	793,185	1,430,541	7,094,165
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Line No 75	Asphalt	Tonne	125,251.190	Contributing
Item No 10830				
1	10830 Asphalt			
2	Spec: Nil			
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801			
4	Site visit photo: Nil			
5	NOTE: Refer to file Quantities .xlsx for details of quantities			
	NOTE: Assume following pavement design 175mm thk base coarse (AC20) + 7mm bitumen seal + 30mm thk wearing course (SMA 10).			
6	NOTE: Allow also for variable thk correction courses (AC14),			
7	allowed 5% of area, 50mm avg.			
8				
9	EE formula - $=(20400-7600)$ m Total corridor length		12,800.000	
	EE formula - $=(32+122+76+200+1188+22+50+22+22)$ m			
10	Length bridges & Viaduct		1,734.000	
11	EE formula - $=(1.0+3.5+3.5+3.0)*2$ m Base width		22.000	
12	EE formula - $=(0.175)$ Dense grade thickness.		0.175	
13	EE formula - $=(0.030)$ m Wearing Course thk		0.030	
	EE formula - $=(\#LQ9-\#LQ10)*\#LQ11*\#LQ12)$ m3 Base			
14	volume		42,604.100	

15	EE formula - $=(\#LQ9-\#LQ10)*\#LQ11*\#LQ13)$ m3 Wearing Course volume			7,303.560			
16	17 A. One seal atop stabilised layer						
18	EE formula - $=(\#LQ9-\#LQ10)*\#LQ11)$ m2	A 7MMSEAL	m ²	243,452.000	1.800	438,214	438,214
19	20 B.Base supply & place						
21	EE formula - $=(\#LQ14*2.4*1.05)$ tonne Allowed 5% waste	A AC20 DG	tonne	107,362.332	160.000	17,177,973	17,177,973
22	23 C. Wearing Course supply & place						
24	EE formula - $=(\#LQ15*2.2*1.03)$ tonne Allowed 3% waste	A SMA10	tonne	16,549.867	250.000	4,137,467	4,137,467
25	26 D. Correction courses supply & place						
27	EE formula - $=(\#LQ9-\#LQ10)*\#LQ11*0.05*0.05*2.2)$ tonne	A DG IC 14/50MM	tonne	1,338.986	200.000	267,797	267,797
28	EE formula - $=(\#LQ21+\#LQ24+\#LQ27)$ tonne Total			125,251.185			
29	30 Estimated Duration						
31	EE formula - $=\text{roundup}(\#LQ28/1400)$ Days Allowed 1400tonne per day place			90.000			
						175.818	22,021,451
						22,021,451	

Line No 76	Cold Milling						
Item No 10840			m2	13,000.000		Contributing	
1	10840 Cold Milling						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities NOTE: Adopt allowance from Aecom - "Allow for existing highway south of Toolijooa Rd (within lane reconfiguration extent) and Tindalls Ln"						
6	7						
8	EE formula - $=(13000)$ m2 Allowance area			13,000.000			
9	10 EE formula - $=(2)$ each	A MOB/MILL	each	2.000	495.000	990	990
11	EE formula - $=(\#LQ8*0.05*2.2)$ tonne	A MILL ASPH50	tonne	1,430.000	35.000	50,050	50,050
12	13 Estimated Duration						
14	EE formula - $=(\#LQ11/300)$ Days Allowed 300tonne per night			4.767			
						3.926	51,040
						51,040	

Line No 77	Subgrade & Sub-pavement drainage						
Item No 10850			m	44,700.000		Contributing	

- 1 10850 Sugrade & subpavement drainage
- 2 Spec: Nil
- Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-
- 3 02-BR-0801
- 4 Site visit photo: Nil
- 5 NOTE: Refer to file Quantities .xlsx for details of quantities
- NOTE: Adopt allowance from Aecom - "Conservative allowance of inside and outside of both mainline
- 6 carriageways will provide allowance for interchange ramps"
- 7

8	EE formula - =(44700) m Allowed length subsoil drainage			44,700.000				
9	EE formula - =(#LQ8/50) each cleanout points, Allowed 50m cts			894.000				
10								
11	EE formula - =(#LQ8) m	RTA SUBSOIL	m	44,700.000	50.000		2,235,000	2,235,000
12	EE formula - =(#LQ9) each	RTA SUBSOIL CLEANOUT	each	894.000	100.000		89,400	89,400
13								
14	Estimated Duration							
15	EE formula - =(#LQ8/750) Days Allowed 750m per day			59.600				
							52.000	2,235,000
							89,400	2,324,400

Line No 81	Toolijooa Road Underbridge Chg 7680							
Item No 10910		m2		832.000			Contributing	

- 1 10910 Toolijooa Road Underbridge Chg 7680
- 2 Spec: Nil
- Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-
- 3 02-BR-0801
- 4 Site visit photo: Nil
- 5 NOTE: Single span simply supported bridge
- NOTE: Assume bored pile required 1:1 embedded vs
- 6 retained, end bearing on rock below NSL 3m rock socket
- NOTE: Assume piling equipment of pile rig, 50t crawler
- 7 crane, 20t rough terrain crane & bobcat
- NOTE: Allow 1No crane mobilisation to site per bridge span.
- Allow a further 50% mobilisation costs for move on site
- 8 between piers eg. 2No setups per span
- NOTE: Assume Girders 1.5m depth, Supporting Deck 0.3m
- 9 depth, Parapet Wall 0.8m high & Spans of 32m
- NOTE: Assumed currently that precast beams will be precast
- On Site. Risk exists for Off Site precast operation by
- 10 subcontractor
- 11

12	EE formula - =(20400-7600) m Total corridor length			12,800.000				
13	EE formula - =(32) m Length bridge deck			32.000				
14	EE formula - =(26.0) m Deck width			26.000				
15								
16	A. Piling							
17	EE formula - =(7*2*(6+6+3)) m Length of 900mm dia bored piles @ 15m/each			210.000				
	EE formula - =(32*10.0)+(1*26)) m2 Allowed for single							
18	side of bridge, width 10m	TEMPROAD	m ²	346.000	10.616	372	2,771	529
19	EE formula - =(2) each Allowed 15x15m	ACCESS PAD	each	2.000	30,000.000			60,000

20	EE formula - =(#LQ17) m EE formula - =(#LQ17*0.221) tonne Allowed 221kg/m for	PILE 900	m	210.000	900.000			189,000	189,000	
21	900mm dia pile	PILE CASING PERM	tonne	46.410	3,500.000		162,435		162,435	
22	EE formula - =st(16:21,#QTY) m2				498.928	372	165,206	529	249,000	415,108
23										
24	B. Substructure									
25	1. Abutments									
26	EE formula - =(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2)) *2) m3	CONC ABUTMENT	m ³	144.360	1,500.000				216,540	216,540
27	2. Diaphragms, end blocks									
28	EE formula - =(((25*1.5)-(13*1.276))*1*2) m3	CONC DIAPHRAGMS	m ³	41.824	3,300.000				138,019	138,019
29	3. Bearings									
30	EE formula - =(13*2) each	BRIDGE BEARING ELASTO	each	26.000	1,500.000		39,000			39,000
31	EE formula - =(#LQ30) each	BRIDGE BEARING ELASTO INS	each	26.000	3,771.249	13,618	83,460	975		98,052
32	EE formula - =st(24:31,#QTY) m2				590.879	13,618	122,460	975	354,559	491,612
33										
34	C. Deck beams									
35	1. Supply beams									
36	EE formula - =(#LQ13*12*0.581) m3 Allowed 1500mm depth Super Tee @ 0.581m3/m	BRIDGE PSC BEAMS	m ³	223.104	1,600.000		356,966			356,966
37	EE formula - =(#LQ36) m3 On site precast facility	BRIDGE OS BEAMS	m ³	223.104	1,520.000		339,118			339,118
38	2. Install beams									
39	EE formula - =(1*1.5) each	CR 200T MOB	each	1.500	15,000.000			22,500		22,500
40	EE formula - =(roundup(13/5))*10) hr Allowed to install 5No per day in 10hr	CR 200T	hr	30.000	625.000			18,750		18,750
41	EE formula - =(#LQ40*5) hr Allowed 5No men, 10hr per day	LAB RIGGER	hr	150.000	58.950	8,843				8,843
42	EE formula - =(20000) Allowance temporary materials	MISC MAT	Item	20,000.000	1.000		20,000			20,000
43	EE formula - =st(34:38,#QTY) m2				407.594		339,118			339,118
44										
45	D. Completion of superstructure									
46	1. Insitu deck									
47	EE formula - =(#LQ13*26*0.2) m3	CONC DECK	m ³	166.400	1,150.000				191,360	191,360
48	2. Central median barriers									
49	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m lengths	PC MEDIAN	each	11.000	10,500.000				115,500	115,500
50	3. Edge barriers									
51	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m lengths	PC PARAPETS	each	11.000	9,600.000				105,600	105,600
52	4. Railings									
53	EE formula - =(#LQ13*2) m	BRIDGE BARRIER	m	64.000	500.000		32,000			32,000
54	5. Expansion joints									
55	EE formula - =(26*2) m	EXPANSION JOINT	m	52.000	600.000				31,200	31,200
56	6. Approach slabs									
57	EE formula - =(2*26*0.3) m3	CONC RUN ON SLAB	m ³	15.600	1,265.000				19,734	19,734
58	7. SAMI seal									
59	EE formula - =(#LQ13*11.5*2) m2	A BRIDGE SAMI	m ²	736.000	10.000				7,360	7,360
60	8. Wearing coarse 75mm thk									
61	EE formula - =(#LQ13*11.5*0.075*2.4) tonne	A BRIDGE AC10 OG	tonne	66.240	220.000				14,573	14,573

62 9. Stone pitching to abutment embankments									
EE formula - $=(230*2*0.5*2.4*1.2)$ tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20% waste									
63	QAR STONE PITCHING	tonne	662.400	40.000		26,496			26,496
64	EE formula - $=(230*2)$ m2 STONE PITCHING EE formula - $=(230*2)/50/5$ m2wk Allowed 50m2 per day	m ²	460.000	100.000			46,000		46,000
65	SCAFFOLD	m2wk	1.840	15.000		28			28
66 10. End walls									
67	EE formula - $=(6*4*0.5)$ m3 CONC ABUTMENT	m ³	12.000	1,500.000			18,000		18,000
68 11. Backfill at abutments									
69	EE formula - $=(2*23*4*3*0.5)$ m3 EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193	12,597
70 12. Safety screens									
71	EE formula - $=(\#LQ13*2.0*2)$ m Allowed 2.0m height SAFETY MESH	m ²	128.000	250.000				32,000	32,000
72 13. Deck stormwater drainage - Both sides									
73	EE formula - $=(\#LQ13*2)$ m Allowed 375mm UPVC BRIDGE DRAIN 375	m	64.000	350.000				22,400	22,400
74	EE formula - $=(2*5000)$ Allowance connections MISC CON	Item	10,000.000	1.000				10,000	10,000
75	EE formula - $=st(45:74,\#QTY)$ m2			823.133	7,781	58,563	4,583	613,920	684,847
76									
77 Estimated Duration									
78	EE formula - $=(3*20)$ Days Allowed 3months per span		60.000						
					2,404,780 30,613 705,347 47,337 1,217,479 2,000,777				

Line No 82	Broughton's Creek Underbridge No1 Chg 9950								
Item No 10920a		m2	3,172.000	Contributing					
1 10920a - Broughton's Creek Underbridge No1 Chg 9950									
2 Spec: Nil									
3 Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-02-BR-0801									
4 Site visit photo: Nil									
5 NOTE: Four span simply supported bridge with separate carriageways									
6 NOTE: Assume bored pile required 1:1 embedded vs retained, end bearing on rock below NSL 3m rock socket									
7 NOTE: Assume piling equipment of pile rig, 50t crawler crane, 20t rough terrain crane & bobcat									
8 NOTE: Allow 1No crane mobilisation to site per bridge span. Allow a further 50% mobilisation costs for move on site									
9 between piers eg. 2No setups per span									
10 NOTE: Assume Girders 1.5m depth, Supporting Deck 0.3m depth, Parapet Wall 0.8m high & Spans of 32m									
11 NOTE: Assumed currently that precast beams will be precast On Site. Risk exists for Off Site precast operation by subcontractor									
12 EE formula - $=(20400-7600)$ m Total corridor length									
			12,800.000						
			122.000						
			26.000						
15									
16 A. Piling									
17 EE formula - $=(7*2*(6+6+3))$ m Length of 900mm dia bored piles @ 15m/each									
			210.000						

