WestNet Rail's Floor and Ceiling Costs Review

Final Determination on the Proposed 2009-10 Floor and Ceiling Costs for:

Mainlines

Worsley Line

Terminal Ends

Kwinana to Soundcem

Grain Lines

30 June 2009

Economic Regulation Authority
WESTERN AUSTRALIA

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 16 October 2008, WestNet Rail Pty Ltd (**WNR**) submitted its proposed floor and ceiling costs 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 proposed floor and ceiling costs for these rail lines resulted from a requirement, detailed in the Authority's July 2007 Final Determination of WNR Floor and Ceiling Costs, for these costs to be submitted for review nine months prior to the application date of the subsequent revised Floor and Ceiling costs (1 July 2009).

2. WNR also included, in its 2008 proposed floor and ceiling costs submission, the Kwinana to Soundcem line, which was not included in its previous submission in 2006. This line was included as a result of a request to the Authority by BHP Billiton Worsley Alumina Pty Ltd (**Worsley**) for a determination to be made on this line.

3. The Authority has considered WNR's proposed floor and ceiling costs for the rail lines under review in conjunction with comments made by interested parties in response to public consultation.

4. WNR's proposed floor and ceiling costs have been assessed by the Authority in accordance with the relevant provisions of the *Railways (Access) Act 1998* (**Act**) and the *Railways (Access) Code 2000* (**Code**).

5. The final determination of the Authority is to approve WNR's proposed floor and ceiling costs subject to three amendments. These amendments are listed below.

List of Amendments

Amendment 1

WNR should amend its 2009 costs, as used in its APM to derive its proposed floor and ceiling costs, by changing the escalation factor used to convert its 2008 costs to 2009 costs from 2.75 per cent to 1.5 per cent.

Amendment 2

The Authority confirms its position as set out under its draft determination to the effect that the 2008 unit prices proposed by WNR should be amended to be consistent with the Authority's 2008 determined prices.

Amendment 3

WNR should revise its proposed floor and ceiling costs to be consistent with the Authority's determined floor and ceiling costs as shown in Appendix 3.

REASONS FOR THE DETERMINATION

Background

6. WNR is the provider of "below" rail freight infrastructure, covering approximately 5,000 kilometres of track, in the south-west of Western Australia. WNR is majority owned by Babcock and Brown Infrastructure, a publicly listed Australian company.

7. WNR leases its freight railway network under a long term lease arrangement with the Western Australian Government. Section 3 of the 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 railway network.

8. In July 2007, the Authority approved the floor and ceiling costs for the four mainlines, the Worsley line, the terminal ends and the grain lines. The approved floor and ceiling costs for the mainlines and the Worsley line were to apply from 1 July 2006 to 30 June 2009. The approved floor and ceiling costs for the grain lines and terminal ends were to apply from 1 January 2007 to 30 June 2009.

9. Under section 6 of WNR's current Costing Principles, WNR is required to review its floor and ceiling costs every three years and to submit these costs to the Authority for approval. WNR's Costing Principles set out the approach to be followed by WNR in formulating its floor and ceiling costs.

10. WNR's 2008 proposed floor and ceiling costs submission was required to be provided to the Authority by 14 October 2008. Following a request from WNR, the Authority approved an extension of time, to 17 October 2008, for WNR to provide its submission.

11. Subsequent to WNR's 2007 floor and ceiling costs determination, Worsley requested that the Authority make a determination for the Kwinana to Soundcem rail line. Worsley agreed to this determination being made at the time the Authority carried out its review of WNR's floor and ceiling costs in 2008. WNR has included this line in its 2008 submission.

12. On 16 October 2008, WestNet Rail Pty Ltd (**WNR**) submitted its proposed floor and ceiling costs for the mainlines, Brunswick to Premier line, terminal ends to the Kwinana to Bunbury line, Kwinana to Soundcem line and three grain lines to the Authority for approval. This submission is available on the Authority's web site (www.era.wa.gov.au).

Legislative Considerations

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

> Clause 1 of Schedule 4 (Definitions)
>
> In this Schedule —
>
> *access-related functions* means the functions involved in arranging the provision of access to railway infrastructure under this Code;
>
> *incremental costs*, in relation to an operator or a group of operators, means —

(a) the operating costs; and

(b) where applicable —

(i) the capital costs; and

(ii) the overheads attributable to the performance of the railway owner's access-related functions whether by the railway owner or an associate,

that the railway owner or the associate would be able to avoid in respect of the 12 months following the proposed commencement of access if it were not to provide access to that operator or group of operators;

operating costs in relation to railway infrastructure includes —

(a) train control costs, signalling and communications costs, train scheduling costs, emergency management costs, and the cost of information reporting; and

(b) the cost of maintenance of railway infrastructure calculated on the basis of cyclical maintenance costs being evenly spread over the maintenance cycle,

and if, for particular infrastructure, modern equivalent assets are determined to be appropriate for the purposes of clause 2(4)(c)(ii), the operating costs in relation to that infrastructure are to be the costs that would be incurred were that infrastructure replaced using those modern equivalent assets;

total costs means the total of all —

(a) operating costs;

(b) capital costs; and

(c) the overheads attributable to the performance of the railway owner's access-related functions whether by the railway owner or an associate.

Clause 2 of Schedule 4 (Definition of "capital costs")

(1) In this Schedule —

capital costs means the costs comprising both the depreciation and risk-adjusted return on the relevant railway infrastructure.

(2) For the purposes of this clause, railway infrastructure does not include the land on which the infrastructure is situated or of which it forms part.

(2a) Despite subclause (2), railway infrastructure is to be taken, for the purposes of this clause, to include a cutting or embankment that is made after the commencement of this Code for any reason, but the value of any such cutting or embankment as railway infrastructure is not to include the value of the land of which it forms part.

(3) The costs referred to in the definition in subclause (1) are to be determined as the equivalent annual cost or annuity for the provision of the railway infrastructure calculated in accordance with subclause (4).

(4) The calculation is to be made by applying —

(a) the Gross Replacement Value (*GRV*) of the railway infrastructure as the principal;

(b) the Weighted Average Cost of Capital (*WACC*) as the interest rate; and

(c) the economic life which is consistent with the basis for the GRV of the railway infrastructure (expressed in years) as the number of periods,

where —

GRV is the gross replacement value of the railway infrastructure, calculated as the lowest current cost to replace existing assets with assets that —

(i) have the capacity to provide the level of service that meets the actual and reasonably projected demand; and

(ii) are, if appropriate, modern equivalent assets;

and

WACC is the target long term weighted average cost of capital appropriate to the railway infrastructure.

Clause 3 of Schedule 4 (Regulator to determine weighted average cost of capital)

(1) For the purposes of clause 2(4)(b), the Regulator is to —

(a) determine, as at 30 June in each year, the weighted average cost of capital for each of —

(i) the railway infrastructure associated with the urban network described in items 49, 50 and 51 in Schedule 1; and

(ii) the railway infrastructure associated with the railways network described in the other items in that Schedule;

(ia) the railway infrastructure associated with that part of the railways network described in item 52 in that Schedule; and

(b) publish notice of each such determination in the *Gazette* as soon as is practicable after it is made.

(2) Subclauses (3), (4) and (5) apply to the determinations under subclause (1) that are required to be made as at 30 June —

(a) in the year 2003; and

(b) in every 5th year after that year.

(3) Before the Regulator makes a determination mentioned in subclause (2) he or she is to —

(a) cause a notice describing the requirements of subclause (1) to be published in an issue of —

(i) a daily newspaper circulating throughout the Commonwealth; and

(ii) a daily newspaper circulating throughout the State;

and

(b) include in the notice the following information —

(i) a statement that written submissions relating to the determination may be made to the Regulator by any person within a specified period;

(ii) the address to which the submissions may be delivered or posted.

(4) The period specified under subclause (3)(b)(i) is to be not less than 30 days after both of the notices under subclause (3)(a) have been published.

(5) In making a determination under this clause the Regulator must have regard to any submission relating to the determination made in accordance with the notice.

Clause 4 of Schedule 4 (Nature of costs)

The costs referred to in this Schedule are intended to be those that would be incurred by a body managing the railways network and adopting efficient practices applicable to the provision of railway infrastructure, including the practice of operating a particular route in combination with other routes for the achievement of efficiencies.

