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 Billiton Aluminium (RAA) Pty Ltd 56%, Billiton Aluminium (Worsley) Pty Ltd 30%,
 Kobe Alumina Associates (Australia) Pty Ltd 10%, Nissho Iwai Alumina Pty Ltd 4%.

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Cc		Date	3 March 2003 N° Pages

As foreshadowed in our previous submission (12 Feb 2003) Worsley has estimated GRVs for the Brunswick/Picton and Picton/Bunbury Inner Harbour route sections. Worsley's estimated GRV for these two sections is \$15.8M, compared with WestNet's estimate of \$30.9M.

Worsley's estimate excludes the earthworks which Worsley contends were erroneously included in WestNet's estimate. Worsley's estimate is based on a rail specification for the route section Worsley/Hamilton (21t axle load; 90kmph) as this is the most recently built section of track between Hamilton and Bunbury.

Worsley's cost estimate uses unit rates for civil works, including rail, in this region. The engineering design calculations and the sources of the unit rates can be made available to the Regulator on request.

Worsley agrees with WestNet that the track as it exists has the capacity to provide the level of service that meets the actual and reasonably projected demand. Worsley does not believe, however, that the specification used by WestNet in estimating its GRVs is that for a modern equivalent asset. WestNet's GRV estimate is considerably greater than that for the track as it exists and, as such, does not meet the requirements of Schedule 4 s2(4)(c).

Worsley believes that its GRV estimate is an upper bound for that to be used under the Code in that the engineering is conservative (see attached) and pricing estimates are taken from recent piecework – lower prices are likely to be available for a major greenfields construction project. The track specification used for the estimate also exceeds the service provided on route sections that have routine speed restrictions.

The details underlying Worsley's estimate are attached. Worsley welcomes the opportunity to discuss this with the Regulator.

WAPL Document Reference	Author	Date	Page
Further submission from Worsley on Clause 9 (GRV) 1.doc	J Keep	Wednesday, 5 Mar 2003	1 of 1

**SUBMISSION TO THE RAIL ACCESS REGULATOR
WORSLEY ALUMINA PTY LTD**

**SOUTH WEST MAIN
ROUTE SECTIONS
BRUNSWICK JUNCTION TO PICTON JUNCTION
PICTON JUNCTION TO HARBOUR JUNCTION**

DETERMINATION OF GROSS REPLACEMENT VALUE

INTRODUCTION

In its submission of February 12, 2003, Worsley Alumina Pty Ltd (Worsley) advised that it would submit its own estimate of the GRVs for the following route sections of the South West Main and for which the company has specific interest:

- Brunswick Junction to Picton Junction
- Picton Junction to Bunbury Inner Harbour

The estimate has been prepared from information obtained through a number of sources. Attempts were made to access the WestNet asset register documentation detailing the actual infrastructure associated with the two route sections. However, such access was denied.

Information that has been utilised includes extracts from Rail Access Regulator's web site as well as information shown on construction drawings associated with the route sections in question. Typically this included formation height levels with cut and bank heights.

ESTIMATE FRAMEWORK

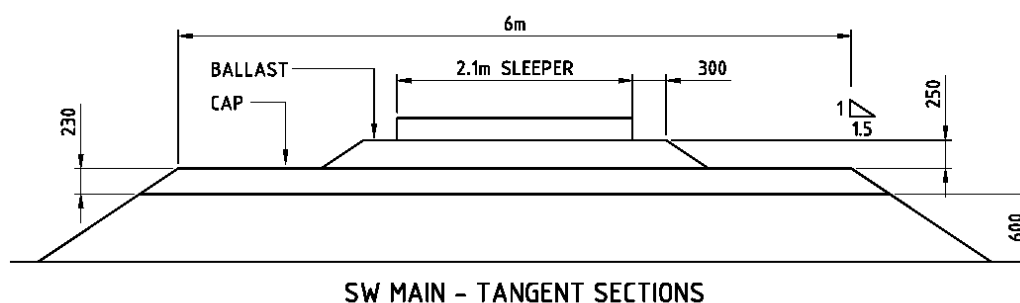
The following provide the broad framework adopted for the development of the GRV estimate.

Route Infrastructure ¹

Route Section	Distance (km)		Turnout	Level Crossing		Bridges (m)
	Main	Loop		Grad 1	Grad 2	
Brunswick Junction to Picton Junction	18.224	1.53	4	7	5	137.2
Picton Junction to Bunbury Inner Harbour	3.520	0.00	1	2	0	163.60
TOTAL	21.744km	1.53km	5	9	5	300.8

Formation

Assumed cross-section



¹ Source: Longrun Maintenance Model (Alcoa submission)

Since its original submission, Worsley has re-examined WAGRC documentation (construction plans) for the Brunswick Junction and Picton Junction route section and extracted the following earthworks data:

Cut and bank sections

Section	Distribution	Height (including cap)
Cut	17%	0.55m
Bank	83%	0.82m

This information has been taken as typical over the alignment between Brunswick Junction and Bunbury Inner Harbour.