EE formula - $=(3*(6+3)*2)$ m Length of 1200mm dia bored 18 piles @ 6m/each			54.000							
EE formula - $=(122*10.0)+(3*26)$ m2 Allowed for single 19 side of bridge, width 10m	TEMPROAD	m ²	1,298.000	10.616	1,397	10,397	1,985			13,779
EE formula - $=(4*2)$ each Allowed 15x15m	ACCESS PAD	each	8.000	30,000.000					240,000	240,000
EE formula - $=(\#LQ17)$ m	PILE 900	m	210.000	900.000					189,000	189,000
EE formula - $=(\#LQ18)$ m	PILE 1200	m	54.000	1,200.000					64,800	64,800
EE formula - $=(\#LQ21*0.221)+(\#LQ22*0.295)$ tonne Allowed 221kg/m for 900mm dia and 295kg/m for 23 1200mm dia piles respectively	PILE CASING PERM	tonne	62.340	3,500.000			218,190			218,190
EE formula - $=st(16:23,\#QTY)$ m2				228.805	1,397	228,587	1,985	493,800		725,769
25										
26 B. Substructure										
27 1. Abutments										
EE formula - $(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2))$ 28 $*2)$ m3	CONC ABUTMENT	m ³	144.360	1,500.000				216,540		216,540
29 2. Pile caps - Amended design N/A										
EE formula - $=(6*(5*5*1.5))$ m3 Detailed excavation	EWKS DETAILED	m ³	225.000	46.504	5,353		5,111			10,463
EE formula - $=(6*(3.5*3.5*1.5))$ m3	CONC PILE CAP	m ³	110.250	1,500.000				165,375		165,375
EE formula - $=(\#LQ30-\#LQ31)$ m3	EWKS BF MACHINE10	m ³	114.750	42.836	2,120	52	2,744			4,915
33 3. Piers, 3No 1200mm dia										
EE formula - $=(6*(3*1.130*4.5))$ m3 Allowed 3No @ 34 1.130m3/m, typically 4.5m height	CONC PIERS	m ³	91.530	1,750.000				160,178		160,178
35 4. Headstocks										
EE formula - $=(6*(17.25*1.5))$ m3	CONC HEADSTOCKS	m ³	155.250	2,500.000				388,125		388,125
37 5. Diaphragms, end blocks										
EE formula - $(((13*1.5)-(6*1.276))*1*5*2)$ m3	CONC DIAPHRAGMS	m ³	118.440	3,300.000				390,852		390,852
39 6. Bearings										
EE formula - $=(48*2)$ each	BRIDGE BEARING ELASTO	each	96.000	1,500.000			144,000			144,000
EE formula - $=(\#LQ40)$ each	BRIDGE BEARING ELASTO INS	each	96.000	3,771.249	50,280	308,160	3,600			362,040
EE formula - $=st(26:39,\#QTY)$ m2				364.343				1,155,695		1,155,695
43										
44 C. Deck beams										
45 1. Supply beams										
EE formula - $=(\#LQ13*12*0.581)$ m3 Allowed 1500mm 46 depth Super Tee @ 0.581m3/m	BRIDGE PSC BEAMS	m ³	850.584	1,600.000			1,360,934			1,360,934
EE formula - $=(\#LQ46)$ m3 Onsite precast facility	BRIDGE OS BEAMS	m ³	850.584	1,520.000			1,292,888			1,292,888
48 2. Install beams										
EE formula - $=(48*1.5)$ each	CR 400T MOB	each	72.000	21,000.000			1,512,000			1,512,000
EE formula - $=(\text{roundup}(48/5)*10)$ hr Allowed to install 50 5No per day in 10hr	CR 400T	hr	100.000	1,100.000			110,000			110,000
EE formula - $=(\#LQ50*5)$ hr Allowed 5No men, 10hr per 51 day	LAB RIGGER	hr	500.000	58.950	29,475					29,475
EE formula - $=(15000)$ Allowance temporary materials	MISC MAT	Item	15,000.000	1.000			15,000			15,000
EE formula - $=st(44:48,\#QTY)$ m2				407.594			1,292,888			1,292,888
54										
55 D. Completion of superstructure										
56 1. Insitu deck										
EE formula - $=(\#LQ13*26*0.2)$ m3	CONC DECK	m ³	634.400	1,150.000				729,560		729,560
58 2. Central median barriers										

59	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m lengths 3. Edge barriers	PC MEDIAN	each	41.000	10,500.000			430,500	430,500			
61	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m lengths 4. Railings	PC PARAPETS	each	41.000	9,600.000			393,600	393,600			
63	EE formula - =(#LQ13*2) m 5. Expansion joints	BRIDGE BARRIER	m	244.000	500.000		122,000		122,000			
65	EE formula - =(13*2*2) m 6. Approach slabs	EXPANSION JOINT	m	52.000	600.000			31,200	31,200			
67	EE formula - =(4*13*0.3)*2) m3 7. SAMI seal	CONC RUN ON SLAB	m ³	31.200	1,265.000			39,468	39,468			
69	EE formula - =(#LQ13*11.5*2) m2 8. Wearing coarse 75mm thk	A BRIDGE SAMI	m ²	2,806.000	10.000			28,060	28,060			
71	EE formula - =(#LQ13*11.5*0.075*2.4) tonne 9. Stone pitching to abutment embankments	A BRIDGE AC10 OG	tonne	252.540	220.000			55,559	55,559			
73	EE formula - =(485+345)*0.5*2.4*1.2) tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20% waste	QAR STONE PITCHING	tonne	1,195.200	40.000		47,808		47,808			
74	EE formula - =(485+345) m2	STONE PITCHING	m ²	830.000	100.000			83,000	83,000			
75	EE formula - =(485+345)/50/5) m2wk Allowed 50m2 per day	SCAFFOLD	m2wk	3.320	15.000		50		50			
77	EE formula - =(6*4*0.5) m3 11. Backfill at abutments	CONC ABUTMENT	m ³	12.000	1,500.000			18,000	18,000			
79	EE formula - =(2*23*4*3*0.5) m3 12. Deck stormwater drainage - Both sides	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193	12,597		
81	EE formula - =(#LQ13*2) m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	244.000	350.000			85,400	85,400			
82	EE formula - =(2+1)*5000) Allowance connections	MISC CON	Item	15,000.000	1.000			15,000	15,000			
83	EE formula - =st(55:82,#QTY) m2				659.458	7,781	169,897	4,583	1,909,540	2,091,801		
85	Estimated Duration											
86	EE formula - =(35*4) Days Allowed 35days per span, Assume single crew				140.000							
							2,345.103	88,933	2,158,532	1,632,168	3,559,035	7,438,667

Line No 83	Broughton's Creek Underbridge No2 Chg 10700									
Item No 10920b		m2		1,976.000		Contributing				
1	10920b - Broughton's Creek Underbridge No2 Chg 10700									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Three span simply supported bridge with separate carriageways									
6	NOTE: Assume bored pile required 1:1 embedded vs retained, end bearing on rock below NSL 3m rock socket									
7	NOTE: Assume piling equipment of pile rig, 50t crawler crane, 20t rough terrain crane & bobcat									

NOTE: Allow 1No crane mobilisation to site per bridge span.
 Allow a further 50% mobilisation costs for move on site
 8 between piers eg. 2No setups per span
 NOTE: Assume Girders 1.5m depth, Supporting Deck 0.3m
 9 depth, Parapet Wall 0.8m high & Spans of 32m
 NOTE: Assumed currently that precast beams will be precast
 On Site. Risk exists for Off Site precast operation by
 10 subcontractor
 11

12	EE formula - =(20400-7600) m Total corridor length			12,800.000					
13	EE formula - =(76) m Length bridge			76.000					
14	EE formula - =(26.0) m Deck width			26.000					

15

16 A. Piling

17	EE formula - =(7*2*(6+6+3)) m Length of 900mm dia bored piles @ 15m/each			210.000						
18	EE formula - =(2*(6+3)*2) m Length of 1200mm dia bored piles @ 6m/each			36.000						
19	EE formula - =((76*5.0)+(3*26)) m2 Allowed for single side of bridge, width 5m	TEMPROAD	m ²	458.000	10.616	493	3,669	701	4,862	
20	EE formula - =(3*2) each Allowed 15x15m	ACCESS PAD	each	6.000	30,000.000			180,000	180,000	
21	EE formula - =(#LQ17) m	PILE 900	m	210.000	900.000			189,000	189,000	
22	EE formula - =(#LQ18) m	PILE 1200	m	36.000	1,200.000			43,200	43,200	
23	EE formula - =((#LQ21*0.221)+(#LQ22*0.295)) tonne Allowed 221kg/m for 900mm dia and 295kg/m for 1200mm dia piles respectively	PILE CASING PERM	tonne	57.030	3,500.000		199,605		199,605	
24	EE formula - =st(16:23,#QTY) m2				312.078	493	203,274	701	412,200	616,667

25

26 B. Substructure

27 1. Abutments

28	EE formula - =(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2)) *2) m3	CONC ABUTMENT	m ³	144.360	1,500.000				216,540	216,540
29	2. Pile caps - Amended design N/A									
30	EE formula - =(4*(5*5*1.5)) m3 Detailed excavation	EWKS DETAILED	m ³	150.000	46.504	3,568		3,407		6,976
31	EE formula - =(4*(3.5*3.5*1.5)) m3	CONC PILE CAP	m ³	73.500	1,500.000				110,250	110,250
32	EE formula - =(#LQ30-#LQ31) m3	EWKS BF MACHINE10	m ³	76.500	42.836	1,413	34	1,829		3,277
33	3. Piers, 3No 1200mm dia									
34	EE formula - =(4*(3*1.130*4.5)) m3 Allowed 3No @ 1.130m3/m, typically 4.5m height	CONC PIERS	m ³	61.020	1,750.000				106,785	106,785
35	4. Headstocks									
36	EE formula - =(4*(17.25*1.5)) m3	CONC HEADSTOCKS	m ³	103.500	2,500.000				258,750	258,750
37	5. Diaphragms, end blocks									
38	EE formula - =(((13*1.5)-(6*1.276))*1*4*2) m3	CONC DIAPHRAGMS	m ³	94.752	3,300.000				312,682	312,682
39	6. Bearings									
40	EE formula - =(36*2) each	BRIDGE BEARING ELASTO	each	72.000	1,500.000		108,000			108,000
41	EE formula - =(#LQ40) each	BRIDGE BEARING ELASTO INS	each	72.000	3,771.249	37,710	231,120	2,700		271,530
42	EE formula - =st(26:39,#QTY) m2				452.812				894,757	894,757

43

44 C. Deck beams

45 1. Supply beams

46	EE formula - $=(\#LQ13*12*0.581)$ m3 Allowed 1500mm depth Super Tee @ 0.581m3/m	BRIDGE PSC BEAMS	m ³	529.872	1,600.000		847,795		847,795
47	EE formula - $=(\#LQ46)$ m3 Onsite precast facility	BRIDGE OS BEAMS	m ³	529.872	1,520.000		805,405		805,405
48	2. Install beams								
49	EE formula - $=(36*1.5)$ each	CR 400T MOB	each	54.000	21,000.000		1,134,000		1,134,000
50	EE formula - $=(\text{roundup}(36/5)*10)$ hr Allowed to install 5No per day in 10hr	CR 400T	hr	80.000	1,100.000		88,000		88,000
51	EE formula - $=(\#LQ50*5)$ hr Allowed 5No men, 10hr per day	LAB RIGGER	hr	400.000	58.950	23,580			23,580
52	EE formula - $=(10000)$ Allowance temporary materials	MISC MAT	Item	10,000.000	1.000		10,000		10,000
53	EE formula - $=\text{st}(44:48,\#QTY)$ m2				407.594		805,405		805,405
54									
55	D. Completion of superstructure								
56	1. Insitu deck								
57	EE formula - $=(\#LQ13*26*0.2)$ m3	CONC DECK	m ³	395.200	1,150.000		454,480		454,480
58	2. Central median barriers								
59	EE formula - $=\text{roundup}(\#LQ13*2/6)$ m Supplied in 6m lengths	PC MEDIAN	each	26.000	10,500.000		273,000		273,000
60	3. Edge barriers								
61	EE formula - $=\text{roundup}(\#LQ13*2/6)$ m Supplied in 6m lengths	PC PARAPETS	each	26.000	9,600.000		249,600		249,600
62	4. Railings								
63	EE formula - $=(\#LQ13*2)$ m	BRIDGE BARRIER	m	152.000	500.000		76,000		76,000
64	5. Expansion joints								
65	EE formula - $=(13*2*2)$ m	EXPANSION JOINT	m	52.000	600.000		31,200		31,200
66	6. Approach slabs								
67	EE formula - $=(4*13*0.3*2)$ m3	CONC RUN ON SLAB	m ³	31.200	1,265.000		39,468		39,468
68	7. SAMI seal								
69	EE formula - $=(\#LQ13*11.5*2)$ m2	A BRIDGE SAMI	m ²	1,748.000	10.000		17,480		17,480
70	8. Wearing coarse 75mm thk								
71	EE formula - $=(\#LQ13*11.5*0.075*2.4)$ tonne	A BRIDGE AC10 OG	tonne	157.320	220.000		34,610		34,610
72	9. Stone pitching to abutment embankments								
73	EE formula - $=(\text{roundup}((345+205)*0.5*2.4*1.2))$ tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20% waste	QAR STONE PITCHING	tonne	792.000	40.000		31,680		31,680
74	EE formula - $=(345+205)$ m2	STONE PITCHING	m ²	550.000	100.000		55,000		55,000
75	EE formula - $=(\text{roundup}((345+205)/50/5))$ m2wk Allowed 50m2 per day	SCAFFOLD	m2wk	2.200	15.000		33		33
76	10. End walls								
77	EE formula - $=(6*4*0.5)$ m3	CONC ABUTMENT	m ³	12.000	1,500.000		18,000		18,000
78	11. Backfill at abutments								
79	EE formula - $=(2*23*4*3*0.5)$ m3	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193
80	12. Deck stormwater drainage - Both sides								
81	EE formula - $=(\#LQ13*2)$ m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	152.000	350.000		53,200		53,200
82	EE formula - $=(1+2)*5000$ Allowance connections	MISC SCON	Item	15,000.000	1.000		15,000		15,000
83	EE formula - $=\text{st}(55:82,\#QTY)$ m2				688.941	7,781	107,752	4,583	1,241,232
84									
85	Estimated Duration								
86	EE formula - $=(35*3)$ Days Allowed 35days per span, Assume single crew			105.000					