Clause 7 of Schedule 4 (Floor price test)

(1) An operator that is provided with access to a route and associated railway infrastructure must pay for the access not less than the incremental costs resulting from its operations on that route and use of that infrastructure.

(2) The total of —

(a) the payments to the railway owner by —

(i) all operators; and

(ii) all other entities,

that are provided with access to a route, or part of a route, and associated railway infrastructure (*the route*); and

(b) the revenue that the railway owner's accounts and financial statements show as being attributable to its own operations on the route,

must not be a sum that is less than the total of the incremental costs resulting from the combined operations on the route of all operators and other entities and the railway owner.

Clause 8 of Schedule 4 (Ceiling price test)

(1) An operator that is provided with access to a route and associated railway infrastructure must pay for the access not more than the total costs attributable to that route and that infrastructure.

(2) For the avoidance of doubt it is declared that the calculation of total costs under subclause (1) —

(a) is for the whole of the route and associated railway infrastructure; and

(b) is to be the same for all operators,

regardless of the extent of the operations or use of the route and infrastructure by any particular operator.

(3) The total of —

(a) the payments to the railway owner by —

(i) all operators; and

(ii) all other entities,

that are provided with access to a route, or part of a route, and associated railway infrastructure (t*he route*); and

(b) the revenue that the railway owner's accounts and financial statements show as being attributable to its own operations on the route,

must not be a sum that is more than the total costs attributable to the route.

(4) It is not a breach of this clause for —

(a) payments to the railway owner mentioned in subclause (1) to exceed the total costs referred to in that subclause; or

(b) the total sum mentioned in subclause (3) to exceed the total costs referred to in that subclause,

if the over-payment rules approved or determined under section 47 are complied with.

Section 46 of Part 5 (Costing Principles)

WNR's Costing Principles which were approved by the Authority in September 2007, pursuant to Part 5 of the Code, provide details on the manner in which WNR's floor and ceiling costs are to be formulated. These Costing Principles are available on the Authority's web site (www.era.wa.gov.au).

14. The key area of the Act which has relevance to the calculation of the floor and ceiling costs is as follows:

    Section 20 (4) (Functions of the Regulator)

    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.

Consultants used by the Authority

15. To assist the Authority in the preparation of its final determination the Authority engaged a consultant, PricewaterhouseCoopers (**PwC**), to review WNR's proposed floor and ceiling costs and the public submissions and provide advice to the Authority. PwC employed the services of Maunsell Australia (**Maunsell**) as a sub-consultant to provide specialist engineering advice.

16. The PwC/Maunsell final report is available on the Authority's web site (www.era.wa.gov.au).

Public Consultation

17. On 24 October 2008, 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. The closing date for public submissions was 5 December 2008.

18. No public submissions were received by the closing date.

19. On 8 December 2008, Worsley requested the Authority's approval to make a late submission. The Authority approved this request and Worsley's submission was received on 19 December 2008.

20. Worsley's submission is available on the Authority's web site (www.era.wa.gov.au)

21. On 16 January 2009, WNR requested the Authority's approval to make a supplementary submission, in response to issues raised in Worsley's submission. The Authority approved this request and WNR's supplementary submission was received on 19 January 2009.

22. WNR's supplementary submission is available on the Authority's web site (www.era.wa.gov.au).

23. The Authority's draft determination was issued on 4 March 2009. A six week period of public consultation on the draft determination was conducted, closing on 15 April 2009. At the close of the public consultation period no submissions had been received.

24. On 24 April 2009, WNR requested that the Authority agree to receive a late submission on the draft determination. The Authority approved this request and a submission was received from WNR on 8 May 2009. This submission is available on the Authority's web site. (www.era.wa.gov.au).

Scope of the Matters Covered under the Determination

25. This determination deals with the matters which require consideration associated with the Authority's determination on WNR's proposed floor and ceiling costs, based on the requirements set out under the relevant sections of the Act and the Code, as outlined above.

26. Some comments made in both Worsley's submission and WNR's supplementary submission over the first round of public consultation are outside the scope of matters which constitute the elements considered by the Authority in undertaking the floor and ceiling cost determination process consistent with the relevant Act and Code provisions. Consequently, these comments, which are outlined below, have not been included in the discussion of relevant issues set out in this Final Determination.

27. The issue in both Worsley's submission and WNR's supplementary submission which is not considered to be within the scope of the matters covered under the Draft Determination related to the accuracy of WNR's Gross Tonne Kilometre (**GTK**) information. In this regard, the Authority will contact Worsley to follow up any concerns Worsley may have in this area. The Authority also notes that WNR has offered to assist interested parties in reconciling any of their GTK data with the data in WNR's systems.

Floor and Ceiling Costs

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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 on an MEA basis, assuming efficient practices.

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

35. 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.

36. The Authority has previously agreed to WNR's definition of the railway network in terms of routes and route sections, as outlined in earlier determinations, based on differences in track characteristics and traffic densities. The current review of the floor and ceiling costs covers those route sections as presented in the earlier determinations, plus the Kwinana-Soundcem line.

Asset Pricing Model

37. To calculate the floor and ceiling costs, WNR has utilised 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.

38. Following the Authority's 2007 determination of WNR's floor and ceiling costs, the Authority met with WNR to discuss the problems associated with use of WNR's APM. This model was very large, complex and difficult to use and was not suitable for placement on the Authority's web site to allow stakeholders to see how the APM worked. Both WNR and the Authority agreed that it would be preferable for WNR to develop a new excel based APM for future floor and ceiling cost reviews to facilitate the process of calculating floor and ceiling costs from cost input data under the APM and to ensure that this process is more transparent to stakeholders.

39. WNR completed the development of its new APM in mid-2008. The Authority engaged PwC to review the new APM to ensure that this model was properly formulated and that it reconciled appropriately with the results from the previous APM.

40. WNR's 16 October 2009 floor and ceiling costs submission included an excel based public version of its APM. WNR's submission, including its APM, is available on the Authority's web site (www.era.wa.gov.au).

41. As part of its submission, WNR also included detailed information on the reconciliation process which had been undertaken between its previous APM and the new APM. As a result of the reconciliation process WNR identified some errors in its previous APM which have been corrected in its new APM.

42. In its Draft Report, PwC/Maunsell has commented on the reconciliation process between WNR's previous APM and its new APM and on the testing which PwC undertook on WNR's new APM. As mentioned earlier, the PwC/Maunsell report is available on the Authority's web site (www.era.wa.gov.au).

43. In its submission, Worsley commented that it was disappointed in the discrepancies identified by WNR in its previous APM. Worsley considered that there was insufficient transparency in the reconciliation process between WNR's old APM and the new APM. In particular, Worsley considered that variations in the floor and ceiling costs as a result of the reconciliation process should be shown at route section level.

44. WNR, in its supplementary submission, agreed that it was disappointing that there were discrepancies in its previous APM but noted that rail users had been the beneficiary of those errors particularly on the Worsley line. WNR noted, that as the reconciliation process between its old and new APMs was extremely detailed and complex, the full detail of this process could not be outlined in its submission. WNR also commented that PwC had been provided with detailed information on its reconciliation process.

45. WNR also offered, in its supplementary submission, to provide details to interested parties to explain the reasons for and the implications of each methodological correction.

46. As noted above, the Authority employed PwC to ensure that WNR's new APM operated correctly and to undertake a detailed check of WNR's reconciliation process between its previous APM and its new APM. A summary report prepared by PwC for the Authority on its review of WNR's new APM is available on the Authority's web site (www.era.wa.gov.au).

47. WNR stated in its supplementary submission that the "Authority has signed off on the reconciliation". However, the Authority notes that prior to the Draft Determination, it had not formed a view in relation to WNR's reconciliation process.

48. The Authority is satisfied that WNR has undertaken a comprehensive reconciliation process between its previous APM and its new APM and in this process corrected any discrepancies identified in its old APM. Given the complexity of the old APM it is understandable that there were some discrepancies identified in this model at the time the new model was being developed. In its report, PwC/Maunsell noted that the impact of these discrepancies was an increase of $4.6 million in the aggregate 2008

ceiling costs for the rail lines under review. This amounts to an increase of 1.9 per cent which the Authority does not consider to be materially significant.

