

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)

Table 1. Alcoa to Mundijong Jct

26.39 kms main

1.8 kms loops

4 turnouts

Management/Control

Inspection	Men	80,000	0.75	60,000	1	60,000	2,273.59
Inspection vehicle	Ute	13,000	0.75	9,750	1	9,750	369.46
Track recording	km	60	26.39	1,583	0.5	3,166	119.97
Ultrasonic detection	km	60	26.39	1,583	0.5	3,166	119.97

Caretaker

100 kms for each Gang member	Members	40,000	0.3	12,000	1	12,000	454.72
24 Turnouts for each Gang member	Members	40,000	0.2	8,000	1	8,000	303.15
Equipment, truck & tools	item	12,500	0.06	750	1	750	28.42
Misc materials for turnouts etc.	km	100	26.39	2,639	1	2,639	100.00
Fuel & consumables	km	200	26.39	5,278	1	5,278	200.00

Cyclic

Surfacing	km	4,400	26.39	116,116	3	38,705	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl weld&matl)	km(trk)	116,000	0.13	15,080	10	1,508	57.14
Ballast cleaning	km		26.39		40		.00
Rail grinding	km	2,400	26.39	63,336	5	12,667	480.00
Weed control	km	100	26.39	2,639	1	2,639	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	189.47
Level crossing repaving	km	80	26.39	2,111	1	2,111	79.99
Structure Maintenance	km		26.39		1		.00
Drain Cleaning	km	70	26.39	1,847	1	1,847	69.99

NSR nil, MB 2 yrs

Projects

Signalling & Comms	km	1,440	26.39	38,002	1	38,002	1,440.02
--------------------	----	-------	-------	--------	---	--------	----------

Totals						207,228.00	7,852.56
--------	--	--	--	--	--	------------	----------

Plus Contribution to Profit & Overhead	20%					248,673.60	9,423.07
---	-----	--	--	--	--	------------	----------

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Table 2. Mundijong Jct to Pinjarra		43.28 kms main		3.6 kms loops		8 turnouts	
Management/Control							
Inspection	Men	80,000	0.75	60,000	1	60,000	1,386.32
Inspection vehicle	Ute	13,000	0.75	9,750	1	9,750	225.28
Track recording	km	60	43.28	2,597	0.5	5,194	120.01
Ultrasonic detection	km	60	43.28	2,597	0.5	5,194	120.01
Caretaker							
100 kms for each Gang member	Members	40,000	0.5	20,000	1	20,000	462.11
24 Turnouts for each Gang member	Members	40,000	0.3	12,000	1	12,000	277.26
Equipment, truck & tools	item	12,500	0.1	1,250	1	1,250	28.88
Misc materials for turnouts etc.	km	100	43.28	4,328	1	4,328	100.00
Fuel & consumables	km	200	43.28	8,656	1	8,656	200.00
Cyclic							
Surfacing	km	4,400	43.28	190,432	3	63,477	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.22	25,520	10	2,552	58.96
Ballast cleaning	km		43.28		40		.00
Rail grinding	km	2,400	43.28	103,872	5	20,774	480.00
Weed control	km	100	43.28	4,328	1	4,328	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	115.53
Level crossing repaving	km	80	43.28	3,462	1	3,462	79.99
Structure Maintenance	km		43.28		1		.00
Drain Cleaning	km	70	43.28	3,030	1	3,030	70.01
Projects							
Signalling & Comms	km	1,440	43.28	62,323	1	62,323	1,440.00
Totals						291,318.00	6,731.03
Plus Contribution to Profit & Overhead						20%	349,581.60 8,077.24

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Table 3. Pinjarra to Alumina Jct							
		1.86 kms main			0 kms loops		2 turnouts
Management/Control							
Inspection	Men	80,000	0.25	20,000	1	20,000	10,752.69
Inspection vehicle	Ute	13,000	0.25	3,250	1	3,250	1,747.31
Track recording	km	60	1.86	112	0.5	224	120.43
Ultrasonic detection	km	60	1.86	112	0.5	224	120.43
Caretaker							
100 kms for each Gang member	Members	40,000	0		1		.00
24 Turnouts for each Gang member	Members	40,000	0.1	4,000	1	4,000	2,150.54
Equipment, truck & tools	item	12,500	0		1		.00
Misc materials for turnouts etc.	km	100	1.86	186	1	186	100.00
Fuel & consumables	km	200	1.86	372	1	372	200.00
Cyclic							
Surfacing	km	4,400	1.86	8,184	3	2,728	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.01	1,160	10	116	62.37
Ballast cleaning	km		1.86		40		.00
Rail grinding	km	2,400	1.86	4,464	5	893	480.00
Weed control	km	100	1.86	186	1	186	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	2,688.17
Level crossing repaving	km	80	1.86	149	1	149	80.11
Structure Maintenance	km		1.86		1		.00
Drain Cleaning	km	70	1.86	130	1	130	69.89
Projects							
Signalling & Comms	km	1,440	1.86	2,678	1	2,678	1,439.78
Totals						40,136.00	21,578.39
Plus Contribution to Profit & Overhead						20%	
						48,163.20	25,894.07

