WestNet Rail's Floor and Ceiling Costs Review

Final Determination on the Proposed Floor and Ceiling Costs for:

Mainlines

Worsley Line

Terminal Ends

Grain Lines

Economic Regulation Authority

WESTERN AUSTRALIA

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Incorporates corrigenda of notice dated 31 July 2007.

A full copy of this document is available from the
Economic Regulation Authority web site at **www.era.wa.gov.au**.

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FINAL DETERMINATION

1. On 11 September 2006 and 13 October 2006, WestNet Rail Pty Ltd (**WNR**) submitted its proposed floor and ceiling prices for the mainlines, Brunswick to Premier line, terminal ends to the Kwinana to Bunbury rail line and three grain lines to the Economic Regulation Authority (**Authority**) for approval. The submission of the proposed floor and ceiling costs for the rail lines resulted from a requirement, under the approved 2006 Costing Principles, for WNR to review the Gross Replacement Value of these rail lines following the initial approval of the floor and ceiling costs in September and October 2003 by the Independent Rail Access Regulator (**IRAR**) and July 2004 by the Authority.

2. The Authority has considered the proposed floor and ceiling costs for the rail lines under review in conjunction with comments made in submissions to the Authority by interested parties.

3. In undertaking its assessment, the Authority has taken into account the needs and interests of the community, track users and WNR as required under Section 20(4) of the *Railways (Access) Act 1998* (**Act**).

4. The draft determination of the Authority was to not approve the proposed floor and ceiling costs for certain rail lines. The reasons for not accepting the proposed floor and ceiling costs were outlined in the draft determination which was released for public consultation on 20 March 2006.

5. Following a period of further public consultation, the Authority considered issues raised in submissions and prepared its final determination.

6. The four amendments to WNR's proposed floor and ceiling costs required by the Authority in its final determination are listed below.

Summary of Amendments

Required Amendment 1

The costs associated with the proposed Venn passing loop should be excluded from the GRV calculation of the floor and ceiling costs for the SWM.

Required Amendment 2

The unit prices submitted by WNR for various infrastructure assets should be amended to be consistent with Table 1 on pages 30 and 31 of the final determination.

Required Amendment 3

The floor and ceiling calculations submitted by WNR should be revised to incorporate the changes required under Amendment 2.

Required Amendment 4

The determined floor and ceiling costs for the mainlines and the Worsley line will apply from 1 July 2006 to 30 June 2009. The determined floor and ceiling costs for the grain lines and Terminal Ends will apply from 1 January 2007 to 30 June 2009. WNR will submit its proposed revisions to the floor and ceiling prices, for all the rail lines subject

to review, nine months prior (by 1 October 2008) to the date from which the next determination of floor and ceiling costs for these rail lines will apply (1 July 2009).

REASONS FOR THE FINAL DETERMINATION

Background

7. WestNet Rail Pty Ltd (**WNR**) is the principal provider of "below" rail freight infrastructure, covering approximately 5,000 kilometres of track, in the south-west of Western Australia. WNR is a subsidiary company owned by Babcock and Brown Ltd, a publicly listed Australian company.

8. Section 3 of the Western Australian *Railways (Access) Act 1998* (**Act**) defines a "railway owner" to mean the person having the management and control of the use of the railway infrastructure. Within this context, WNR is considered to be the railway owner for the freight rail infrastructure.

9. The Authority is required under Clauses 9 and 10, Schedule 4, of the *Railways (Access) Code 2000* (**Code**) to make determinations of floor and ceiling costs for rail lines nominated by the Authority or access seekers.

10. The scope of the floor and ceiling cost review is limited to those matters specifically set out under Schedule 4 of the Code and outlined in the next section under Legislative Considerations (Paragraph 25).

11. In September 2003, the IRAR approved the floor and ceiling costs for the four mainlines under the provisions of Clause 9, Schedule 4, of the Code. Subsequently, in October 2003, the IRAR approved the floor and ceiling costs for the Brunswick to Premier (**Worsley line**) under the provisions of Clause 10, Schedule 4, of the Code. In each of these determinations the IRAR carried out a public consultation process during the course of its assessment. The approved floor and ceiling costs for the mainlines and the Worsley line were to apply from 1 July 2003.

12. In July 2004, the Authority approved the floor and ceiling costs for the terminal ends for the Kwinana to Bunbury mainline (**Terminal Ends**) under Clause 10, Schedule 4 of the Code. At this time, in a separate determination, the Authority also approved the floor and ceiling costs for four grain lines also under Clause 10, Schedule 4 of the Code. The approved floor and ceiling costs for the Terminal Ends and the four grain lines were to apply from 1 January 2004.

13. In its September 2002 determination of WNR's inaugural Costing Principles, the IRAR stipulated the requirement for a review of the Gross Replacement Value (**GRV**) every three years. The GRV, as the asset value, underpins the floor and ceiling cost calculations.

14. Following a request from WNR, the Authority approved an extension of time, to 11 September 2006, for WNR to submit its proposed revisions to its floor and ceiling costs for the mainlines, Worsley line, Terminal Ends and an extension of time to 13 October 2006 for the revisions to the floor and ceiling costs for the four grain lines.

15. WNR advised the Authority that the floor and ceiling costs for only three of the grain lines would be included in this review as the fourth grain line, Mullewa to Narngulu, would require significant upgrading to accommodate the proposed increased transport requirements of mid-west iron ore producers. This upgrading will result in

a significant change to the Modern Equivalent Asset (**MEA**) standard for the Mullewa to Narngulu rail line. WNR indicated that once it had confirmed transport requirements (expected by December 2007) with the companies involved, a new MEA standard would be developed and revised floor and ceiling costs would then be calculated and submitted to the Authority for review.

16. On 15 September 2006 and 17 October 2006, the Authority issued notices calling for submissions from interested parties on WNR's proposed floor and ceiling costs for all the rail lines under review. Two submissions were received:

- Joint submission from Alcoa World Alumina Australia Pty Ltd and Worsley Alumina Pty Ltd (**Alcoa/Worsley**).
- Australian Rail Track Corporation Ltd (**ARTC**).

The Authority accepted two further submissions (from Alcoa/Worsley and WNR) which were received after the public submission period had closed. All these submissions are available on the Authority's web site (www.era.wa.gov.au).

17. Two important reference documents in the determination of the floor and ceiling costs are the Authority's Costing Principles Final Determination and Approval WNR's Costing Principles, released on 21 August 2006, and the approved WNR Costing Principles. The Authority's Final Determination and Approval focused on the discussion of principles, rules and practices that were considered to be important by stakeholders when determining the floor and ceiling costs in the review of WNR's Costing Principles. Both documents are available on the Authority's web site.

18. To assist the Authority in the review of WNR's proposed floor and ceiling costs and assess the issues raised in the public submissions the Authority engaged PricewaterhouseCoopers (**PwC**). PwC then engaged Hughes Consulting Services Pty Ltd (**HCS**) to provide advice on costing and engineering issues. The consultants (**PwC/HCS**) provided recommendations, in its initial report to the Authority prior to the draft determination, on WNR's proposed MEA standard for the rail lines to meet current and projected levels of demand and reviewed WNR's capital, maintenance, operating and overhead costs to identify acceptable costs, that can be substantiated and/or benchmarked, in order to ensure that operating and technical efficiencies are achieved at the MEA standard.

19. In preparing its first report, PwC/HCS reviewed and considered all the submissions received from interested parties and participated in meetings with WNR to check the veracity of the costs proposed by WNR. The PwC/HCS review also considered additional information provided by WNR and Alcoa/Worsley in support of their proposals. The PwC/HCS initial report recommendations were summarised within the Authority's draft determination. The report was made available on the Authority's web site (www.era.wa.gov.au).

20. The draft determination was released for public consultation on 20 March 2007.

21. Subsequent to the Authority issuing a notice on 20 March 2007 calling for submissions from interested parties on the draft determination, five submissions were received as listed below.

- Two joint submissions from Alcoa/Worsley.

- Australian Railroad Group (**ARG**).

- Two submissions from WNR.

All these submissions, with the exception of the confidential submission from Alcoa/Worsley, are available on the Authority's web site (www.era.wa.gov.au).

22. PwC/HCS has provided a revised report following a review of the additional information and issues raised in submissions on the draft determination. The PwC/HCS report has assessed the issues raised in submissions and provided recommendations to the Authority. This second PwC/HCS report is available on the Authority's web site (www.era.wa.gov.au).

23. The Authority's final determination on WNR's proposed floor and ceiling costs focuses on the elements within the scope of the floor and ceiling costs review as outlined under paragraph 26 below.

24. This final determination makes reference to a number of acronyms which are identified in the glossary in Appendix 4.

25. It should be noted that WNR has revised the date by which it expects to provide the proposed floor and ceiling costs for the Mullewa to Narngulu rail line from July 2007 to December 2007.

Legislative Considerations

26. The key areas of the Code and the Act that have relevance to the calculation of the floor and ceiling costs are as follows:

a) *Definition of Costs (Clauses 1 and 2, Schedule 4 of the Code)*

All costs referred to under the Code are those that would be incurred by adopting efficient practices in the provision and management of railway infrastructure including the practice of operating a particular route in combination with other routes for the achievement of efficiencies.

Incremental costs are the operating costs and, where applicable, capital costs and overheads that the rail owner would be able to avoid in respect of the 12 months following the proposed access.

Operating costs are the train control, signalling and communications, infrastructure maintenance, train scheduling, emergency management and information reporting costs. The cost of maintaining the railway infrastructure is to be calculated on the basis that cyclical maintenance costs are evenly spread over the maintenance cycle. All cost items are to be based on the costs that would be incurred if the infrastructure were replaced using MEA.

Capital costs are the costs comprising both the depreciation and risk-adjusted return on the relevant railway infrastructure. It is to be determined using an annuity formula by applying the GRV of the infrastructure as the principal, the Weighted Average Cost of Capital (**WACC**) as the rate of return and the economic life of the railway infrastructure in years. The GRV of the rail infrastructure is calculated as the lowest current cost to replace existing assets that have the capacity to provide

the level of service that meets the actual and reasonable projected demand and are if appropriate, MEA.

Total costs include the total of all operating and capital costs and overheads attributable to the performance of the access-related functions of the railway owner.

b) Determination of the WACC (Clause 3, Schedule 4 of the Code).

The Authority is required to determine, as at 30 June each year, the WACC for the rail infrastructure associated with the non-urban network. In 2003 and every five years thereafter, the Authority is to publicly consult when determining the WACC.

c) *Nature of costs (Clause 4, Schedule 4 of the Code).*

All costs are to be those that would be incurred by adopting efficient practices for the provision of rail infrastructure, including the practice of operating a particular route in combination with other routes to achieve efficiencies.

d) *Allocation of costs to determine the floor (Clause 7, Schedule 4 of the Code).*

The floor price of a route and associated railway infrastructure is the incremental costs resulting from the combined operations of all operators and other entities on that route and use of that infrastructure.

e) *Allocation of costs to determine the ceiling (Clause 8, Schedule 4 of the Code).*

The ceiling price of a route and associated railway infrastructure is the total cost attributable to that route and infrastructure.

f) *Determination of the floor and ceiling costs on routes for which access proposals are likely to be made (Clause 9, Schedule 4 of the Code).*

The Authority is required to nominate the routes which it considers that proposals for access are likely to be made, and ask the railway owner to propose floor and ceiling costs of these routes. The Authority will make a determination on these costs and will seek public comment before making the determination.

g) *Determination of the floor and ceiling costs on routes which have not been assessed under Clause 9 (Clause 10, Schedule 4 of the Code).*

When a proposal is made on a route where the floor and ceiling costs have not previously been determined by the Authority, the railway owner will be required to notify the Authority of its costs. The Authority will either approve the railway owner's proposed costs or make an appropriate determination of the costs. In both instances, the Authority may seek public comment on the determination, as long as the time limit imposed on the railway owner, under the Code, to present to the operator a draft access agreement for consideration is not breached. This time constraint can be waived by the operator who is seeking access.

h) *Review and re-determination of costs (Clause 12, Schedule 4 of the Code).*

If it is considered that there is a material change in the circumstances that existed when the floor and ceiling costs were determined, the Authority may review the costs and make a fresh determination. The Authority may also give public notification of such a review and seek public comment on the determination.

i) *Competition Principles (Section 20(4) of the Act).*

The Act also provides a framework within which the Authority's determination is to be made. Section 20(4) states:

In performing functions under the Act or Code, the Regulator is to take into account-

(a) the railway owner's legitimate business interests and investment in the railway infrastructure;

(b) the railway owner's costs of providing access, including any costs of extending or expanding the railway infrastructure, but not including costs associated with losses arising from increased competition in upstream or downstream markets;

(c) the economic value to the railway owner of any additional investment that a person seeking access or the railway owner has agreed to undertake;

(d) the interests of all persons holding contracts for the use of the railway infrastructure;

(e) firm and binding contractual obligations of the railway owner and any other person already using the railway infrastructure;

(f) the operational and technical requirements necessary for the safe and reliable use of the railway infrastructure;

(g) the economically efficient use of the railway infrastructure; and

(h) the benefits to the public from having competitive markets.

The nature of the decision-making power given to the Authority under Clauses 9 and 10 of Schedule 4 of the Code is mandatory in that the Authority must take into account all the factors listed in Section 20(4) of the Act. However, the Authority has discretion to allocate such weight to each of the factors listed in Section 20(4) of the Act as it considers appropriate for each particular case.

Costs in the WA Rail Access Regime

27. WNR is required to negotiate access prices between a floor and a ceiling as specified in Clauses 7 and 8, Schedule 4 of the Code.

28. The floor is determined by the incremental costs resulting from the operations on the section of a route and use of the infrastructure. "Incremental costs" is defined in Clause 1, Schedule 4 of the Code as the sum of the operating costs and, where applicable, the capital costs and the overheads resulting from the access seeker's operation that the railway owner would be able to avoid in respect of the 12 months following the commencement of access.

29. The calculation of the floor is dependent upon a number of specific circumstances which will vary based on each access application. Each operator can have a different floor and the sum of all operators' floors on a route section will be no less than the floor for that route section.

30. WNR has applied the following factors to calculate the floor:

- the percentage that the incremental traffic represents of the total traffic;
- the existing overall level of traffic (i.e. high or low density traffic use);
- the requirements of the service (e.g. high speed passenger versus low speed freight);

- the nature of the infrastructure (which will influence the operating costs) and the specific requirements of the user; and
- the nature of the train operations and its impact on overhead costs.

31. Similarly, the ceiling is derived from the total costs attributable to the section of a route and the use of the infrastructure. Total costs is defined in Clause 1, Schedule 4 of the Code as the total of all operating, capital and overhead costs resulting from the provision of access-related functions by WNR.

32. The components of the floor and ceiling costs and the approach to estimating these costs are not based on actual costs or the actual network but rather the hypothetical GRV of a MEA, assuming efficient practices.

33. There is no obligation for WNR to provide a network that is MEA or to adopt the specific maintenance practices assumed in the Regime as its actual practices. However, the standard of service assumed for the hypothetical GRV of a MEA must be consistent with what is to be provided by the actual network to meet current and reasonably projected demand.

34. Schedule 2 of the Code defines a "route section" as a section of the railway network that has been divided for management and costing purposes. Each route section contains its own derived ceiling and floor costs and it is between these costs that access prices will be negotiated. It should be noted that a negotiated route could equate to a route section (or part thereof) or be a combination of several route sections.

35. The IRAR and the Authority agreed to WNR's definition of the railway network into routes and route sections which were outlined in the 2003 and 2004 determinations based on differences in track characteristics and traffic densities. The current review of the floor and ceiling costs are for the same routes and route sections as presented in the earlier determinations and are outlined in Appendix 2.