49. The Authority also notes that WNR has offered to provide further detail, if requested by stakeholders, on any discrepancies identified in its old APM and subsequent changes made to its new APM, which relate to the rail operations of such stakeholders.

50. Following WNR's submission of 8 May 2009, and subsequent investigation of ballast haulage costs, it was discovered that WNR had included an erroneous parameter in its calculation of ballast haulage costs. This has been corrected in the modelling undertaken to produce the cost outcomes in this final determination. In addition, WNR also identified an error in some of the route section distances in its APM for the Kwinana to Soundcem line. The relevant distances have been corrected in the final determination.

CPI Adjustment for 2008-09

51. WNR has used market-tested unit rates and escalation factors to derive its 2008 costs then adjusted these costs by an assumed Consumer Price Index (**CPI**) for 2008-09 to produce its costs as of 30 June 2009. These costs have then been used in WNR's APM as the basis for calculating its proposed floor and ceiling costs to apply from 1 July 2009.

52. The CPI assumed by WNR for 2008-09 was 2.75 per cent. PwC/Maunsell has advised that the latest forecasts indicate a CPI (Weighted Average of Eight Capital Cities – All Groups) of 1.5 per cent for 2008-09. This forecast is based on the Reserve Bank's Statement of Monetary Policy of May 2009. This forecast reflects the significant turnaround in the CPI between the September 2008 (1.2 per cent) and December 2008 (-0.3 per cent) quarters.

53. The Authority indicated in the Draft Determination that a CPI adjustment of 2.0 per cent for the escalation of WNR's proposed floor and ceiling costs from 2008 to 30 June 2009 was appropriate. The Authority indicated that this figure would be updated prior to the issue of its final determination.

54. The Authority's Draft Determination (Amendment 1) was that WNR should amend its 2009 costs, as used in its APM to derive its proposed floor and ceiling costs, by changing the escalation factor used to convert its 2008 costs to 2009 costs from 2.75 per cent to 2.0 per cent.

55. In its submission on the draft determination, WNR commented that the 2008-09 price escalation should be based on the latest CPI information available at the time of the final determination, and that the escalation should therefore be 2.2 per cent, based on the Perth All Groups CPI for the year to March 2009.

56. The Authority considers that the inflation forecast for 2008-09 should be based on the most recent forecasts published by the Reserve Bank of Australia. Based on the Reserve Bank's May 2009 Statement on Monetary Policy, the appropriate inflation forecast for 2008-09 is 1.5 per cent.

Final Determination

Amendment 1

WNR should amend its 2009 costs, as used in its APM to derive its proposed floor and ceiling costs, by changing the escalation factor used to convert its 2008 costs to 2009 costs from 2.75 per cent to 1.5 per cent.

Rate of Return

57. WNR has applied a Weighted Average Cost of Capital (**WACC**) of 9.77 per cent pre-tax real in the calculation of the capital annuity charge for its floor and ceiling costs, to apply from 1 July 2008 to 30 June 2009, based on its proposed GRV. This was the WACC determined by the Authority in June 2008 to apply to WNR's rail network over 2008-09.

58. In accordance with the Code requirements, the Authority has made a determination on the WACC to apply to WNR's rail network, over 2009-10. This determination was published on the Authority's web site on 19 June 2009. The WACC determination was 8.63 per cent, pre-tax real, and will apply to the annuity component of WNR's revised floor and ceiling costs from 1 July 2009 to 30 June 2010.

Forecast Capital Expenditure

59. WNR has not forecast any capital expenditure on upgrading of its rail network for the three year period from 1 July 2009 to 30 June 2012.

Discussion of Key Issues

60. Key issues pertaining to WNR's floor and ceiling costs in this draft determination are discussed under the following headings:

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

61. The discussion commences with a review of what has been established in WNR's current Costing Principles under each of the above headings. This is followed by:

- A summary of WNR's proposal.
- Relevant comments received in the first round of public consultation on WNR's proposal..
- Assessment and draft recommendations from PWC/Maunsell.
- The Authority's assessment and draft determination amendments.
- Relevant comments received in the second round of public consultation on the draft determination.

- Assessment and final recommendations from PwC/Maunsell (where appropriate).
- The Authority's assessment and final determination amendments.

62. It should be noted that, as outlined earlier, those matters raised in the public submissions which were considered to be outside the scope of this floor and ceiling costs review were not taken into account in this final determination.

63. It should be noted that in the case of the grain lines, only three specific grain lines are subject to this floor and ceiling costs determination. 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

Costing Principles

64. The term Modern Equivalent Assets (MEA) has been defined as:

> "An optimised network that is re-configured using current modern technology serving the current load with some allowances for reasonably projected demand growth for up to three years into the future. The MEA excludes any unused or under utilised assets and allows for potential cost savings that may have resulted from technological improvement."

65. The operating standards that WNR will apply for determining GRV are as follows:

- For that part of the standard gauge network that is part of the 'Defined Interstate Railway Network', i.e. Kalgoorlie to Kwinana, as defined by the Australian Transport Council standards in place at 1 January 2002.
- For the standard gauge (**SG**) branch lines and the narrow gauge (**NG**) main and branch lines, the standards that WNR is required to maintain the tracks at in accordance with the lease obligations with the Western Australian Government entered into in December 2000.

66. A "greenfields" assumption is to be utilised for estimating a GRV on a MEA basis for WNR, and costs related to constructing around rail traffic, surface restoration and other surface diversions are excluded from the GRV. It is also assumed that the optimised network is provided by rail track within the existing corridor of land. In other words, the existing rail track alignment of the network will be considered as efficient.

67. WNR is required to provide a set of assumptions that it intends to adopt when calculating a GRV on a MEA for a mainline asset, and for branch, feeder and grain lines. These are to include assumptions on rail weight, ballast depth, sleeper types (and spacing), fastener type, signalling type, passing loop lengths, manner in which bridges are to be designed, network construction rate, turnouts and formation costs.

68. Where the ceiling cost calculated for a specific route section using MEA is significantly higher than the existing infrastructure calculation, the Authority may determine that it is not appropriate to apply MEA. Under these conditions, the pre-existing infrastructure may be used in determining the ceiling costs if the existing infrastructure meets current and anticipated operational and safety standards and if the infrastructure components are available in the market.

69. For those parts of the network that WNR is able to demonstrate are MEA, common proxies for estimating efficient costs are likely to be the unit cost levels quoted in competitive tenders for providing actual services. However, unit rates will need to be assessed against the quantity of units consumed to ensure operating (productivity of inputs) and technical (type and combination of inputs) efficiency. Benchmark unit rates will also require adjustment for environmental factors as well as for factors such as the scope of the contract and the time elapsed since it was awarded.

70. For the parts of the WNR network that are not considered MEA, the Authority will benchmark their costs against other comparable assets as required.

WNR's Proposal

71. WNR has used the same asset base approved by the ERA in September 2006, with four exceptions:

- An additional crossing loop has been constructed at Burekup, on the Kwinana to Bunbury line. A manual adjustment to the APM for the proposed loop was included in the previous determination. This has been replaced with real asset information.
- The Kwinana to Soundcem line is included.
- Proposed crossing loops at Gibson, on the Kalgoorlie-Esperance section and at Beckwith, east of Koolyanobbing, have been included in the asset base.

72. Construction of the proposed crossing loops at Gibson and Beckwith had not been constructed at the time of WNR's floor and ceiling cost submission. WNR has advised that the Gibson Loop has now been completed and the Beckwith Loop is 95 per cent completed. Both these loops are expected to be commissioned in August 2009.

73. WNR's SG and NG Codes of Practice are to apply to the MEA as WNR is required to comply with these Codes of Practice under its Rail Safety Accreditation.

74. WNR has stated[1] that the same MEA standards approved by the IRAR in September 2003 and the Authority in July 2004 and September 2006 have been used in the proposed floor and ceiling costs for the current review.

75. These MEA standards are outlined in Appendix 1.

76. The new crossing loops on the SW Main (Burekup), Kalgoorlie to Esperance line (Gibson) and on the Avon-Kalgoorlie section (Beckwith) are assigned the MEA of the main lines on which they are constructed, and are not listed separately. The MEA for the Kwinana-Soundcem line is listed separately.