2,688,910 69,564 1,465,551 1,229,983 2,548,188 5,313,287

Line No 84	Broughton's Creek Underbridge No3 Chg 11200								
Item No 10920c		m2	5,200.000	Contributing					
1	10920c - Broughton's Creek Underbridge No3 Chg 11200								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-02-BR-0801								
4	Site visit photo: Nil								
5	NOTE: Six span simply supported bridge with separate carriageways								
6	NOTE: Assume bored pile required 1:1 embedded vs retained, end bearing on rock below NSL 3m rock socket								
7	NOTE: Assume piling equipment of pile rig, 50t crawler crane, 20t rough terrain crane & bobcat								
8	NOTE: Allow 1No crane mobilisation to site per bridge span. Allow a further 50% mobilisation costs for move on site between piers eg. 2No setups per span								
9	NOTE: Assume Girders 1.5m depth, Supporting Deck 0.3m depth, Parapet Wall 0.8m high & Spans of 32m								
10	NOTE: Assumed currently that precast beams will be precast On Site. Risk exists for Off Site precast operation by subcontractor								
11									
12	EE formula - =(20400-7600) m Total corridor length		12,800.000						
13	EE formula - =(200) m Length bridge		200.000						
14	EE formula - =(26.0) m Deck width		26.000						
15									
16	A. Piling								
17	EE formula - =(7*2*(6+6+3)) m Length of 900mm dia bored piles @ 15m/each		210.000						
18	EE formula - =(10*(6+3)*2) m Length of 1200mm dia bored piles @ 6m/each		180.000						
19	EE formula - =((220*10.0)+(6*26)) m2 Allowed for single side of bridge, width 10m	TEMPROAD	m ²	2,356.000	10.616	2,535	18,871	3,604	25,010
20	EE formula - =(6*2) each Allowed 15x15m	ACCESS PAD	each	12.000	30,000.000				
21	EE formula - =(#LQ17) m	PILE 900	m	210.000	900.000				
22	EE formula - =(#LQ18) m	PILE 1200	m	180.000	1,200.000				
23	EE formula - =((#LQ21*0.221)+(#LQ22*0.295)) tonne Allowed 221kg/m for 900mm dia and 295kg/m for 1200mm dia piles respectively	PILE CASING PERM	tonne	99.510	3,500.000	348,285		348,285	
24	EE formula - =st(16:23,#QTY) m2			218.903	2,535	367,156	3,604	765,000	1,138,295
25									
26	B. Substructure								
27	1. Abutments								
28	EE formula - =(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2)) *2) m3	CONC ABUTMENT	m ³	144.360	1,500.000				
29	2. Pile caps - Amended design N/A								
30	EE formula - =(10*(5*5*1.5)) m3 Detailed excavation	EWKS DETAILED	m ³	375.000	46.504	8,921	8,518		17,439
31	EE formula - =(10*(3.5*3.5*1.5)) m3	CONC PILE CAP	m ³	183.750	1,500.000				
32	EE formula - =(#LQ30-#LQ31) m3	EWKS BF MACHINE10	m ³	191.250	42.836	3,533	86	4,573	8,192

33 3. Piers, 3No 1200mm dia									
EE formula - $=(10*(3*1.130*4.5))$ m3 Allowed 3No @									
34	1.130m3/m, typically 4.5m height	CONC PIERS	m ³	152.550	1,750.000			266,963	266,963
35 4. Headstocks									
36	EE formula - $=(10*(17.25*1.5))$ m3	CONC HEADSTOCKS	m ³	258.750	2,500.000			646,875	646,875
37 5. Diaphragms, end blocks									
38	EE formula - $(((13*1.5)-(6*1.276))*1*7*2)$ m3	CONC DIAPHRAGMS	m ³	165.816	3,300.000			547,193	547,193
39 6. Bearings									
40	EE formula - $=(72*2)$ each	BRIDGE BEARING ELASTO	each	144.000	1,500.000		216,000		216,000
41	EE formula - $=(#LQ40)$ each	BRIDGE BEARING ELASTO INS	each	144.000	3,771.249	75,420	462,240	5,399	543,060
42	EE formula - $=st(26:39,#QTY)$ m2				322.610			1,677,570	1,677,570
43									
44 C. Deck beams									
45 1. Supply beams									
EE formula - $=(#LQ13*12*0.581)$ m3 Allowed 1500mm									
46	depth Super Tee @ 0.581m3/m	BRIDGE PSC BEAMS	m ³	1,394.400	1,600.000		2,231,040		2,231,040
47	EE formula - $=(#LQ46)$ m3 Onsite precast facility	BRIDGE OS BEAMS	m ³	1,394.400	1,520.000		2,119,488		2,119,488
48 2. Install beams									
49	EE formula - $=(72*1.5)$ each	CR 400T MOB	each	108.000	21,000.000			2,268,000	2,268,000
EE formula - $=(roundup(72/5)*10)$ hr Allowed to install									
50	5No per day in 10hr	CR 400T	hr	150.000	1,100.000			165,000	165,000
EE formula - $=(#LQ50*5)$ hr Allowed 5No men, 10hr per									
51	day	LAB RIGGER	hr	750.000	58.950	44,213			44,213
52	EE formula - $=(20000)$ Allowance temporary materials	MISC MAT	Item	20,000.000	1.000		20,000		20,000
53	EE formula - $=st(44:48,#QTY)$ m2				407.594		2,119,488		2,119,488
54									
55 D. Completion of superstructure									
56 1. Insitu deck									
57	EE formula - $=(#LQ13*26*0.2)$ m3	CONC DECK	m ³	1,040.000	1,150.000			1,196,000	1,196,000
58 2. Central median barriers									
EE formula - $=roundup(#LQ13*2/6)$ m Supplied in 6m									
59	lengths	PC MEDIAN	each	67.000	10,500.000			703,500	703,500
60 3. Edge barriers									
EE formula - $=roundup(#LQ13*2/6)$ m Supplied in 6m									
61	lengths	PC PARAPETS	each	67.000	9,600.000			643,200	643,200
62 4. Railings									
63	EE formula - $=(#LQ13*2)$ m	BRIDGE BARRIER	m	400.000	500.000		200,000		200,000
64 5. Expansion joints									
65	EE formula - $=(13*2*2)$ m	EXPANSION JOINT	m	52.000	600.000			31,200	31,200
66 6. Approach slabs									
67	EE formula - $=(4*13*0.3*2)$ m3	CONC RUN ON SLAB	m ³	31.200	1,265.000			39,468	39,468
68 7. SAMI seal									
69	EE formula - $=(#LQ13*11.5*2)$ m2	A BRIDGE SAMI	m ²	4,600.000	10.000			46,000	46,000
70 8. Wearing coarse 75mm thk									
71	EE formula - $=(#LQ13*11.5*0.075*2.4)$ tonne	A BRIDGE AC10 OG	tonne	414.000	220.000			91,080	91,080
72 9. Stone pitching to abutment embankments									
EE formula - $=(345+205)*0.5*2.4*1.2)$ tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20%									
73	waste	QAR STONE PITCHING	tonne	792.000	40.000		31,680		31,680
74	EE formula - $=(345+205)$ m2	STONE PITCHING	m ²	550.000	100.000			55,000	55,000

75	EE formula - $=(345+205)/50/5$ m2wk Allowed 50m2 per day	SCAFFOLD	m2wk	2.200	15.000		33			33
76	10. End walls									
77	EE formula - $=(6*4*0.5)$ m3	CONC ABUTMENT	m ³	12.000	1,500.000				18,000	18,000
78	11. Backfill at abutments									
79	EE formula - $=(2*23*4*3*0.5)$ m3	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193	12,597
80	12. Deck stormwater drainage - Both sides									
81	EE formula - $=(\#LQ13*2)$ m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	400.000	350.000				140,000	140,000
82	EE formula - $=(2+2)*5000$ Allowance connections	MISC CON	Item	20,000.000	1.000				20,000	20,000
83	EE formula - $=st(55:82,\#QTY)$ m2				620.723	7,781	231,752	4,583	2,983,641	3,227,758
84										
85	Estimated Duration									
86	EE formula - $=(35*6)$ Days Allowed 35days per span, Assume single crew			210.000						
				2,196,035 129,949 3,416,637 2,446,586 5,426,212 11,419,383						

Line No 85	Austral Park Road Overbridge Chg 11500										
Item No 10930			m2	562.000			Contributing				
1	10930 - Austral Park Road Overbridge Chg 11500										
2	Spec: Nil										
3	Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-02-BR-0801										
4	Site visit photo: Nil										
5	NOTE: Single span curved bridge, cast insitu box girder										
	NOTE: Assume bored pile required 1:1 embedded vs										
6	retained, end bearing on rock below NSL 3m rock socket										
	NOTE: Assume piling equipment of pile rig, 50t crawler										
7	crane, 20t rough terrain crane & bobcat										
	NOTE: Allow 1No crane mobilisation to site per bridge span.										
	Allow a further 50% mobilisation costs for move on site										
8	between piers eg. 2No setups per span										
	NOTE: Assume Girders 1.5m depth, Supporting Deck 0.3m depth, Parapet Wall 0.8m high & Spans of 56m cast insitu										
9	span										
10											
11	EE formula - $=(20400-7600)$ m Total corridor length			12,800.000							
12	EE formula - $=(56.2)$ m Length bridge deck			56.200							
13	EE formula - $=(10.0)$ m Deck width			10.000							
14											
15	A. Piling										
16	EE formula - $=(5*2*(6+6+3))$ m Length of 900mm dia bored piles @ 15m/each			150.000							
	EE formula - $=(2*100*10)$ m2 Allowed for 100m road										
17	either side of bridge, width 10m		TEMPROAD	m ²	2,000.000	10.616	2,152	16,020	3,059	21,231	
18	EE formula - $=(2)$ each Allowed 15x15m			ACCESS PAD	each	2.000	30,000.000		60,000	60,000	
19	EE formula - $=(\#LQ16)$ m			PILE 900	m	150.000	900.000		135,000	135,000	
	EE formula - $=(\#LQ19*0.221)$ tonne Allowed 221kg/m for										
20	900mm dia pile			PILE CASING PERM	tonne	33.150	3,500.000		116,025	116,025	
21	EE formula - $=st(15:20,\#QTY)$ m2					591.203	2,152	132,045	3,059	195,000	
22											
23	B. Substructure										

24 1. Abutments									
EE formula - (((10*1.5*1.8)+(10*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2))									
25	*2) m3	CONC ABUTMENT	m ³	83.160	1,500.000			124,740	124,740
26 2. Diaphragms, end blocks									
27	EE formula - (((10*2.5)-(15.75))*1*2) m3	CONC DIAPHRAGMS	m ³	18.500	3,300.000			61,050	61,050
28 3. Bearings									
29	EE formula - =(2*2) each	BRIDGE BEARING ELASTO	each	4.000	1,500.000		6,000		6,000
30	EE formula - =(#LQ29) each	BRIDGE BEARING ELASTO INS	each	4.000	3,771.249	2,095	12,840	150	15,085
31	EE formula - =st(23:30,#QTY) m2				368.105	2,095	18,840	150	185,790
32									
33 C. Deck structure - Cast insitu									
EE formula - =(10.50*#LQ12) m2 Internal formwork									
34	Allowed 10.50m2/m	FW SOFFIT	m ²	590.100	152.828	69,182	14,659	6,343	90,184
EE formula - =(13.50*#LQ12) m2 External formwork									
35	Allowed 13.50m2/m	FW SOFFIT	m ²	758.700	152.828	88,948	18,847	8,155	115,951
EE formula - =%(34:35,50) Allowance labour to assemble / 36 disassemble soffit forms 50%									
						79,065			79,065
EE formula - =(11.25*#LQ12)/10) m3 Concrete placed									
37	Allowed 10m3/hr @ 11.25m3/m	CONC CREWS	hr	63.225	304.755	18,043		1,225	19,268
38	EE formula - =(11.25*#LQ12) m3 Concrete pumped	CONC PUMPED 10M3	m ³	632.250	57.174	11,024		18,802	6,323
EE formula - =(#LQ38*1.05) m3 Concrete supplied Allowed									
39	5% waste	CONC 40MPA-B2	m ³	663.863	205.000		136,092		136,092
EE formula - =(#LQ38*150/1000) tonne Reinforcing @ 40 200kg/m3									
		REBAR	tonne	94.838	2,612.964	4,383	184,174	2,347	56,903
EE formula - =(#LQ38*30/1000) tonne Internal prestressing 41 @ 30kg/m3									
		POST TENSIONING	tonne	18.968	10,000.000				189,675
42	EE formula - =(#LQ12*10) m2 Cure	CONC CURE	m ²	562.000	2.482	1,040	280	75	1,395
43	EE formula - =(#LQ42) m2 Finish	CONC FINISH	m ²	562.000	7.970	4,461		18	4,479
EE formula - =(1.5*#LQ12*1*4.33) m2wk Allowed 1.5m width, length of bridge, 1months duration @ 1No side only									
44		SCAFFOLD	m2wk	365.019	15.000		5,475		5,475
EE formula - =(#LQ12*10*5*1*4.33) m3wk Allowed length 45 of bridge, 10m width, 5m high, 1months									
		FALSEWORK	m3wk	12,167.300	75.000		912,547		912,547
EE formula - =(2*7*1*4.33) 1mwk Allowed 2No towers, 7m 46 high, 1months									
		ACCESSSTAIR	lm/wk	60.620	48.000		2,910		2,910
47	EE formula - =st(33:46,#QTY) m2				3,275.794	276,146	1,274,985	36,965	252,900
48									
49 D. Completion of superstructure									
50 1. Edge barriers									
EE formula - =roundup(#LQ12*2/6) m Supplied in 6m									
51	lengths	PC PARAPETS	each	19.000	9,600.000			182,400	182,400
52 2. Railings									
53	EE formula - =(#LQ12*2) m	BRIDGE BARRIER	m	112.400	500.000		56,200		56,200
54 3. Expansion joints									
55	EE formula - =(10*2) m	EXPANSION JOINT	m	20.000	600.000			12,000	12,000
56 4. Approach slabs									
57	EE formula - =(2*10*0.3) m3	CONC RUN ON SLAB	m ³	6.000	1,265.000			7,590	7,590
58 5. SAMI seal									
59	EE formula - =(#LQ12*10) m2	A BRIDGE SAMI	m ²	562.000	10.000			5,620	5,620

