

Longrun Transport Developments Pty Ltd.

PROJECT : Kwinana to Bunbury Inner Harbour Railway Infrastructure – Gross Replacement Value Calculations

ESTIMATE: GREENFIELD

N.W.Tan & R.M.Marks

DATE: 13/02/03

1. Alcoa Kwinana - Mundijong Junction	2. Mundijong Junction - Pinjarra	3. Pinjarra - Alumina Junction
26.390 km NG track	43.284 km NG track	1.864 km NG track
1490 sleepers/km	1490 sleepers/km	1490 sleepers/km
50 kg/m rail weight	50 kg/m rail weight	50 & 41 kg/m rail weight
0.90 km Wellard (PL)	0.900 km Mundijong (PL)	0 km Pinjarra (1/4PL)
0.90 km Kwinana (PL)	0.900 km Keysbrook (PL)	
	0.900 km Dandalup (PL)	
	0.900 km Pinjarra (1/2PL)	
4 turnouts	8 turnouts	2 turnouts
11 level Xing (grad 1)	10 level Xing (grad 1)	1 level Xing (grad 1)
0 level Xing (grad 2)	1 level Xing (grad 2)	0 level Xing (grad 2)
0 culverts	0 culverts	0 culverts
82.3 m bridges	174.9 m bridges	0 m bridges

	DESCRIPTION	UNIT	RATE	QTY	AMOUNT	QTY	AMOUNT	QTY	AMOUNT
1	Survey	km	20,000	28.19	563,800	46.884	937,680	1.864	37,280
2	Engineering - see EPCM item 27 below.	km	-	28.19	-	46.884	-	1.864	-
3	Land	ha	-	0					
4	Clearing & topsoil removal	km	-	28.19	-	46.884	-	1.864	-
5	Earthworks for Track								
a	Prepare Formation	km	59,200	28.19	1,668,848	46.884	2,775,533	1.864	110,349
b	Basecourse layer	km	47,400	28.19	1,336,206	46.884	2,222,302	1.864	88,354
6	Tunnels	m							
7	Bridges (\$15,000/span m)	m	9,400	82.3	773,620	174.9	1,644,060		-
	Culverts (600m dia ?m per km)	km	11,400	28.19	321,366	46.884	534,478	1.864	21,250
8	Level Xings (Grad 1)	No	5,000	11	55,000	10	50,000	1	5,000
	Level Xings (Grad 2)	No	2,500	0	-	1	2,500	0	-
9	Fencing of Track	km	-						
10	Ballasting								
	Placement (incl in Track Construction item 13 below)	km	-	28.19	-	46.884	-	1.864	-
	Rail Ballast 1,900tonne per km @ \$14.00/t	km	27,900	28.19	786,501	46.884	1,308,064	1.864	52,006
	Freight (incl in Track Construction item 13 below)	km							
11	Sleepers								
a	Concrete Sleepers NG \$56 ea 1490/km	km	83,440	28.19	2,352,174	46.884	3,912,001	1.864	155,532
e	Turnout Bearers - Concrete	No	25,000	4	100,000	8	200,000	2	50,000
12	Rails & Fastenings								
a	Rails 50kg/m (\$1000/t)	km	101,500	28.19	2,861,285	46.884	4,758,726	1.864	189,196
b	Rails 41kg/m	km	-						
c	Junction Rails	Pair	-						
d	Fastenings(concrete) NG "e" clips & pads	km	23,840	28.19	672,050	46.884	1,117,715	1.864	44,438
g	Turnouts 1in12 (tangential) 50kg/m	No	106,000	4	424,000	8	848,000	2	212,000
h	Turnouts 1in10(tangential) 41kg/m	No	-						
j	Catch Points	No	-						
k	Other-Ins Jts \$500 ea	No	500	28.19	14,095	46.884	23,442	1.864	932
13	Track Construction								
a	Mob/deob	Item							
b	Tracklay Track	km	93,820	28.19	2,644,786	46.884	4,398,657	1.864	174,880
c	Tracklay Turnouts	No	40,000	4	160,000	8	320,000	2	80,000
14	Buildings - Op Cabins								
15	Roads & paths between tracks	m2	6	400	2,400	800	4,800	200	1,200
16	Water Services								
17	Signalling								
	Signalling System	km	57,125	26.39	1,507,529	43.284	2,472,599	1.864	106,481
	Train Control System	km	8,698	26.39	229,531	43.284	376,469	1.864	16,212
18	Communications	km	4,317	26.39	113,930	43.284	186,865	1.864	8,047