Public Submissions on WNR's Proposal

77. Worsley raised a similar concern to that raised in its submission to the Authority's 2006 review of WNR's floor and ceiling costs. This concern was expressed as follows:

[1] WNR, Proposed Floor and Ceilings for Mainlines, Worsley line and Terminal End Bits, page 7.

> It is now six years since the MEA was defined and there are still sections of track on the SWM which remain at the old standard. Whilst the track upgrades are near completion, the track axle loading is compromised by substandard culverts and bridges. Since the whole line must be at the higher standard before new rolling stock can be utilised, end users have been funding the upgrades without any benefit flowing to them in the five years since the 2003 determination.

78. WNR commented that when this matter had been raised by Worsley in 2006, the Authority determined that there was no obligation for WNR to meet the MEA standard[2] and that WNR also noted that it is providing the standard of service up to the capability of the rolling stock of operators on the South West Main. In addition, WNR observed that the Authority had determined, under its 2006 review, that there was no requirement for the application of penalties, in WNR's floor and ceiling costs, for not meeting the agreed service level.

79. In terms of the program for re-sleepering of the South West Main, WNR commented that it was currently undertaking the final stage of concrete re-sleepering on this line and expected this work to be completed by 30 June 2009.

PwC/Maunsell's Assessment of WNR's Proposal

80. In response to Worsley's concern, PwC/Maunsell reiterated PwC's view expressed at the time of the 2006 review, to the effect that it was not the intention of the ceiling cost calculation within the Code to require the rail owner to provide a completely MEA compliant network but rather to progressively implement components of the MEA standard (e.g. replacing timber sleepers with concrete) as commercially appropriate.

81. Similar to PwC's view in 2006, PwC/Maunsell also considered that the intention of the MEA is to facilitate the setting of the absolute upper limit of costs using a simplifying set of modern construction assumptions, with prices to be negotiated to appropriate levels below the ceiling to reflect the standard of the infrastructure concerned. This approach:

- reduces regulatory costs by simplifying and streamlining ceiling cost calculations,
- provides some potential to pass onto track users gains from technological innovation (e.g. centralised train control);
- precludes inefficient outcomes which could require the network owner to replace otherwise fit-for-purpose assets prior to their life expiry (e.g. timber bridges or lower height formations) while protecting access seekers from abuse of monopoly power by containing the upper limit of prices to the efficient cost levels which would prevail if the network was totally replaced.

82. In relation to the MEA standard proposed by WNR for each of the rail lines in its submission (which except for the Kwinana to Soundcem line are the same MEA standards as submitted by WNR in 2006), PwC/Maunsell considers that these MEA standards are still appropriate. With regard to the Kwinana to Soundcem line, which was not included in WNR's 2006 submission, PwC/Maunsell considers that the MEA standard proposed by WNR for this line is appropriate.

[2] WNR quoted the Authority's Determination on the Proposed Floor and Ceiling Costs, 20 March 2007, paragraphs 68 & 69.

Authority's Assessment – Draft Determination

83. The Authority considered Worsley's comments and agreed with the view of PwC/Maunsell, noting that the MEA is a theoretical concept which facilitates the calculation of a GRV for a hypothetical "new" railway based on the lowest current cost to replace existing assets with assets that have the capacity to provide the level of service that meets the actual and reasonably projected demand. The Code does not impose any obligation on the railway owner to upgrade a rail network to a level which matches the MEA. It is expected, as noted by PwC/Maunsell, that the rail network would be upgraded over time to meet the demands of rail users on a commercial basis and that this upgrading may result in some older assets being replaced with modern assets consistent with the assumed MEA for such assets, as in the case of WNR's re-sleepering of South West Main with concrete sleepers.

84. The Authority also noted that WNR anticipates the re-sleepering work on the South West Main to be completed by 30 June 2009.

85. In the case of Worsley's comment in relation to end users having funded the South West Main upgrades without any benefit flowing to them since 2003, the Authority noted that all the existing rail users on the South West main operate under commercial access contracts which have been agreed between these users and WNR.

86. In terms of the other matter raised by Worsley, that its rolling stock is unable to fully utilise the upgraded sections of the South West Main until the entire line is upgraded, the Authority noted WNR's position that the standard of service offered on the South West Main meets the capability of the rolling stock being operated by rail users on this line. In any case, this is a matter for commercial negotiation as all the rail users on this line have commercial access contracts, as mentioned above. The Authority agreed with the view of PwC/Maunsell, that under the Code the intention is that prices can be negotiated, between operators and the rail owner under the terms of their Access Agreements, to an appropriate level below the ceiling to reflect the standard of the infrastructure concerned.

87. The Authority agreed with PwC/Maunsell, that the MEA standards submitted by WNR for each of the rail lines contained in its submission are appropriate. These MEA standards are set out in Appendix 1.

Public Submissions on the Draft Determination

88. There were no comments made in public submissions on the issue of level of service and modern equivalent asset standard.

Authority's Assessment – Final Determination

89. The Authority confirms its position as outlined in its draft determination.

Capital Costs

Costing Principles

90. The assets included in the capital cost calculations consist of assets that are directly engaged in the provision of rail infrastructure services. These are identified in Section 3 (1) of the Act and include:

- railway track, associated track structures, over or under track structures, supports (including supports for equipment or items associated with the use of a railway);
- tunnels and bridges;
- stations and platforms;
- train control systems, signalling systems and communication systems;
- buildings and workshops; and
- associated plant, machinery and equipment.

Sidings or spur lines that are excluded by Section 3(3) or (4) of the Act from being railway infrastructure are not included.

91. Assets that support operating functions are not included in the asset base for capital cost calculations. These are included in the operating cost or overhead cost calculations as appropriate. Assets in this category include motor vehicles, computers, printers, facsimile machines, photocopiers, system hardware and software, mobile and fixed communications, office furniture and equipment. The cost of these assets is to be calculated on a net basis.

92. Cuttings and embankments are not in the initial capital calculations. However, expenditures on cuttings and embankments incurred since the commencement of the Code, to create capacity or expand the network, or to improve operating standards or efficiency, will be included in the calculation of the ceiling.

93. The cost of the earthworks formation is to be included in calculating the GRV.

94. The infrastructure is required to be optimised to meet current and reasonably projected demand. If WNR seeks to include the costs of additional infrastructure to meet projected demand, it would need to demonstrate:

- the basis of the demand projection; and
- a commitment to the capital expenditure.

95. WNR's economic life assumptions as detailed in the Costing Principles are based on engineering assessment of rail life and have been approved by the Authority.

96. Key capital cost drivers WNR will adopt to ensure a MEA network are:

- the operating track standard (e.g. axle load and speed);
- population of supporting infrastructure (e.g. bridges and culverts); and
- topography of the route (e.g. track curvature and gradient).

97. All operator and government contributed assets are to be included in calculating the floor and ceiling costs. An amount of the contribution determined as the equivalent annual cost will be credited to the operator and the route section(s) concerned in the calculation of the over-payment in the ceiling price test.

98. The appropriate design, construction and project management fee is at a rate of 20 per cent of the total cost of the infrastructure and based on an economic life of 50 years.

99. The appropriate construction rate is an average of 1 kilometre (**km**) per day, and there will be sections of the network that the Authority may consider a higher or lower rate to be more appropriate.

100. The WACC is to be used as the interest rate for assessing the capital costs incurred during the construction period for the calculation of the financing charge which ceases upon completion of construction. A 50 year economic life assumption is used in amortising financing costs.

WNR's Proposal

101. WNR has indicated (page 8 of its proposal) that the asset populations previously approved by the Authority in its 2007 determination have been used in the calculation of the floor and ceiling costs for the rail lines under review, along with additional passing loops (Burekup, Gibson and Beckwith) and the inclusion of the Kwinana-Soundcem line.

102. WNR's unit rates for track capital have been assessed by consulting engineers GHD (**GHD**). WNR engaged GHD to market test all unit prices of capital in WNR's asset base. WNR indicated this was done by GHD obtaining quotes from multiple suppliers in the market and then making recommendations to what the market rates are. WNR has used the output of the GHD report to update unit rates in the APM. Where these rates have been adjusted for scale or scope or the impact of location these assumptions have been included.