36. To calculate the floor and ceiling costs, WNR has developed a computerised costing model, the access pricing model (**APM**). The WNR APM is a bottom-up model where individual activity unit costs are applied to estimated activity levels to derive floor and ceiling costs for individual route sections. The APM stores population data, including all costs and physical parameter assumptions, in a Microsoft (**MS**) Access database. The database has an interface that allows the user to select routes and vary assumptions prior to running the model.

37. Preliminary calculations are performed within MS Access, and thereafter the results are exported as text files to the Decision Support System (**DSS)** where final calculations are conducted and summary results on access costs are presented. As a check, the DSS calculations are mirrored in MS Excel.

Assessment Process

38. The key dates associated with this review of WNR's proposed floor and ceiling costs are outlined below.

- November 2006- Public submissions received on WNR's proposed floor and ceiling costs.
- March 2007- Authority's draft determination published.

- May 2007- Public submissions on draft determination close.
- June 2007- Authority's final determination published.
- June 2007- Amended floor and ceiling costs submitted by WNR for approval.

Discussion of Issues

39. Issues pertaining to WNR's floor and ceiling costs in the draft determination were discussed under the following headings:

    - Level of service and modern equivalent asset standard.
    - Capital costs.
    - Operating costs and working capital.
    - Maintenance costs.
    - Overhead costs.

    The final determination discusses issues under these same headings to ensure consistency with the draft determination.

40. The discussion of each item below commences with the draft determination's required amendments, where appropriate, followed by an outline of relevant comments received in the public consultation process on each amendment, PwC/HCS assessment then the Authority's assessment and final determination.

41. The Authority received three submissions on the Authority's draft determination. However, Alcoa/Worsley and WNR also provided supplementary submissions.

42. It should be noted that in the case of the grain lines, only three specific grain lines are subject to floor and ceiling cost determinations. The unit costs arising from the determination on these three lines is used to calculate the equivalent floor and ceiling costs for the rest of the grain network based on either a 16 or 19 tonne axle load, whichever is relevant to the particular grain line.

Level of service and modern equivalent asset standard

43. There were no amendments identified under this heading and the submissions on the draft determination did not express any concerns in relation to this area. Consequently, the Authority confirms the position outlined in the draft determination to the effect that there should be no change to the MEA standard, as submitted by WNR, for all the rail lines under this review.

Capital Costs

Draft Determination Amendment

44. Three amendments were outlined in the draft determination relating to capital costs, as listed below.

Amendment 1

The costs associated with the proposed Venn passing loop should be excluded from the GRV calculation of the floor and ceiling costs for the SWM.

Amendment 2

The unit prices submitted by WNR for various infrastructure assets should be amended to be consistent with Table 1 on pages 32 and 33 of the draft determination.

Amendment 3

The floor and ceiling calculations submitted by WNR should be revised to incorporate the changes required under Amendment 2.

45. In the draft determination, the Authority outlined required amendments (Amendment 2) to the unit prices of some items of rail infrastructure and these were identified in Table 1 of the draft determination. Comments on the unit pricing of these items of rail infrastructure have been provided in submissions by interested parties.

Interested Party Submissions

Submissions Received During Submission Period

46. Two submissions were received from interested parties that addressed unit pricing of rail infrastructure.

47. Alcoa/Worsley has commented on the unit price of 50kg steel rail which was accepted in the draft determination to be $1,440 per tonne. It disputes the method by which PwC/HCS calculated the delivered price to be $1,440 per tonne as it was inclusive of flash butt welding when compared with the WNR price of $1440 per tonne exclusive of flash butt welding. Alcoa/Worsley suggests that when undertaking like-for-like comparisons and with volume discounts on freight, the Australian manufactured 50kg steel rail price should be $1,430 per tonne delivered to Midland. Alcoa/Worsley has supported the view of the Authority outlined in the draft determination that there should be no premium on large quantities of 41kg or 50kg rail and the same cost per tonne should apply to 41kg, 50kg and 60kg rail.

48. Alcoa/Worsley has also assessed the option of sourcing steel rail from China based on advice that the Fortescue Metals Group (**FMG**) is sourcing its rail requirements from China. Alcoa/Worsley has obtained a quote from a Chinese rail supplier for the supply of large quantities of rail and estimated Chinese land transport costs, shipping costs to Australia, local freight costs and clearance costs at Fremantle. Alcoa/Worsley estimated the landed cost of large volumes of rail to be $1,002 per tonne and suggests that imported rail is very competitive for large volumes. Alcoa/Worsley contends that with the FMG experience of using Chinese manufactured rail in the Pilbara, the Chinese rail price should be used as the lowest current cost for rail.

49. In regard to sleeper prices, Alcoa/Worsley indicated[1] that it did not agree with the unit cost for NG sleepers of $82 per sleeper that the Authority determined in the draft determination as this price did not reflect the lowest cost for NG sleepers. It maintained its original position outlined in the submission prior to the draft determination that a price quoted from an Eastern States supplier (Austrak or Rocla) should be the price used for NG sleepers “as it could be assumed that either

[1] Alcoa/Worsley, Public Submission by Alcoa World Alumina Australia and Worsley Alumina on the Draft Determination on WestNet Rail’s Proposed Floor and Ceiling Costs for Certain Rail Lines, page 17.

of these companies would build a sleeper production facility in WA for the quantities required for the MEA rebuild of the WestNet network" and hence there would be no transport cost to WA. It supported this contention that a local manufacturing facility would be built in WA, citing similar experience for other major rail infrastructure projects in Australia such as the Alice Springs to Darwin rail line where local manufacturing facilities were built. On this basis, Alcoa/Worsley concluded that a unit price of $75.50 per NG sleeper and $83 per SG sleeper represents the lowest sleeper costs.

50. Alcoa/Worsley agreed with the unit cost of ballast (ex works) as outlined in the draft determination. However, it expressed a concern about the rounding up of the value and indicated that the price should be expressed as two decimal places at $20.70 per tonne as opposed to $21 per tonne (as outlined in the draft determination) as this represented a difference in the GRV ballast cost of $136,267. Further, the submission requested that the Authority state what transport cost was allowed for each of the quarries nominated in the draft determination. It contends that the transport distance should average 45km on the SWM, on the basis of quarries at either end of the SWM, and that the maximum cost for ballast transport for the SWM should be $3.60 per tonne.

51. Alcoa/Worsley has expressed concern about the unit cost of earthworks for both the SWM and the Worsley line determined in the draft determination. It believes that the unit costs suggested by the Authority did not reflect a 17% increase above the 2003 determination but rather an increase some 36% above the 2003 determined rate. The submission also expressed some concern with the PwC/HCS dismissal of the Rawlinson Australian Construction Handbook calculations for civil engineering works and the inclusion of components of earthworks costs associated with items such as environmental protection, land stabilisation and provision of access points and pads for maintenance including removal of construction roads at completion.

52. Alcoa/Worsley commented that its consultant, Indec Consulting, had done some further work on earthworks costs and source additional quotes from contractors. The additional work suggested that a "lowest cost estimate" was $13.31 per cubic metre and with the inclusion of the cost for the capping layer the average cost for earthworks was estimated at $19.02 per cubic metre (or $131 per linear metre) for the SWM as opposed to an average rate of $23.21 per cubic metre (i.e. $159.925 per linear metre) proposed by WNR for the SWM. Similarly, a revised earthworks cost estimate was provided for the Worsley line with additional information provided by contractors suggesting that the new earthworks cost estimate should be $14.85 per cubic metre (i.e. $169.53 per linear metre) as opposed to the proposed cost by WNR of $19.04 per cubic metre (i.e. $217.50 per linear metre).

53. Alcoa/Worsley did not agree with the Authority's acceptance in the draft determination of WNR proposed GRV of $12,815,555 for communications equipment for the SWM. Alcoa/Worsley considered that the amount of 20% for design, construction and project management used in the WNR GRV estimate was too high and should only be 10% in line with projects of this nature where "WNR is only providing a minimal project oversight given the high-tech nature of the project". Alcoa/Worsley provided an estimate of $8,754,620 for the GRV for this equipment, (which was the same amount as provided in its original submission in November 2006) with further detail provided in a confidential appendix to its submission. Alcoa/Worsley has also challenged the use of CPI comparisons for the escalation factor and considered that the ABS Producer Price Index for telecommunications should be used for escalation comparisons to be consistent with the use of other

ABS indices elsewhere in the GRV calculations. Alcoa/Worsley indicated that the use of ABS index for *Telecom/Broadcast Equipment* shows that the escalation would be 0.46% between June 2003 and March 2006.

54. In regard to the issue of forecast capacity enhancements, Alcoa/Worsley did not recognise the need for the Venn passing loop, north of Pinjarra, on the basis that the requirement for this passing loop was not supported by track users as there were no submissions from interested parties, other than Alcoa/Worsley, addressing this issue. In addition, Alcoa/Worsley suggested[2] that the assertion in the draft determination that the Venn loop is required to "hold Alcoa trains departing from Calcine when opposing trains are in the same section" is incorrect as any Alcoa trains departing Calcine and heading north can be held on the branch line until the mainline is clear. Therefore, Alcoa/Worsley considers it unlikely that another passing loop 2km north of the existing branch line at Pinjarra East would be required. On this basis, it argues that the Venn passing loop is not required.

55. The Alcoa/Worsley submission also seeks clarification on the cost of the Burekup passing loop, south of Brunswick Junction for this and future determinations. In the draft determination, the Authority accepted that the proposed cost of $3.22 million be used in the GRV calculation as the passing loop has not been built as yet but is expected to be built within the next twelve months. Alcoa/Worsley considers "that this price reset should assume that the passing loop is constructed as part of the whole of the SWM and not as a single isolated loop". On this basis, it is suggested that a value of $2.6 million be used in the GRV calculation reflecting the unit rates recommended in the Alcoa/Worsley submission.

56. WNR considers that the sleeper prices outlined in the draft determination understate the true cost of supply in WA[3]. WNR contends that the sleeper prices should be the same as its proposed prices of $95 per SG sleeper and $85 per NG sleeper on the basis of a recent written quote from a local supplier to WNR for a major track construction project of 75km.

Submissions Received after Submission Period

57. In a supplementary submission, WNR claimed[4] that the proposed WNR sleeper prices are supported by current tenders for projects of similar magnitude to the 112,500 sleeper 75km requirement for resleepering of the Kalgoorlie to Koolyanobbing sections of the EGR. Further, WNR contends that the unit prices proposed by Alcoa/Worsley are hypothetical prices which are subject to the supplier building a new plant in WA. The unit pricing, under these circumstances would be driven by the scope, scale and recovery of production plant costs. Therefore, WNR suggests the reliability of pricing under these conditions is questionable.

58. WNR outlined some concerns, in its supplementary submission, regarding the issue of Chinese sourced rail as proposed in the Alcoa/Worsley submission. In particular, WNR suggested that the rail priced was not to Australian standard and there was some doubt as the specification of the rail had not been disclosed. Further, WNR suggested that recognition should be made for dimensional tolerances, chemical

[2] Alcoa/Worsley page 20.

[3] WNR, WestNet Submission on the Draft Determination on the Proposed Floor and Ceiling Costs, April 2007, page 2.

[4] WNR, Supplementary Submission, page 2.

composition and mechanical properties so that the purchase price is not just dependent on the standard specified. For example, WNR suggested that, in Australia, rail is supplied in standard 27.5 metre lengths with shorter lengths requiring more welded joints which would increase the cost per track kilometre and maintenance cost as well. It is suggested that due to shipping limitations, the rail supplied from overseas sources would have a shorter length. WNR has also questioned the economic life of different standard rail as the Chinese sourced product has not been tested in Australia. WNR suggests that the cost of shipping, transport, stevedoring and product protection during sea transportation have not been sufficiently defined to justify a realistic comparison between the two supply sources with exchange rate fluctuations also being a factor which effect rail pricing. Accordingly, WNR maintains that its proposed rate of $1,440 per tonne unit cost should apply as the efficient cost of rail.

59. In its supplementary submission, WNR questioned the validity of the revised earthworks unit cost proposed by Alcoa/Worsley. It suggested that the Alcoa/Worsley proposed unit price of $19 per cubic metre (or $131 per linear metre) had not been subject to the rigour of a tender process and therefore must be questionable. WNR has indicated that the current earthworks estimates tendered for the Burekup passing loop was $200 per linear metre on flat terrain and after allowing for 30% price discount for mobilisation and large scale construction, believes that a rate of $140 per linear metre is a reasonable rate for earthworks for the SWM. WNR further stipulates that site conditions will dictate the proportion of cut to fill as compared to borrowing to fill from a nearby site and the "relatively benign topography of the SWM as a greenfields site would indicate 100% borrowing to fill as reasonable for earthworks".

60. In its supplementary submission, WNR stated that it had "provided detailed specification outlining the level of redundancy required to satisfy the strict operational capability for freight and passenger services for all communications infrastructure on the SWM" which the Authority subsequently accepted in its draft determination, WNR's $12.8 million valuation based on the specification and actual costs incurred by WNR. Further, WNR asserted that the Alcoa/Worsley valuation of $8.7 million, based on an unknown specification, must be treated with caution as it is a hypothetical cost compared to the WNR valuation which is based on a real contract price to provide the specified infrastructure.

61. In its supplementary submission, WNR contested the Alcoa/Worsley position that the Burekup passing loop be costed on the basis as if it was built at the same time as the original mainline and initial passing loops. WNR indicated that passing loops get added to the existing infrastructure base as required to increase capacity and therefore the cost to provide passing loops in isolation is relevant and the detailed estimate provided supports its position. Consequently, WNR asserted that the proposed cost of $3.22 million be adopted as the GRV for the Burekup passing loop as it reflects the true cost to provide additional infrastructure as capacity limits are reached.

PwC/HCS Assessment

62. PwC/HCS has undertaken a review of the prices for key inputs proposed by WNR in its calculation of the GRV and has also reviewed submissions from interested parties in formulating its views on the appropriateness of the GRV proposed by WNR. The following comments provide a summary of PwC/HCS' assessment and more details are available in its report which is available on the Authority's web site.

63. In its assessment on the unit price for steel rail, PwC/HCS notes that WNR has proposed prices of $1,440 per tonne for 60kg rail and $1,500 per tonne for 50kg rail (both delivered to Midland). PwC/HCS has confirmed with another rail owner that the OneSteel large order price is $1,240 per tonne for 60kg rail ex-works excluding flashbutt welding ($200 per weld per 110 metres or $30 per tonne for 60kg) providing a price ex-works including welding of $1,270 per tonne. PwC/HCS has assessed the rail transport cost to be 12 cents per tonne km and applying this to a Whyalla-Midland movement (2,340km) produces a transport cost of $280 per tonne generating a complete rail cost delivered to Midland of $1,550 per tonne for 60kg rail. As this price exceeds the WNR proposal for 60kg rail of $1,440/tn, PwC/HCS considers the price proposed by WNR as more acceptable.

64. PwC/HCS assessed the comments, in the Alcoa/Worsley submission on the draft determination, regarding rail sourced from China which contained a quotation for 60kg rail from China inclusive of shipping and freight cost estimates delivered to Midland at an estimated $A1,002 per tonne for large quantities. A further confidential submission from Alcoa/Worsley provided further detail on this issue.

65. PwC/HCS observed that WNR had expressed concerns about China sourced rail in its subsequent submission, such as:

- Potentially shorter lengths due to shipping constraints creating a need for more welding which adds to the cost.
- Exposure of the rail to salt during shipping and the need to remove this salt with a chemical treatment before use (potentially adding to cost).
- Uncertainty of Chinese manufactured rail relating to compliance with Australian standards, dimensional tolerances, chemical composition and mechanical properties.
- Uncertainties over the economic life of 60kg rail from China as such rail is currently untested under Australian conditions.
- The reliability of supply remains unproven.
- Entering such a deal would create exposure to additional risk resulting from fluctuations in exchange rates (albeit these could be controlled through hedging contracts).