EE formula - $=(3*(6+3)*2)$ m Length of 1200mm dia bored 18 piles @ 6m/each			54.000						
EE formula - $=(2*100*10)$ m2 Allowed for 100m road									
19 either side of bridge, width 10m	TEMPROAD	m ²	2,000.000	10.616	2,152	16,020	3,059		21,231
20 EE formula - $=(2)$ each Allowed 15x15m	ACCESS PAD	each	2.000	30,000.000				60,000	60,000
21 EE formula - $=(\#LQ17)$ m	PILE 900	m	210.000	900.000				189,000	189,000
22 EE formula - $=(\#LQ18)$ m	PILE 1200	m	54.000	1,200.000				64,800	64,800
EE formula - $=(\#LQ21*0.221)+(\#LQ22*0.295)$ tonne Allowed 221kg/m for 900mm dia and 295kg/m for									
23 1200mm dia piles respectively	PILE CASING PERM	tonne	62.340	3,500.000		218,190			218,190
24 EE formula - $=st(16:23,\#QTY)$ m2				714.756	2,152	234,210	3,059	313,800	553,221
25									
26 B. Substructure									
27 1. Abutments									
EE formula - $(((13*1.5*1.5)+(13*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2))$ 28 *2) m3	CONC ABUTMENT	m ³	90.360	1,500.000				135,540	135,540
29 2. Pile caps - Amended design N/A									
30 EE formula - $=(2*(5*14.5*1.5))$ m3 Detailed excavation	EWKS DETAILED	m ³	217.500	46.504	5,174		4,940		10,115
31 EE formula - $=(2*(3.5*13.0*1.5))$ m3	CONC PILE CAP	m ³	136.500	1,500.000				204,750	204,750
32 EE formula - $=(\#LQ30-\#LQ31)$ m3	EWKS BF MACHINE10	m ³	81.000	42.836	1,496	36	1,937		3,470
33 3. Piers, 3No 1200mm dia									
EE formula - $=(3*1.130*6.0*2)$ m3 Allowed 3No @									
34 1.130m3/m, typically 6.0m height	CONC PIERS	m ³	40.680	1,750.000				71,190	71,190
35 4. Headstocks									
36 EE formula - $=(13*1.2*1.2*2)$ m3	CONC DIAPHRAGMS	m ³	37.440	3,300.000				123,552	123,552
37 5. Bearings									
38 EE formula - $=(6*2)$ each	BRIDGE BEARING ELASTO	each	12.000	1,500.000		18,000			18,000
39 EE formula - $=(\#LQ38)$ each	BRIDGE BEARING ELASTO INS	each	12.000	3,771.249	6,285	38,520	450		45,255
EE formula - $=(13*2*2)$ m Bearing strip under girders on									
40 headstocks	BRIDGE BNGS200	m	52.000	76.800		3,994			3,994
41 EE formula - $=(\#LQ40*2/10)$ hr Install bearing strips	LAB CIVIL	hr	10.400	55.510	577				577
42 EE formula - $=st(26:41,\#QTY)$ m2				514.351	6,862	60,514	450	330,282	398,108
43									
44 C. Deck beams									
45 1. Supply beams									
EE formula - $=(\#LQ13*6*0.490)$ m3 Allowed 1200mm									
46 depth Super Tee @ 0.490m3/m	BRIDGE PSC BEAMS	m ³	176.400	1,600.000		282,240			282,240
47 EE formula - $=(\#LQ46)$ m3 Onsite precast facility	BRIDGE OS BEAMS	m ³	176.400	1,520.000		268,128			268,128
48 2. Install beams									
49 EE formula - $=(18*1.5)$ each	CR 200T MOB	each	27.000	15,000.000			405,000		405,000
EE formula - $=(roundup(18/5)*10)$ hr Allowed to install									
50 5No per day in 10hr	CR 200T	hr	40.000	625.000			25,000		25,000
EE formula - $=(\#LQ50*5)$ hr Allowed 5No men, 10hr per									
51 day	LAB RIGGER	hr	200.000	58.950	11,790				11,790
52 EE formula - $=(10000)$ Allowance temporary materials	MISC MAT	Item	10,000.000	1.000		10,000			10,000
53 EE formula - $=st(44:48,\#QTY)$ m2				346.419		268,128			268,128
54									
55 D. Completion of superstructure									
56 1. Insitu deck									
57 EE formula - $=(\#LQ13*\#LQ14*0.23)$ m3	CONC DECK	m ³	178.020	1,150.000				204,723	204,723

46 C. Deck beams

47 1. Supply beams

EE formula - $=(\#LQ14*12*0.581)$ m3 Allowed 1500mm								
48 depth Super Tee @ 0.581m3/m	BRIDGE PSC BEAMS	m ³	8,282.736	1,600.000		13,252,378		13,252,378
49 EE formula - $=(\#LQ48)$ m3 Onsite precast facility	BRIDGE OS BEAMS	m ³	8,282.736	1,520.000		12,589,759		12,589,759
50 2. Install beams								
51 EE formula - $=(33*1.5)$ each	CR 400T MOB	each	49.500	21,000.000		1,039,500		1,039,500
EE formula - $=(\text{roundup}(396/5)*10)$ hr Allowed to install								
52 5No per day in 10hr	CR 400T	hr	800.000	1,100.000		880,000		880,000
EE formula - $=(\#LQ52*5)$ hr Allowed 5No men, 10hr per								
53 day	LAB RIGGER	hr	4,000.000	58.950	235,800			235,800
EE formula - $=(4*10*40)$ hr Allow 4Men @ 10hr per span								
54 install temporary handrails	LAB CIVIL	hr	1,600.000	55.510	88,816			88,816
EE formula - $=(\#LQ54/40)$ week temporary handrails, 40wk								
55 per week	BOOMLIFT	week	40.000	1,278.000		51,120		51,120
56 EE formula - $=(200000)$ Allowance temporary materials	MISC MAT	Item	200,000.000	1.000		200,000		200,000
57 EE formula - $=\text{st}(46:50,\#QTY)$ m2				407.594		12,589,759		12,589,759

58

59 D. Completion of superstructure

60 1. Insitu deck

61 EE formula - $=(\#LQ14*26*0.2)$ m3	CONC DECK	m ³	6,177.600	1,150.000		7,104,240		7,104,240
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62 2. Central median barriers

EE formula - $=\text{roundup}(\#LQ14*2/6)$ m Supplied in 6m								
63 lengths	PC MEDIAN	each	396.000	10,500.000		4,158,000		4,158,000

64 3. Edge barriers

EE formula - $=\text{roundup}(\#LQ14*2/6)$ m Supplied in 6m								
65 lengths	PC PARAPETS	each	396.000	9,600.000		3,801,600		3,801,600

66 4. Railings

67 EE formula - $=(\#LQ14*2)$ m	BRIDGE BARRIER	m	2,376.000	500.000		1,188,000		1,188,000
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68 5. Expansion joints

69 EE formula - $=(13*2*2)$ m	EXPANSION JOINT	m	52.000	600.000		31,200		31,200
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70 6. Approach slabs

71 EE formula - $=(4*13*0.3*2)$ m3	CONC RUN ON SLAB	m ³	31.200	1,265.000		39,468		39,468
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72 7. SAMI seal

73 EE formula - $=(\#LQ14*11.5*2)$ m2	A BRIDGE SAMI	m ²	27,324.000	10.000		273,240		273,240
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74 8. Wearing coarse 75mm thk

75 EE formula - $=(\#LQ14*11.5*0.075*2.4)$ tonne	A BRIDGE AC10 OG	tonne	2,459.160	220.000		541,015		541,015
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76 9. Stone pitching to abutment embankments

EE formula - $=(230*2*0.5*2.4*1.2)$ tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20% waste								
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77	QAR STONE PITCHING	tonne	662.400	40.000		26,496		26,496
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78 EE formula - $=(230*2)$ m2	STONE PITCHING	m ²	460.000	100.000		46,000		46,000
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EE formula - $=(230*2)/50/5)$ m2wk Allowed 50m2 per day								
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79	SCAFFOLD	m2wk	1.840	15.000		28		28
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80 10. End walls

81 EE formula - $=(6*4*0.5)$ m3	CONC ABUTMENT	m ³	12.000	1,500.000		18,000		18,000
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82 11. Backfill at abutments

83 EE formula - $=(2*23*4*3*0.5)$ m3	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193	12,597
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84 12. Deck stormwater drainage - Both sides

85 EE formula - $=(\#LQ14*2)$ m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	2,376.000	350.000		831,600		831,600
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86	EE formula - $=((33+2)*5000)$ Allowance connections	MISC SCON	Item	175,000.000	1.000				175,000	175,000
87	EE formula - $=st(59:86, \#QTY)$ m2				590.730	7,781	1,214,563	4,583	17,019,556	18,246,483
88										
89	Estimated Duration									
90	EE formula - $=((35*33/2))$ Days Allowed 35days per span, Assume 2No crews			577.500						
					1,571.390	761,074	19,771,947	2,024,607	25,979,454	48,537,082

Line No 88	Wharf Road underbridge Chg 17500									
Item No 10960			m2	572.000		Contributing				

- 1 10960 - Wharf Road Underbridge Chg 17500
- 2 Spec: Nil
- 3 Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-02-BR-0801
- 4 Site visit photo: Nil
- 5 NOTE: Assume 15m span precast arch units atop cast insitu foundations, height 2m and bored 900mm dia piles at 1.5m
- 6 cts Length of arch 30m
- 7 NOTE: Minimum clearance from road surface to arch structure 4.6m
- 8 NOTE: Assume bored pile required 1:1 embedded vs retained, end bearing on rock below NSL 3m rock socket
- 9 NOTE: Assume piling equipment of pile rig, 50t crawler crane, 20t rough terrain crane & bobcat
- 10 NOTE: Allow 1No crane mobilisation to site per bridge span. Allow a further 50% mobilisation costs for move on sitespan
- 11 NOTE: Assume thk precast arch units 300mm. Also minimum depth 1.5m of imported select material backfill above the arch
- 12 NOTE: Assumed currently that precast beams will be precast On Site. Risk exists for Off Site precast operation by subcontractor

13	EE formula - $=((20400-7600))$ m Total corridor length			12,800.000						
14	EE formula - $=((22))$ m Length bridge			22.000						
15	EE formula - $=((26.0))$ m Deck width			26.000						
16	EE formula - $=((30*2/1.5))$ each Precast arch units			40.000						
17	EE formula - $=((9*(15+5+5))-((15*2)-40))$ m2 Area of Precast headwalls			235.000						

19	A. Piling									
20	EE formula - $=((30*2/1.5)*(10+3))$ m Length of 900mm dia bored piles @ 10m/each			520.000						
21	EE formula - $=((22*10.0)+(1*30))$ m2 Allowed for single side of arch, width 10m	TEMPROAD	m ²	250.000	10.616	269	2,002	382		2,654
22	EE formula - $=((2))$ each Allowed 15x15m	ACCESS PAD	each	2.000	30,000.000				60,000	60,000
23	EE formula - $=((\#LQ20))$ m	PILE 900	m	520.000	900.000				468,000	468,000
24	EE formula - $=((\#LQ23*0.221))$ tonne Allowed 221kg/m for 900mm dia piles	PILE CASING PERM	tonne	114.920	3,500.000		402,220			402,220
25	EE formula - $=st(19:24, \#QTY)$ m2				1,630.898	269	404,222	382	528,000	932,874

27 B.Foundation beams

EE formula - $=(30*2.0*0.5*2)$ m3 Allowed 30m length,
28 2.0m high, 0.5m thick, each side

CONC ABUTMENT

m³

60.000

1,500.000

90,000

90,000

29 EE formula - $=st(27:28,\#QTY)$ m2

157.343

90,000

90,000

30

31 C. Precast units

32 1. Supply units

EE formula - $=(10.12*0.3*1.5)*\#LQ16$ m3 Precast arch
33 units 300mm thk, width 1.5m, directrix length 10.12m

BRIDGE PSC BEAMS

m³

182.160

1,600.000

291,456

291,456

EE formula - $=(\#LQ17*0.3*2)$ m3 Precast wingwalls units

34 300mm thk, 2No

BRIDGE PSC BEAMS

m³

141.000

1,600.000

225,600

225,600

35 EE formula - $=(\#LQ33)$ m3 Onsite precast facility

BRIDGE OS BEAMS

m³

182.160

1,520.000

276,883

276,883

36 EE formula - $=(\#LQ34)$ m3 Onsite precast facility

BRIDGE OS BEAMS

m³

141.000

1,520.000

214,320

214,320

37 2. Install units

EE formula - $=(1+(2*0.5))$ each Allowed 1No to site, 2No at
38 site

CR 200T MOB

each

2.000

15,000.000

30,000

30,000

EE formula - $=(\#LQ16/3)+(2*1)$ hr Allowed to install
precast arch units 3No per hr, 1hr each for precast

39 headwalls

CR 200T

hr

15.333

625.000

9,583

9,583

40 EE formula - $=(\#LQ39*5)$ hr Allowed 5No men

LAB RIGGER

hr

76.667

58.950

4,519

4,519

41 EE formula - $=(5000)$ Allowance temporary materials

MISC MAT

Item

5,000.000

1.000

5,000

5,000

42 EE formula - $=st(31:37,\#QTY)$ m2

858.747

491,203

491,203

43

44 D. Completion of structure

45 1. Imported select backfill

EE formula -
46 $=(\#LQ16*10.12*1.5)+(30*2*1.5*2)+(\#LQ17*2*0.5)$ m3

QAR SELECT RSW

tonne

1,022.200

18.500

18,911

18,911

47 2. Place select backfill

48 EE formula - $=(\#LQ46*0.60)$ m3

EWKS BF HPLACE

m³

613.320

45.640

17,291

87

10,184

429

27,992

49 EE formula - $=(\#LQ46*0.40)$ m3

EWKS BF MACHINE10

m³

408.880

42.836

7,554

184

9,777

17,515

50 3. Wharf Road pavement reconstruction

51 EE formula - $=(2.0+3.5+3.5+2.0)*50$ m2

RTA MINOR ROAD MODS

m²

550.000

80.000

44,000

44,000

52 EE formula - $=st(44:51,\#QTY)$ m2

189.541

24,845

19,182

19,961

44,429

108,417

53

54 Estimated Duration

EE formula - $=(2*5)+(4*5)+(1*5)+(1*5)$ Days Allowed 2wks
for piling, 4wks for foundation beams, 1wk to install units &
55 1wk to complete backfill

40.000

2,922.373 29,633 919,608 59,927 662,429 1,671,597

Line No 89 Drainage structure No1 Underbridge Chg 18600

Item No 10970

m2

1,300.000

Contributing

1 10970 - Drainage structure Underbridge Chg 18600

2 Spec: Nil

Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-

3 02-BR-0801

4 Site visit photo: Nil

NOTE: Assume three span simply supported bridge,
currently no details provided, assume similar to Broughton's
5 Creek No1 underbridge
NOTE: Assume bored pile required 1:1 embedded vs
6 retained, end bearing on rock below NSL 3m rock socket
NOTE: Assume piling equipment of pile rig, 50t crawler
7 crane, 20t rough terrain crane & bobcat
NOTE: Allow 1No crane mobilisation to site per bridge span.
Allow a further 50% mobilisation costs for move on site
8 between piers eg. 2No setups per span
NOTE: Assume Girders 1.5m depth, Supporting Deck 0.3m
9 depth, Parapet Wall 0.8m high & Spans of 25m
NOTE: Assumed currently that precast beams will be precast
On Site. Risk exists for Off Site precast operation by
10 subcontractor
11