103. The GHD report is available on the Authority's web site, published as a component of the WNR proposal.

104. GHD outlined in its report (page 5) the scope of work that WNR had set for the GHD review as:

- summarise, from previous determinations, the specifications for track, signalling and communications infrastructure;
- identify the cost elements and appropriate unit rates categorisations;
- identify targeted suppliers/contractors and provide brief to allow understanding of the requirements;
- receive the suppliers and contractors quotes/tenders, make any adjustments for misunderstandings or incompleteness in their quotes through consultation with them;
- compile the best offers to provide a "market tested" best result; and
- report.

Specifications for track, signalling and communications infrastructure remains unchanged from the initial determination approved by the IRAR in the 2003 determination.

105. The assumptions set by WNR for the valuation of rail infrastructure were:

- adopt Modern Engineering Equivalent Replacement Asset principles (i.e. replacement value of current design standards of existing infrastructure);
- adopt current best practices for construction;
- adopt a "greenfield" approach for all infrastructure construction. Work to be undertaken free of all rail traffic;

- adopt the most economic construction package to deliver the lowest economic costs and pricing discounts recognising economies of scale;
- allowance for wastage;
- transport of materials to site; and
- engineering and construction overheads to be separately defined.

106. The principles and methodology adopted by GHD in undertaking the assignment was outlined in section 3.1 and 3.2 respectively of its report (at page 6). References to the Review of Unit Prices report provided by WorleyParsons in support of the 2006 review, and to that provided by GHD for the earlier 2003 review are made at section 3.2.

107. The GHD report outlines market-tested unit rates for the following elements of rail infrastructure:

- Rail
- Sleepers
- Ballast
- Track Laying

108. Unit rates for the following elements of rail infrastructure were determined by applying escalation factors to the 2006 unit rates:

- Bridges
- Culverts
- Level crossings
- Track signage
- Shunter walkways and access roads

109. Escalation from 2006 to 2008 prices was achieved by using Australian Bureau of Statistics (**ABS**) indices to reflect cost movements. The 2006 prices for these elements were similarly determined by WorleyParsons by way of escalation of 2003 unit prices.

110. GHD provided WNR with stratified costing for three classes of culvert (small, medium and large) in accordance with a request from the Authority to simplify the method of calculating GRV for culverts. WNR initially applied this stratification which resulted in an increase of more than 200 per cent in the total GRV of the culvert asset base. There are 83 different types of culvert used by WNR, although the vast majority are accounted for by a few standard sizes.

111. The difficulty in applying a simplified method for determining a GRV for culverts is described on page 10 of the WNR proposal. As explained on this page, WNR elected not to use the stratified costing provided by GHD, but to use the existing method and to escalate the cost of culverts by the movement in the ABS Road and Bridge construction index, between June 2006 and June 2008, of 15.4 per cent.

112. For signalling and communications equipment, the 2008 costs were determined by escalation of 2006 values (determined in 2006 by escalation of 2003 values) using component price movements provided by a signalling and communications contractor.

113. Signalling assets include track circuits, interlocking, cabling, power supply and stand-by plant, signal equipment and telemetry components. Communications assets include components for radio control equipment, base stations, towers, communications backbone 4 fibres, carrier equipment, cabling ducts and pits.

114. Unit rates for all elements were multiplied by the population data for that particular section of the route using the MEA standard which then produced the GRV.

115. The same remoteness factors and economic lives for the classes of assets approved in the 2003 and 2006 determinations have been applied by WNR in its proposed floor and ceiling calculations.

116. The transport cost approved for the 2006 determination was escalated by the ABS Transportation Index to reflect 2008 values (WNR, page 11, section 4.1.6).

117. WNR has also indicated that the same assumptions regarding design, project management, construction financing costs and construction margins that were approved in the 2003 and 2006 determinations have been used in its submission (page 11).

118. WNR's proposed capital costs by routes and route sections, as contained in its submission, are outlined in Appendix 2 of this draft determination.

Public Submissions on WNR's Proposal

119. In its submission, Worsley claimed that the methods employed by WNR's consultant, GHD, do not meet the lowest current cost criteria for GRV valuation as required in the Code. In particular, Worsley asserted that, in instances where 2003 and 2006 prices have been indexed to determine 2008 prices, the approach is unlikely to produce lowest current cost.

120. In its supplementary submission, WNR noted that its proposed costs were based on a report prepared by an independent expert consultant (GHD) who was requested to contact suppliers and contractors and compile the best offers to arrive at a market test price. Where this was not possible or practical, the consultant applied appropriate escalation factors. WNR also commented that its approach was consistent with the approach it had adopted under previous floor and ceiling reviews.

PwC/Maunsell's Assessment of WNR's Proposal

121. In response to the comments by Worsley, PwC/Maunsell noted that it had carried out an independent validation process for the unit costs proposed by WNR in which multiple suppliers were contacted to obtain quotes on the current cost for equivalent assets. This process covered key rail network assets such as the rail track, sleepers, ballast, transportation and communication infrastructure. If there was a significant difference in the quotes obtained by PwC/Maunsell and WNR's proposed costs, the reason for the cost differences was assessed and the lowest quote selected in most cases. This independent assessment process addresses Worsley's concerns in relation to the process of establishing the GRV.

122. PwC/Maunsell's comments on the unit prices proposed by WNR are outlined below. It should be noted that WNR's unit prices are provided in the report from its consultant, GHD. These prices are presented in the GHD report in terms of 2008 prices and PwC/Maunsell has assessed these prices on this basis.

Rail

123. WNR proposed prices of $1,400 per tonne for 60 kg rail, $1,500 per tonne for 50 kg rail and $1,600 per tonne for 40 kg rail.

124. PwC/Maunsell obtained quotations for rail from Australian steel suppliers which were broadly in line with WNR's proposed rail prices for its three rail weight categories (41kg, 50kg and 60kg).

125. However, based on a high manufacturing volume assumption, consistent with the GRV approach, PwC/Maunsell expects that the prices for 50kg and 60kg rail would be similar. In the case of 41kg rail, PwC/Maunsell recognised that this rail size was only produced in small quantities with lesser economies of scale than for 50kg or 60kg rail. However, with large production volumes these economies of scale would increase and the unit price would reduce.

126. PwC/Maunsell also examined the cost of purchasing the rail from Chinese steel suppliers. This was an issue raised by stakeholders during the Authority's 2006 review of WNR's floor and ceiling costs. The information obtained from China was that steel rail could be supplied at $US1,100/tonne Free on Board (**FOB**) at a Chinese port. PwC/Maunsell considered, based on the additional costs to land this rail at Fremantle and transport it to Midland (marine freight cost, insurance cost, unloading cost, land transport cost and the exchange rate uncertainties between the US and Australian dollar) that the equivalent price for Chinese rail delivered to Midland would be about $1,700/ tonne. On this basis, PwC/Maunsell concluded that Chinese sourced rail was not competitive with Australian sourced rail at this time.

127. Based on the above, PwC/Maunsell recommended that an average price of $1,400 be used for all three rail weight categories. Table 1 below shows WNR proposed prices and the PwC/Maunsell recommended prices for rail.

Table 1. Rail Prices

Rail Weight	2006 Authority-determined prices ($/tonne)	2008 WNR-proposed prices ($/tonne)	2008 PwC/Maunsell-recommended prices ($/tonne)
60kg/m	1440	1400	1400
51 kg/m	1440	1500	1400
41 kg/m	1440	1600	1400

128. In regard to rail welding, WNR (page 7 of Report for Review of Unit Prices) outlined the pricing of flashbutt welding on manufactured rail lengths (27.5 metre) at Midland into 110 metre strings separately from the welding of these strings on site using Thermit welds, as the cost of the latter is considered as a part of the tracklaying activity. As the tracklaying activity includes the cost of transportation, this approach is considered reasonable by PwC/Maunsell.

129. The flashbutt welding price proposed by WNR is $400 per weld. The inclusion of flashbutt welding at Midland, as opposed to alternatives such as mobile welding or the establishment of a new project-related welding facility, is considered by PwC/Maunsell to be cost-effective in terms of a MEA replacement, as the existing dedicated facility provides sufficient scale. In terms of quotations, a flashbutt welding quotation obtained by PwC/Maunsell from a rail contractor was higher than the WNR figure.

130. Based on the above, PwC/Maunsell recommended that the WNR's proposed price of $400 per weld for the flashbutt welding of rail sections be accepted as reasonable.