66. PwC/HCS sought the views of other rail owners, including QR. Most network owners expressed interest that an alternative supply option could be emerging, but they were yet to place orders for imported rail from China for similar reasons as provided by WNR (i.e. Chinese rail is not a tried alternative to Australian manufactured rail and its economic life and reliability of supply are unproven and standards and dimensional tolerances under Australian conditions have not been confirmed). PwC/HCS also commented that QR also considers that its current quantity requirements for 60kg rail are not sufficient to produce an adequate financial advantage to warrant the risks of purchasing Chinese rail for use on its network.

67. PwC/HCS, at this stage, cannot support the use of imported rail from China as it is not a tested product and, as such, may not provide WNR with the appropriate level of certainty to ensure that WNR can meet its safety obligations under the Rail Safety Code:

68. At the next floor and ceiling cost reset, PwC/HCS recommends that the issue of purchasing rail from China should be re-assessed based on factors including:

- New quotes from China (or elsewhere) and the differential vis-à-vis the latest Australian prices.
- The actual out-turn cost of rail imported from China for use in the Pilbara.
- An assessment of any installation issues and any initial performance quality data from the use of Chinese rail in the Pilbara.

69. The Alcoa/Worsley submission also recommended that for Australian sourced rail, the appropriate price per tonne should be $1,430/tonne and not $1,440/tonne recommended by PwC/HCS in its March 2007 report. In relation to this comment, PwC/HCS supports the $1,440 per tonne figure noting that the difference in the two rates is arguably insignificant (0.7%) and documentation supporting the $1,440 per tonne estimate has been verified.

70. In its assessment of WNR's proposed floor and ceiling costs, PwC/HCS note the importance of relative prices of rail by weight category per tonne. This issue is important for the WNR network due to its mix of 41kg, 50kg and 60kg rail with WNR seeking a 7% premium for 50kg and an 11% premium for 41kg rail over the nominated price for 60kg rail. The most popular size for new rail being laid in Australia is 60kg rail with its price being considered to be a more readily established efficient/high volume market benchmark price. Whereas, in the case of 50kg and 41kg rail, while market price data is available it is based on more modest volumes. The current lower demand, less frequent production and smaller production runs of 50kg relative to 60kg rail means that costs of producing 50kg rail are higher.

71. Whilst the general reasons behind the current price differences for 50kg and 60kg per tonne are understood to be mainly based on economies of scale, PwC/HCS does not have access to relevant cost data to establish the actual relativity of production costs between these weight categories when both are produced at high volumes. However, PwC/HCS expect that the costs of inputs (raw materials, energy etc) would represent a large percentage within the total cost structure of rail production, and that those input costs would not vary to any significant degree on a $/tonne basis in the production of the different rail categories. This general characteristic of the production cost structure would serve to moderate the effect of any diseconomies of scale on total production costs. Consequently, under high volume assumptions, the current prevailing premium for 50kg (due to its lower economies of scale than 60kg) is expected to dissipate and total production costs expressed in $/tonne basis is unlikely to be significantly different. Hence, PwC/HCS considers it reasonable that based on high volume and competitive market-based prices, both rail weight categories would broadly be the same cost. This is considered to be a more realistic position than alternative suggestions that 50 kg rail production costs will be higher, or lower, than those for 60 kg rail costs.

72. In regard to sleeper prices, PwC/HCS notes that WNR has proposed a price of $95 per SG concrete sleeper from Humes at Welshpool. WNR has provided further support its claim by providing more recent emails from Humes (Rinker).

73. Alcoa/Worsley referred to the contract price for SG concrete sleepers of $75 per sleeper, as provided by Rocla (Mittagong & Grafton in NSW) to another rail owner.[5] However, PwC/HCS independently confirmed that the free on train (ex Rocla works) price is $86 for 1.35 million concrete sleepers including fastenings over 2.5 years. Whilst the $86 per sleeper ex-works price from Rocla appears cheaper, once transport is added, the delivery cost from Mittagong to Midland (3,930km) is likely to be between $70 and $90 per sleeper making supply ex-Mittagong uncompetitive. Overall, the $95 per SG concrete sleeper from Humes appears reasonable as the ex-works price in WA. However, the issue of volume needs to be considered as the Rocla information illustrates that lower prices (ex-works) can be achieved where higher economies of scale are present.

74. PwC/HCS has also assessed the comments in WNR's supplementary submission where WNR sought to reinforce the reasonableness of its proposed SG concrete sleeper price by providing further details on this matter in a confidential section of its submission. Overall, the $95 per SG concrete sleeper price may be close to prevailing prices in WA. However, PwC/HCS places greater focus on more recent costing (where these are available) and the Rocla information appears to suggest that lower prices can be achieved through a well structured, competitive tender process where higher economies of scale from large scale orders are offered to the market.

75. In addressing comments in the Alcoa/Worsley submission, PwC/HCS notes that Alcoa/Worsley has suggested that the sleeper costing exercise should assume that either Rocla or Austrak would build a new concrete sleeper production facility in WA for the quantities required for the MEA rebuild of the WNR network. However, PwC/HCS suggests that as a sleeper plant already operates in Perth, a new entrant to this market would likely to establish a price based on market forces (rather than a cost build-up) and price at slightly below the prevailing market price. Such a new entrant would also have some cost disadvantages compared to the incumbent (Humes) particularly in relation to the cost of building a new plant (including the purchase of land around Perth) and the purchase of new equipment for the plant and the higher associated capital recovery costs compared to an existing building. PwC/HCS further note that whilst major rail projects in remote parts of Australia have from time to time warranted new (usually temporary) sleeper manufacturing plants (e.g. for the Darwin to Alice Springs railway line) the set-up of temporary plants is often driven by the high cost of transporting sleepers from existing plants to the remote works site plus the need to ensure a timely and reliable supply of sleepers to sites where access can often be cut due to weather conditions for considerable periods of time. On project completion, the project focused sleeper plants are usually closed and where this occurs they are not an ongoing competitive market participant. Hence, PwC/HCS considers such project based sleeper plants can have high ex-plant unit costs higher compared to permanent plants as they need to recover set-up and capital costs over a shorter economic life.

76. For SG concrete sleepers, PwC/HCS has tested the WNR proposed cost by obtaining the breakdown of the price paid by another rail owner including transport and fastenings. Lower prices are obtainable on the east coast compared to current WA prices due to higher volumes and economies of scale. The analysis requires an assumption of large volume purchases providing economies of scale. Whilst

[5] According to a Rocla press release, at www.pipe.rocla.com.au/news/200605/article401.shtml, the cost is $85 per sleeper.

WNR has provided evidence from Humes supporting concrete sleeper costs of $85 (NG) and $95 (SG) including fastenings the Rocla evidence illustrates that the Humes price does not appear to represent the most cost efficient outcomes achievable from a large scale competitive tender. The information from Rocla suggests that higher volumes can generate economies of scale and reduce prices down to $86 per sleeper (ex-works). Consequently, PwC/HCS recommend the WNR price for SG concrete sleepers be reduced by 5% to recognise a scale discount but result in a price marginally above that of the $86 ex-works price for Rocla also recognising WA may have some other input costs (such as reinforcing steel) which are higher than in the eastern states.

77. The NG sleeper price is typically 8-10% below the SG price based on it being shorter (requiring less concrete) and being cheaper to transport. Consequently, PwC/HCS recommends a 9% reduction from its recommended SG price of $90. This results in a price of $82 per sleeper compared with WNR's proposed price of $85 per sleeper.

78. In relation to ballast costs, WNR has proposed the ex-quarry ballast price of between $20 and $26 per tonne for the lines under review. Hanson provided Alcoa/Worsley with a quote (for the SWM) of $20.70 per tonne ex-quarry at either end of the SWM. WNR has proposed $25 per tonne ex quarry for the SWM based on a quarry at either end of the SWM . PwC/HCS has confirmed with Hanson the validity of its quote to Alcoa/Worsley.

79. To test these quotes PwC/HCS independently sought further ballast cost information from other rail network owners elsewhere in Australia and were advised that their average price per tonne in eastern and central Australia is $15 per tonne ex-quarry whilst the ballast price accepted by the Essential Services Commission in Victoria for a recent rail decision was an average of $25 per tonne ex-quarry and $30 per tonne delivered.

80. PwC/HCS has recommended reducing the proposed ballast price to $20.70 per tonne ex quarry for all the locations in the rail system for which ex quarry prices have been proposed by WNR with the exception of Kalgoorlie where WNR has proposed an ex quarry price of $20 per tonne. For Kalgoorlie, PwC/HCS has recommended a lower price of $17 per tonne.

81. In regard to the issue of ballast transport costs, PwC/HCS indicates that WNR's ballast cost calculation takes the distance of the line with quarries assumed to be located at central points along each line and makes an adjustment for extra distance due to the fact that suitable quarry sites will not be located adjacent to the rail corridor. In its original submission, WNR stated that ballast would be transported up 250km (assumed average 150km) from the supply point to the construction worksite and also indicated that for the purposes of haulage; $0.08 per NTK is considered a reasonable and acceptable value to adopt, given that the assumed average transport distance would be 150km from the nearest quarry, this equates to an average $12 per tonne haulage cost.

82. In regard to the SWM, WNR's proposed ballast transport cost assumed an average ballast haul distance of 60km with a revised estimate (provided in subsequent discussions with WNR) for the proposed haulage rate of $0.114 per GTK (instead of $0.08 per NTK) results in a ballast transport rate of $6.84 per tonne instead of $4.80 per tonne if $0.08 per NTK at 60km is utilised. Alcoa/Worsley, on the other hand, has proposed a maximum cost for ballast transport on the SWM at $3.60 per tonne based on 45km average haul at $0.08 per net tonne kilometre, but did not

provide specific supporting evidence for this estimate based on the assumption that the ballast quarries are located at exact midpoints of the SWM (distance of 180km) and immediately adjacent to the rail corridor. PwC/HCS considers to be unrealistic as the quarries are likely to be located in the hills running parallel to the SWM some distance from the rail line.

83. Following a review of the comments from Alcoa/Worsley and WNR and assessing benchmark truck haulage costs PwC/HCS agrees with the original WNR ballast unit transport cost of $0.08 per NTK as being efficient and broadly consistent with publicly reported information on efficient bulk road freight costs and prices.[6] In relation to the assumed haulage distance, PwC/HCS believes that instead of assessing line by line transport costs based on distance to current quarries, it is simpler and reasonable to assume a uniform average haulage length across the network and this is likely to be less than those assumed by WNR. It is also noted that for most longer hauls of ballast (e.g. greater than 70km) rail transport is often used where it has better cost unit outcomes than road freight. Hence for better transparency and simplicity, PwC/HCS recommends the use of a uniform average transport distance of 60km which at $0.08 per NTK results in a ballast haulage cost of $4.80 per tonne for all lines. This is broadly consistent with the $5 per tonne utilised by the ESC in Victoria as an average ballast delivery cost.

84. In regard to the assessment of earthworks costs, PwC/HCS noted that submissions on the draft determination identified issues on how the earthworks costs were derived. In particular, the calculation of quantities for various heights, widths and unit costs for earthworks formations used for the 2003 determination, how these were utilised in practice and how they should be updated for 2006.

85. To address the uncertainties identified above, PwC/HCS has suggested that rather than focusing on the escalation rate used by WNR to increase the 2003 earthworks costs to 2006 costs the assessment should focus on the efficient cost for construction of the earthworks formation (including the capping costs) per linear kilometre for each rail route. WNR's assumed formation profiles for the rail lines involve a total formation height of either 1.0m or 1.5m, as applicable for the various lines (refer Appendix 1 of this determination) which includes a 0.230m limestone capping layer. WNR has assumed for all the rail lines that the earthworks material (excluding the limestone capping which is imported) will be sourced from borrow material within a 3 km distance. PwC/HCS agrees with these assumptions for the rail lines under review apart from two sections of rail line in steep terrain (the Brunswick to Worsley section of the Worsley rail line and the Forrestfield to Avon dual gauge/double track section of the EGR) where WNR's borrow to fill assumption is not considered to be appropriate as a considerable amount of fill material is likely to be utilised for the earthworks in these locations. For these two sections of rail line PwC/HCS has assumed 85% of material would be supplied from on-site cut material and15% from borrow material within a 3 km distance.

86. PwC/HCS has assumed WNR's costs of formation construction (total of earthworks plus capping cost expressed as dollars per linear kilometre of rail line formation) outlined on page 17 of its September 2006 submission include all appropriate costs which would be expected to be borne by a contractor tendering for this work on the basis that the contractor would be fully responsible for all aspects of the

[6] For example work commissioned by the NTC and BTRE analysis available at: http://www.ntc.gov.au/filemedia/Reports/TheFutureofFreightMarch2006.pdf, http://www.btre.gov.au/docs/submissions/BTRE_submission_pc_infra_pricing.pdf

construction site (such as fencing, lighting, health and safety requirements, environmental requirements and site preparation requirements) from the period from award of the contract to the contract completion.

87. In undertaking its assessment of the WNR's formation construction costs as outlined in the WNR submission, PwC/HCS reviewed the earthwork costs per km for major recent and current road and rail projects including:

- Kwinana Freeway;
- Alice Springs to Darwin Railway; and
- coal lines in Queensland for QR particularly the new Rolleston line.

88. In its assessment of comments in submissions on the draft determination, PwC/HCS noted that in its supplementary submission WNR proposed a revised rate for the SWM of $140,000 per linear km or 12.5% below the proposed rate of $159,925 per linear km in its September 2006 submission for the SWM. Alcoa/Worsley, on the other hand, has proposed $131,000 per linear km for the SWM and provided a confidential submission containing further details on this issue.

89. PwC/HCS noted that Alcoa/Worsley's suggested cost for the SWM earthworks of $131,000 per linear km was higher than the cost which it had suggested previously ($117,680 per linear km), prior to the release of the draft determination.

90. WNR, in a supplementary submission, responded that Alcoa/Worsley's estimate for the SWM of $131,000 per linear km should not be relied upon as it is not the outcome of a formal competitive tender process. WNR noted that its recent quote for earthworks for the Burekup passing loop had been approximately $200 per linear metre on flat terrain. However, WNR considered that a discount of 30% would be appropriate for large scale projects resulting in a cost per linear metre of $140. WNR then noted that this cost (equivalent to $140,000 per kilometre) could be justified for the SWM. In its September 2006, WNR had put forward a cost of $159,925 per kilometre for the SWM.

91. PwC/HCS has reviewed the information provided by Alcoa/Worsley to support its suggestion of $131,000 per linear km for the earthworks cost of the SWM and does not consider that this information provides sufficient justification to support this cost figure. Consequently, PwC/HCS supports the revised estimate of $140,000 per linear km for the SWM, as proposed by WNR in its supplementary submission of May 2007, as reasonable and efficient based on general consistency with costs for major new earthworks projects on other leading Australian rail networks.

92. Drawing upon the revised rate of $140,000 per kilometre put forward by WNR for flat terrain rail lines (in particular, the SWM) PwC/HCS has developed revised rates for those rail lines under this review which meet the requirements applicable to WNR's revised rate (i.e. flat terrain similar to the SWM with WNR's formation construction assumptions as per paragraph 85). Consequently, PwC/HCS recommends reducing the WNR proposed earthworks costs of its September 2006 submission, for those rail line or rail line sections located in generally flat terrain (Worsley to Premier section of the Worsley line, the grain lines, the Avon to Kalgoorlie section of the EGR, the Kalgoorlie to Leonora line and the Kalgoorlie to Esperance line).