12	EE formula - =(20400-7600) m Total corridor length			12,800.000					
13	EE formula - =(50) m Length bridge			50.000					
14	EE formula - =(26.0) m Deck width			26.000					
15									
16	A. Piling								
17	EE formula - =(7*2*(6+6+3)) m Length of 900mm dia bored piles @ 15m/each			210.000					
18	EE formula - =(3*(6+3)*2) m Length of 1200mm dia bored piles @ 6m/each			54.000					
19	EE formula - =(50*10.0)+(4*26)) m2 Allowed for single side of bridge, width 10m	TEMPROAD	m ²	604.000	10.616	650	4,838	924	6,412
20	EE formula - =(4*2) each Allowed 15x15m	ACCESS PAD	each	8.000	30,000.000			240,000	240,000
21	EE formula - =(#LQ17) m	PILE 900	m	210.000	900.000			189,000	189,000
22	EE formula - =(#LQ18) m	PILE 1200	m	54.000	1,200.000			64,800	64,800
23	EE formula - =((#LQ21*0.221)+(#LQ22*0.295)) tonne Allowed 221kg/m for 900mm dia and 295kg/m for 1200mm dia piles respectively	PILE CASING PERM	tonne	62.340	3,500.000		218,190		218,190
24	EE formula - =st(16:23,#QTY) m2				552.617	650	223,028	924	493,800
25									
26	B. Substructure								
27	1. Abutments								
28	EE formula - =(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2)) *2) m3	CONC ABUTMENT	m ³	144.360	1,500.000			216,540	216,540
29	2. Pile caps - Amended design N/A								
30	EE formula - =(1*(5*5*1.5)) m3 Detailed excavation	EWKS DETAILED	m ³	37.500	46.504	892		852	1,744
31	EE formula - =(1*(3.5*3.5*1.5)) m3	CONC PILE CAP	m ³	18.375	1,500.000			27,563	27,563
32	EE formula - =(#LQ30-#LQ31) m3	EWKS BF MACHINE10	m ³	19.125	42.836	353	9	457	819
33	3. Piers, 3No 1200mm dia								
34	EE formula - =(2*(3*1.130*4.5)) m3 Allowed 3No @ 1.130m3/m, typically 4.5m height	CONC PIERS	m ³	30.510	1,750.000			53,393	53,393
35	4. Headstocks								
36	EE formula - =(2*(17.25*1.5)) m3	CONC HEADSTOCKS	m ³	51.750	2,500.000			129,375	129,375
37	5. Diaphragms, end blocks								
38	EE formula - =(((26*1.5)-(12*1.276))*1*4) m3	CONC DIAPHRAGMS	m ³	94.752	3,300.000			312,682	312,682
39	6. Bearings								
40	EE formula - =(36*2) each	BRIDGE BEARING ELASTO	each	72.000	1,500.000		108,000		108,000

41	EE formula - =(#LQ40) each	BRIDGE BEARING ELASTO INS	each	72.000	3,771.249	37,710	231,120	2,700	271,530
42	EE formula - =st(26:39,#QTY) m2				547.684			711,989	711,989
43									
44	C. Deck beams								
45	1. Supply beams								
46	EE formula - =(#LQ13*12*0.581) m3 Allowed 1500mm depth Super Tee @ 0.581m3/m	BRIDGE PSC BEAMS	m ³	348.600	1,600.000		557,760		557,760
47	EE formula - =(#LQ46) m3 Onsite precast facility	BRIDGE OS BEAMS	m ³	348.600	1,520.000		529,872		529,872
48	2. Install beams								
49	EE formula - =(36*1.5) each	CR 400T MOB	each	54.000	21,000.000			1,134,000	1,134,000
50	EE formula - =(roundup(36/5)*10) hr Allowed to install 5No per day in 10hr	CR 400T	hr	80.000	1,100.000			88,000	88,000
51	EE formula - =(#LQ50*5) hr Allowed 5No men, 10hr per day	LAB RIGGER	hr	400.000	58.950	23,580			23,580
52	EE formula - =(15000) Allowance temporary materials	MISC MAT	Item	15,000.000	1.000		15,000		15,000
53	EE formula - =st(44:48,#QTY) m2				407.594		529,872		529,872
54									
55	D. Completion of superstructure								
56	1. Insitu deck								
57	EE formula - =(#LQ13*26*0.2) m3	CONC DECK	m ³	260.000	1,150.000			299,000	299,000
58	2. Central median barriers								
59	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m lengths	PC MEDIAN	each	17.000	10,500.000			178,500	178,500
60	3. Edge barriers								
61	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m lengths	PC PARAPETS	each	17.000	9,600.000			163,200	163,200
62	4. Railings								
63	EE formula - =(#LQ13*2) m	BRIDGE BARRIER	m	100.000	500.000		50,000		50,000
64	5. Expansion joints								
65	EE formula - =(13*2*2) m	EXPANSION JOINT	m	52.000	600.000			31,200	31,200
66	6. Approach slabs								
67	EE formula - =(4*13*0.3*2) m3	CONC RUN ON SLAB	m ³	31.200	1,265.000			39,468	39,468
68	7. SAMI seal								
69	EE formula - =(#LQ13*11.5*2) m2	A BRIDGE SAMI	m ²	1,150.000	10.000			11,500	11,500
70	8. Wearing coarse 75mm thk								
71	EE formula - =(#LQ13*11.5*0.075*2.4) tonne	A BRIDGE AC10 OG	tonne	103.500	220.000			22,770	22,770
72	9. Stone pitching to abutment embankments								
73	EE formula - =(485+345)*0.5*2.4*1.2) tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20% waste	QAR STONE PITCHING	tonne	1,195.200	40.000		47,808		47,808
74	EE formula - =(485+345) m2	STONE PITCHING	m ²	830.000	100.000			83,000	83,000
75	EE formula - =(485+345)/50/5) m2wk Allowed 50m2 per day	SCAFFOLD	m2wk	3.320	15.000		50		50
76	10. End walls								
77	EE formula - =(6*4*0.5) m3	CONC ABUTMENT	m ³	12.000	1,500.000			18,000	18,000
78	11. Backfill at abutments								
79	EE formula - =(2*23*4*3*0.5) m3	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193
80	12. Deck stormwater drainage - Both sides								
81	EE formula - =(#LQ13*2) m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	100.000	350.000			35,000	35,000
82	EE formula - =(4*5000) Allowance connections	MISC SCON	Item	20,000.000	1.000			20,000	20,000

83	EE formula - =st(55:82,#QTY) m2	778.533	7,781	97,897	4,583	901,831	1,012,092
84							
85	Estimated Duration						
86	EE formula - =(35*3) Days Allowed 35days per span, Assume single crew	105.000					
		3,548.050	69,721	1,204,917	1,230,207	2,107,620	4,612,465

Line No 90	South Coast Railway Underbridge Chg 18900							
Item No 10980		m2	572.000			Contributing		
1	10980 - South Coast Railway Underbridge Chg 18900							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Single span simply supported bridge, currently no details provided, assume similar to Toolijooa Road							
6	NOTE: Assume bored pile required 1:1 embedded vs retained, end bearing on rock below NSL 3m rock socket							
7	NOTE: Assume piling equipment of pile rig, 50t crawler crane, 20t rough terrain crane & bobcat							
8	NOTE: Allow 1No crane mobilisation to site per bridge span. Allow a further 50% mobilisation costs for move on site between piers eg. 2No setups per span							
9	NOTE: Assume Girders 1.0m depth, Supporting Deck 0.23m depth, Parapet Wall 0.8m high & Spans of 22m							
10	NOTE: Assumed currently that precast beams will be precast On Site. Risk exists for Off Site precast operation by subcontractor							
11								
12	EE formula - =(20400-7600) m Total corridor length		12,800.000					
13	EE formula - =(22) m Length bridge deck		22.000					
14	EE formula - =(26.0) m Deck width		26.000					
15								
16	A. Piling							
17	EE formula - =(7*2*(6+6+3)) m Length of 900mm dia bored piles @ 15m/each		210.000					
18	EE formula - =(22*10.0)+(1*26)) m2 Allowed for single side of bridge, width 10m	TEMPROAD	m ²	246.000	10.616	265	1,970	376
19	EE formula - =(2) each Allowed 15x15m	ACCESS PAD	each	2.000	30,000.000			60,000
20	EE formula - =(#LQ17) m	PILE 900	m	210.000	900.000			189,000
21	EE formula - =(#LQ17*0.221) tonne Allowed 221kg/m for 900mm dia pile	PILE CASING PERM	tonne	46.410	3,500.000		162,435	162,435
22	EE formula - =st(16:21,#QTY) m2			723.857	265	164,405	376	249,000
23								414,046
24	B. Substructure							
25	1. Abutments							
26	EE formula - =(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2)) *2) m3	CONC ABUTMENT	m ³	144.360	1,500.000			216,540
27	2. Diaphragms, end blocks							
28	EE formula - =(((25*1.5)-(12*1.276))*1*2) m3	CONC DIAPHRAGMS	m ³	44.376	3,300.000			146,441

29 3. Bearings									
30	EE formula - =(12*2) each	BRIDGE BEARING ELASTO	each	24.000	1,500.000		36,000		36,000
31	EE formula - =(#LQ30) each	BRIDGE BEARING ELASTO INS	each	24.000	3,771.249	12,570	77,040	900	90,510
32	EE formula - =st(24:31,#QTY) m2				855.753	12,570	113,040	900	362,981
33									
34 C. Deck beams									
35 1. Supply beams									
	EE formula - =(#LQ13*12*0.479) m3 Allowed 1000mm								
36	depth Super Tee @ 0.479m3/m	BRIDGE PSC BEAMS	m ³	126.456	1,600.000		202,330		202,330
37	EE formula - =(#LQ36) m3 On site precast facility	BRIDGE OS BEAMS	m ³	126.456	1,520.000		192,213		192,213
38 2. Install beams									
39	EE formula - =(1*1.5) each	CR 200T MOB	each	1.500	15,000.000			22,500	22,500
	EE formula - =((roundup(12/5))*10) hr Allowed to install								
40	5No per day in 10hr	CR 200T	hr	30.000	625.000			18,750	18,750
	EE formula - =(#LQ40*5) hr Allowed 5No men, 10hr per								
41	day	LAB RIGGER	hr	150.000	58.950	8,843			8,843
42	EE formula - =(20000) Allowance temporary materials	MISC MAT	Item	20,000.000	1.000		20,000		20,000
43	EE formula - =st(34:38,#QTY) m2				336.037		192,213		192,213
44									
45 D. Completion of superstructure									
46 1. Insitu deck									
47	EE formula - =(#LQ13*26*0.2) m3	CONC DECK	m ³	114.400	1,150.000			131,560	131,560
48 2. Central median barriers									
	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m								
49	lengths	PC MEDIAN	each	8.000	10,500.000			84,000	84,000
50 3. Edge barriers									
	EE formula - =roundup(#LQ13*2/6) m Supplied in 6m								
51	lengths	PC PARAPETS	each	8.000	9,600.000			76,800	76,800
52 4. Railings									
53	EE formula - =(#LQ13*2) m	BRIDGE BARRIER	m	44.000	500.000		22,000		22,000
54 5. Expansion joints									
55	EE formula - =(26*2) m	EXPANSION JOINT	m	52.000	600.000			31,200	31,200
56 6. Approach slabs									
57	EE formula - =(2*26*0.3) m3	CONC RUN ON SLAB	m ³	15.600	1,265.000			19,734	19,734
58 7. SAMI seal									
59	EE formula - =(#LQ13*11.5*2) m2	A BRIDGE SAMI	m ²	506.000	10.000			5,060	5,060
60 8. Wearing coarse 75mm thk									
61	EE formula - =(#LQ13*11.5*0.075*2.4) tonne	A BRIDGE AC10 OG	tonne	45.540	220.000			10,019	10,019
62 9. Stone pitching to abutment embankments									
	EE formula - =(230*2*0.5*2.4*1.2) tonne Allowed 230m2								
	per abutment, 500mm thk, 2.4tonne/m3. 20% waste								
63		QAR STONE PITCHING	tonne	662.400	40.000		26,496		26,496
64	EE formula - =(230*2) m2	STONE PITCHING	m ²	460.000	100.000			46,000	46,000
	EE formula - =((230*2)/50/5) m2wk Allowed 50m2 per day								
65		SCAFFOLD	m2wk	1.840	15.000		28		28
66 10. End walls									
67	EE formula - =(6*4*0.5) m3	CONC ABUTMENT	m ³	12.000	1,500.000			18,000	18,000
68 11. Backfill at abutments									
69	EE formula - =(2*23*4*3*0.5) m3	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193
70 12. Safety screens									

71	EE formula - $=\{\#LQ13*2.0*2\}$ m Allowed 2.0m height	SAFETY MESH	m ²	88.000	250.000			22,000	22,000	
72	13. Deck stormwater drainage - Both sides									
73	EE formula - $=\{\#LQ13*2\}$ m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	44.000	350.000			15,400	15,400	
74	EE formula - $=\{2*5000\}$ Allowance connections	MISC SCON	Item	10,000.000	1.000			10,000	10,000	
75	EE formula - $=st(45:74,\#QTY)$ m2				928.134	7,781	48,563	4,583	469,966	
76										
77	Estimated Duration									
78	EE formula - $=\{1*3*20\}$ Days Allowed 3months per span			60.000						
				2,966.321		29,458	538,221	47,109	1,081,947	1,696,736