Worsley continues to contend that the infrastructure to be included is as defined in the Code and described in s2.2 of the Costing Principles and the cost of construction of earthworks should be excluded from the GRV. Notwithstanding its position, Worsley also contends that the cut and bank distribution, as well as the actual formation data available for the route section between Brunswick Junction and Picton Junction confirms the inappropriate application of a hypothetical MEA which incorporates a 1.5m high embankment.

Ballast and Capping Thickness

Adopting the MEA rail and sleeper configuration nominated by GHD for the South West Main

Rail Weight	50kg/m
Sleeper - Material	concrete
- Spacing	1490/km

Angular ballast has been assumed.

Worsley's independent rail engineer has calculated an appropriate track structure commensurate with Narrow Gauge Block Train operations in the Bunbury area, namely 21t axle at 90km/h, to be:

Ballast thickness	250mm
Capping thickness	230mm

Details supporting these calculations can be provided if required.

Additionally, it has been suggested to Worsley that the adopted ballast thickness is more likely to be 200mm rather than the 250mm calculated.

Bridge Structures

Based on similar structures on the Narrow Gauge network, Worsley has adopted an overall bridge width of 4.5m.

EXAMINATION OF UNIT RATES

Worsley has previously commented on the failure of WestNet to demonstrate open market competition in the derivation of unit rates with examples of pricing information being based upon:

- Track Laying Costs - *“verbal advice from JHCE”*
- Turnouts *“only VAE responded”*

A review of the unit rates included in the WestNet pricing shows significant variation to those Worsley has been able to establish for similar activities within the SW and Bunbury areas.

Item	Unit Rates	
	WestNet	Worsley
Bridge Rates up to 12m	\$2 200/m ²	\$1 750/m ²
12m – 20m	\$2 600/m ²	\$1 900/m ²
Culverts 600mm RCP	\$ 254/m	\$ 160/m (Class 2)
900mm RCP	\$ 578/m	\$ 335/m (Class 2)
900 x 600 RCBC	\$1 155/m	\$ 630/m
1200 x 300 RCBC	\$2 040/m	\$ 670/m
1200 x 450 RCBC	\$2 093/m	\$ 700/m
RC headwalls end treatment – 900RCP	\$1 000/m ³	\$ 630/m ³

Further detail is included in the GRV estimate in Appendix A

The lack of “real” data available to Worsley in relation to communication and signalling on the two route sections has prevented the development of an actual GRV for these items and also a comparative evaluation of the rates. If documentation detailing the actual communication and signalling and can made available, Worsley will arrange for an estimate of these components for the two route sections in question.

GRV ESTIMATE

Worsley has retained independent quantity surveyors to prepare an estimate of the GRV for the two route sections in question. The estimate has been developed using the framework and assumptions outlined above and incorporating appropriate local rates extracted from similar works within the SW and Bunbury area. The estimate is attached Appendix A.

It should be noted that the GRV estimate has been prepared on the basis of the two separate route sections with an allowance for contractor’s preliminaries included under each section of the estimate.

Based on the Regulator’s determination on what infrastructure is to be included in the calculation of the GRV and in that context, the exclusion of earthworks and drainage, Worsley has prepared its base cost estimate with the exclusion of these work components. However, specific cost items have been included for both earthworks and culvert drainage,

thereby enabling direct comparison with WestNet costing and in addition, illustrating the excessively high unit rates adopted by WestNet in relation to these work activities.

SUMMARY

Worsley contends that the GRV for the two route sections in question is substantially above the replacement value of an equivalent MEA applicable for those routes, namely:

- Brunswick Junction to Picton Junction
- Picton Junction to Bunbury Inner Harbour

The GRV comparisons being:

Route Section	WestNet	Worsley	
		Excluding Earthworks	Including Earthworks
Brunswick Junction to Picton Junction	\$23 392 080	\$11 899 837	\$13 808 415
Picton Junction to Inner Harbour	\$ 7 463 959	\$3 928 508	\$4 256 572
TOTAL	\$30 856 039	\$15 828 345	\$18 064 987