93. For the Worsley to Premier section of the Worsley line and the grain lines the same formation profile (with height being 1.0 metres) and construction assumptions apply as for the SWM so the cost for these lines or line sections has been reduced to the same cost as WNR's revised cost for the SWM ($140,000 per kilometre). For the Avon to Kalgoorlie section of the EGR, the Kalgoorlie to Leonora line and the Kalgoorlie to Esperance line the same formation profile (with height being 1.5 metres) and construction assumptions apply so the cost for these lines is the same. The 12.5% reduction results in a cost of $218,750 per kilometre for these three lines.

94. In regard to WNR's proposed costs for the Forrestfield to Avon dual gauge/double track section of the EGR and the Brunswick to Worsley section of the Worsley line, as noted under paragraph 85, PwC/HCS considers that WNR's assumption of all earthworks being from borrow material is not appropriate given the steeper grades terrain on these lines and the cut material available in this type of terrain. PwC/HCS has calculated an average earthworks unit rate (exclusive of capping) of $11.68 per cubic metre for these two rail lines based on 85% of the formation being sourced from cut material (using a rate of $10.36 per cubic metre) and 15% being sourced from borrow material (using a rate of $19.23 per cubic metre). Using this cost for the earthworks and the capping cost proposed by WNR ($9.62 per square metre) for the capping layer together with the formation profile proposed by WNR, PwC/HCS has calculated a total formation cost of $260,580 per linear km for the Forrestfield to Avon dual gauge/double track (height 1.5 metres) section of EGR and $174,500 per linear km for the Brunswick to Worsley section (height 1.5 metres) of the Worsley line. As WNR has proposed a lower cost of $182,692 per linear km for the Forrestfield to Avon dual gauge/double track section of EGR, PwC/HCS has recommended accepting WNR's lower figure for this line. In the case of the Brunswick to Worsley section of the Worsley line, PwC/HCS has recommended a reduction from WNR's proposed cost of $216,330 per linear km to $174,500 per linear km.

95. WNR has requested that the Authority include $4.99 million of communications backbone assets for the SWM into the GRV which were inadvertently overlooked in the 2003 review. Some communications backbone components were also omitted for the EGR as well. The reason for the omission of some communications backbone components in the 2003 review was due to oversight by WNR. PwC/HCS has discussed this issue in detail with WNR and has also reviewed a breakdown of the omitted components and confirmed they are prudent and necessary inputs for an effective communications system.

96. PwC/HCS noted that in its September 2006 submission, WNR proposed an escalation factor rounded up to 17% but that the actual WNR calculations are based on a 16.7% escalation factor. WNR, based on advice from Worley Parsons, proposed calculating a communications and signals escalation factor by splitting the cost into its four major components, (i.e. engineering, materials, installation and management) and identifying separate escalation factors for each component and then weighting these outcomes relative to their proportional cost mix. The approach is outlined in WNR's September 2006 submission.

97. In its submission on the draft determination, Alcoa/Worsley, however, advised that the most relevant escalation approach is the ABS Producer Price Index for telecommunications and broadcasting equipment which rose only 0.46% in the past 3 years (June 2003 to March 2006). Furthermore Alcoa/Worsley viewed the movement in communications equipment prices as either static or reducing over time (as data volumes rise).

98. Overall, PwC/HCS is of the view that the cost growth since 2003 for the materials component of communications and signalling costs (40% of the total) should be linked to the relevant ABS index which appears to be the Producer Price index for telecommunications and broadcasting equipment. This index has risen 0.5% over 3 years. The remaining 60% of the communications and signals GRV escalation factor should be based on the change in the ABS WA Wage Cost Index which rose 12.7% between July 2003 to the June 2006. Consequently, PwC/HCS recommends that the total communications and signals GRV be adjusted by 7.8% from 2003 levels.

99. The communications GRV nominated by WNR for the SWM is $10.99m (excluding design and project management). This amount includes the $4.1m (SWM proportion) that was omitted in the 2003. The APM adjusts the base GRV by 20% (to $13.19m) for design and project management (consistent with the approved Costing Principles 20% allowance). The $13.19 million represents a 17% escalation from 2003 values with this escalation based on WP's analysis. The proposed amount is largely based on the outcome of a competitive tender to design and construct the optic fibre backbone system used by WNR for the 2003 determination. However, as indicated above, PwC/HCS believes that a lower escalation factor of 7.8% is appropriate to recognise the relative low level of price movement of communications and broadcasting materials and components. This change in the escalation factor would reduce the communications GRV for the SMW to $12.60 million.

100. Alcoa/Worsley provided a confidential submission from a consultant which contained a specification and indicative quote for a communications backbone for the SWM which came to a total cost of $8.75 million, which is $4.44 million less than the proposed WNR GRV. As the consultant specification was confidential, a full evaluation of its feasibility and safeworking compliance, particularly by WNR, was not possible. Unlike other parts of a rail network, the quantities and types of components used to form a communications backbone can have significant variation. In response, the WNR supplementary submission addressed the Alcoa/Worsley proposal including the valuation of $8.75 million for the SWM as "a hypothetical cost (based on an unknown specification) compared to a WNR valuation that is based upon a real contract price".

101. PwC/HCS has sought to identify reasons for the difference between the WNR proposed cost estimate and the Alcoa/Worsley consultant's estimate with some of the key differences identified as:

- WNR included copper backbone in the Coolup-Picton section as well as each siding whereas the Alcoa/Worsley consultant has only included a total of 10km in sidings.

- The consultant includes 10% for project management whereas WNR includes the approved 20% project design, construction management and project management margin in its estimate.

- PwC/HCS is unclear that adequate allowances are made for installation. The general consultant approach is to allow 40% of equipment costs (which is usable for ballpark quotes) whereas WNR has actual installation costs from its contractor following a competitive tender.

- PwC/HCS is unclear that the consultant has made sufficient provision for buildings and/or sheds as compared to the actual number required for the safe working of the SWM.

- Different types and brands of components and quantities (e.g. radio towers).

102. PwC/HCS also expressed an overarching concern that the consultant's quote contained the comment that equipment specification is "best guess" and "may not represent a functioning system solution". While this quote may be a standard disclaimer, it typifies the complexities involved in developing an MEA specification for a rail network communications system.

103. In the 2003 determination, it was identified that the communication and signalling network backbone provides the "Safe Working" validation for the rail network. PwC/HCS considers that the WNR submission correctly states that the communications network must have a level of redundancy required to satisfy operational capability for freight and passenger services for the entire SWM.

104. The method of developing the WNR actual communications network had been reviewed by PwC/HCS previously as a "design and construct" contract provided by competitive tendering and accordingly, value for money and efficiency have been achieved as well as compliance requirements of safe working. Overall, PwC/HCS considers the WNR proposed unit costs for communications assets are based on a competitive tender and hence they appear reasonable, inclusive of economies achieved by large scale orders and capturing efficiencies via combining some trenching for signalling and communications assets where appropriate. The use of a lower escalation factor of 7.8% is recommended which reduces the communications GRV for the SWM to $12.60 million.

105. In regard to signalling costs, PwC/HCS considers that many of the comments made above for communications also largely apply for the signalling assets components and their installation. PwC/HCS has discussed the signalling asset list and installation approach in detail with WNR and views these outcomes as reasonable. PwC/HCS has also reviewed the 2003 unit costs and has confirmed them to be reasonable and inclusive of economies achieved by large scale orders. However, PwC/HCS recommends the same reduction in the escalation rate from 16.7% to 7.8% should apply in calculating an efficient GRV cost for signalling assets.

106. In regard to the requirement for a new passing loop at Venn (north of Pinjarra), Alcoa/Worsley noted (paragraph 54) that there had been no submissions from interested parties on this issue and reiterated its position to the effect that this passing loop is not required over this review period. WNR did not comment on this matter in its submissions on the draft determination. PwC/HCS is of the view that the proposed new loop at Venn is operationally justified to ensure train path projections are met. However, PwC/HCS concede that as the timing for the construction of the Venn passing loop is primarily driven by demand from existing customers, it is not clear as to when this will eventuate and therefore consider it prudent to exclude it from the present GRV and resulting floor and ceiling calculation for the SWM.

107. In regard to the issue of which cost for the Burekup loop should be included in the GRV for the SWM, PwC/HCS has considered the submissions of both Alcoa/Worsley and WNR on the draft determination in relation to this matter and confirms that the WNR proposed cost of $3.22 million is a reasonable estimate of the cost required to construct this loop. PwC/HCS considers that in the instances of

incremental future additions to the network accommodate an increase in capacity, it is reasonable to base these additions to the GRV on the estimated cost of that addition as an incremental cost separate from the new build network cost as such additions would occur in the future, within the five year new facilities period considered under the MEA evaluation. This process also provides WNR with the incentive to expand the network capacity in response to growth in traffic demand.

Authority's Assessment

Supply of Track Profile Elements (Unit Costs)

-Rail

108. In its draft determination, the Authority considered that the same price ($1,440 per tonne) should apply for 41kg, 50kg and 60 kg rail to reflect efficient costs arising from large purchases of rail.

109. The Authority has noted that Alcoa/Worsley's comment in its submission to the effect that if the rail is sourced from an Australian manufacturer then the cost for 50kg rail should be $1,430 per tonne rather than $1,440 per tonne and the PwC/HCS view that this cost could not be supported on the evidence it had available.

110. The Authority also noted that Alcoa/Worsley has provided information which has costed rail sourced from China at $1,002 per tonne for 60kg rail inclusive of transport, shipping and Australian customs duty.

111. The Authority has considered the concerns expressed by WNR and other rail owners in Australia, as outlined above in paragraphs 58 and 66, regarding the use of Chinese rail. The concerns relate to Chinese rail being untested under Australian conditions and the uncertainties this may lead to in relation to issues such as maintenance costs and the economic life of the asset. In this regard, the Authority notes that the maintenance costs proposed by WNR and the economic life of rail established in the approved Costing Principles are based on rail sourced from an Australian manufacturer.

112. Other particular concerns expressed by WNR in relation to the Chinese rail information provided by Alcoa/Worsley were the shorter rail lengths which would require additional welding, the possible need for chemical treatment of the imported rail sections prior to use (due to the effects of saltwater during shipping) and the uncertainty in regard to the total transport and handling costs required to deliver Chinese rail from the manufacturer in China to Midland. Another area of concern identified is the uncertainty in the quality of Chinese rail as this rail would need to meet the requirements of the appropriate Australian standards.

113. The Authority is aware that FMG has sourced its rail requirements from Chinese suppliers and will be the first Australian rail owner to use the Chinese rail product. However, as FMG is not expected to commence operations until about mid 2008 it will be some time before there is likely to be any experience for the use of Chinese rail in Australian operating conditions similar to WNR's for heavy haul railway network. As the FMG rail network (below rail component) will come under the WA rail regulatory regime when it comes into operation, the Authority, will be able to obtain information on the performance of this network in relation to issues such as track performance, economic life and maintenance costs.

114. The Authority notes the uncertainties identified above regarding the potential use of rail sourced from China and agrees with PwC/HCS that it may be better placed at the next floor and ceiling cost reset of these rail lines (due to commence in October 2008) to assess the relevant issues raised by WNR and other rail owners relating to the cost of Chinese rail compared to Australian sourced rail. The Authority considers that in view of these uncertainties, it is not in a position to be able to properly assess all the relevant cost considerations relating to the purchase of Chinese manufactured rail for the WNR network for the purpose of this floor and ceiling cost review and consequently, does not accept Alcoa/Worsley's view that the cost for Chinese manufactured rail should be used as the basis for the supply of rail for the purpose of this review rather than the cost of Australian manufactured rail.

115. Therefore, the Authority confirms its position, as set out in the draft determination, that a cost of $1,440 per tonne for 41kg, 50kg and 60kg rail is reasonable and represents efficient cost.

-Sleepers

116. In the draft determination, the Authority determined that the SG concrete sleeper unit cost should be $90 per sleeper and $82 per NG concrete sleeper compared to WNR's proposed prices of $95 and $85 per sleeper respectively. The Authority has noted Alcoa/Worsley's comments in paragraph 49 regarding concrete sleeper prices. The Alcoa/Worsley estimates of $83 per SG sleeper and $75.50 per NG sleeper are based on interstate supplier prices with no cost for transport as it is assumed that either Austrak or Rocla would build a sleeper production facility in WA for the large scale rebuild of the WNR network. The Alcoa/Worsley cost estimate is predicated on the validity of the assumption that the supplier will construct the plant at no additional cost to the interstate quoted prices as indicated above. The Authority acknowledges that sleeper production facilities have been built for large rail infrastructure projects such as the Alice Springs to Darwin rail line. However, there is no information that suggests that the sleeper costs for the Darwin to Alice Springs project were the same as sleeper costs from eastern states supply sources which is assumed in the Alcoa/Worsley sleeper cost estimates.

117. The Authority notes the comments from PwC/HCS in paragraph 75 regarding the building of a new sleeper plant by an interstate supplier and agrees with the comments that it is most likely sleepers from a newly built facility would be priced to reflect market forces so that it will be priced just below sleepers from existing plants. The Authority considers there would be little incentive for suppliers building a new plant to retain interstate sleeper prices and incur the full cost of setting up a new production facility as the price gap between the interstate based Alcoa/Worsley estimate and the WNR proposed prices are about $10 per sleeper. The new plant would be more likely to meet or just under-cut sleeper prices sourced from an existing plant in WA. Accordingly, the Authority considers that the Alcoa/Worsley sleeper cost estimates are not reasonable. The Authority does not accept the comments from WNR in its supplementary submission in support of maintaining the sleeper prices as originally proposed as they are actual prices for smaller scale projects which are not reflective of efficient cost estimates for large scale rail construction as reflected in an MEA environment.

118. Therefore, the Authority confirms its position, as set out in the draft determination, that the concrete sleeper costs of $90 per SG sleeper and $82 per NG sleeper are reasonable and represent efficient costs.

-Ballast

119. The Authority has considered the comments from Alcoa/Worsley outlined in paragraph 50 and agrees that the ex quarry unit cost per tonne for ballast should be expressed to two decimal places (and not rounded up to $21 per tonne for a number of quarry locations, as in the draft determination) because the unit cost estimate of $20.70 per tonne was provided by Hanson to PwC/HCS prior to the draft determination and this cost was deemed to be the efficient cost for ballast in the draft determination. The Authority has also noted the assessment of ballast transport costs by PwC/HCS outlined in paragraphs 82 and 83. PwC/HCS is of the view, following consideration of the estimates provide by Alcoa/Worsley and WNR, that a transport cost of $4.80 per tonne be considered for the haulage of ballast for all rail lines under this review. The Authority agrees with the PwC/HCS view as the transport rate of $0.08 per NTK is the same rate as proposed by Alcoa/Worsley and WNR and is consistent with bulk haulage rates with the transport distance in the range as proposed by Alcoa/Worsley and WNR. The rate used to calculate the transport cost is $4.80 per tonne.

120. Therefore, the Authority has reduced the ex quarry ballast cost per tonne for Bunbury, Esperance, Kwinana and Midland from $21 per tonne as set out in the draft determination to $20.70 per tonne. The ex quarry ballast cost per tonne for Kalgoorlie has been left at the same figure ($17.00) as set in the draft determination. The Authority has also decided that a transport cost of $4.80 per tonne is appropriate for the haulage of ballast from the quarries for all the rail lines under this review. A cost for transport of the ballast was not included in the draft determination. The revised ballast and ballast transport cost are outlined below in Table 1.

Construction (Unit Costs)

-Earthworks

121. The Authority has considered the submissions by WNR and Alcoa/Worsley in relation to the issue of earthworks costs for the rail lines under review. The Authority has also noted the evaluation of the comments from WNR and Alcoa/Worsley undertaken by PwC/HCS and the subsequent recommendations by PwC/HCS.