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1. Alcoa Kwinana - Mundijong Junction	2. Mundijong Junction - Pinjarra	3. Pinjarra - Alumina Junction
26.390 km NG track	43.284 km NG track	1.864 km NG track
1490 sleepers/km	1490 sleepers/km	1490 sleepers/km
50 kg/m rail weight	50 kg/m rail weight	50 & 41 kg/m rail weight
0.90 km Wellard (PL)	0.900 km Mundijong (PL)	0 km Pinjarra (1/4PL)
0.90 km Kwinana (PL)	0.900 km Keysbrook (PL)	
	0.900 km Dandalup (PL)	
	0.900 km Pinjarra (1/2PL)	
4 turnouts	8 turnouts	2 turnouts
11 level Xing (grad 1)	10 level Xing (grad 1)	1 level Xing (grad 1)
0 level Xing (grad 2)	1 level Xing (grad 2)	0 level Xing (grad 2)
0 culverts	0 culverts	0 culverts
82.3 m bridges	174.9 m bridges	0 m bridges

	DESCRIPTION	UNIT	RATE	QTY	AMOUNT	QTY	AMOUNT	QTY	AMOUNT
19	Wharfs & Jetties								
20	Electrics								
a	Power Reticulation								
b	Yard Lighting	Poles							
21	Workshops On-line Fuelling Structure	Item							
22	Power Supply Buildings	Item							
23	Transmission Lines								
24	Machinery Plant & Equipment On-line Fuelling Facility	Item							
25	Miscellaneous								
a	Track Signs	km	1,100	28.19	31,009	46,884	51,572	1,864	2,050
b	Freight	km	1,000	28.19	28,190	46,884	46,884	1,864	1,864
26	Contingencies								
	Early Planning & Design	%	7		1,165,242		1,973,464		94,995
	Contractor's Risk	%	0		-		-		-
27	EPCM	%	8		1,424,925		2,413,265		116,165
	Engr, Procurement & Constr Mgt								
28	Financing Charges	%	7		60,832		171,347		328
	TOTAL				19,297,318		32,750,421		1,568,559

PROJECT : Kwinana to Bunbury Inner Harbour Railway Infrastructure – Gross Replacement Value Calculations

			1. Alcoa Kwinana - Mundijong Junction	2. Mundijong Junction - Pinjarra	3. Pinjarra - Alumina Junction
SUMMARY					
	ENGR, PROCURE & CONST MGT		1,988,725	3,350,945	153,445
	EARTHWORKS		3,007,454	5,002,634	199,902
	BRIDGES & CULVERTS		1,094,986	2,178,538	21,250
	TRACK MATERIALS		7,265,104	12,220,447	709,104
	TRACKLAY		2,804,786	4,718,657	254,880
	SIGNALLING & COMMUNICATION		1,850,990	3,035,932	130,741
	OTHER		59,199	98,456	3,914
	CONTINGENCIES		1,165,242	1,973,464	94,995
	FINANCE CHARGES		60,832	171,347	328
	TOTAL		19,297,318	32,750,421	1,568,559

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4. Pinjarra East - Pinjarra South	5. Pinjarra - Wagerup Nth	6. Wagerup Nth - Brunswick Junction
1.060 km NG track	31.339 km NG track	39.312 km NG track
1490 sleepers/km	1490 sleepers/km	1490 sleepers/km
50 & 41 kg/m rail weight	50 kg/m rail weight	50 kg/m rail weight
	0 km Pinjarra (1/4PL)	0.765 km Yarloop (PL)
	0.765 km Coolup (PL)	0.765 km Warranup (PL)
	0.765 km Waroona (PL)	0.765 km Bengier (PL)
1 turnouts	4 turnouts	6 turnouts
1.5 level Xing (grad 1)	10.5 level Xing (grad 1)	12 level Xing (grad 1)
0 level Xing (grad 2)	2 level Xing (grad 2)	18 level Xing (grad 2)
0 culverts	0 culverts	0 culverts
0 m bridges	140 m bridges	120.9 m bridges