Sleepers

131. In relation to sleeper prices, PwC/Maunsell noted that there appeared to be a potential supply issue for concrete sleepers in Australia, based on forward orders for iron ore rail network expansions and other projects, which was current as at November 2008. On the basis of the situation at that time, it is understood that procurement of sleepers in large quantities was projected to be difficult until 2010. However, due to the recent downturn in the iron ore industry and the domestic economy in general, this situation may no longer exist.

132. Despite the potential for volatility in the current market, PwC/Maunsell's discussions with suppliers did not indicate any significant tightening in market conditions, and in a small number of cases, indicated a lowering of prices in relation to the costs proposed by WNR.

133. PwC/Maunsell has recommended that lower prices for SG and DG concrete sleepers be adopted on the basis that price increases anticipated by WNR in respect of steel pre-stressing strands were not evident in quotes received by PwC/Maunsell.

134. In regard to DG sleepers, PwC/Maunsell recommended that lower prices for dual gauge sleepers be adopted on the basis that the complexities anticipated by WNR in the manufacture of these sleepers was not reflected in the prices quoted to PwC/Maunsell.

135. For other types of sleepers, PwC/Maunsell found that, based on quotations received by PwC/Maunsell, these prices were reasonable.

136. PwC/Maunsell's recommendations in relation to sleepers are outlined in Table 2 below.

Table 2. Sleeper Prices

Item (I=insulated, NI=non insulated)	2006 Authority-determined prices ($/tonne)	2008 WNR-proposed prices ($ per unit)	2008 PwC/Maunsell proposed prices ($ per unit)
Concrete NG	82.00	120	120
Concrete SG	90.00	155	125
Concrete DG	140.00	210	174
Steel NG M7.5 (NI)	65.30	88	88
Steel NG M8.5 (I)	83.25	110	110
Steel SG M7.5 (NI)	75.35	102	102
Steel SG M8.5 (I)	93.25	123	123
Steel DG M7.5 (NI)	288.50	198	110
Steel DG M8.5 (I)	313.45	210	136
Timber SG	59.00	55	55
Timber NG	44.20	65	65
Baseplate	22.00	19	19
Lockspike	1.25	1.15	1.15
Rail Clip	2.50	2.60	2.60

Ballast

137. WNR has proposed a significant increase in ballast unit prices (ranging from 59 to 142 per cent) compared to the Authority's 2007 determination. In assessing the cost of ballast supply, PwC/Maunsell approached a major contractor and a major supplier for quotations. While the contractor's quote was consistent with the costs proposed by WNR, the supplier indicated that ballast costs had fallen recently due to the recent postponement and cancellation of capital railway works in the Pilbara.

138. Pwc/Maunsell noted that with the decline in commodity prices between mid-2008 and 2009, there had been a postponement of capital works projects and on this basis it was not unreasonable to assume that any downward movement in ballast prices would endure for some time. For large scale projects, as assumed under the GRV approach, PwC/Maunsell observed that some project based quarries would be developed to service this demand (as occurred for the Alice to Darwin railway) leading to lower unit costs for ballast.

139. In the case of Esperance, which had the largest proposed increase of 142 per cent, PwC/Maunsell considered that this increase was unreasonable given the large quantities which would required under the GRV approach and comparison with the prices considered appropriate in other locations. PwC/Maunsell recommended that the price of ballast for Esperance be set at a price comparable to the other centres, at $25 per tonne.

140. PwC/Maunsell's recommended ballast prices are outlined in Table 3 below.

Table 3 – Ballast Prices

	2006 Authority-determined prices ($/tonne)	2008 WNR-proposed prices ($ per tonne)	2008 PwC/Maunsell-recommended prices ($ per tonne)
Ballast – Perth Metro area	20.70	34.00	24
Ballast - Bunbury	20.70	32.00	27
Ballast - Kalgoorlie	17.00	27.00	23
Ballast - Esperance	20.70	50.00	25
Transport Cost	4.80	12.00	5.40

141. In regard to the transportation price for ballast, WNR proposed a ballast transport price of $12 per tonne representing a 250 per cent increase over the Authority's 2007 determination. This increase is at least partly due to WNR assuming an average 150km haul at $0.09 per tonne per kilometre.

142. PwC/Maunsell noted that in the Authority's 2007 determination, it was determined that a uniform average haul length of 60 kilometres should be assumed across the network, based on:

- The potential to establish some new project quarries if existing quarries are not within a reasonable distance
- Where longer hauls are required, the potential to make some use of rail haulage at a lower unit rate than 9 cents per tonne per kilometre

143. PwC/Maunsell recommended that WNR's proposed 9 cents per tonne kilometre be accepted as reasonable but that the 150 kilometre average haulage distance be reduced to 60 kilometres, consistent with the Authority's 2007 determination. This results in a recommended ballast transport price of $5.40 per tonne, as shown in Table 3.

Track Turnouts

144. In its assessment of the cost of turnouts, PwC/Maunsell obtained quotes for turnout installation from a major rail contractor that has recently undertaken rail construction in New South Wales and has access to recent construction information from projects in the Pilbara. The prices obtained were typically 70 per cent higher for installation of turnouts in concrete bearers and 90 per cent higher for installation of turnouts on timber bearers, than those provided by WNR.

145. PwC/Maunsell considers that the lower turnouts prices proposed by WNR are likely to be the result of WNR's longstanding contract with John Holland for maintenance and renewal of the WNR network, the likely cost advantages compared to projects interstate and in the Pilbara and differences in installation scope. In particular, PwC/Maunsell noted that an incumbent contractor (John Holland in the case of WNR) would offer considerable savings on turnouts compared to a third party contractor.

146. Based on the above, PwC/Maunsell recommended that the prices proposed by WNR for track turnouts be accepted as reasonable. Table 4 below outlines PwC/Maunsell's recommended prices for turnouts.

Table 4 – Turnout Prices

	2006 Authority-determined prices ($)	2008 WNR-proposed prices ($)	2008 PwC/Maunsell recommended prices ($)
SG 1:12 60kg on concrete sleepers	133 000	166 250	166 250
DG 1:16 60kg on concrete sleepers	357 000	359 950	359 950
NG 1:12 60kg on concrete sleepers	135 000	146 650	146 650
SG 1:12 60kg on timber sleepers	101 000	166 250	166 250
DG 1:16 60kg on timber sleepers	288 000	359 950	359 950
NG 1:12 60kg on timber sleepers	134 418	146 650	146 650
SG 1:12 50kg on timber sleepers	120 872	139 800	139 800
DG 1:16 50kg on timber sleepers	315 726	372 500	372 500
NG 1:12 50kg on timber sleepers	114 000	131 700	131 700
Installation SG Concrete	72 000	115 000	115 000
Installation DG Concrete	97 000	130 000	130 000
Installation NG Concrete	72 000	115 000	115 000
Installation SG Timber	72 000	115 000	115 000
Installation DG Timber	97 000	130 000	130 000
Installation NG Timber	72 000	115 000	115 000

Tracklaying

147. PwC/Maunsell approached the same contractor for tracklaying quotes as used for the turnout quotations. The result was a 30 per cent higher price for tracklaying on the SWM and the EGR, and a 75-90 per cent higher price for tracklaying between Leonora and Esperance compared to WNR's proposed tracklaying prices.

148. As in the case of track turnouts, PwC/Maunsell considered that WNR's incumbent contractor (John Holland) offered price advantages over an alternative contractor.

149. Based on the above, PwC recommended that the prices proposed by WNR for tracklaying be accepted as reasonable. Table 5 below outlines PwC/Maunsell's recommended prices for tracklaying.

Table 5 – Tracklaying Prices

	2006 Authority-determined prices ($/m)	2008 WNR-proposed prices ($/m)	2008 PwC/Maunsell-recommended prices ($/m)
NG – Kwinana to Bunbury	117.51	132.45	132.45
SG – Forrestfield to Kalgoorlie	123.79	146.50	146.50
SG – Kalgoorlie to Leonora	109.16	112.30	112.30
SG – Kalgoorlie to Esperance	109.16	112.30	112.30
DG – Forrestfield to Kalgoorlie	144.30	168.55	168.55

Bridges

150. The cost of bridge construction is dependant on the specific nature of the bridge required at each location as the design of each bridge is based on the particular requirements at each site. As a result, categorisations (span length, support structure and width) have been established on the basis of previously floor and ceiling determinations to estimate bridge costs on a per square metre basis. These categorisations were used by PwC/Maunsell to assess WNR's proposed costs. PwC/Maunsell noted that railway bridge construction cost escalation factors have been high over the last few years.