122. The Authority agrees with the approach recommended by PwC/HCS (paragraphs 84 to 94) to the effect that the revised earthworks cost for the SWM, submitted by WNR in its supplementary submission on the draft determination, be used as the basis for setting the earthworks cost for those rail lines in similar (flat) terrain with the same formation profile subject to appropriate adjustment for the higher formations on the Avon to Kalgoorlie section of the EGR, the Kalgoorlie to Leonora line and Kalgoorlie to Esperance line. For the rail lines in steep terrain, the Authority agrees with the view of PwC/HCS that WNR's assumption of all the formation (excluding capping) material being sourced from borrow material (within a 3 kilometre distance) is not appropriate given the likely availability of cut material for this purpose in such an environment. The Authority agrees with the approach taken by PwC/HCS for such rail lines to the effect that the earthworks cost be calculated based on 85% of the formation material being supplied from cut material and 15% from borrow material. Therefore, the Authority considers that an earthworks cost of $140,000 per linear km is a reasonable and efficient cost for the SWM, the Worsley to Premier section of the Worsley line and the grain lines. For the Avon to Kalgoorlie section of the EGR, the Kalgoorlie to Leonora line and Kalgoorlie to Esperance line the appropriate earthworks cost is $218,750 per linear km. For the Forrestfield to Avon dual gauge/double track section of the EGR, the Authority considers that an earthworks cost of $182,692 per linear km is appropriate. For the

Brunswick to Worsley section of the Worsley line the Authority considers that an earthworks cost of $174,500 per linear km is appropriate. These earthworks costs represent the total cost for formation construction and include both the cost of both the earthworks component and the limestone capping layer. The revised earthworks rates are outlined below in Table 1.

-Tracklaying

123. The Authority notes that there has not been any comment in submissions on the draft determination regarding tracklaying. Therefore, the Authority confirms its position, as set out in the draft determination, for the tracklay costs for each of the rail lines under review.

-Bridges and Culverts

124. The Authority notes that there has not been any comment in submissions on the draft determination regarding bridges and culverts. Therefore, the Authority confirms its position, as set out in the draft determination, that it accepts the costs proposed by WNR for bridges and culverts. The Authority also notes, as outlined in the draft determination, that at the next floor and ceiling cost review for these rail lines it will seek agreement with WNR on a more standardised range of culvert sizes in keeping with an MEA rail network.

Communications and Signalling

125. The Authority notes that a communications system in a rail network usually consists of a number of base components tailored to meet specific system requirements as suggested by PwC/HCS in paragraph 104 above. By using this approach, communications infrastructure is different to other items of infrastructure such as sleepers where the efficient cost is determined by economies of scale in the production process. In determining the efficient cost of a communications system, or parts of the communications system, the Authority considers that a competitive tender process is appropriate in delivering efficient costs as it reflects the actual contract price to deliver a required communications system based on detailed design and specification.

126. The Authority notes that there is a difference of $4.44 million between the GRV estimated by WNR at $13.19 million and the estimate of $8.75 million provided by Alcoa/Worsley. PwC/HCS has tried to reconcile this difference and has identified a number of factors which has contributed to this difference, as outlined in paragraph 101, which includes understating the quantity of copper backbone required for sidings, inadequate allowances for installation, inadequate provision for buildings or sheds, the use of different types of components and differences in allowance for project management and design costs. Alcoa/Worsley provided further detail on its cost estimate in a confidential submission. The Authority also noted WNR expressed the view that any communications system must have a level of redundancy required to satisfy the concurrent operational requirements for both freight and passenger services over the entire SWM.

127. PwC/HCS has assessed the validity of WNR's proposed escalation factor of 16.7% which has been used to escalate the 2003 determined GRV for communications. PwC/HCS' analysis (as outlined in paragraphs 96 to 98 above) indicates that the WNR proposed rate is too high and not reflective of other measures which suggest equipment and component costs in the communications industry have been relatively flat. The PwC/HCS assessment has recommended a 7.8% escalation rate based on a weighted average of the proportion of the labour and materials component mix in the communications infrastructure. The Authority has considered

PwC/HCS' recommendation and agrees that it is reasonable and more reflective of cost movements in communications infrastructure than the 16.7% proposed by WNR.

128. The Authority notes the PwC/HCS comment that the actual WNR communications system is based on a "design and construct" contract awarded by a competitive tendering process and PwC/HCS consequently consider that the existing communications system represents an efficient value for money system which achieves compliance with safe working requirements. PwC/HCS considers the WNR proposed unit costs for communications assets are based on a competitive tender and hence they appear reasonable as they reflect economies achieved by large scale orders and capturing efficiencies via combining some trenching for signalling and communications assets where appropriate.

129. The Authority also notes that WNR's proposed communications GRV is largely based on the outcome of a competitive tender to install the actual optic fibre backbone system used by WNR for the 2003 determination. However, PwC/HCS has recommended that a lower escalation factor of 7.8% be adopted to better reflect the movement in costs for labour and materials components since the 2003 determination. The Authority has considered the recommendation and considers it reasonable. The lower escalation rate results in a revised communications GRV for the SMW of $12.60 million. The revised escalation factor should apply to the communications system costs for all the rail lines under this review where the 2003 determined costs are escalated to 2006 values.

130. The Authority also notes that PwC/HCS has confirmed WNR's inclusion of the communications backbone costs for the SWM and EGR to be genuine as these costs were inadvertently omitted in the APM for the 2003 determination and the omission was discovered during the update for the 2006 review. The Authority agrees with the PwC/HCS views on this issue.

131. Accordingly, the Authority has revised its position as outlined in the draft determination that there should be no change to WNR's proposed communications system cost and determines that the communications GRV should be revised to $12.60 million to represent efficient costs for this item of infrastructure. The revised communications GRV is outlined in Table 1 below.

132. The Authority also considers that the escalation factor for the signalling assets should be revised to 7.8% due to the similarities in the equipment reflected in the common ABS index for *Telecom/Broadcast Equipment.* The revised GRV for signalling equipment is outlined in Table 1 below.

Forecast Capacity Enhancement

133. The Authority notes that in regard to the requirement for a new passing loop at Venn (north of Pinjarra), Alcoa/Worsley commented in its submission on the draft determination that there had been no other submissions from interested parties on this issue and reiterated its position to the effect that this passing loop is not required over this review period. WNR did not comment on this matter in its submissions on the draft determination. Therefore, the Authority confirms its position, as set out in the draft determination, that due to uncertainty as to whether there would be sufficient traffic increase over the 2006-2011 period to justify the construction of this passing loop within this five year period, the proposed Venn passing loop should be excluded from the GRV calculation of WNR's rail network for the purpose of this review.

134. The Authority also acknowledges the inconsistency in having the GRV being determined every three years and the MEA including forecast network enhancements over a period of five years beyond the GRV determination date. The Authority intends to amend the Costing Principles Part 5 Instrument prior to the next review of these rail lines, through its powers under Section 46(4) of the Code, to make the forward forecast period applying to the MEA three years, in line with the periods between GRV determinations.

135. In regard to the Burekup loop, the Authority has noted the comments contained in the submissions of both Alcoa/Worsley and WNR on the draft determination in relation to this matter. The Authority has also considered the views of PwC/HCS to the effect that in the instances of incremental future additions to the network to accommodate an increase in capacity, it is reasonable to base these additions to the GRV on the estimated cost of that addition as an incremental cost separate from the new build network cost as such additions would occur in the future, within the five year new facilities period considered under the MEA evaluation. This process also provides WNR with the incentive to expand the network capacity in response to growth in traffic demand. The Authority agrees with the view of PwC/HCS on this matter.

136. Therefore, the Authority confirms its position, as set out in the draft determination, that it accepts the cost proposed by WNR ($3.22 million) for the Burekup passing loop.

Unit Cost Changes Required

Table 1: Recommended Unit Cost Changes

Item[7]	2006 WNR Price ($)	Authority's Determined Price($)
Cost per 50 kg/m rail per tonne (delivered Midland)	1,500[8]	1,440
Cost per 41 kg/m rail per tonne (delivered Midland)	1,600[9]	1,440
Concrete sleeper cost SG (delivered Midland)	95	90
Concrete sleeper cost NG (delivered Midland)	85	82
Ballast cost per tonne Bunbury	25	20.70
Ballast cost per tonne Esperance	26	20.70
Ballast cost per tonne Kalgoorlie	20	17.00
Ballast cost per tonne Kwinana	25	20.70

[7] PwC tested a sample of the items for which unit prices were provided. For those categories which yielded discrepancies between the price sought by WNR and the price deemed appropriate by PwC – such as ballast – all the items in that category were then calculated and listed in this table.

[8] Price includes delivery to Midland

[9] Price includes delivery to Midland

Item[7]	2006 WNR Price ($)	Authority's Determined Price($)
Ballast cost per tonne Midland	25	20.70
Ballast transport cost per tonne	6.84	4.80
Earthworks SWM (per linear km)	159,925[10] 140,000[11]	140,000
Earthworks Worsley to Premier (per linear km)	142,094	140,000
Earthworks Brunswick to Worsley (per linear km)	216,330	174,500
Earthworks Grain lines (per linear km)	159,925	140,000
Earthworks Avon to Kalgoorlie (per linear km)	250,000	218,750
Earthworks Leonora line (per linear km)	250,000	218,750
Earthworks Esperance (per linear km)	250,000	218,750
Tracklay Collie East (per km)	117,510	110,356
Tracklay South West Main (per km)	117,510	110,356
Tracklay Grain Region (per km)	116,260	109,182
Tracklay EGR dual gauge track (per km)	144,300	144,300
Tracklay Brunswick to Worsley (per km)	117,510	110,356
Comms & Signals escalation- all routes (%)	16.7	7.8
Communications GRV SWM ($m)	13.19	12.60
Communications GRV EGR ($m)	45.66	43.75
Signals GRV SWM ($m)	37.81	35.14
Signals GRV EGR ($m)	95.93	88.81

[10] WNR's September 2006 submission.

[11] WNR's May 2007 supplementary submission.

Draft Determination

Required Amendment 1

The costs associated with the proposed Venn passing loop should be excluded from the GRV calculation of the floor and ceiling costs for the SWM.

Required Amendment 2

The unit prices submitted by WNR for various infrastructure assets should be amended to be consistent with Table 1 on pages 30 and 31 of the final determination.

Required Amendment 3

The floor and ceiling calculations submitted by WNR should be revised to incorporate the changes required under Amendment 2.

Operating Costs and Working Capital

137. There were no amendments outlined in the draft determination under the heading of Operating Costs and Working Capital and submissions did not address any issues of concern on this topic. Therefore, the Authority confirms its position, as set out in the draft determination, that it accepts the operating costs proposed by WNR.

138. Working capital is a function of capital costs and the WACC. Consequently, appropriate changes to the capital costs are reflected in changes to the working capital.

139. Operating costs and working capital for each of the routes as a result of the final determination are outlined in Appendix 3.

Maintenance Costs

140. There were no amendments outlined in the draft determination under the heading of Maintenance Costs. However, there were two submissions that addressed issues under this heading which are discussed below.

Interested Party Submissions

Submissions Received During Submission Period

141. Alcoa/Worsley has challenged[12] some of the comments from PwC/HCS, as outlined in the draft determination, to justify the position that there should be no change to WNR's proposed maintenance costs for the rail lines. In particular, Alcoa/Worsley does not consider it appropriate to compare maintenance costs between the WA rail lines and other rail networks in Australia as the maintenance costs for the WA

[12] Alcoa/Worsley page 22.

network exclude MPM whereas the maintenance costs for other rail networks are inclusive of MPM resulting in a situation where such a comparison could be misleading and could lead to wrong conclusions. Alcoa/Worsley further assert that MPM costs are typically more than 50% of actual maintenance costs and it implies that WNR's proposed MEA maintenance costs are not efficient when compared with WNR's actual maintenance costs for the SWM when MPM is excluded from the actual maintenance costs.

142. Alcoa/Worsley also challenges the use of the ABS index to escalate the 2003 determined maintenance costs to represent the 2006 proposed MEA maintenance costs. It considers that the use of the full indexation of the ABS data is inappropriate as any productivity benefits should be reflected in the escalation of the 2003 determined maintenance costs to 2006 values.

143. Alcoa/Worsley has reassessed the maintenance costs for the SWM and Worsley line from its earlier submission prior to the draft determination. Using a Code of Practice DIRN model, the revised maintenance cost for the SWM is estimated at $15,273 per km which Alcoa/Worsley suggests should also apply to the Brunswick to Worsley sections of the Worsley line. Alcoa/Worsley suggests that this revised maintenance cost is appropriate as the Code of Practice defines the minimum infrastructure inspection periods and track standards for the DIRN and provides an acceptable base for comparison of maintenance workload across different rail networks and is therefore a better method to evaluate benchmarked infrastructure costs.

Submissions Received After Submission Period

144. In its supplementary submission, WNR has commented on the maintenance cost issues raised in the Alcoa/Worsley submission on the draft determination. WNR has indicated that the proposed maintenance costs of $17,600 per km for the SWM is derived from the approved 2003 determination rate of $15,000 per km escalated by 17.4% using the relevant ABS index for the period December 2002 to March 2006. WNR confirmed the validity of this approach by comparing the actual contract escalation of its maintenance provider and found the two rates to be similar over the same period. WNR advised its actual maintenance cost for the SWM was $24,087 per km during 2006 and claimed that it cannot hold maintenance costs without escalation as costs have gone up since the 2003 determination. Hence, it maintains its proposed rate of $17,600 per km should apply to the SWM and Brunswick to Worsley sections of the Worsley line.

PwC/HCS Assessment

145. PwC/HCS has noted that WNR has proposed a uniform escalation of 17.4% (based on ABS indices) from 2003 rates to provide the 2006 unit costs. In assessing the reasonableness of WNR's proposed maintenance costs for undertaking routine maintenance for a MEA network which commences from a new condition, PwC/HCS compared the WNR proposed costs to the actual maintenance unit costs being incurred in maintaining the existing network. Whilst these actual unit costs are confidential precluding release of full details, the proposed maintenance costs on four of the mainlines are between 8% and 50% below the actual WNR 2006 unit cost outcomes. In its submission on the draft determination, WNR provided further public information (confirming detail provided already to PwC/HCS) that the actual maintenance costs for the SWM in 2006 were $24,087 per km. However, on one of the mainlines the 2006 actual cost was 32% below the proposed unit cost due to the way in which maintenance effort was deployed over the network within any one

year. The WNR $6.0 million contract administration, management and overhead cost of the outsourced maintenance contract is excluded from the proposed unit rate for the individual rail lines.

146. WNR has proposed an approach to maintenance costs which uses the unit rate as the average across a route but within route sections WNR has proposed to use higher and lower unit rates reflecting factors such as the complexity and asset count of specific sections of track (e.g. turnouts, cross overs, signals, level crossings). PwC/HCS has reviewed the proposed approach and view it as reasonable particularly as it does not impact on overall route costs.

147. The initial Alcoa/Worsley submission proposed a maintenance cost specification suggesting an efficient cost of $12,700 per km for the SWM. PwC/HCS noted that this estimate was an update of their 2003 submission which lifted the rate by 7.5% to reflect current labour rates. The key difference between the WNR proposed rate and the Alcoa/Worsley estimated rate was the latter's view that for a MEA network there should be a lower number of trackside staff because of the use of concrete sleepers as the current focus on inspection-related work to ensure safe working would be reduced and for an MEA there is no need for extra staff to complete rail grinding to improve rail life and rideability.