	DESCRIPTION	UNIT	RATE	QTY	AMOUNT	QTY	AMOUNT	QTY	AMOUNT
1	Survey	km	20,000	1.060	21,200	32.869	657,380	41.607	832,140
2	Engineering - see EPCM item 27 below.	km	-	1.060	-	32.869	-	41.607	-
3	Land	ha	-						
4	Clearing & topsoil removal	km	-	1.060	-	32.869	-	41.607	-
5	Earthworks for Track								
a	Prepare Formation	km	59,200	1.060	62,752	32.869	1,945,845	41.607	2,463,134
b	Basecourse layer	km	47,400	1.060	50,244	32.869	1,557,991	41.607	1,972,172
6	Tunnels	m							
7	Bridges (\$15,000/span m)	m	9,400		-	140	1,316,000	120.9	1,136,460
	Culverts (600m dia ?m per km)	km	11,400	1.060	12,084	32.869	374,707	41.607	474,320
8	Level Xings (Grad 1)	No	5,000	1.5	7,500	10.5	52,500	12	60,000
	Level Xings (Grad 2)	No	2,500	0	-	2	5,000	18	45,000
9	Fencing of Track	km	-						
10	Ballasting								
	Placement (incl in Track Construction item 13 below)	km	-	1.060	-	32.869	-	41.607	-
	Rail Ballast 1,900tonne per km @ \$14.00/t	km	27,900	1.060	29,574	32.869	917,045	41.607	1,160,835
	Freight (incl in Track Construction item 13 below)	km							
11	Sleepers								
a	Concrete Sleepers NG \$56 ea 1490/km	km	83,440	1.060	88,446	32.869	2,742,589	41.607	3,471,688
e	Turnout Bearers - Concrete	No	25,000	1	25,000	4	100,000	6	150,000
12	Rails & Fastenings								
a	Rails 50kg/m (\$1000/t)	km	101,500	1.060	107,590	32.869	3,336,204	41.607	4,223,111
b	Rails 41kg/m	km	-						
c	Junction Rails	Pair	-						
d	Fastenings(concrete) NG "e" clips & pads	km	23,840	1.060	25,270	32.869	783,597	41.607	991,911
g	Turnouts 1in12 (tangential) 50kg/m	No	106,000	1	106,000	4	424,000	6	636,000
h	Turnouts 1in10(tangential) 41kg/m	No							
j	Catch Points	No	-						
k	Other-Ins Jts \$500 ea	No	500	1.060	530	32.869	16,435	41.607	20,804
13	Track Construction								
a	Mob/deob	Item							
b	Tracklay Track	km	93,820	1.060	99,449	32.869	3,083,770	41.607	3,903,569
c	Tracklay Turnouts	No	40,000	1	40,000	4	160,000	6	240,000
14	Buildings - Op Cabins								
15	Roads & paths between tracks	m2	6	100	600	400	2,400	600	3,600
16	Water Services								
17	Signalling								
	Signalling System	km	57,125	1.06	60,553	31.339	1,790,240	39.312	2,245,698
	Train Control System	km	8,698	1.06	9,220	31.339	272,576	39.312	341,922
18	Communications	km	4,317	1.06	4,576	31.339	135,296	39.312	169,717

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ESTIMATE: GREENFIELD

4. Pinjarra East - Pinjarra South	5. Pinjarra - Wagerup Nth	6. Wagerup Nth - Brunswick Junction
1.060 km NG track	31.339 km NG track	39.312 km NG track
1490 sleepers/km	1490 sleepers/km	1490 sleepers/km
50 & 41 kg/m rail weight	50 kg/m rail weight	50 kg/m rail weight
	0 km Pinjarra (1/4PL)	0.765 km Yarloop (PL)
	0.765 km Coolup (PL)	0.765 km Warranup (PL)
	0.765 km Waroona (PL)	0.765 km Benger (PL)
1 turnouts	4 turnouts	6 turnouts
1.5 level Xing (grad 1)	10.5 level Xing (grad 1)	12 level Xing (grad 1)
0 level Xing (grad 2)	2 level Xing (grad 2)	18 level Xing (grad 2)
0 culverts	0 culverts	0 culverts
0 m bridges	140 m bridges	120.9 m bridges

	DESCRIPTION	UNIT	RATE	QTY	AMOUNT	QTY	AMOUNT	QTY	AMOUNT
19	Wharfs & Jetties								
20	Electrics								
a	Power Reticulation								
b	Yard Lighting	Poles							
21	Workshops On-line Fuelling Structure	Item							
22	Power Supply Buildings	Item							
23	Transmission Lines								
24	Machinery Plant & Equipment On-line Fuelling Facility	Item							
25	Miscellaneous								
a	Track Signs	km	1,100	1.060	1,166	32.869	36,156	41.607	45,768
b	Freight	km	1,000	1.060	1,060	32.869	32,869	41.607	41,607
26	Contingencies								
	Early Planning & Design	%	7		52,697		1,381,982		1,724,062
	Contractor's Risk	%	0		-		-		-
27	EPCM	%	8		64,441		1,689,966		2,108,281
	Engr, Procurement & Constr Mgt								
28	Financing Charges	%	7		103		84,122		132,844
	TOTAL				870,055		22,898,668		28,594,642