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Table 4. Alumina Jct to Pinjarra Sth		1.06 kms main		0 kms loops		1 turnouts	
Management/Control							
Inspection	Men	80,000	0.25	20,000	1	20,000	18,867.92
Inspection vehicle	Ute	13,000	0.25	3,250	1	3,250	3,066.04
Track recording	km	60	1.06	64	0.5	128	120.75
Ultrasonic detection	km	60	1.06	64	0.5	128	120.75
Caretaker							
100 kms for each Gang member	Members	40,000	0		1		.00
24 Turnouts for each Gang member	Members	40,000	0.0		1		.00
Equipment, truck & tools	item	12,500	0		1		.00
Misc materials for turnouts etc.	km	100	1.06	106	1	106	100.00
Fuel & consumables	km	200	1.06	212	1	212	200.00
Cyclic							
Surfacing	km	4,400	1.06	4,664	3	1,555	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.01	1,160	10	116	109.43
Ballast cleaning	km		1.06		40		.00
Rail grinding	km	2,400	1.06	2,544	5	509	480.00
Weed control	km	100	1.06	106	1	106	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	4,716.98
Level crossing repaving	km	80	1.06	85	1	85	80.19
Structure Maintenance	km		1.06		1		.00
Drain Cleaning	km	70	1.06	74	1	74	69.81
Projects							
Signalling & Comms	km	1,440	1.06	1,526	1	1,526	1,439.62
Totals						32,795.00	30,938.16
Plus Contribution to Profit & Overhead						20%	37,125.79

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Table 5. Pinjarra to Wagerup Nth		31.34 kms main		1.53 kms loops		4 turnouts	
Management/Control							
Inspection	Men	80,000	0.75	60,000	1	60,000	1,914.49
Inspection vehicle	Ute	13,000	0.75	9,750	1	9,750	311.10
Track recording	km	60	31.34	1,880	0.5	3,760	119.97
Ultrasonic detection	km	60	31.34	1,880	0.5	3,760	119.97
Caretaker							
100 kms for each Gang member	Members	40,000	0.3	12,000	1	12,000	382.90
24 Turnouts for each Gang member	Members	40,000	0.2	8,000	1	8,000	255.26
Equipment, truck & tools	item	12,500	0.06	750	1	750	23.93
Misc materials for turnouts etc.	km	100	31.34	3,134	1	3,134	100.00
Fuel & consumables	km	200	31.34	6,268	1	6,268	200.00
Cyclic							
Surfacing	km	4,400	31.34	137,896	3	45,965	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.16	18,560	10	1,856	59.22
Ballast cleaning	km		31.34		40		.00
Rail grinding	km	2,400	31.34	75,216	5	15,043	480.00
Weed control	km	100	31.34	3,134	1	3,134	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	159.54
Level crossing repaving	km	80	31.34	2,507	1	2,507	79.99
Structure Maintenance	km		31.34		1		.00
Drain Cleaning	km	70	31.34	2,194	1	2,194	70.01
Projects							
Signalling & Comms	km	1,440	31.34	45,130	1	45,130	1,440.01
Totals						228,251.00	7,283.06
Plus Contribution to Profit & Overhead						20%	273,901.20
							8,739.67