Line No 91	Berry South Interchange Underbridge Chg 19600								
Item No 10990				m2	572.000	Contributing			
1	10990 - Berry South Interchange Underbridge Chg 19600								
2	Spec: Nil								
	Dwg: 60021933-DRG-10-02-BR-0100 to 60021933-DRG-10-								
3	02-BR-0801								
4	Site visit photo: Nil								
	NOTE: Single span simply supported bridge, currently no								
5	details provided, assume similar to Toolijooa Road								
	NOTE: Assume bored pile required 1:1 embedded vs								
6	retained, end bearing on rock below NSL 3m rock socket								
	NOTE: Assume piling equipment of pile rig, 50t crawler								
7	crane, 20t rough terrain crane & bobcat								
	NOTE: Allow 1No crane mobilisation to site per bridge span.								
	Allow a further 50% mobilisation costs for move on site								
8	between piers eg. 2No setups per span								
	NOTE: Assume Girders 1.0m depth, Supporting Deck 0.23m								
9	depth, Parapet Wall 0.8m high & Spans of 22m								
	NOTE: Assumed currently that precast beams will be precast								
	On Site. Risk exists for Off Site precast operation by								
10	subcontractor								
11									
12	EE formula - $=\{20400-7600\}$ m Total corridor length			12,800.000					
13	EE formula - $=\{22\}$ m Length bridge deck			22.000					
14	EE formula - $=\{26.0\}$ m Deck width			26.000					
15									
16	A. Piling								
	EE formula - $=\{7*2*(6+6+3)\}$ m Length of 900mm dia bored								
17	piles @ 15m/each			210.000					
	EE formula - $=\{\{22*10.0\}+\{1*26\}\}$ m2 Allowed for single								
18	side of bridge, width 10m	TEMPROAD	m ²	246.000	10.616	265	1,970	376	2,611
19	EE formula - $=\{2\}$ each Allowed 15x15m	ACCESS PAD	each	2.000	30,000.000			60,000	60,000
20	EE formula - $=\{\#LQ17\}$ m	PILE 900	m	210.000	900.000			189,000	189,000
	EE formula - $=\{\#LQ17*0.221\}$ tonne Allowed 221kg/m for								
21	900mm dia pile	PILE CASING PERM	tonne	46.410	3,500.000		162,435		162,435
22	EE formula - $=st(16:21,\#QTY)$ m2				723.857	265	164,405	376	249,000
23									
24	B. Substructure								
25	1. Abutments								

26	EE formula - =(((23*1.5*1.5)+(23*1.5*0.3)+(1.5*1.2*0.3*2)+(15*0.3*2)) *2) m3	CONC ABUTMENT	m ³	144.360	1,500.000			216,540	216,540
27	2. Diaphragms, end blocks								
28	EE formula -=((25*1.5)-(12*1.276))*1*2) m3	CONC DIAPHRAGMS	m ³	44.376	3,300.000			146,441	146,441
29	3. Bearings								
30	EE formula -=(12*2) each	BRIDGE BEARING ELASTO	each	24.000	1,500.000		36,000		36,000
31	EE formula -=(#LQ30) each	BRIDGE BEARING ELASTO INS	each	24.000	3,771.249	12,570	77,040	900	90,510
32	EE formula -=st(24:31,#QTY) m2				855.753	12,570	113,040	900	362,981
33									
34	C. Deck beams								
35	1. Supply beams								
36	EE formula -=(#LQ13*12*0.479) m3 Allowed 1000mm depth Super Tee @ 0.479m3/m	BRIDGE PSC BEAMS	m ³	126.456	1,600.000		202,330		202,330
37	EE formula -=(#LQ36) m3 On site precast facility	BRIDGE OS BEAMS	m ³	126.456	1,520.000		192,213		192,213
38	2. Install beams								
39	EE formula -=(1*1.5) each	CR 200T MOB	each	1.500	15,000.000			22,500	22,500
40	EE formula -=((roundup(12/5))*10) hr Allowed to install 5No per day in 10hr	CR 200T	hr	30.000	625.000			18,750	18,750
41	EE formula -=(#LQ40*5) hr Allowed 5No men, 10hr per day	LAB RIGGER	hr	150.000	58.950	8,843			8,843
42	EE formula -=(20000) Allowance temporary materials	MISC MAT	Item	20,000.000	1.000		20,000		20,000
43	EE formula -=st(34:38,#QTY) m2				336.037		192,213		192,213
44									
45	D. Completion of superstructure								
46	1. Insitu deck								
47	EE formula -=(#LQ13*26*0.2) m3	CONC DECK	m ³	114.400	1,150.000			131,560	131,560
48	2. Central median barriers								
49	EE formula -=roundup(#LQ13*2/6) m Supplied in 6m lengths	PC MEDIAN	each	8.000	10,500.000			84,000	84,000
50	3. Edge barriers								
51	EE formula -=roundup(#LQ13*2/6) m Supplied in 6m lengths	PC PARAPETS	each	8.000	9,600.000			76,800	76,800
52	4. Railings								
53	EE formula -=(#LQ13*2) m	BRIDGE BARRIER	m	44.000	500.000		22,000		22,000
54	5. Expansion joints								
55	EE formula -=(26*2) m	EXPANSION JOINT	m	52.000	600.000			31,200	31,200
56	6. Approach slabs								
57	EE formula -=(2*26*0.3) m3	CONC RUN ON SLAB	m ³	15.600	1,265.000			19,734	19,734
58	7. SAMI seal								
59	EE formula -=(#LQ13*11.5*2) m2	A BRIDGE SAMI	m ²	506.000	10.000			5,060	5,060
60	8. Wearing coarse 75mm thk								
61	EE formula -=(#LQ13*11.5*0.075*2.4) tonne	A BRIDGE AC10 OG	tonne	45.540	220.000			10,019	10,019
62	9. Stone pitching to abutment embankments								
63	EE formula -=(230*2*0.5*2.4*1.2) tonne Allowed 230m2 per abutment, 500mm thk, 2.4tonne/m3. 20% waste	QAR STONE PITCHING	tonne	662.400	40.000		26,496		26,496
64	EE formula -=(230*2) m2	STONE PITCHING	m ²	460.000	100.000			46,000	46,000
65	EE formula -=((230*2)/50/5) m2wk Allowed 50m2 per day	SCAFFOLD	m2wk	1.840	15.000		28		28

66	10. End walls									
67	EE formula - =(6*4*0.5) m3	CONC ABUTMENT	m ³	12.000	1,500.000				18,000	18,000
68	11. Backfill at abutments									
69	EE formula - =(2*23*4*3*0.5) m3	EWKS BF HPLACE	m ³	276.000	45.640	7,781	39	4,583	193	12,597
70	12. Safety screens									
71	EE formula - =(#LQ13*2.0*2) m Allowed 2.0m height	SAFETY MESH	m ²	88.000	250.000				22,000	22,000
72	13. Deck stormwater drainage - Both sides									
73	EE formula - =(#LQ13*2) m Allowed 375mm UPVC	BRIDGE DRAIN 375	m	44.000	350.000				15,400	15,400
74	EE formula - =(2*5000) Allowance connections	MISC CON	Item	10,000.000	1.000				10,000	10,000
75	EE formula - =st(45:74,#QTY) m2				928.134	7,781	48,563	4,583	469,966	530,893
76										
77	Estimated Duration									
78	EE formula - =(1*3*20) Days Allowed 3months per span			60.000						
				2,966.321	29,458	538,221	47,109	1,081,947	1,696,736	

Line No 92	Reinforced Soil Walls									
Item No 10990a			m2	2,800.000	Contributing					
1	10990a Reinforced Soil Walls (RSW)									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: RSW will be required at abutments - refer to item 10950									
6	NOTE: Refer to file Quantities .xlsx for details of quantities									
7	NOTE: Adopt allowance from Aecom - "Berry Nth interchange - 190m SB off-ramp & 90m NB on-ramp (approx 5m height)"									
8	NOTE: Adopt similar RSW areas for Berry Sth interchange as per Nth interchange above									
9	NOTE: Rate for RSW Components has been increased to allow for potential architectural finish requirements to panel faces									
10										
11	EE formula - =(20400-7600) m Total corridor length			12,800.000						
12	EE formula - =(32+122+76+200+1200+40+50+25+20) m Length bridges & Viaduct			1,765.000						
13	EE formula - =((190+90+190+90)*5) m2 Wall face area			2,800.000						
14	EE formula - =((190*5)+(90*5)+(190*5)+(90*5)) m2 Foundation preparation area			2,800.000						
15	EE formula - =(190+90+190+90) m Length strip footing			560.000						
16	EE formula - =((190*5*5)+(90*5*5)+(190*5*5)+(90*5*5)) m3 Volume of select fill			14,000.000						
17										
18	A. Supply of components for RSW									
19	EE formula - =(#LQ13) m2	RSW COMPONENTS	m ²	2,800.000	659.402	17,575	1,823,500	5,249		1,846,324
20										
21	B. Preparation of foundation for RSW									
22	EE formula - =(#LQ14) m2	EWKS S/G250	m ²	2,800.000	0.822	622		1,680		2,302
23										
24	C. Base concrete strip footing									

25	EE formula - (#LQ15) m	RSW FOOTING	m	560.000	70.911	28,049	11,210	73	378	39,710	
26											
27	D. RSW erection										
28	EE formula - (#LQ13) m2	RSW ERECT	m ²	2,800.000	118.551	198,881	8,400	124,661		331,942	
29											
30	E. RSW capping / Barrier										
31	EE formula - (#LQ15) m	RSW CAPPING	m	560.000	75.000		42,000			42,000	
32											
33	F. RSW Imported / Select fill										
	EE formula - (#LQ16*2.2*1.1) tonne Allowed 2.2t/m3,										
34	10% waste	QAR SELECT RSW	tonne	33,880.000	18.500		626,780			626,780	
35	EE formula - (#LQ16) m3	RSW BACKFILL	m ³	14,000.000	31.245	196,054	3,055	231,459	6,860	437,428	
36											
37	G. Other										
38	1. Dish drain										
39	EE formula - =(40+675) m	DRA DISH375	m	715.000	73.013	4,007	46,948	1,249		52,204	
40	2. Handrail										
41	EE formula - =(40+675) m	MONOWILS HANDRAIL	m	715.000	100.000				71,500	71,500	
42											
43	Estimated Duration										
44	EE formula - =(#LQ13/50) Days Allowed 50m2 per day			56.000							
						1,232.211	445,189	2,561,892	364,372	78,738	3,450,191

Line No 96	Local Roads - Pavement Type 1									
Item No 11010			m2	33,220.000	Contributing					
1	11010 Local roads - Pavement type 1									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Refer to file Quantities .xlsx for details of quantities									
	NOTE: Allow to modify / repair existing road once new									
6	viaduct structure is constructed above									
	NOTE: Adopt allowance from Aecom - "Allow for Toolijooa Road, Austral Park Road, Tindalls Lane & existing highway connection (south)									
	NOTE: Allowed two seal atop 300mm thk DGB20 base layer									
8										
9										
10	EE formula - =(33220) m2 Area of other local roads			33,220.000						
11										
12	EE formula - (#LQ10) m2	RTA MINOR ROAD MODS	m ²	33,220.000	80.000				2,657,600	2,657,600
13										
14	Estimated Duration									
15	EE formula - (#LQ12/1000) Days Allowed 1000m2 per day			33.220						
						80.000			2,657,600	2,657,600

Line No 97	Local Roads - Repairs							
Item No 11020			m2	35,450.000		Contributing		
1	11020 Local roads - Repairs							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
	NOTE: Allow for repair work to local roads, as per discussions at intermediate review 21/3/2012 + emails from R. Lyster 12/4/2012 & 23/4/2012							
5	R. Lyster 12/4/2012 & 23/4/2012							
	NOTE: Allow for typical width of 10m at the following locations: Section of existing Princess Hwy Victoria Street to Andersons Lane & Length of Woodhill Mountain Road used by heavy construction equipment							
6	NOTE: "Through Berry we only maintain the central 7m. The pavement in this area is of lesser quality than south of Berry, so is likely to require a more substantial treatment. I would allow for 150mm asphalt replacement for the full length"							
7	NOTE: Refer to email on file G. Smith (Aecom) 8/5/2012 length of existing Princess Hwy required to be upgraded for flood immunity 375m + enlarged cross drainage RCP's							
9								
10	EE formula - =(7) m Width township			7.000				
11	EE formula - =(10) m Width Princess Hwy			10.000				
12	EE formula - =(2600) m Length of through Berry township			2,600.000				
	EE formula - =(1500-375) m Length of Princess Hwy less length of upgrade required for flood immunity			1,125.000				
13	EE formula - =(600) m Length of Existing Woodhill Mountain Road			600.000				
14	EE formula - =(LQ12*LQ10) m2 Area of pavement to repair through Berry township			18,200.000				
15	EE formula - =(LQ13+LQ14)*LQ11) m2 Area of pavement to repair Princess Hwy			17,250.000				
16	EE formula - =(4500) m2 Area of flood immunity works to existing Princess Hwy			4,500.000				
17	EE formula - =(LQ15+LQ16) m2 Total area			35,450.000				
18								
19								
20	A. Dilapidation survey							
21	EE formula - =(1.5) Allow 1.5mth	CONSULTANT	month	1.500	35,000.000		52,500	52,500
22								
23	B. Pavement repair							
24	EE formula - =(LQ15) m3 Pavement repair	RTA PAVE REPAIR HEAVY	m ³	18,200.000	90.000		1,638,000	1,638,000
	EE formula - =(LQ16*0.05) m2 Patching, Allow 5% of repair area		RTA PAVE REPAIR LIGHT	m ²	862.500	100.000	86,250	86,250
25	EE formula - =(LQ16) m2 Resheeting, depth 50mm	RTA RESHEET50	m ²	17,250.000	35.000		603,750	603,750
26								
27								
28	Estimated Duration							
29	EE formula - =(0) Days							
				67.151	2,380,500	2,380,500		