PROJECT : Kwinana to Bunbury Inner Harbour Railway Infrastructure – Gross Repl

			4. Pinjarra East - Pinjarra South	5. Pinjarra - Wagerup Nth	6. Wagerup Nth - Brunswick Junction
SUMMARY					
	ENGR, PROCURE & CONST MGT		85,641	2,347,346	2,940,421
	EARTHWORKS		113,596	3,506,235	4,438,906
	BRIDGES & CULVERTS		12,084	1,690,707	1,610,780
	TRACK MATERIALS		389,911	8,377,369	10,759,348
	TRACKLAY		139,449	3,243,770	4,143,569
	SIGNALLING & COMMUNICATION		74,348	2,198,112	2,757,337
	OTHER		2,226	69,025	87,375
	CONTINGENCIES		52,697	1,381,982	1,724,062
	FINANCE CHARGES		103	84,122	132,844
	TOTAL		870,055	22,898,668	28,594,642

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PROJECT : Kwinana to Bunbury Inner Harbour Railway Infrastructure

ESTIMATE: GREENFIELD

7. Brunswick Junction - Picton Junction	8. Picton Junction - Harbour Junction	Totals
18.224 km NG track	3.520 km NG track	
1490 sleepers/km	1490 sleepers/km	
50 kg/m rail weight	50 kg/m rail weight	
0.765 km Brunswick Jn (PL)		
0.765 Picton Yard		
4 turnouts	1 turnouts	
7 level Xing (grad 1)	2 level Xing (grad 1)	
5 level Xing (grad 2)	0 level Xing (grad 2)	
0 culverts	0 culverts	
137.2 m bridges	163.6 m bridges	

	DESCRIPTION	UNIT	RATE	QTY	AMOUNT	QTY	AMOUNT	AMOUNT
1	Survey	km	20,000	19.754	395,080	3.52	70,400	3,514,960
2	Engineering - see EPCM item 27 below.	km	-	19.754	-	3.52	-	-
3	Land	ha	-					
4	Clearing & topsoil removal	km	-	19.754	-	3.52	-	-
5	Earthworks for Track							
a	Prepare Formation	km	59,200	19.754	1,169,437	3.52	208,384	10,404,282
b	Basecourse layer	km	47,400	19.754	936,340	3.52	166,848	8,330,455
6	Tunnels	m						
7	Bridges (\$15,000/span m)	m	9,400	137.2	1,289,680	163.6	1,537,840	7,697,660
	Culverts (600m dia ?m per km)	km	11,400	19.754	225,196	3.52	40,128	2,003,527
8	Level Xings (Grad 1)	No	5,000	7	35,000	2	10,000	275,000
	Level Xings (Grad 2)	No	2,500	5	12,500	0	-	65,000
9	Fencing of Track	km	-					
10	Ballasting							
	Placement (incl in Track Construction item 13 below)	km	-	19.754	-	3.52	-	-
	Rail Ballast 1,900tonne per km @ \$14.00/t	km	27,900	19.754	551,137	3.52	98,208	4,903,369
	Freight (incl in Track Construction item 13 below)	km						
11	Sleepers							
a	Concrete Sleepers NG \$56 ea 1490/km	km	83,440	19.754	1,648,274	3.52	293,709	14,664,413
e	Turnout Bearers - Concrete	No	25,000	4	100,000	1	25,000	750,000
12	Rails & Fastenings							
a	Rails 50kg/m (\$1000/t)	km	101,500	19.754	2,005,031	3.52	357,280	17,838,422
b	Rails 41kg/m	km	-					
c	Junction Rails	Pair	-					
d	Fastenings(concrete) NG "e" clips & pads	km	23,840	19.754	470,935	3.52	83,917	4,189,832
g	Turnouts 1in12 (tangential) 50kg/m	No	106,000	4	424,000	1	106,000	3,180,000
h	Turnouts 1in10(tangential) 41kg/m	No	-					
j	Catch Points	No	-					
k	Other-Ins Jts \$500 ea	No	500	19.754	9,877	3.52	1,760	87,874
13	Track Construction							
a	Mob/deob	Item						
b	Tracklay Track	km	93,820	19.754	1,853,320	3.52	330,246	16,488,677
c	Tracklay Turnouts	No	40,000	4	160,000	1	40,000	1,200,000
14	Buildings - Op Cabins							
15	Roads & paths between tracks	m2	6	400	2,400	100	600	18,000
16	Water Services							
17	Signalling							
	Signalling System	km	57,125	18.224	1,041,046	3.52	201,080	9,425,225
	Train Control System	km	8,698	18.224	158,506	3.52	30,616	1,435,051
18	Communications	km	4,317	18.224	78,676	3.52	15,196	712,304