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Table 6. Wagerup Nth to Brunswick Jct		39.34 kms main		2.3 kms loops		6 turnouts	
Management/Control							
Inspection	Men	80,000	0.75	60,000	1	60,000	1,525.17
Inspection vehicle	Ute	13,000	0.75	9,750	1	9,750	247.84
Track recording	km	60	39.34	2,360	0.5	4,720	119.98
Ultrasonic detection	km	60	39.34	2,360	0.5	4,720	119.98
Caretaker							
100 kms for each Gang member	Members	40,000	0.4	16,000	1	16,000	406.71
24 Turnouts for each Gang member	Members	40,000	0.3	12,000	1	12,000	305.03
Equipment, truck & tools	item	12,500	0.08	1,000	1	1,000	25.42
Misc materials for turnouts etc.	km	100	39.34	3,934	1	3,934	100.00
Fuel & consumables	km	200	39.34	7,868	1	7,868	200.00
Cyclic							
Surfacing	km	4,400	39.34	173,096	3	57,699	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.20	23,200	10	2,320	58.97
Ballast cleaning	km		39.34		40		.00
Rail grinding	km	2,400	39.34	94,416	5	18,883	480.00
Weed control	km	100	39.34	3,934	1	3,934	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	127.10
Level crossing repaving	km	80	39.34	3,147	1	3,147	79.99
Structure Maintenance	km		39.34		1		.00
Drain Cleaning	km	70	39.34	2,754	1	2,754	70.01
Projects							
Signalling & Comms	km	1,440	39.34	56,650	1	56,650	1,440.01
Totals						270,379.00	6,872.88
Plus Contribution to Profit & Overhead						20%	324,454.80
							8,247.46

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Table 7. Brunswick Jct to Picton Jct		18.22 kms main		1.53 kms loops		4 turnouts	
Management/Control							
Inspection	Men	80,000	0.25	20,000	1	20,000	1,097.69
Inspection vehicle	Ute	13,000	0.25	3,250	1	3,250	178.38
Track recording	km	60	18.22	1,093	0.5	2,186	119.98
Ultrasonic detection	km	60	18.22	1,093	0.5	2,186	119.98
Caretaker							
100 kms for each Gang member	Members	40,000	0.2	8,000	1	8,000	439.08
24 Turnouts for each Gang member	Members	40,000	0.2	8,000	1	8,000	439.08
Equipment, truck & tools	item	12,500	0.04	500	1	500	27.44
Misc materials for turnouts etc.	km	100	18.22	1,822	1	1,822	100.00
Fuel & consumables	km	200	18.22	3,644	1	3,644	200.00
Cyclic							
Surfacing	km	4,400	18.22	80,168	3	26,723	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.09	10,440	10	1,044	57.30
Ballast cleaning	km		18.22		40		.00
Rail grinding	km	2,400	18.22	43,728	5	8,746	480.00
Weed control	km	100	18.22	1,822	1	1,822	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	274.42
Level crossing repaving	km	80	18.22	1,458	1	1,458	80.02
Structure Maintenance	km		18.22		1		.00
Drain Cleaning	km	70	18.22	1,275	1	1,275	69.98
Projects							
Signalling & Comms	km	1,440	18.22	26,237	1	26,237	1,440.01
Totals						121,893.00	6,690.03
Plus Contribution to Profit & Overhead						20%	146,271.60
							8,028.04

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)

Table 8. Picton Jct to Bunbury I. H.

3.52 kms main

0 kms loops

1 turnouts

Management/Control							
Inspection	Men	80,000	0.25	20,000	1	20,000	5,681.82
Inspection vehicle	Ute	13,000	0.25	3,250	1	3,250	923.30
Track recording	km	60	3.52	211	0.5	422	119.89
Ultrasonic detection	km	60	3.52	211	0.5	422	119.89
Caretaker							
100 kms for each Gang member	Members	40,000	0		1		.00
24 Turnouts for each Gang member	Members	40,000	0.0		1		.00
Equipment, truck & tools	item	12,500	0		1		.00
Misc materials for turnouts etc.	km	100	3.52	352	1	352	100.00
Fuel & consumables	km	200	3.52	704	1	704	200.00
Cyclic							
Surfacing	km	4,400	3.52	15,488	3	5,163	1,466.67
Resleeping Materials	sleepers	65			15		.00
Resleeping Insertion	sleepers	40			15		.00
Rail replacement (incl matl)	km(trk)	116,000	0.02	2,320	10	232	65.91
Ballast cleaning	km		3.52		40		.00
Rail grinding	km	2,400	3.52	8,448	5	1,690	480.00
Weed control	km	100	3.52	352	1	352	100.00
Boghole & tunnels	No	5,000	1	5,000	1	5,000	1,420.45
Level crossing repaving	km	80	3.52	282	1	282	80.11
Structure Maintenance	km		3.52		1		.00
Drain Cleaning	km	70	3.52	246	1	246	69.89
Projects							
Signalling & Comms	km	1,440	3.52	5,069	1	5,069	1,440.06
Totals						43,184.00	12,267.99
Plus Contribution to Profit & Overhead						20%	51,820.80 14,721.59