151. On this basis, PwC/Maunsell recommended that the bridge prices proposed by WNR be accepted as reasonable. PwC/Maunsell's recommended prices are as shown in Table 6 below.

Table 6 – Bridge Prices

	2006 Authority-determined prices ($/m^2)	2008 WNR-proposed prices ($/m^2)	2008 PwC/Maunsell-recommended prices ($/m^2)
Simple <12m span 4m wide	2 700	3 116	3 116
Simple <12m span 8m wide	2 583	2 981	2 981
Simple 12m span 3.6m wide	2 583	2 981	2 981
Medium 12-20m span 4m wide	3 287	3 793	3 793
Medium 12-20m span 8m wide	3 170	3 658	3 658
Medium 12-20m span 3.6m wide	3 052	3 522	3 522

Complex >20m span 4m wide	3 992	4 606	4 606
Complex >20m span 8m wide	3 874	4 471	4 471
Complex >20m span 3.6m wide	3 757	4 335	4 335

Culverts

152. PwC/Maunsell assessed WNR's proposed culvert prices on the basis of the categories nominated by WNR and sought quotes for culverts at the upper end of each size range.

153. PwC/Maunsell noted that it was not clear from the WNR report whether the WNR proposed culvert prices included installation, and whether the scope of quotes was appropriate for the range of site specific 'end treatments' required. However, as the prices quoted to PwC/Maunsell were higher than WNR's proposed prices, PwC/Maunsell suggested that the escalation factors used by WNR were not unreasonable.

154. Based on the above, PwC/Maunsell recommended that WNR's proposed culvert prices should be accepted as reasonable. PwC/Maunsell's recommended culvert prices are shown in Table 7 below.

Table 7 – Culvert Prices

	2006 Authority-determined prices ($/m)*	2008 WNR-proposed prices ($/m)	2008 PwC/Maunsell-recommended prices ($/m)
Small – Culvert < 1000 mm		288.98	288.98
Small – end treatment 650mm average		880.62	880.62
Medium – Culvert 1000-2000 mm		1255.27	1255.27
Medium – end treatment 1450mm average		1964.46	1964.46
Large – Culvert >2000 mm		2853.21	2853.21
Large – end treatment 2850 mm average		3861.18	3861.18

*note: 2006 culvert prices were approved for a range of 84 culvert sections of various dimensions.

Level Crossings

155. WNR utilised escalation factors to inflate previous price estimates for level crossings, to arrive at an equivalent 2008 price. PwC/Maunsell has had sufficient recent experience with the costing of level crossing equipment to be able to undertake a direct cost comparison rather than assess the appropriateness of the escalation factor used by WNR.

156. PwC/Maunsell were unable to obtain reliable quotes for Gravel Surfacing or Timbered Surfacing for level crossing construction, sufficient to corroborate WNR proposed prices. Nonetheless, as all other level crossing component proposed prices appeared reasonable, PwC recommended that the prices proposed by WNR for these two items be accepted.

157. Based on the above, PwC/Maunsell recommended that WNR's proposed level crossing prices should be accepted as reasonable. PwC/Maunsell's recommended level crossing prices are shown in Table 8 below.

Table 8 – Level Crossing Prices

	2006 Authority-determined prices	2008 WNR-proposed prices	2008 PwC/Maunsell-recommended prices
DC Westrak controlled - Lights	$106 190	$124 774	$124 774
DC Westrak controlled – Lights and Boomgates	$149 594	$175 773	$175 773
Predictor controlled - lights	$133 525	$156 982	$156 982
Predictor controlled – Lights and Boomgates	$192 862	$226 613	$226 613
Surfacing - Bitumen	$85.00 per m^2	$85.00 per m^2	$85.00 per m^2
Surfacing - Concrete	$88.00 per m^2	$101.61 per m^2	$101.61 per m^2
Surfacing - Gravel	$70.44 per m^2	$81.29 per m^2	$81.29 per m^2
Surfacing – Metal Dust	$29.35 per m^2	$33.87 per m^2	$33.87 per m^2
Surfacing – Rock Ballast	$23.48 per m^2	$27.10 per m^2	$27.10 per m^2
Surfacing - Timbered	$41.09 per m^2	$47.42 per m^2	$47.42 per m^2

Earthworks

158. WNR has proposed to escalate its proposed earthworks prices from 2006 to 2008 (expressed on a per kilometre basis) by 7.7 per cent. The PwC/Maunsell has confirmed this escalation to be appropriate.

159. PwC/Maunsell's recommended earthworks costs are shown in Table 9 below. WNR's 2008 prices shown in this table have been taken from the 2008 earthworks prices used in its APM.

Table 9 – Earthworks Prices

	2006 Authority-determined prices ($/km)	2008 WNR-proposed prices ($/km)	2008 PwC-recommended prices ($/km)
South West Main	140,000	150,780	150,780
Worsley - Premier	140,000	150,780	150,780
Brunswick - Worsley	174,500	187,936	187,936
Grain Lines	140,000	150,780	150,780
Forrestfield – Avon (DG)	182,692	196,759	196,759
Avon - Kalgoorlie	218,750	235,593	235,593
Kalgoorlie - Leonora	218,750	235,593	235,593
Kalgoorlie - Esperance	218,750	235,593	235,593
Kwinana - Soundcem		187,936	187,936

Signalling and Communications

160. PwC/Maunsell reviewed the proposed breakdown of signalling and communications costs presented in Table 22 (page 19) of WNR's GHD report. PwC/Maunsell undertook a "dummy" estimate of signalling replacement costs for a crossing loop

on the Avon Yard to Merredin section to establish a cost breakdown into Engineering, Materials, Installation and Management. PwC/Maunsell considered the breakdown to be within 5 per cent of the breakdown proposed by WNR and on this basis, consider WNR's proposed costs to be reasonable.

161. In relation to the signalling and communication escalation factors in Table 23, PwC/Maunsell considered these escalation factors to be reasonable.

Miscellaneous Items

162. PwC/Maunsell reported that it was difficult to undertake a direct price comparison for the miscellaneous items, such as the shunter's walkway, due to the problems in providing a standard scope for quotes. Contractors were asked to quote for a "typical" railway project. Quotes received by Maunsell were greater than proposed WNR costs, and ranged from 25 per cent (shunter's walkway) to 200 per cent (access road) higher. PwC/Maunsell accepted that WNR's proposed prices for these items were reasonable based on the higher quotes it obtained.

Authority's Assessment – Draft Determination

General

163. In its assessment of WNR's proposed capital costs, the Authority was guided by the advice of its consultant PwC/Maunsell who carried out an independent analysis of the unit costs which underpin the GRV calculation. PwC/Maunsell reviewed the costs proposed by WNR by undertaking independent checks with suppliers, contractors and other rail owners in order to arrive at recommendations on appropriate unit costs for WNR's rail network based on the GRV methodology outlined in the Code.

Worsley's Submission

164. The Authority considered the comments made by Worsley in relation to WNR's rail network GRV not being based on the lowest current cost. The Authority considered that the independent review of WNR's costs by PwC/Maunsell, as outlined above, ensures that WNR's costs have been assessed in accordance with the requirements of the Code. Where quotations were not possible or practicable due to the nature of the infrastructure or other reasons, escalation factors were used by WNR which were then assessed by PwC/Maunsell.

WNR's Proposed Unit Prices

165. The Authority considered the recommendations provided by PwC/Maunsell in relation to WNR's proposed unit prices as outlined in the previous section and agreed with those recommendations.