APPENDIX A

GRV ESTIMATE

SECTION 1 NOTES & EXCLUSIONS

- 1 This cost indication is an estimate for the railtrack work between Brunswick Junction & Bunbury Inner Harbour based on our understanding of the asset as it currently exists & is subject to confirmation
- 2 This cost indication excludes the following:-
 - land costs
 - clearing & removal of topsoil
 - financing costs
 - professional fees for engineering design, procurement, construction management
 - cost escalation
 - 10% GST
- 3 The rates used in this cost indication include contractor's margin & are based on cost data from various sources including tendered & priced schedules of rates/bills of quantities for civil works comprising roads, bridges, tunnels & railtrack work; estimates for similar work for other projects provided by reputable consulting engineering companies experienced in this project type; & trade publications for various elements of the work
- 4 The rates used in this cost indication include for a regional loading for the Bunbury/Brunswick area of 5% (Department of Housing & Works published WA locality factor lists Brunswick Junction as 5% & Bunbury as 0%)
- 5 There are some elements in this cost indication which we have not been able to quantify at this stage. We have, however, made what we believe to be fair & reasonable allowances for same which will be reviewed & confirmed or revised as & when more information is available. These items include:-
 - rail turnouts
 - culverts
 - signalling & communications
- 6 With regard to the unit rates that Westnet rail is proposing to use we have compared these with our data base of rates for similar work & believe that some of rates proposed may be excessive. Examples of the items & rates which we believe are appropriate include:-
 - ballast \$ 28.00/m³
 - cut to fill \$ 3.00/m³
 - imported filling \$ 11.00/m³
 - 230 crushed limestone cap \$ 5.50/m²
 - 1200x300 box culvert \$ 670.00/m
 - 1200x450 ditto \$ 700.00/m
 - 1200x1200 ditto \$ 1000.00/m
 - 900x600 ditto \$ 630.00/m
 - 300 dia. class 2 RC pipe \$ 120.00/m
 - 450 ditto \$ 140.00/m
 - 600 ditto \$ 160.00/m
 - 900 ditto \$ 335.00/m
 - end treatment to 300 dia. \$ 300.00/each
 - ditto to 450 dia. \$ 310.00/each
 - ditto to 600 dia. \$ 400.00/each
 - ditto to 900 dia. \$ 700.00/each

SECTION 2 BRUNSWICK JUNCTION - PICTON JUNCTION

	Unit	Qty	Rate	Amount
SURVEY WORK				
Allowance for surveying	km	19.8	\$7,500.00	\$148,500.00
EARTHWORKS				
Embankment foundation compaction	m2	166744	\$0.75	\$125,058.00
Embankment construction comprising cut to fill	m3	15307	\$3.00	\$45,921.00
Embankment construction comprising imported fill	m3	74735	\$11.00	\$822,085.00
230 Thick crushed limestone formation layer	m2	125548	\$5.50	\$690,514.00
TRACKWORK				
250 Thick ballast	m3	12436	\$28.00	\$348,208.00
Extra over 250 thick ballast for laying on bridge including ballast mat	m	138	\$700.00	\$96,600.00
Concrete sleepers (1500/km)	No.	29631	\$60.00	\$1,777,860.00
50kg/m Narrow guage rail track including fastenings, laying, etc.	km	19.8	\$225,000.00	\$4,455,000.00
Turnout complete	No.	4	\$175,000.00	\$700,000.00
SIGNALLING				
Allowance for signalling & communications	PS			\$1,250,000.00
BRIDGES, CULVERTS, CROSSINGS, ETC.				
Bridges (assumed deck width is 4.50m)	m	138	\$10,000.00	\$1,380,000.00
Culverts	Item			\$225,000.00
Level crossing (grade 1)	No.	7	\$5,000.00	\$35,000.00
Level crossing (grade 2)	No.	5	\$2,500.00	\$12,500.00
MISCELLANEOUS				
Allowance for miscellaneous items such as signage, sundry roads & paths, fencing, etc. (1%)	Item			\$121,122.00
OTHER PROJECT COSTS				
Allowance for contractor's preliminaries & general items (7.5%)	Item			\$917,503.00
Allowance for contingencies (5%)	Item			\$657,544.00
ROUTE SECTION TOTAL				\$13,808,415.00

SECTION 3 PICTON JUNCTION - BUNBURY INNER HARBOUR

SURVEY WORK

Allowance for surveying	km	3.6	\$7,500.00	\$27,000.00
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EARTHWORKS

Embankment foundation compaction	m2	28532	\$0.75	\$21,399.00
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Embankment construction comprising cut to fill	m3	2619	\$3.00	\$7,857.00
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Embankment construction comprising imported fill	m3	12787	\$11.00	\$140,657.00
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230 Thick crushed limestone formation layer	m2	21482	\$5.50	\$118,151.00
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TRACKWORK

250 Thick ballast	m3	2216	\$28.00	\$62,048.00
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Extra over 250 thick ballast for laying on bridge including ballast mat	m	164	\$700.00	\$114,800.00
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Concrete sleepers (1500/km)	No.	5280	\$60.00	\$316,800.00
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50kg/m Narrow guage rail track including fastenings, laying, etc.	km	3.6	\$225,000.00	\$810,000.00
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Turnout complete	No.	1	\$175,000.00	\$175,000.00
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SIGNALLING

Allowance for signalling & communications	PS			\$250,000.00
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BRIDGES, CULVERTS, CROSSINGS, ETC.

Bridges (assumed deck width is 4.50m)	m	164	\$10,000.00	\$1,640,000.00
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Culverts	Item			\$40,000.00
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Level crossing (grade 1)	No.	2	\$5,000.00	\$10,000.00
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MISCELLANEOUS

Allowance for miscellaneous items such as signage, sundry roads & paths, fencing, etc. (1%)	Item			\$37,337.00
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OTHER PROJECT COSTS

Allowance for contractor's preliminaries & general items (7.5%)	Item			\$282,829.00
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Allowance for contingencies (5%)	Item			\$202,694.00
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ROUTE SECTION TOTAL**\$4,256,572.00**

TOTAL

\$18,064,987.00