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PROJECT : Kwinana to Bunbury Inner Harbour Railway Infrastructure

ESTIMATE: GREENFIELD

7. Brunswick Junction - Picton Junction	8. Picton Junction - Harbour Junction	Totals
18.224 km NG track	3.520 km NG track	
1490 sleepers/km	1490 sleepers/km	
50 kg/m rail weight	50 kg/m rail weight	
0.765 km Brunswick Jn (PL)		
0.765 Picton Yard		
4 turnouts	1 turnouts	
7 level Xing (grad 1)	2 level Xing (grad 1)	
5 level Xing (grad 2)	0 level Xing (grad 2)	
0 culverts	0 culverts	
137.2 m bridges	163.6 m bridges	

	DESCRIPTION	UNIT	RATE	QTY	AMOUNT	QTY	AMOUNT	AMOUNT
19	Wharfs & Jetties							
20	Electrics							
a	Power Reticulation							
b	Yard Lighting	Poles						
21	Workshops On-line Fuelling Structure	Item						
22	Power Supply Buildings	Item						
23	Transmission Lines							
24	Machinery Plant & Equipment On-line Fuelling Facility	Item						
25	Miscellaneous							
a	Track Signs	km	1,100	19,754	21,729	3.52	3,872	193,323
b	Freight	km	1,000	19,754	19,754	3.52	3,520	175,748
26	Contingencies							
	Early Planning & Design	%	7		882,554		253,722	7,528,719
	Contractor's Risk	%	0		-		-	-
27	EPCM	%	8		1,079,238		310,266	9,206,547
	Engr, Procurement & Constr Mgt							
28	Financing Charges	%	7		32,286		23,756	505,618
	TOTAL				14,601,996		4,212,348	124,794,008

PROJECT : Kwinana to Bunbury Inner Harbour Railway Infrastructure – Gross Rep

			7. Brunswick Junction - Picton Junction	8. Picton Junction - Harbour Junction	TOTALS
SUMMARY					
	ENGR, PROCURE & CONST MGT		1,474,318	380,666	12,721,507
	EARTHWORKS		2,108,176	375,832	18,752,737
	BRIDGES & CULVERTS		1,514,876	1,577,968	9,701,187
	TRACK MATERIALS		5,256,754	975,874	45,953,911
	TRACKLAY		2,013,320	370,246	17,688,677
	SIGNALLING & COMMUNICATION		1,278,228	246,892	11,572,581
	OTHER		41,483	7,392	369,071
	CONTINGENCIES		882,554	253,722	7,528,719
	FINANCE CHARGES		32,286	23,756	505,618
	TOTAL		14,601,996	4,212,348	124,794,008

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ESTIMATE: GREENFIELD

Summary of Gross Replacement Value			Mainline	Passing
		\$	km	km
1	Alcoa to Mundijong Jct	19,297,300	26.39	1.80
2	Mundijong Jct to Pinjarra	32,750,400	43.28	3.60
3	Pinjarra to Alumina Jct	1,568,600	1.86	0.00
4	Pinjarra E. to Pinjarra Sth	870,100	1.06	0.00
5	Pinjarra to Wagerup Nth	22,898,700	31.34	1.53
6	Wagerup Nth to Brunswick Jct	28,594,600	39.31	2.30
7	Brunswick Jct to Picton Jct	14,602,000	18.22	1.53
8	Picton Jct to Bunbury I.H.	4,212,300	3.52	0.00
Total		124,794,000	164.99	10.76

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Total Track km	TO No.	Level Xng No.	Bridges No.
28.19	4	11	82.3
46.884	8	11	174.9
1.864	2	1	0
1.06	1	1.5	0
32.869	4	12.5	140
41.612	6	30	120.9
19.754	4	12	137.2
3.52	1	2	163.6
175.75	30.0	81.0	818.9