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)

Table Accumulated Cost Estimates

		165.0	kms main	10.8	kms loops	30	turnouts
Management/Control							
Inspection	Men	80,000				320,000	1,939.28
Inspection vehicle	Ute	13,000				52,000	315.13
Track recording	km	60				19,800	119.99
Ultrasonic detection	km	60				19,800	119.99
Caretaker							
kms for each Gang member	Members	40,000				68,000	412.10
Turnouts for each Gang member	Members	40,000				52,000	315.13
Equipment, truck & tools	item	12,500				4,250	25.76
Misc materials for turnouts etc.	km	100				16,501	100.00
Fuel & consumeables	km	200				33,002	200.00
Cyclic							
Surfacing	km	4,400				242,015	1,466.67
Resleepering Materials	sleepers	65					.00
Resleepering Insertion	sleepers	40					.00
Rail replacement (incl matl)	km(trk)	116,000				9,744	59.05
Ballast cleaning	km						.00
Rail grinding	km	2,400				79,205	480.00
Weed control	km	100				16,501	100.00
Boghole & tunnels	No	5,000				40,000	242.41
Level crossing repaving	km	80				13,201	80.00
Structure Maintenance	km						.00
Drain Cleaning	km	70				11,550	70.00
Projects							
Signalling & Comms	km	1,440				237,615	1,440.00
Totals						1,235,184.00	7,485.51

Table South West Main Annual Maintenance Cost Estimates for Section of Track

Annual Costs for Section of Track:

Contribution to Profit & Overhead 20%

Item	Unit	Rate	Qty	Amount	Every No of Years	Cost per Year	Costper Km/Year mainline km
	A	B	C	D=B*C	E	F=D/E	G=D/(E*Kms)
Plus Contribution to Profit & Overhead	20%					1,482,220.80	8,982.61

Table South West Main Annual Maintenance Cost Estimates for Section of Track
Annual Costs for Section of Track:

Track Manpower Related to the NTKPA and Track Characteristics.

	GTPA	% Welded	TO/man	Tk km/man	Mgt&Insp	km	GTKx10 ⁶
1 Alcoa to Mundijong Jct	16.8	100	24	140	0.75	26.39	443.4
2 Mundijong Jct to Pinjarra	17.6	100	24	140	0.75	43.28	761.7
3 Pinjarra to Alumina Jct	15.0	100	24	140	0.25	1.86	27.8
4 Alumina Jct to Pinjarra Sth	4.8	100	24	140	0.25	1.06	5.0
5 Pinjarra to Wagerup Nth	7.4	100	24	140	0.75	31.34	231.9
6 Wagerup Nth to Brunswick Jct	11.7	100	24	140	0.75	39.34	460.3
7 Brunswick Jct to Picton Jct	16.2	100	24	140	0.25	18.22	295.2
8 Picton Jct to Bunbury I.H.	17.4	100	24	140	0.25	3.52	61.2
					4.00	165.01	2286.5
Total No Track workers in model				3.00			
Total No. Mgt & Inspectors				4.00			

SUMMARY OF MODEL RESULTS - Track & Signalling.

	Cost Tck \$ per yr	Cost S&C \$ per yr	Tot Cost \$ per yr	Cost \$/km/yr	Cost c/GTK
1 Alcoa to Mundijong Jct	248,700	34,500	283,200	10,731	.064
2 Mundijong Jct to Pinjarra	349,600	56,600	406,200	9,385	.053
3 Pinjarra to Alumina Jct	48,200	2,400	50,600	27,204	.182
4 Alumina Jct to Pinjarra Sth	39,400	1,400	40,800	38,491	.816
5 Pinjarra to Wagerup Nth	273,900	41,000	314,900	10,048	.136
6 Wagerup Nth to Brunswick Jct	324,500	51,400	375,900	9,555	.082
7 Brunswick Jct to Picton Jct	146,300	23,800	170,100	9,336	.058
8 Picton Jct to Bunbury I.H.	51,800	4,600	56,400	16,023	.092
	1,482,400	215,700	1,698,100	10,290	.074