148. Following the review of both labour specifications and assessing resources required to concurrently fulfil both the inspection requirements of the Rail Safety Act and other routine maintenance functions, PwC/HCS is of the view that the WNR proposal is reasonable.

149. In its subsequent submission on the draft determination, Alcoa/Worsley provided information from an interstate infrastructure consultant who was engaged to independently generate a new maintenance cost for the SWM based on complying with the DIRN Code of Practice as the reference standard for inspections. Based on the DIRN modelling, Alcoa/Worsley proposed that maintenance costs should be $15,273 per km for the SWM and for the Brunswick to Worsley sections of the Worsley line. This new proposed rate from Alcoa/Worsley represents a 20.2% increase from its initial 2006 submission and the gap between this new rate ($15,273 per km) and the WNR rate ($17,610 per km) has narrowed to 13.2%. However, the full details of the Alcoa/Worsley DIRN maintenance costing were claimed as confidential which precluded the opportunity for this to undergo a transparent critique by WNR and also limits the extent of comment that PwC/HCS can provide in its report on its reasonableness and achievability. Nevertheless, in relation to the new DIRN costing, whilst the revised Alcoa/Worsley cost is closer to a reasonable and efficient cost, PwC/HCS continues to have uncertainties on the adequacy of resources and labour allowances. In particular the new costing again appeared to understate inspection and fettling costs.

150. In its earlier report, PwC/HCS sought to provide a benchmark comparison of maintenance costs for rail lines in other Australian rail networks. There was a recognition that some of this data included some MPM cost which are excluded from the MEA based WA maintenance costs. Alcoa/Worsley, however, noted in its submission that MPM can form 50% of total maintenance costs. PwC/HCS considers that the extent of MPM included in the maintenance cost comparitors is relatively modest as some of the jurisdictions which were assessed capitalise significant parts of their MPM costs and other networks, particularly on grain lines, have had minimal MPM expenditure.

151. The 2003 determination reviewed the issue of estimating efficient routine maintenance unit costs in detail. The PwC/HCS recommended maintenance costs for the 2003 determination were independently reviewed by rail engineers from Bovis Lend Lease which endorsed the PwC/HCS unit rates as reasonable and efficient. In summary, the 2003 determination reported that QR's average maintenance cost (excluding MPM) was;

- approximately 6,000 per km on 16-19tal branch lines with annual tonnages of less than 1mgt,
- between $7,000-$9,000 per km on 19tal lines where annual tonnages are in the range of 1 to 3mgt and
- between $8,000-$11,000 per km on 19-21tal lines where annual tonnages are in the range of 3 to 6mgt, depending on terrain and location.

152. PwC/HCS suggests that if the 2003 QR maintenance rates were escalated by approximately 17% these rates continue to support retention of the WNR proposed 2006 maintenance rates.

153. Overall, PwC/HCS considers the proposed WNR increase in maintenance costs of 17.4% appears reasonable as it is in line with the relevant ABS indices and is also consistent with the rise in the cost of WNR's outsourced maintenance contract with John Holland.

Authority's Assessment

154. The authority notes the comments with respect to maintenance costs from Alcoa/Worsley as outlined in paragraphs 141 to 143. In regard to the issue of the inappropriateness of using benchmark comparisons, PwC/HCS has sought to address this issue recounting information provided in the 2003 determination which showed benchmark comparisons with rail lines in Queensland exclusive of MPM. In the 2003 determination the comparisons were seen to be reasonable and using the same ABS index to escalate to 2006 values, the escalated values also were seen to be reasonable. In addition, PwC/HCS has made the point that in other jurisdictions MPM represents a smaller percentage than was claimed (50%) by Alcoa/Worsley as the tendency was to capitalise a significant proportion of the MPM costs and the grain lines in most (if not all) jurisdictions have had very little MPM expenditure due to the inability to recover capital costs on grain lines.

155. The Authority notes that for the SWM, the WNR proposed maintenance rate of $17,610 per km is some 27% below the 2006 actual maintenance rate of $24,087 per km. The Authority considers that the Alcoa/Worsley view that MPM comprises 50% of total maintenance costs is a generalisation and not necessarily reflective of individual lines. The SWM underwent a significant upgrade over 2004 and 2005 across most of the route, with sleeper and ballast replacement and therefore would likely have a lower proportion of MPM costs in 2006.

156. In its submission on the draft determination, Alcoa/Worsley provided a revised maintenance cost estimate of $15,273 per km which was an increase of about 20% above its original estimate of $12,700 per km. PwC/HCS has assessed this revised estimate and still has some concerns as to the adequacy of resources and labour allowances in the estimate, particularly with respect to an understatement of inspection and fettling costs.

157. In the draft determination, the Authority noted that WNR's proposed maintenance rates were based on the 2003 IRAR approved maintenance rates escalated by 17.4% using the ABS *Non Building Construction and Road Bridge Construction* index as the escalator. Alcoa/Worsley has challenged the application of full indexation of the ABS data as it considers that this percentage should be discounted to reflect productivity benefits achieved since 2003. The Authority noted in the draft determination that there has been an increase in train movements of 10% (on the SWM) with a further increase of 9% expected by 2009 with an associated increase in tonnages transported of about 28%. WNR has not reflected the increase in traffic growth in its proposed maintenance rate. Consequently, the Authority considers that productivity benefits are already built into WNR's proposed maintenance rate for the SWM as the base maintenance rate has not been increased to allow for the higher train movement activity.

158. The Authority has assessed the comments from Alcoa/Worsley and WNR and considers there should be no change to the position taken in the draft determination. Therefore, on the basis that the 2003 determined maintenance costs were deemed efficient by the IRAR and that the escalation in costs of 17.4%, based on the ABS *Non Building Construction and Road Bridge Construction* index, was considered to be acceptable by PwC/HCS, the Authority considers that WNR's proposed unit maintenance costs are reasonable and reflect efficient maintenance costs.

Overhead Costs

159. There were no amendments outlined in the draft determination under Overhead Costs.

160. No submissions were received in regard to the total overhead costs proposed by WNR. Therefore, the Authority confirms its position, as set out in the draft determination, that it accepts the costs proposed by WNR for overhead costs as reasonable and efficient costs.

161. In the draft determination (paragraph 264), the Authority noted that none of the submissions on WNR's proposed floor and ceiling costs suggested an alternative methodology for the allocation of common costs. The Authority sought further submissions on the issue of appropriate allocation methodologies for common costs in the draft determination and indicated that it would review its decision on this matter prior to the final determination in the light of any such submissions received. Two submissions were received from interested parties (Alcoa/Worsley and WNR).

Interested Party Submissions

Submissions Received During Submission Period

162. Alcoa/Worsley considers[13] that WNR's proposed allocation of train controllers for the SWM, Terminal Ends and Worsley line is inappropriate. Following advice from "experienced interstate train controllers", it has suggested that only one train control desk covering these three routes is appropriate. Alcoa/Worsley requests that the Authority "review the applicability of using current Train Controller numbers rather than benchmarking the required numbers for the MEA and suggests that two

[13] Alcoa/Worsley page 28.

screens (two Train Controllers) would not be efficient practice on a new installation with full CTC control over the SWM, Terminal Ends and Worsley line.

163. Alcoa/Worsley contend that the methodology proposed by WNR for allocating overhead costs does not provide a fair allocation of overhead costs to the Terminal Ends. The submission acknowledges a reduction in the proportion of common costs (operating costs and overhead costs) attributed to the Terminal Ends, as outlined in Table 3 of the draft determination, since the 2003 determination but considers the rise in allocation of overhead costs to the Terminal Ends from 38.3% to 55.2% as unacceptable. Alcoa/Worsley considers that "the new allocation methodology for overheads on the Terminal Ends does not work and it should include a cap which ensures that overheads on any one route section does not exceed 20% of the ceiling on that route section". Alcoa/Worsley further asserts that it is the regulatory process that has resulted in the unfair allocation of overheads to the Terminal Ends because the route sections contained within the Terminal Ends were not included in the 2003 determination and that it was unrelated to any track user needing to allocate costs.

Submissions Received After Submission Period

164. In a supplementary submission, WNR responded[14] to Alcoa/Worsley's assertion that there should only be one train control desk that covers the SWM, Terminal Ends and Worsley line. WNR has stipulated that the train control function in the south-west region cannot be managed with half the resources as suggested by Alcoa/Worsley. WNR claims that the train control function includes the management of train movements in the Kwinana yard and Bunbury port. Activities undertaken by train controllers include train pathway management, control of maintenance work windows in between scheduled train paths, interaction with maintenance crews and ensuring network management decisions are in accordance with Train Management Guidelines and specific customer train priority requests. WNR further contend that accepting one train control desk operation to control all activity in the south-west region will lead to a compromised network management solution and delays in attending to conflicting train priority requests which will fail to meet customer expectations. Therefore, WNR recommends the train control allocation as proposed should remain unchanged.

PwC/HCS Assessment

165. In its submission on the draft determination, Alcoa/Worsley suggested placing a cap of 20% on the proportion of overheads for any particular route section. Overheads in excess of this capped proportion would need to be reallocated probably to the nearby line section(s). In assessing this issue, PwC/HCS is of the view that any cap level would be arbitrary and the reallocation would be likely to see the original parties bearing the overhead costs still bear this cost but in other route sections of the Terminal Ends. Additionally, assessing the equity of the overhead allocation is best done on a route basis, rather than a route section basis. Therefore, PwC/HCS suggests that the better solution to this issue would be to combine the Terminal Ends with the SWM.

166. PwC/HCS noted that in its submission on the draft determination, Alcoa/Worsley requested that the Authority review the applicability of using current Train Controller

[14] WNR supplementary submission page 3.

numbers rather than benchmarking the required numbers for the MEA. Alcoa/Worsley suggested that two screens (and therefore two Train Controllers) requiring 9.2 FTEs for round the clock coverage would not be efficient practice on a new installation with full CTC control over the SWM, the Terminal Ends and the Worsley line. Alcoa/Worsley propose, based on consultation with train controllers from other states, that only one CTC screen would be required for SWM and therefore a maximum of 5 FTE would be required to give round the clock coverage. WNR commenting on this issue noting that the two train control positions also covered the Bunbury Port and the Kwinana Yard (as well as the SWM, the Terminal Ends and the Worsley line) and that halving train control resources would lead to delays in managing conflicting train priority requests and reduced service levels.

167. Following assessment of these competing claims, PwC/HCS is of the view that two train control screens are required to provide adequate service quality given the relatively high number of train movements across the relevant lines (SWM, Worsley, Terminal Ends, Bunbury Port and Kwinana Yard), the growth rate in these train paths over the next 3-5 years and the rising number of passing loops across these lines which when in use would require train controller actions.

Authority's Assessment

168. In regard to Alcoa/Worsley's concerns regarding the allocation of two train control desks (i.e. 9.2 train controllers) to the SWM, Terminal Ends and Worsley line, the Authority notes the comments by Alcoa/Worsley and WNR response to Alcoa/Worsley's comments. PwC/HCS has recommended, as outlined in paragraph 167, that two train control desks be accepted (as proposed by WNR) to control train movements on the above three rail lines on the basis that adequate train management is undertaken with high number of train movements across the relevant lines, the Bunbury Port and the Kwinana yard. This would also cater for an expected increase in train movements through forecast capacity enhancements to the SWM. The Authority has noted earlier in paragraph 157 and in the draft determination that there has been an increase of 10% in train movements from 2003 to 2006 with this increase in traffic expected to be about 19% by 2009 at the next floor and ceiling cost reset. Consequently, the Authority agrees with the PwC/HCS recommendation that two train control desks is appropriate coverage for the SWM, Terminal Ends and Worsley line.

169. The Authority has noted that Alcoa/Worsley has proposed a cap of 20% for overhead costs on the Terminal End route sections. However, Alcoa/Worsley has not provided any substantiation to this proportion and therefore it must be considered to be an arbitrary figure. PwC/HCS has correctly noted that any costs above the 20% cap would need to be reallocated to other route sections where the original parties (i.e. Alcoa and Worsley) bearing the overhead costs would still bear this cost but in other route sections of the Terminal Ends if the overhead costs in those other route sections were less than 20%. The Authority notes that the overhead costs as a proportion of total costs in the other route sections of the Terminal Ends is greater than 20%.

170. The WNR proposed allocation of overhead costs to the Terminal End route sections is an outcome of the same methodology (equal proportion of train movements and GTK's) used for allocation to the routes and agreed by the Authority chaired working group in 2005/06 as discussed in the draft determination. The reason for the increase in the proportion of overheads allocated to the route sections, as outlined under Table 3 in the draft determination, is that the magnitude of the overhead costs has increased due to the change in ownership as identified in the

draft determination. The Authority has also noted the advice from PwC/HCS outlined in paragraph 165 that assessing the equity of the overhead allocation is best done on a route basis as this is the norm for Australian rail networks as discussed in the draft determination.

171. The Authority has considered the views of Alcoa/Worsley in placing an overhead cost cap of 20% on the route sections of the Terminal Ends. However, difficulties in reallocating costs above this cap to other route sections of the Terminal Ends have also been identified. Due to the arbitrary nature of this 20% cap the Authority does not accept that this will result in a better outcome than the allocation methodology outlined in the draft determination. The Authority also notes that Alcoa/Worsley did not suggest an alternative allocation methodology using the proxies suggested by the Authority (train movements and GTK) or others. The Authority has noted the suggestion by PwC/HCS that a more appropriate way of addressing the allocation issue is to amalgamate the SWM with the Terminal Ends, which would enable common costs to be spread over a greater length and other track users.

172. Therefore, the Authority confirms its position, as set out in the draft determination, that it accepts the allocation methodology proposed by WNR for overhead costs (based on an equal proportion of train movements and GTK) as reasonable and efficient. The Authority has also decided to amalgamate the SWM and Terminal Ends at the next floor and ceiling cost review of these rail lines.

Overall Impact of Cost Changes

173. The Authority has assessed the impact of its determined changes to capital costs (Appendix 3) on the floor and ceiling costs for each of the rail lines under review against WNR's proposed floor and ceiling costs (Appendix 2). A summary of the cost differences are outlined in Table 2 below.

Table 2: Summary of Floor and Ceiling Cost Changes

Rail Line	Floor (%)	Ceiling (%)	GRV (%)
Kwinana to Bunbury Inner Harbour	1.3	-4.5	-6.7
Brunswick to Premier	-1.2	-5.4	-7.1
Forrestfield to Kalgoorlie	-3.2	-4.6	-5.8
Kalgoorlie to Leonora	-1.0	-5.6	-6.6
Kalgoorlie to Esperance	-3.9	-5.6	-7.0
Terminal Ends	-0.3	-1.4	-5.2
Avon to Goomalling	0	-6.1	-7.5
Katanning to Tambellup	0	-7.2	-8.4
Kulin to Yilminning	0	-8.6	-9.4

174. The table shows reductions in the WNR proposed ceiling costs and the proposed GRV's are in the range of 1.4% to 7.1% for the mainlines, Worsley line and the Terminal Ends. However, the differences are marginally higher for the three grain lines with reductions to the proposed ceiling costs and the proposed GRV's in the range of 6.1% to 9.4%. This is primarily due to reductions in unit costs for 41kg rail as discussed earlier in paragraphs 70, 71 and 115.

Consistency of Future Review Dates

Draft Determination Amendment

175. One amendment was outlined in the draft determination relating to consistency of future review dates.

Amendment 4

The determined floor and ceiling costs for the mainlines and the Worsley line will apply from 1 July 2006 to 30 June 2009. The determined floor and ceiling costs for the grain lines and Terminal Ends will apply from 1 January 2007 to 30 June 2009. WNR will submit its proposed revisions to the floor and ceiling prices, for all the rail lines subject to review, nine months prior (by 1 October 2008) to the date from which the next determination of floor and ceiling costs will apply (1 July 2009).