Line No 98 Item No 11030	Existing Princess Hwy Flooding immunity			1.000	Contributing					
		Item								
1	11030 Existing Princess Hwy - Flooding immunity									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Refer to email on file G. Smith (Aecom) 8/5/2012 length of existing Princess Hwy required to be upgraded for flood immunity 375m (lift road level by 70mm)+ enlarged									
6	cross drainage RCP									
7	EE formula - =(375) m Length of existing Princess Hwy to be raised						375,000			
8	EE formula - =(4500) m2 Area of flood immunity works to existing Princess Hwy						4,500,000			
9	A. Flood Immunity works									
11	EE formula - =(150000) Allowance to demolish existing RCP's 2No and remove pavement						150,000.000	1.000	150,000	150,000
12	EE formula - =(15*2500)+(2*15000) Allowance new 4No 1800mm dia RCP, length 15m						67,500.000	1.000	67,500	67,500
13	EE formula - =(15*2500)+(2*25000) Allowance new 4No 2100x1500 RCB, length 15m						87,500.000	1.000	87,500	87,500
14	EE formula - =(LQ8*0.5) m2 Repair pavement, allow depth 500mm						2,250.000	90.000	202,500	202,500
15	Estimated Duration									
17	EE formula - =(0) Days									
				507,500.000		507,500	507,500			

Line No 102 Item No 11110	Urban Design			1.000	Contributing					
		Item								
1	11110 Urban Design									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Allow to provide hard landscaping structure at Berry (North & South) Interchanges									
6	EE formula - =(50000*2) each Hard landscaping structure						100,000.000			
9	EE formula - =(LQ7) each						100,000.000	1.000	100,000	100,000
10	Estimated Duration									
12	EE formula - =(0) Days									
				100,000.000		100,000	100,000			

Line No 103	Landscaping								
Item No 11120		m2		76,800.000		Contributing			
1	11120 Landscaping								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801								
4	Site visit photo: Nil								
5	NOTE: Refer to file Quantities .xlsx for details of quantities								
6	NOTE: Adopt allowance from Aecom - "Allow for an average of 3m width each side of the highway to be landscaped"								
7									
8	EE formula - =(76800) m2 Landscaping area			76,800.000					
9									
10	EE formula - =(#LQ8) m2	LAND TURF SMALL	m ²	76,800.000	28.000		2,150,400	2,150,400	
11	EE formula - =(#LQ8) m2	LAND REVEG	m ²	76,800.000	35.000		2,688,000	2,688,000	
12	EE formula - =(#LQ8/20) m2 Allowed 1No per 20m2	LAND TREE 45LT	each	3,840.000	280.000		1,075,200	1,075,200	
13	EE formula - =st(10:12,#LQ8) m2				77.000		5,913,600	5,913,600	
14									
15	Estimated Duration								
16	EE formula - =(0) Days								
							77.000	5,913,600	5,913,600

Line No 104	Vegetation								
Item No 11130		m2		76,800.000		Contributing			
1	11130 Vegetation								
2	Spec: Nil								
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801								
4	Site visit photo: Nil								
5	NOTE: Refer to file Quantities .xlsx for details of quantities								
6	NOTE: Adopt allowance from Aecom - Topsoil Batters and Medians "Allow for fill bater area plus full length of median"								
7	NOTE: Adopt allowance from Aecom - Grass / Hydro								
8	"Assume same as the 'landscaped' area"								
9	EE formula - =(104) wk Allowed maintenance duration			104.000					
10	EE formula - =(195890) m2 Topsoil Batters and Medians			195,890.000					
11	EE formula - =(76800) m2 Grass / Hydro			76,800.000					
12									
13	EE formula - =(#LQ10) m2 Topsoil import	EWKS TOPSOIL IMPORT	m ²	195,890.000	13.639	84,316	2,327,945	156,583	102,842
14	EE formula - =(#LQ10) m2 Ground preparation	LAND GP100	m ²	195,890.000	0.350				68,562
15	EE formula - =(#LQ11) m2	LAND HYDROMULCH	m ²	76,800.000	2.500				192,000
16	EE formula - =(#LQ11) m2	LAND HYDROSEEDING	m ²	76,800.000	1.150				88,320
17	EE formula - =(#LQ10*(#LQ9-26)/10000) ha	LAND MAINTAIN >26	wk/ha	1,527.942	470.000				718,133
18	EE formula - =(#LQ10*26/10000) ha	LAND MAINTAIN <26	wk/ha	509.314	700.000				356,520
19	EE formula - =st(13:18,#LQ12) m2					84,316	2,327,945	156,583	1,526,376
20									4,095,220

21 Estimated Duration
 22 EE formula - =(0) Days

53.323 84,316 2,327,945 156,583 1,526,376 4,095,220

Line No 108 Item No 11210	Demolition	Item	1.000	Contributing		
1	11210 Demolition					
2	Spec: Nil					
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801					
4	Site visit photo: Nil					
5	NOTE: Refer to file Quantities .xlsx for details of quantities					
6	NOTE: Adopt allowance from Aecom - Kerbs "Assume no existing sections of highway or local road are kerbed - hence no kerb demolition"					
7	NOTE: Adopt allowance from Aecom - Conc Pave "No existing concrete pavement to be removed"					
8	NOTE: Adopt allowance from Aecom - Guardrail / Barriers "Assume all of the barriers to be removed where on line widening. Nominal amount for off line. Assume 30% has barriers"					
9	NOTE: Adopt allowance from Aecom - Signs "Assume 3 signs per 500m (this will capture minor and major signage)"					
10	NOTE: Adopt allowance from Aecom - Commercial Properties "No commercial properties affected"					
11	NOTE: Adopt allowance from Aecom - Houses "23 houses are directly impacted and require demolition" Allow 50% of this number for Southern option					
12	NOTE: Adopt allowance from Aecom - Fences "Allow for 50% of the Project length to be removed"					
13	NOTE: Adopt allowance from Aecom - Pits / Headwalls "Approximately 8 existing cross drainage structures to remove mostlt pipe or small culvert"					
14	NOTE: Adopt allowance from Aecom - Pipework "Allow for removal of 25m of cross drainage pipework at each of the existing 8 cross drainage structures"					
15	EE formula - =(1800*12) Guardrail / Barriers Allowed @ \$12/m		21,600.000			
16	EE formula - =(77*100) Signs Allowed @ \$100/each		7,700.000			
17	EE formula - =(23*14000*0.5) Houses Allowed @ \$14k/house, assuming presence of asbestos		161,000.000			
18	EE formula - =(5700*12) Fences Allowed @ \$12/m		68,400.000			
19	EE formula - =(8*475) Pits / Headwalls Allowed @ \$475/each		3,800.000			
20	EE formula - =(200*70) Pipework Allowed @ \$70/m		14,000.000			
21	EE formula - =(LQ16+LQ17+LQ18+LQ19+LQ20+LQ21) m3 Total					
22	Demolition value		276,500.000			
23						
24	EE formula - =(LQ22) each	MISC SCON	Item	276,500.000	1.000	276,500 276,500
25						
26	Estimated Duration					

27 EE formula - =(0) Days

276,500.000 276,500 276,500

Line No 109	Minor Concrete Works - K & G & Medians			1.000	Contributing		
Item No 11220		Item					
1	11220 Minor Concrete Works						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
6	NOTE: Allow to provide traffic island infills + kerb & gutter						
	NOTE: Adopt allowance from Aecom - Kerbing SO						
7	"Extracted directly from 12d model (SO in cuts only)"						
	NOTE: Adopt allowance from Aecom - Kerbing Type SF "Not						
8	applicable"						
	NOTE: Adopt allowance from Aecom - "Allow 500m for local						
9	road intersections"						
10							
11	EE formula - =(2500) m2 Traffic Island infill			2,500.000			
12	EE formula - =(1500) m K&G type SA			1,500.000			
13	EE formula - =(0) m K&G type SF						
14	EE formula - =(9480) m K&G type SO			9,480.000			
15							
16	EE formula - =(#LQ11) each	RTA INFILL CONC	m ²	2,500.000	50.000	125,000	125,000
17	EE formula - =(#LQ12) m	RTA K&G SA	m	1,500.000	45.000	67,500	67,500
18	EE formula - =(#LQ13) m	RTA K&G SF	m		25.000		
19	EE formula - =(#LQ14) m	RTA K&G SO	m	9,480.000	112.500	1,066,500	1,066,500
20							
21	Estimated Duration						
	EE formula - =((#LQ12+#LQ13+#LQ14)/1000) Days Allowed						
22	1000m per day			10.980			
				<u>1,259,000.000</u>		<u>1,259,000</u>	<u>1,259,000</u>

Line No 110	UPVC Ducts			11,066.000	Contributing		
Item No 11230		m					
1	11230 UPVC Duct						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
	NOTE: Allow for four 150mm dia conduit for length of road						
5	corridor for ITS system						
6							
7	EE formula - =(20400-7600) m Total corridor length			12,800.000			
	EE formula - =(32+122+76+200+1188+22+50+22+22) m						
8	Length bridges & Viaduct			1,734.000			
9	EE formula - =(#LQ7-#LQ8) m Duct length			11,066.000			
10							

11	EE formula - =(#LQ9*4) m	RTA CONDUIT 150	m	44,264.000	30.000	1,327,920	1,327,920
12	13 Estimated Duration						
14	EE formula - =(0) Days						
				120.000		1,327,920	1,327,920

Line No 111	Guide Posts						
Item No 11240			each	738.000	Contributing		
1	11240 Guide Posts						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
6	NOTE: Adopt allowance from Aecom - "Allow for 1 every 30m both sides for full length"						
7							
8	EE formula - =(20400-7600) m Total corridor length			12,800.000			
9	EE formula - =(32+122+76+200+1188+22+50+22+22) m Length bridges & Viaduct			1,734.000			
10	EE formula - =roundup((#LQ8-#LQ9)*2/30) each Guide Posts			738.000			
11							
12	EE formula - =(#LQ10) m	RF GUIDE POSTS	each	738.000	25.000	18,450	18,450
13	14 Estimated Duration						
14	EE formula - =(0) Days						
				25.000		18,450	18,450

Line No 112	Safety Barriers						
Item No 11250			m	34,460.000	Contributing		
1	11250 Safety Barrier						
2	Spec: Nil						
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
6	NOTE: Adopt allowance from Aecom - Wire Rope Barrier "Extracted directly from 12d model (median and fills > 1.5m). Preference is for wire rope. Assume 500m @ Toolijooa, 1000m @ Austral Pk Rd, 200m @ rest area, 1000m @ Tindalls, 1000m @ Berry Nth, 4000m @ KVR & 300m @ Huntingdale"						
7	NOTE: Adopt allowance from Aecom - Guardrail						
8	NOTE: Adopt allowance from Aecom - Type 'F' Barrier "						
9	Assume nominal amount where deflection is an issue"						
10	MOTE: Adopt allowance from Aecom - Special Barrier on RSS Wall " RSS walls have not been included at this point"						

10

11	EE formula - =(20400-7600) m Total corridor length	12,800.000
	EE formula - =(32+122+76+200+1188+22+50+22+22) m	
12	Length bridges & Viaduct	1,734.000
13	EE formula - =(25360) m Wire Rope Barrier length	25,360.000
14	EE formula - =(7*2) each Anchor blocks	14.000
15	EE formula - =(8700) m Guard Rail length	8,700.000
	EE formula - =(11*4) each Trie Beam terminals Allowed 4No	
16	per structure	44.000
	EE formula - =(11*4) each ET terminals Allowed 4No per	
17	structure	44.000
18	EE formula - =(400) m Type 'F' Barrier length	400.000
19	EE formula - =(0) m Special Barrier on RSS Wall length	
	EE formula - =(#LQ13+#LQ15+#LQ18+#LQ19) m Total	
20	length	34,460.000

21

22	EE formula - =(#LQ13) m	RF WR SUPPLY 3S	m	25,360.000	93.000	2,358,480		2,358,480
23	EE formula - =(#LQ13) m	RF WR FENCE 3S	m	25,360.000	17.000		431,120	431,120
24	EE formula - =(#LQ14) each	RF WR ANCHOR3S	each	14.000	390.000	5,460		5,460
25	EE formula - =(#LQ15) m	RF WBEAM	m	8,700.000	100.000	870,000		870,000
26	EE formula - =(#LQ15) m	RF WBEAM INS	m	8,700.000	35.000		304,500	304,500
27	EE formula - =(16) each	RF WBEAM ET	each	16.000	2,000.000	32,000		32,000
28	EE formula - =(16) each	RF TRIE BEAM	each	16.000	1,140.000	18,240		18,240
29	EE formula - =(#LQ18) m	BARRIER NJB	m	400.000	195.700	78,280		78,280
	EE formula - =(#LQ18*2*10/25) hr Allowed 2No men, 25m							
30	per day, 10hr per day	LAB CIVIL	hr	320.000	55.510	17,763		17,763
	EE formula - =(#LQ18/24/5) week Allowed 24m per day,							
31	5days per week	TK CR/12T	week	3.333	1,347.570		4,492	4,492

32

33 Estimated Duration

34 EE formula - =(0) Days

119,569 17,763 3,362,460 4,492 735,620 4,120,335

Line No 113	Pavement Markings	Item	1.000	Contributing
Item No 11260				
1	11260 Pavement Markings			
2	Spec: Nil			
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801			
4	Site visit photo: Nil			
5	NOTE: Refer to file Quantities .xlsx for details of quantities			
	NOTE: Adopt allowance from Aecom - Linemark - lines			
	"Assume 6 times length of project + 20% for existing road, ramps and local roads"			
6	NOTE: Adopt allowance from Aecom - Linemark -			
7	Arrows/Sym " Assume 3 arrows per ramp (12 ramps)"			
	NOTE: Adopt allowance from Aecom - Linemark - Chevrons			
	" Allow 50m2 per ramp of interchange (12 ramps)"			
8				
9				
10	EE formula - =(20400-7600) m Total corridor length		12,800.000	

EE formula - =(32+122+76+200+1188+22+50+22+22) m							
11 Length bridges & Viaduct				1,734.000			
12 EE formula - =(#LQ10) m Length linemark				12,800.000			
13 EE formula - =(3*12) each Arrows / Symbols				36.000			
14 EE formula - =(12*50) m2 Chevrons				600.000			
15							
16 EE formula - =(#LQ12*2) m	LINE PTPMM E2	m		25,600.000	2.000	51,200	51,200
17 EE formula - =(#LQ12*2) m	LINE NTPMM C1	m		25,600.000	1.850	47,360	47,360
18 EE formula - =(#LQ12) m	LINE NTPMM L1	m		12,800.000	0.550	7,040	7,040
19 EE formula - =(#LQ12) m	LINE NTPMM E6	m		12,800.000	1.500	19,200	19,200
20 EE formula - =(#LQ13) each	LINE NTPMM ARROW	each		36.000	90.000	3,240	3,240
21 EE formula - =(#LQ14) m2	LINEMARKING MARKING	m ²		600.000	20.000	12,000	12,000
22							
23 Estimated Duration							
24 EE formula - =(0) Days							
				140,040.000		140,040	140,040