Interested Party Submissions

Submissions Received During Submission Period

176. There were three submissions that addressed issues in this section relating to the consistency of future reviews and the backdating of the approved floor and ceiling costs.

177. Alcoa/Worsley supported[15] the position taken in the draft determination to align future review dates for the floor and ceiling costs for all the rail lines under review. However, it opposed the backdating of the approved floor and ceiling costs as proposed in the draft determination. Alcoa/Worsley recommended that the current price reset should apply from the date of the final determination and not backdated to 1 July 2006 and 1 January 2007 as outlined in Amendment 4 above and that the timelines for the process must guarantee a final determination is issued by the 1 July review date.

178. ARG also opposed the backdating of the approved floor and ceiling costs as proposed in the draft determination. ARG questions[16] whether the Authority has the power to make such a retrospective determination. It suggests that neither the Act nor the Code expressly confers such a retrospective power. "In the absence of an express conferral of retrospective power, it is generally the position that no retrospective power is intended to be conferred by the legislation and retrospectivity is not permitted". ARG cites legislation under the *Trade Practices Act 1974 (Cth)* where there is power to backdate determinations and the attempt to make provision for the ability to backdate reference tariffs in the National Gas Regime, which was opposed by the Productivity Commission, as evidence in support of its position. ARG also asserts that the backdating decision also could have an impact on its commercial position as the payment of backdated access charges to WNR may not be able to be recovered from track users.

[15] Alcoa/Worsley page 31.

[16] ARG, Submission on the Draft Determination of WestNet Rail's Proposed Floor and Ceiling Costs for Certain Rail Lines, page 2.

179. WNR did not support the amendment relating to the backdating of the floor and ceiling costs for the grain lines and Terminal Ends to 1 January 2007 as it claimed its proposed floor and ceiling costs were based upon the same underlying 1 July 2006 costs as the mainlines and the Worsley line. WNR considers that the timing for the grain lines and the Terminal Ends should have the same date of application as, they should be escalated for a period of six months using the CPI-X escalation factor the mainlines and Worsley line, of if they are to be applied from the 1 January 2007 date approved in the Costing Principles.

Submissions Received after Submission Period

180. In its supplementary submission, WNR repeated its assertion that the floor and ceiling costs for all the rail lines subject to the current review have a common application date of 1 July 2006, or if the floor and ceiling costs for some of the rail lines were backdated to 1 January 2007 then escalation should apply for a period of six months as indicated above. WNR does not agree with the views that are outlined in the Alcoa/Worsley and ARG submissions that the Authority does not have the power to backdate the determination and suggests[17] its legal advice indicates that the Authority does have the power to backdate the determination. WNR further suggests that the Authority should "balance the interests of rail users and the rail owner and to not backdate the determination, which correctly reflects the clear evidence that the costs to invest in and maintain the WNR network have increased, will penalise WNR".

Authority's Assessment

181. The Authority has noted the views of Alcoa/Worsley, ARG and WNR on the issues of consistency of review dates and backdating of the floor and ceiling costs.

182. In regard to the issue of consistency of review dates, the Authority notes the support of Alcoa/Worsley that future reviews of the floor and ceiling costs for all rail lines that are subject to this review be undertaken concurrently. ARG and WNR have not commented on this issue. In the draft determination, the Authority identified the merits of doing the reviews concurrently. Accordingly, the Authority maintains the view as outlined in the draft determination that the reviews be undertaken concurrently.

183. In the draft determination, the Authority took the decision to backdate the floor and ceiling costs for the SWM and Worsley lines to 1 July 2006 and the floor and ceiling costs for the grain lines and the Terminal Ends to 1 January 2007. The decision to backdate resulted from delays associated with the review and approval of the Costing Principles which was completed in August 2006. As the Costing Principles outlines the assumptions used in floor and ceiling cost calculations, the review of the floor and ceiling costs for the rail lines subject to the 2006 review could not commence until the Costing Principles were approved.

184. The Authority has noted the conflicting views of ARG and WNR on whether the Authority has the power to backdate the floor and ceiling costs and obtained legal advice on this matter of retrospectivity. ARG's objection to the draft determination's proposed Amendment 4 was on the basis that it is unlikely that the Authority has the power to require the floor and ceiling costs to take effect from 1 July 2006 and 1

[17] WNR supplementary submission page 4.

January 2007 in circumstances where the Authority's final determination is made after these dates.

185. The Authority has considered ARG's concerns and while it is acknowledged that the *Economic Regulation Authority Act 2003* (**ERA Act**), the Act and the Code do not expressly permit the Authority to make determinations with retrospective effect, the issue for the Authority is not whether there is an express power to backdate a determination but whether the legislation as a whole can be construed as permitting the Authority to specify a date for commencement of its determination prior to the date of its determination.

186. Despite the absence of any express power, the Authority's view, based on its legal advice, is that it has the power to make determinations with retrospective effect on the basis of the following considerations:

- Clauses 9 and 10 of Schedule 4 of the Code do not specify any time when the determination is to apply from;
- Section 27 of the ERA Act allows the Authority to do all things necessary or convenient to be done for or in connection with the performance of its functions, including its function under section 46 of approving or determining the Costing Principles to be applied in the floor and ceiling costs and making a determination in relation to those costs under section 9 and 10 of Schedule 4 of the Code; and
- Such a determination is consistent with the considerations in sections 20(4) (a), (b) and (g) that the Authority is required to take into account when performing its functions under the Act. That is, WNR's legitimate business interests and investment in railway infrastructure, WNR's ability to cover the costs of granting access and the economically efficient use of the railway infrastructure.

In circumstances where a review of the costs for a number of rail lines was expected to be implemented by 30 June 2006 and others by 31 December 2006, where the delay in approval of the Costing Principles was not due to any fault on the part of WNR and where the estimated financial impact on WNR is materially significant, the Authority is of the view that the considerations in sections 20(4) (a), (b) and (g) of the Act should be given greater weight than the interests of persons holding contracts for the use of the railway infrastructure.

187. The Authority has sought to ensure that this issue of retrospectivity does not occur in the future by commencing the next review of the floor and ceiling costs for the rail lines nine months prior to the expiration of the current floor and ceiling costs on 30 June 2009.

188. The Authority has noted the comments, as outlined in paragraph 179, from WNR regarding the backdating of the determined floor and ceiling costs for all the rail lines subject to this review to 1 July 2006. In the approved Costing Principles, it is stipulated that the GRV of rail lines should be current for a period of three years and the ceiling costs in between resets are to be escalated by CPI-X to reflect annual cost increases. In the 2004 determined floor and ceiling costs of the Terminal Ends and grain lines, the Authority agreed that the costs would apply from 1 January 2004. Consequently, it is the view of the Authority that any revisions to the GRV should only apply from 1 January 2007 to ensure consistency with the Costing Principles. Accordingly, the Authority does not agree with WNR's position that the floor and ceiling costs for all the rail lines subject to this review be backdated to 1 July 2006. The Authority also does not see a need for it to approve WNR's request

that the costs be escalated for six months by CPI-X in the event that the floor and ceiling costs for the grain lines and the Terminal Ends as WNR already has the power to do this under the approved Costing Principles.

189. The Authority acknowledges the comments from Alcoa/Worsley in regard to completing the review prior to the effective date and considers it appropriate for WNR to submit its revisions to the floor and ceiling costs, for all the rail lines under review, nine months prior to the commencement date for the next determination to enable full public consultation and preparation of draft and final determinations. Consequently, the next review would need to commence on 1 October 2008.

190. Therefore, the Authority confirms its position, as set out under Amendment 4 in the draft determination, and maintains this amendment in the final determination as follows.

Final Determination

Required Amendment 4

The determined floor and ceiling costs for the mainlines and the Worsley line will apply from 1 July 2006 to 30 June 2009. The determined floor and ceiling costs for the grain lines and Terminal Ends will apply from 1 January 2007 to 30 June 2009. WNR will submit its proposed revisions to the floor and ceiling prices, for all the rail lines subject to review, nine months prior (by 1 October 2008) to the date from which the next determination of floor and ceiling costs for these rail lines will apply (1 July 2009).

APPENDICES

Appendix 1 MEA Standard* for Certain Rail Lines

MEA Standard for the Grain Lines

Grain line	Avon to Goomalling (1) and Katanning to Tambellup (2)	Kulin to Yiliminning (3)
Axle Load – Freight (tns)	19 tal	16 tal
Rail weight (min Kg/m)	41	31 (if 31 not available, then 41 to be substituted)
Sleeper type, pattern and spacing	1:4 steel/timber “B’ type 2100mm x225mm x130mm – 1320/km min	1:4 steel/timber “A” type 2100mm x225mm x115mm – 1320/km min
Ballast type & min depth (mm) for Continuously Welded Rail (CWR)	Metal – 150	Gravel/Metal - 150
Ballast type & min depth (mm) for Mechanically Jointed Rail	Not Applicable	Gravel/Metal - 100
Fasteners	Plated timber sleepers, elastic fasteners throughout	Plated curves <800 radius, non-elastic fasteners in timber
Formation depth (m)	1.0 (including capping layer)	1.0 (including capping layer)
Target speed maximum (kph)	80 (subject to operating requirements)	60 (subject to operating requirements)

*MEA Standard proposed by WNR and accepted by the Authority as the determined standard.

MEA Standard for the Main Lines (excluding Terminal Ends)

Main line	Kwinana to Bunbury (SWM)	Brunswick to Premier	Forrestfield to Kalgoorlie (EGR)	Kalgoorlie to Leonora	Kalgoorlie to Esperance
Axle Load Freight (tn) & Max. Speed Freight (kph) [loaded/empty]	At 21tn: 115/115 (NG) At 23tn: 80/80 (NG)	At 21tn: 50/70 (NG)	At 21tn: 115/115 (DG & SG) At 23tn: 80/80 (DG & SG)	At 21tn: 50/70 (SG)	At 23tn: 70/80 (SG)
Max. Speed Passenger (kph)	160 (NG)	N/A	160 (SG)/100 (DG)	N/A	N/A
Ave. Formation height (m)	1.0	1.5 (Brunswick East to Worsley) 1.0 (Worsley to Hamilton & Worsley to Premier)	1.5	1.5	1.5
Rail (kg/m)	50	50	60	50	50
Ballast depth (mm)	250	250 (Concrete sleepers) [18] 150 (timber sleepers)[19]	300	200	250
Sleeper Type & spacing/km	Concrete/ 1,500	Concrete/1,500 Timber/1,470	Concrete/1,500	1 in 4 Steel/1,500	1 in 2 Steel/1,640

Sources: ERA September 2003 WNR Clause 9 Floor & Ceiling Cost Determination (page 18) and October 2003 Worsley Floor & Ceiling Cost Determination (page 4).

[18] For the section Brunswick East to Worsley

[19] For sections East and North of Worsley

Appendix 2 WNR Proposed Floor and Ceiling Costs for Route Sections by Cost Function

Kwinana to Bunbury Inner Harbour

Revised Ceiling @ July 2006	Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	GRV
Route Section								
Kwinana to Mundijong Jn	29.107	$4,122,772	$2,852,189	$511,309	$254,596	$504,678	$306,908	$36,951,012
Mundijong Jn to Pinjarra	48.826	$6,073,151	$4,290,540	$758,888	$328,654	$695,070	$466,409	$56,715,426
Pinjarrato Pinjarra East	1.471	$689,231	$194,011	$110,921	$134,890	$249,410	$109,174	$2,310,330
Pinjarra East to Alumina Jn	0.233	$788,122	$124,933	$135,034	$187,582	$340,573	$136,962	$1,311,123
Pinjarra East to Pinjarra South	1.06	$311,767	$99,241	$49,342	$58,384	$104,800	$42,700	$1,211,948
Pinjarra to Wagerup	33.523	$3,420,218	$2,545,649	$367,437	$194,353	$312,779	$155,911	$35,197,956
Wagerup to Brunswick Jn	42.968	$5,302,980	$3,845,148	$627,763	$299,999	$530,069	$345,837	$51,219,656
Brunswick Jn to Picton Jn	22.083	$3,503,197	$2,217,207	$449,281	$296,323	$540,386	$344,031	$28,706,611
Picton Jn to Bunbury Inner Harb	3.522	$1,512,097	$702,248	$209,009	$215,340	$385,500	$189,931	$8,703,167
Total	182.79	$ 25,723,536	$ 16,871,166	$ 3,218,985	$ 1,970,122	$ 3,663,264	$ 2,097,863	$222,327,228

Brunswick to Premier

Revised Ceiling @ July 2006		Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	GRV
Route Section	Mtce rate								
Brunswick North - East	17610	0.911	$168,677	$90,184	$21,636	$11,610	$45,248	$5,359	$1,160,381
Brunswick - Brunswick East	17610	1.025	$495,309	$254,114	$66,490	$36,174	$138,531	$13,922	$3,058,037
Brunswick East - Worsley	17610	22.001	$2,745,889	$2,003,036	$381,672	$103,144	$258,037	$90,181	$26,688,059
Worsley - Worsley North	9392	2.316	$493,988	$238,845	$64,464	$37,390	$153,288	$30,126	$2,811,617
Worsley North - Hamilton	9392	8.584	$963,112	$567,523	$92,475	$60,982	$242,132	$50,745	$7,539,517
Worsley East - Worsley North	9392	1.067	$133,628	$73,106	$13,855	$9,183	$37,484	$8,645	$931,376
Worsely - Worsely East	9392	1.885	$253,792	$110,293	$19,851	$23,688	$99,959	$9,324	$1,447,545
Worsley East - Ewington Jn	9392	28.24	$2,156,284	$1,757,274	$214,616	$73,593	$110,801	$62,438	$23,458,746
Ewington Jn - Premier	9392	2.385	$318,765	$267,859	$16,807	$13,100	$20,999	$4,330	$3,300,240
Total		68.41	7,729,445	5,362,235	891,867	368,864	1,106,479	275,069	$70,395,517.76

Terminal Ends

Revised Ceiling @ July 2006	Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	GRV
Route Section								
Inner Harbour 485 Pt to Alcoa (Inbound)	0.512	$515,754	$82,449	7,858	70,914	$354,534	$20,344	$864,067
Inner Harbour 486 Pt to ALCOA (Outbound)	0.38	$334,228	$68,373	3,032	44,514	$218,307	$12,132	$754,239
Inner Harbour 487 Pt to Worsley (Outbound)	0.328	$219,120	$54,830	2,517	27,765	$134,008	$7,531	$631,563
Inner Harbour 485 Pt to 486 pts	0.081	$471,925	$49,699	572	69,816	$351,837	$18,694	$408,448
Inner Harbour 486 Pt to 487 pts	0.055	$180,928	$20,138	352	26,602	$133,836	$7,145	$173,927
Inner Harbour 487 Pt to Woodchips	3.183	$308,268	$271,860	24,732	9,507	$2,169	$5,596	$4,097,735
Kwinana no3 points to bauxite junction	1.853	$477,046	$150,235	26,499	50,433	$249,878	$27,006	$1,877,640
Alcoa Bauxite Jn - Alcoa Bauxite Sdg	1.297	$317,211	$86,959	15,632	35,721	$178,899	$12,723	$1,145,613
Alcoa Bauxite Jn - Alcoa Caustic Sdg Pts	1.893	$198,203	$103,242	12,003	16,052	$66,907	$5,240	$1,492,691
Alcoa Caustic Sdg Pts -Alcoa Alumina Sdg Pts	0.94	$89,188	$50,434	5,625	6,699	$26,429	$2,150	$734,898
Total Route	10.52	3,111,869	938,219	98,823	358,023	1,716,805	118,562	$12,180,820

Forrestfield to Kalgoorlie

Revised Ceiling @ July 2006	Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	GRV
Route Section								
F'Field Sth to Midland	25.711	$5,858,387	$4,026,111	$975,968	$430,124	$426,184	537775.3732	$49,811,584
Midland to Millendon Jn	28.25	$5,960,546	$4,005,115	$1,059,256	$421,593	$474,582	607630.6108	$48,544,289
Millendon Jn to Toodyay West	125.138	$17,908,433	$13,813,244	$2,489,724	$729,090	$876,375	1569128.789	$173,832,446
Toodyay West to Avon Yard	51.827	$8,499,722	$6,198,172	$1,314,850	$459,133	$527,567	767560.9589	$77,612,338
Avon Yard to West Merredin	190.939	$27,746,154	$22,141,282	$3,298,650	$948,587	$1,357,636	1324139.13	$284,831,163
West Merredin to Koolyanobbing	191.981	$25,270,734	$20,278,959	$2,941,722	$848,446	$1,201,607	1059754.343	$264,058,081
Koolyanobbing to West Kalgoorlie	204.329	$26,136,888	$19,694,177	$3,536,595	$849,268	$2,056,848	1431827.818	$256,070,979
West Kalgoorlie to Border	6.21	$1,713,078	$1,165,757	$302,820	$119,316	$125,185	109054.4074	$13,972,929
Avon to West Merredin Sidings	18.049	$1,560,569	$1,415,931	$97,204	$47,434	$0	10410.27	$18,181,379
West Merredin to Koolyanobbing Sidings	9.605	$856,665	$778,883	$51,690	$26,093	$0	5496.43	$10,009,773
Koolyanobbing to W Kal Sidings	4.745	$389,339	$352,189	$25,351	$11,798	$0	2508.87	$4,517,230
Total	856.78	$ 121,900,516	$ 93,869,819	$ 16,093,831	$ 4,890,882	$ 7,045,984	$ 7,425,287	$1,201,442,191

Kalgoorlie to Leonora

Revised Ceiling @ July 2006	Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	GRV
Route Section								
Kalgoorlie to Malcolm	237.498	$20,533,476	$17,460,112	$2,113,791	$666,942	$292,630	$287,966	$242,226,407
Malcolm to Leonora	24.54	$2,660,233	$2,081,813	$348,250	$151,769	$78,401	$99,512	$28,593,082
Menzies sidings	0.325	$23,759	$20,984	$2,071	$703	$0	$126	$292,864
Total	262.36	23,217,467	19,562,909	2,464,113	819,414	371,031	387,605	271,112,353

Kalgoorlie to Esperance

Revised Ceiling @ July 2006	Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	GRV
Route Section								
West Kalgoorlie to Hampton	17.882	$2,500,679	$1,714,398	$319,912	$229,320	$237,049	$219,260	$22,340,303
Hampton to Kambalda	38.25	$4,094,623	$2,960,937	$526,470	$271,079	$336,137	$278,489	$39,882,479
Kambalda to Salmon Gums	229.595	$22,071,889	$17,767,465	$2,518,907	$680,881	$1,104,636	$912,974	$240,668,582
Salmon Gums to Esperance	111.598	$11,005,869	$8,769,988	$1,314,778	$379,465	$541,638	$545,575	$117,268,011
Kambalda siding	0.609	$43,804	$39,252	$3,237	$1,315	$0	$226	$539,171
Norseman Siding	0.524	$39,959	$35,969	$2,785	$1,205	$0	$195	$492,797
Salmon Gums Siding	1.275	$95,592	$85,936	$6,777	$2,879	$0	$473	$1,175,055
Total Route	399.73	39,852,414	31,373,945	4,692,865	1,566,143	2,219,461	1,957,193	422,366,398

Grain Lines

Revised Ceiling @ September 2006	Section Length	Total Ceiling	Capital	Maintenance	Operating	Overhead	Floor	Total GRV
Route Section								
Avon to Goomalling	57.69	4,385,906	3,720,733	311,526	252,143	101,504	96,253	51,500,188
Katanning to Tambellup	46.712	3,113,897	2,682,444	252,245	143,126	36,082	43,360	37,214,363
Kulin to Yilminning	99.808	6,497,751	5,844,803	410,111	222,433	20,404	37,780	80,323,583

Appendix 3 Authority Determined Floor and Ceiling Costs for Route Sections by Cost Function

Kwinana to Bunbury Inner Harbour

	Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route	181.69	$ 24,569,823	$ 15,773,593	$ 3,199,614	$ 528,415	$ 1,404,938	$ 3,663,264	$ 2,124,264	$ 207,499,744
Route Section									
Kwinana to Mundijong Jn	29.11	$3,930,312	$2,667,653	$509,567	$89,366	$159,048	$504,678	$302,430	$34,491,616.30
Mundijong Jn to Pinjarra	47.73	$5,527,464	$3,775,421	$745,576	$126,477	$184,921	$695,070	$444,925	$50,088,747.16
Pinjarrato Pinjarra East	1.47	$677,940	$183,171	$110,833	$6,136	$128,390	$249,410	$108,651	$2,170,893.26
Pinjarra East to Alumina Jn	0.23	$781,938	$118,888	$135,098	$3,983	$183,397	$340,573	$136,917	$1,238,305.82
Pinjarra East to Pinjarra South	1.06	$304,902	$92,601	$49,339	$3,102	$55,060	$104,800	$42,644	$1,123,514.86
Pinjarra to Wagerup	33.52	$3,245,723	$2,377,653	$366,566	$79,651	$109,074	$312,779	$154,156	$32,838,809.87
Wagerup to Brunswick Jn	42.97	$5,039,667	$3,592,351	$625,716	$120,344	$171,187	$530,069	$341,325	$47,786,713.28
Brunswick Jn to Picton Jn	22.08	$3,584,957	$2,297,512	$448,046	$76,967	$222,047	$540,386	$404,264	$29,482,894.05
Picton Jn to Bunbury Inner Harb	3.52	$1,476,919	$668,343	$208,872	$22,390	$191,814	$385,500	$188,953	$8,278,249.65

Brunswick to Premier

		Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route		**68.41**	**$ 7,312,541**	**$ 4,991,331**	**$ 858,291**	**$ 167,210**	**$ 189,229**	**$ 1,106,479**	**$ 271,742**	**$ 65,369,796**
Route Section										
Brunswick North - East	17,610.00	0.91	$154,936	$82,299	$16,043	$2,757	$8,589	$45,248	$5,311	$1,052,344.66
Brunswick - Brunswick East	17,610.00	1.03	$433,870	$241,535	$18,050	$8,091	$27,662	$138,531	$13,868	$2,893,557.11
Brunswick East - Worsley	17,610.00	22.00	$2,572,257	$1,829,453	$387,438	$61,287	$36,042	$258,037	$88,949	$24,280,113.01
Worsley - Worsley North	17,610.00	2.32	$459,376	$228,267	$40,785	$7,647	$29,389	$153,288	$29,786	$2,681,294.84
Worsley North - Hamilton	9,392.00	8.58	$893,626	$511,759	$80,621	$17,144	$41,970	$242,132	$49,736	$6,750,921.02
Worsley East - Worsley North	9,392.00	1.07	$122,708	$66,250	$10,021	$2,219	$6,734	$37,484	$8,446	$835,538.81
Worsely - Worsely East	9,392.00	1.89	$245,540	$104,387	$17,704	$3,497	$19,994	$99,959	$9,297	$1,369,618.86
Worsley East - Ewington Jn	9,392.00	28.24	$2,124,648	$1,677,690	$265,230	$56,203	$14,725	$110,801	$62,022	$22,426,387.18
Ewington Jn - Premier	9,392.00	2.39	$305,581	$249,690	$22,400	$8,365	$4,126	$20,999	$4,326	$3,080,020.86

Forrestfield to Kalgoorlie

	Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route	**856.78**	**$ 116,306,639**	**$ 88,457,263**	**$ 16,093,831**	**$ 2,963,318**	**$ 1,746,243**	**$ 7,045,984**	**$ 7,188,762**	**$ 1,132,028,557**
Route Section									
F'Field Sth to Midland	25.71	$5,789,170	$3,949,748	$985,672	$132,317	$295,249	$426,184	$534,169	$49,003,279.48
Midland to Millendon Jn	28.25	$5,868,820	$3,907,420	$1,068,497	$130,899	$287,422	$474,582	$602,288	$47,504,315.75
Millendon Jn to Toodyay West	125.14	$17,543,862	$13,455,104	$2,495,290	$450,746	$266,347	$876,375	$1,538,696	$170,002,944.42
Toodyay West to Avon Yard	51.83	$8,308,154	$6,009,811	$1,317,954	$201,329	$251,494	$527,567	$751,671	$75,522,085.00
Avon Yard to West Merredin	190.94	$26,187,573	$20,643,781	$3,287,735	$691,567	$206,854	$1,357,636	$1,263,583	$265,193,810.66
West Merredin to Koolyanobbing	191.98	$23,573,972	$18,655,810	$2,922,484	$624,970	$169,101	$1,201,607	$995,234	$242,727,196.65
Koolyanobbing to West Kalgoorlie	204.33	$24,821,395	$18,424,510	$3,533,303	$617,221	$189,513	$2,056,848	$1,376,209	$239,402,816.18
West Kalgoorlie to Border	6.21	$1,650,595	$1,101,897	$306,337	$36,914	$80,264	$125,185	$108,495	$13,182,859.80
Avon to West Merredin Sidings	18.05	$1,425,104	$1,283,608	$98,495	$43,001	$0	$0	$10,410	$16,390,210.62
West Merredin to Koolyanobbing Sidings	9.61	$777,343	$701,467	$52,376	$23,499	$0	$0	$5,496	$8,964,627.23
Koolyanobbing to W Kal Sidings	4.75	$360,651	$324,105	$25,688	$10,858	$0	$0	$2,509	$4,134,411.38

Kalgoorlie to Leonora

	Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route	**262.36**	**$ 21,914,797**	**$ 18,302,463**	**$ 2,464,113**	**$ 613,133**	**$ 164,057**	**$ 371,031**	**$ 383,705**	**$ 253,180,345**
Route Section									
Kalgoorlie to Malcolm	237.50	$19,379,596	$16,343,628	$2,113,798	$547,512	$82,028	$292,630	$284,628	$226,311,344.24
Malcolm to Leonora	24.54	$2,513,122	$1,939,481	$348,240	$64,973	$82,028	$78,401	$98,952	$26,599,893.46
Menzies sidings	0.33	$22,078	$19,355	$2,075	$648	$0	$0	$126	$269,107.42

Kalgoorlie to Esperance

	Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route	**399.73**	**$ 37,637,455**	**$ 29,230,782**	**$ 4,692,865**	**$ 979,231**	**$ 515,116**	**$ 2,219,461**	**$ 1,881,727**	**$ 392,745,418**
Route Section									
West Kalgoorlie to Hampton	17.88	$2,401,316	$1,615,529	$322,730	$54,120	$171,887	$237,049	$217,681	$21,008,300.96
Hampton to Kambalda	38.25	$3,920,614	$2,789,330	$529,817	$93,443	$171,887	$336,137	$274,732	$37,473,857.72
Kambalda to Salmon Gums	229.60	$20,726,206	$16,473,466	$2,510,572	$551,861	$85,671	$1,104,636	$862,410	$222,811,129.61
Salmon Gums to Esperance	111.60	$10,422,834	$8,203,908	$1,316,787	$274,831	$85,671	$541,638	$526,009	$109,425,533.32
Kambalda siding	0.61	$40,903	$36,406	$3,277	$1,220	$0	$0	$226	$498,031.51
Norseman Siding	0.52	$36,835	$32,912	$2,820	$1,103	$0	$0	$195	$449,418.18
Salmon Gums Siding	1.28	$88,747	$79,232	$6,862	$2,654	$0	$0	$473	$1,079,146.93

Terminal Ends

	Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route	10.52	$ 3,067,148	$ 894,947	$ 98,823	$ 29,981	$ 326,592	$ 1,716,805	$ 118,170	$ 11,546,026
Route Section									
Inner Harbour 485 Pt to Alcoa (Inbound)	0.51	$512,812	$79,609	$7,851	$2,667	$68,152	$354,534	$20,304	$824,481.64
Inner Harbour 486 Pt to ALCOA (Outbound)	0.38	$332,664	$66,853	$3,040	$2,240	$42,224	$218,307	$12,129	$731,640.95
Inner Harbour 487 Pt to Worsley (Outbound)	0.33	$217,771	$53,518	$2,525	$1,793	$25,928	$134,008	$7,531	$612,057.55
Inner Harbour 485 Pt to 486 pts	0.08	$471,591	$49,375	$574	$1,654	$68,152	$351,837	$18,694	$403,630.61
Inner Harbour 486 Pt to 487 pts	0.06	$180,701	$19,917	$353	$667	$25,928	$133,836	$7,145	$170,655.74
Inner Harbour 487 Pt to Woodchips	3.18	$294,713	$258,667	$24,812	$8,665	$399	$2,169	$5,596	$3,907,357.66
Kwinana no3 points to bauxite junction	1.85	$469,299	$142,841	$26,394	$4,785	$45,401	$249,878	$26,772	$1,767,804.07
Alcoa Bauxite Jn - Alcoa Bauxite Sdg	1.30	$311,833	$81,786	$15,600	$2,740	$32,808	$178,899	$12,623	$1,068,733.93
Alcoa Bauxite Jn - Alcoa Caustic Sdg Pts	1.89	$190,432	$95,695	$12,032	$3,206	$12,593	$66,907	$5,228	$1,380,484.03
Alcoa Caustic Sdg Pts -Alcoa Alumina Sdg Pts	0.94	$85,331	$46,687	$5,642	$1,564	$5,009	$26,429	$2,149	$679,179.70

Grain Lines

	Section Length	Total Ceiling	Capital	Maintenance	Working Capital	Operating	Overhead	Floor	Total GRV
Total Route	307.30	$ 12,947,532	$ 11,193,974	$ 973,882	$ 374,998	$ 246,689	$ 157,990	$ 177,393	**$ 154,538,316**
Route Section									
Avon to Goomalling	57.69	$4,118,414	$3,438,538	$311,526	$115,191	$151,655	$101,504	$96,253	$47,634,223.78
Katanning to Tambellup	46.71	$2,890,356	$2,456,384	$252,245	$82,289	$63,356	$36,082	$43,360	$34,093,617.22
Kulin to Yilminning	99.81	$5,938,762	$5,299,052	$410,111	$177,518	$31,678	$20,404	$37,780	$72,810,474.66

Appendix 4 Glossary

ABS	Australian Bureau of Statistics
Act	Railways (Access) Act 1998
Alcoa	Alcoa World Alumina Australia Pty Ltd
APM	Access Pricing Model
ARTC	Australian Rail Track Corporation Ltd
Authority	Economic Regulation Authority
ARG	Australian Railroad Group Pty Ltd
Code	Railways (Access) Code 2000
CPI	Consumer Price Index
DIRN	Defined Interstate Railway Network
DORC	Depreciated Optimised Replacement Cost
DSS	Decision Support System
FTE	Full Time Employee
GRV	Gross Replacement Value
GTK	Gross Tonne Kilometres
HCS	Hughes Consulting Service
HR	Human Resources
IRAR	Independent Rail Access Regulator
IT	Information Technology
KM	Kilometre
KPI	Key Performance Indicator
MEA	Modern Equivalent Asset
MPM	Major Periodic Maintenance
MS	Microsoft
NG	Narrow Guage
PwC	PricewaterhouseCoopers
SG	Standard Guage
WACC	Weighted Average Cost of Capital
WNR	WestNet Rail Pty Ltd
Worsley	Worsley Alumina Pty Ltd
WP	Worley Parsons

Appendix 5 Map of WestNet Rail Rail Network