Line No 114	Signposting						
Item No 11270		each		408.000		Contributing	
1	11270 Signposting						
2	Spec: Nil						
	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-						
3	02-BR-0801						
4	Site visit photo: Nil						
5	NOTE: Refer to file Quantities .xlsx for details of quantities						
	NOTE: Adopt allowance from Aecom - Signs Large " Allow						
6	for 4 major sign structures at each interchange"						
	NOTE: Adopt allowance from Aecom - Meduim Signs "Allow						
7	an average of 1 sign per 100m"						
	NOTE: Adopt allowance from Aecom - Signs Small "Allow 2						
8	signs per 100m"						
	NOTE: Adopt allowance from Aecom - VMS "1 VMS						
	included northbound and 1 southbound, locations to be						
9	determined"						
10							
11	EE formula - =(20400-7600) m Total corridor length			12,800.000			
12	EE formula - =(4*6) each Signs Large			24.000			
13	EE formula - =(#LQ11/100) each Meduim Signs			128.000			
14	EE formula - =(#LQ11*2/100) each Signs Small			256.000			
15	EE formula - =(2) each VMS large			2.000			
16							
17	EE formula - =(#LQ12) each Advanced directional	RTA SIGN ADIRECT	each	24.000	30,000.000	720,000	720,000
18	EE formula - =(#LQ13) each Directional	RTA SIGN DIRECT	each	128.000	15,000.000	1,920,000	1,920,000
19	EE formula - =(#LQ14) each Directional small	RTA SIGN DIRECT SMALL	each	256.000	1,000.000	256,000	256,000
20	EE formula - =(60) each Warning	RTA SIGN WARNING	each	60.000	200.000	12,000	12,000
21	EE formula - =(30) each Hazard boards	RTA SIGN HAZARD	each	30.000	250.000	7,500	7,500
22	EE formula - =(#LQ15) each	VMS LARGE	each	2.000	400,000.000	800,000	800,000
23							
24	Estimated Duration						
25	EE formula - =(0) Days						

9,106.618	3,715,500	3,715,500
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Line No 115	Street Lighting							
Item No 11280			each	47.000	Contributing			
1	11280 Street Lighting							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Refer to file Quantities .xlsx for details of quantities							
	NOTE: Adopt allowance from Aecom - Lights Single							
	"Assume that only local road junctions and interchanges are to be lit. Allow 4 lights per local road junction and 9 (8 per on ramp and 1 per off ramp) per interchange + rest area"							
6	NOTE: Adopt allowance from Aecom - New Traffic Lights "							
7	Not applicable"							
8								
9	EE formula - =(20400-7600) m Total corridor length			12,800.000				
10	EE formula - =(47) each Lights Single			47.000				
11								
12	EE formula - =(#LQ10*100) m UPVC conduit	RTA CONDUIT 150	m	4,700.000	30.000	141,000	141,000	
13	EE formula - =(#LQ10*6) each	RTA CABLE PIT	each	282.000	200.000	56,400	56,400	
14	EE formula - =(8) each	RTA CONTROL CAB	each	8.000	9,500.000	76,000	76,000	
15	EE formula - =(#LQ10) each	RTA LIGHTING PLINTH	each	47.000	1,000.000	47,000	47,000	
16	EE formula - =(#LQ10) each	RTA LIGHT POLE 10.5M	each	47.000	1,500.000	70,500	70,500	
17								
18	Estimated Duration							
19	EE formula - =(0) Days							
				8,317.021		390,900	390,900	

Line No 116	Fencing							
Item No 11290			m	25,600.000	Contributing			
1	11290 Fencing							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Refer to file Quantities .xlsx for details of quantities							
	NOTE: Adopt allowance from Aecom - Wire Fence "Assume boundary fence is required for the full length both sides"							
6	NOTE: Adopt allowance from Aecom - Floppy top fence "Not							
7	applicable"							
8								
9	EE formula - =(20400-7600) m Total corridor length			12,800.000				
	EE formula - =(32+122+76+200+1188+22+50+22+22) m							
10	Length bridges & Viaduct			1,734.000				
11	EE formula - =(#LQ9*2) m Fencing length			25,600.000				

12								
13	EE formula -=(#LQ11) m	FENCE CW1.8BW	m	25,600.000	68.000		1,740,800	1,740,800
14	EE formula -=(0) m No scope	FENCE FAUNA	m		48.000			
15								
16	Estimated Duration							
17	EE formula -=(0) Days							
							68.000	1,740,800
								1,740,800

Line No 117	Property adjustments							
Item No 11300			each	33.000		Contributing		
1	11300 Property Adjustments							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801							
4	Site visit photo: Nil							
5	NOTE: Allow from drawings 17No properties affected in the northern zone							
6	NOTE: Refer to email on file RMS Ron De Roy 19/4/2012 - 16No properties affected in southern zone.							
7	NOTE: Allow for construction of a new driveway, small length of fencing & installation of gate							
8	NOTE: Allow for same number as in item 10240 Traffic Control							
9								
10	EE formula -=(17+16) each	Number of affected properties		33.000				
11	EE formula -=(150) m	Length of fencing per property		150.000				
12	EE formula -=(1) each	Vehcile gates per property		1.000				
13								
14	EE formula -=(#LQ10) each	RTA DRIVEWAY ADJ	each	33.000	1,000.000		33,000	33,000
15	EE formula -=(#LQ10*#LQ11) m	FENCE FAUNA	m	4,950.000	48.000		237,600	237,600
16	EE formula -=(#LQ10*#LQ12) each	FENCE GATE 6M BB	each	33.000	1,510.000		49,830	49,830
17								
18	Estimated Duration							
19	EE formula -=(0) Days							
							9,710.000	320,430
								320,430

Line No 118	Heavy Vehicle Rest Area - Austral Park							
Item No 11310			Each	1.000		Contributing		
1	11310 Heavy Vehicle Rest Area - Austral Park							
2	Spec: Nil							
3	Dwg: 60021933-DRG-10-02-RD-1011							
4	Site visit photo: Nil							
5	NOTE: Refer to email from Annette Beedles (RMS 11/4/2012), on file, for details of quantities							
6	NOTE: Assume that separate traffic control allowance NOT required - done as part of the larger project							
7	NOTE: Assume that pavement for HVRA is the same as required for Nungarry site, for simplicity							
8								

9	EE formula - =(6915) m2 Pavement area			6,915.000						
10	EE formula - =(40185) m3 Total Cut volume			40,185.000						
11	EE formula - =(17468) m3 Total Fill volume			17,468.000						
12										
13	A. Control of traffic									
14	EE formula - =(0) Incl in general project scope									
15										
16	B. General items									
17	EE formula - =(1) each Picnic table table and shelter	RTA PICNIC TABLE	each	1.000	17,500.000			17,500		17,500
18	EE formula - =(1) each Supply & install garbage bins	RTA GARBAGE BIN	each	1.000	750.000			750		750
19	EE formula - =(50) each Supply & install bollards	RTA BOLLARDS	each	50.000	350.000			17,500		17,500
20	EE formula - =(1) each Self composting toilet block	RTA TOILET BLOCK	each	1.000	91,200.000			91,200		91,200
21	EE formula - =(2) each Supply & install solar light	RTA SOLAR LIGHT	each	2.000	11,200.000			22,400		22,400
22	EE formula - =st(16:21,0)							149,350		149,350
23										
24	C. Earthworks									
25	EE formula - =(((400+150)/2)*75/10000) ha Clear & grub EE formula - =(LQ25*10000*0.15) m3 Remove & stockpile	EWKS CLEAR & GRUB LIGHT	ha	2.063	9,359.300	3,435		15,869		19,304
26	topsoil	EWKS TOPSOIL STOCKPILE	m ³	3,093.750	16.975	7,117	209	31,036	14,154	52,516
27	EE formula - =(LQ11) m3 Cut to fill	RTA CUT/FILL	m ³	17,468.000	16.000			279,488		279,488
28	EE formula - =(LQ10-#LQ11) m3 Disposal of spoil EE formula - =(LQ27*0.1) m3 Unsuitable material,	RTA CUT TO SPOIL	m ³	22,717.000	20.000			454,340		454,340
29	Allowed 10% of Cut/Fill material EE formula - =(LQ9*0.3) m3 SMZ Supply & place, Allowed	RTA UNSUITABLE	m ³	1,746.800	100.000			174,680		174,680
30	300mm thk	RTA SMZ	m ³	2,074.500	80.000				165,960	165,960
31	EE formula - =st(24:30,0)					10,552	209	955,413	180,114	1,146,288
32										
33	D. Drainage									
	EE formula - =(250) m Stormwater drainage, typically									
34	375mm dia RCP	RTA STORMWATER RCP	m	250.000	450.000			112,500		112,500
35	EE formula - =(4) each pits	RTA GRATED PIT	each	4.000	2,000.000			8,000		8,000
36	EE formula - =(100) m Trench drain	RTA TRENCH DRAIN	m	100.000	50.000			5,000		5,000
37	EE formula - =(10) m Open channel drain	RTA OPEN DRAIN	m	10.000	10.200			102		102
38	EE formula - =st(33:37,0)							125,602		125,602
39										
40	E. Pavements									
	EE formula - =(0) m Modified Type F NJB used as									
41	combination barrier & wall, NOT required	BARRIER RT INSITU	m		1,350.000					
	EE formula - =(0) m Concrete encasement of utilities,									
42	located under acceleration lane, NOT required	UTILITY CONC ENCASE <150M	m		102.500					
	EE formula - =(LQ9*0.15) m3 Insitu stabilisation of top									
43	150mm of SMZ layer	RTA STAB INSITU	m ³	1,037.250	75.000			77,794		77,794
	EE formula - =(LQ9*0.3) m3 Heavily bound subbase layer									
44	300mm thk	RTA SUBBASE BFS	m ³	2,074.500	145.000			300,803		300,803
	EE formula - =(LQ9*0.3) m3 Insitu stabilisation of 300mm									
45	thk base layer	RTA STAB INSITU	m ³	2,074.500	75.000			155,588		155,588
46	EE formula - =(LQ9*2) m2 7mm primer seal	A 7MMSEAL	m ²	13,830.000	1.800			24,894		24,894
	EE formula - =(LQ9*0.05*2.4*1.05) tonne AC14 base									
47	coarse, 50mm thk, 2.4tonne/m3, 5% waste	A AC14 DG	tonne	871.290	180.000			156,832		156,832

48	EE formula - =(#LQ9*0.05*2.4*1.03) tonne AC14 wearing coarse, 50mm thk, 2.4tonne/m3, 3% waste	A DG IC 14/50MM	tonne	854.694	200.000				170,939	170,939	
49	EE formula - =st(40:48,#LQ9) m2				128.250				886,849	886,849	
50											
51	F. Miscellaneous										
52	EE formula - =() Allowance erosion & sedimentation controls, Not required	RTA EROSION & SED	Item		1.000						
53	EE formula - =(0) Allowance demolition of existing, Not required	MISC SCON	Item		1.000						
54	EE formula - =(500) m Kerb & Gutter, Type SO	RTA K&G SO	m	500.000	112.500				56,250	56,250	
55	EE formula - =(30) each guide posts	RF GUIDE POSTS	each	30.000	25.000				750	750	
56	EE formula - =(400*110) m Wire rope safety fence, 400m length @ \$110/m supplied & installed	MISC SCON	Item	44,000.000	1.000				44,000	44,000	
57	EE formula - =(10000) Allowance signage	MISC SCON	Item	10,000.000	1.000				10,000	10,000	
58	EE formula - =(7500) Allowance linemarking & RPM's	MISC SCON	Item	7,500.000	1.000				7,500	7,500	
59	EE formula - =(400) m Fencing	FENCE CW1.8BW	m	400.000	68.000				27,200	27,200	
60	EE formula - =(250) m2 Concrete paving	RTA INFILL CONC	m ²	250.000	50.000				12,500	12,500	
61	EE formula - =((#LQ25*10000)-#LQ9) m2 Topsoiling, site won material	EWKS TOPSOIL IMPORT	m ²	13,710.000	13.639	5,901	162,929	10,959	7,198	186,987	
62	EE formula - =(1000) m2 Turfing	LAND TURF SMALL	m ²	1,000.000	28.000				28,000	28,000	
63	EE formula - =(#LQ61-#LQ62) m2 Hydroseeding	LAND HYDROSEEDING	m ²	12,710.000	1.150				14,617	14,617	
64	EE formula - =st(51:63,0)					5,901	162,929	10,959	208,014	387,803	
65											
66	Estimated Duration										
67	EE formula - =(60) Days			60.000							
						2,695,891.519	16,453	163,138	966,372	1,549,929	2,695,892

Line No 119	Other									
Item No 11320		Item		1.000		Contributing				
1	11310 Other									
2	Spec: Nil									
3	Dwg: 60021933-DRG-10-02-GE-0001 to 60021933-DRG-10-02-BR-0801									
4	Site visit photo: Nil									
5	NOTE: Refer to file Quantities .xlsx for details of quantities									
6	NOTE: Adopt allowance from Aecom - Breakdown Bays									
7	"Actual figure from the design model"									
8	EE formula - =(160*7) m2 Approx area of breakdown bay pavements			1,120.000						
9	EE formula - =(2) each VMS			2.000						
10										
11	A. Breakdown Bays									
12	EE formula - =(#LQ8) m2	RTA MAJOR ROAD TYPE2	m ²	1,120.000	130.000				145,600	145,600
	EE formula - =(7*10000) Allowance fit out breakdown bays									
13	- Emergency phones	MISC SCON	Item	70,000.000	1.000				70,000	70,000
14										
15	Estimated Duration									
16	EE formula - =(0) Days									

215,600.000	215,600	215,600
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