166. Based on the above, the Authority set out in Table 10 the 2008 unit prices which it required WNR to adopt.

Table 10 - Required 2008 Unit Price Changes

Item	2008 WNR Proposed Price ($)	2008 Authority Determined Price($)
Cost per 50 kg/m rail per tonne	1,500	1,400
Cost per 41 kg/m rail per tonne	1,600	1,400
Concrete sleeper cost SG	155	125
Concrete sleeper cost DG	210	174
Steel Sleeper DG M7.5 (non insulated)	198	110
Steel Sleeper DG M8.5 (insulated)	210	136
Ballast cost per tonne Perth Metro Area	34	24
Ballast cost per tonne Bunbury	32	27
Ballast cost per tonne Kalgoorlie	27	23
Ballast cost per tonne Esperance	50	25
Ballast Transport Cost per tonne	12.00	5.40

167. The Authority's draft determination (Amendment 2) was that the 2008 prices proposed by WNR should be amended to be consistent with the Authority's 2008 determined prices as set out in Table 10 of the Draft Determination.

168. The Authority determined the floor and ceiling costs shown in Appendix 3 based on escalating WNR's proposed 2008 unit prices by 2.0 per cent to convert these to 30 June 2009 prices.

Public Submissions on the Draft Determination

169. WNR agreed that there has been a general softening of prices for rail since their proposal was first submitted, and agreed with the revision of the price of 50kg/m rail as indicated in Table 10 above. WNR nonetheless argued that the price of 41kg/m rail should be set higher than the price outlined in Table 10. The basis for this argument was that there is greater rolling, handling and transport costs for lighter rail when expressed in dollars per tonne.

170. WNR argued that developments in the Mid-west and Pilbara continue to place pressure on supply of concrete sleepers and prices have not reduced as significantly as is indicated by the revisions determined at Table 10. WNR proposed that the price of standard gauge concrete sleepers be set at $137 each, and of dual gauge concrete sleepers be set at $195 each.

171. WNR disagreed with PwC/Maunsell's assumptions in the calculation of ballast haulage rates. WNR argued for the adoption of a rate of 9.0 cents per tonne kilometre, and asserted that even this rate does not fully reflect the specialised equipment required and the inefficient nature of ballast transport by road or rail.

PwC/Maunsell's Assessment of submissions on the Draft Determination

172. In relation to the price of 41kg rail, PwC/Maunsell advised that, at present, production volumes of 41kg rail are relatively low and its use is mainly on branch and grain lines. PwC/Maunsell advise that for the purposes of a MEA calculation, the replacement of a 100 kilometre section should be assumed, and that this would require 8.2 million tonnes of 41kg rail, which would be a volume adequate to produce significant economies of scale. In consideration of the WNR argument, PwC/Maunsell advise that transport is more often priced per tonne kilometre rather

than per length, and that heavy materials trucks/wagons load to their mass limits rather than being constrained by a number of lengths per load. PwC/Maunsell have observed a continuing weakening in the demand for steel and falls in the cost of input commodities, as well as increased competition in transport costs. On this basis, PwC expects that rail prices would be more competitive than when Maunsell obtained benchmark prices in December 2008.

173. In relation to sleeper prices, PwC/Maunsell have observed that a May 2009 Inland Railway Report for ARTC examined sleeper costs and reported that a contract rate of $85 per sleeper was achieved ($115 million for 1.35 million SG sleepers). A price of $115-120 per sleeper has been suggested as a standard rate. Including $25 per sleeper for delivery cost, a total cost of $145 per sleeper was used in the ARTC costing model. PwC note that in the period since the benchmarking study was undertaken (i.e. since December 2008) sleeper demand levels have been stable and will weaken if some iron ore railway projects are deferred. On this basis, PwC/Maunsell believe that for an order of 160,000 sleepers, a competitive rate of approximately $125 per SG sleeper remains achievable, and that no factors have been identified which would raise the premium for DG sleepers beyond the 39 per cent identified in the draft PwC/Maunsell report.

174. In relation to ballast transport cost, PwC/Maunsell concludes that the WNR claim for higher ballast transport costs is based on shorter hauls, specialised transport equipment required and subsequent poor asset utilisation. PwC/Maunsell notes that for the purpose of this regulatory costing exercise, a ballast order of 300,000 tonnes is assumed providing adequate economies of scale for lower cost delivery compared with smaller scale and top-up ballast programs. A high assumed volume is likely to stimulate the establishment of some prioject based quarries to reduce distance between source and delivery points. PwC also notes reductions in transport costs reported in conjunction with the March 2009 CPI outcomes, due to moderation of demand for haulage of commodities. PwC advises that there is no justification for changing the unit ballast transport rate from $5.40 per tonne.

Authority's Assessment – Final Determination

175. The Authority notes PwC/Maunsell's advice in relation to WNR's submission on the draft determination.

176. The Authority also notes, from the PwC/Maunsell assessment of the WNR's submission, that the WNR analysis does not appear to fully take into account the economies of scale resulting from the GRV process under the Code associated with developing the costings for an equivalent railway network on an MEA basis.

177. The Authority accepts the PwC/Maunsell advice to the effect that the unit prices set out in the draft determination are appropriate.

Final Determination

Amendment 2

The Authority confirms its position as set out under its draft determination to the effect that the 2008 unit prices proposed by WNR should be amended to be consistent with the Authority's 2008 determined prices.

Overhead and Operating Costs

Costing Principles – Overhead Costs

178. WNR has two categories of overhead costs:
    - WNR overheads; and
    - corporate overheads.

179. WNR overheads include corridor management, access compliance, information technology (**IT**) and software costs, motor vehicle costs, office accommodation and support services, insurance (based on actual market prices), accreditation costs, human resources (**HR**), accounting/finance and WNR management.

180. Corporate overheads include public relations, corporate governance, treasury and insurance management, corporate procurement and other management services such as Australian Stock Exchange reporting.

181. Two proxies are used to allocate overheads. GTKs are used to allocate costs which vary more in quantum due to volumes moved, and train movements are used to allocate costs which vary more in quantum due to the number of train movements.

Costing Principles – Operating Costs

182. Operating costs are costs directly associated with operational management of the network. They reflect a centralised train control system and include compliance costs with WNR's safety accreditation requirements under the *Rail Safety Act,* train scheduling and requirements for emergency management and information reporting.

183. Operating costs also include the approved annual working capital charge that is calculated by multiplying half the WACC by the annuity.

184. WNR will test whether the operating costs used for determining the floor and ceiling are efficient in the following manner:
    - benchmarking will be used where it is available and comparable;
    - for certain processes and activities unit costs from competitive tendering may be used;
    - if the maintenance programs are based on accepted industry standards for maintenance which describe the scope and frequency of the activity then this may be considered to be efficient;
    - actual costs may be used where the consumption and scope are efficient (e.g. train controller's salaries if the number of controllers and their range of duties are efficient by benchmarking); and

- actual costs may also be used where the costs come from a competitive market such as insurance, or are regulatory costs (such as the cost of rail safety accreditation).

185. In measuring efficiency, WNR recognises that these costs change over time especially as a result of innovation and technological change.

186. Centralised train control costs will be apportioned directly to routes based upon actual train control resources managing traffic over each route.

187. Allocation of non-sector specific operating costs is to be in accordance with the allocation rules using Gross Tonne Kilometres (**GTKs**) or train movements. Train movements have been linked to network management functions and the management of maintenance related functions have been linked to GTKs. WNR is of the view that this will provide the most appropriate allocation between users which are predominantly rail freight customers. The allocation of operating costs will in the first instance be apportioned to the route level and subsequent allocation to the route section level will be determined by the Authority as part of the floor and ceiling cost determinations.

WNR's Proposal – Overhead Costs

188. WNR has proposed overhead costs in 2009 dollars unlike the unit prices in the report by its consultant, GHD, which are presented on a 2008 basis.

189. WNR has escalated overhead costs by 7.8 per cent (based on CPI movement) between June 06 and June 08 and has inflated these costs by a further 2.75 per cent to arrive at a June 2009 figure.

190. WNR has categorised its overhead costs into WNR Overheads and Insurance, WNR Corporate Support Services and WNR Group Overheads whose functions are consistent with the Costing Principles.

191. WNR Overheads comprises functions such as corporate management, insurance, IT equipment and software, motor vehicles and office furniture and equipment. The proposed 2009 costs are $12,957,623 which is an increase of 10.7 per cent on the cost of $11,701,868 approved in 2006.

192. The WNR Corporate Support Services comprises costs associated with human resources, accounting/finance, compliance and information technology. The proposed 2009 costs are $4,018,990, which is an increase of 10.7 per cent on the cost in the 2006 determination.

193. WNR's Group Overheads, as outlined above, are provided by its parent company Babcock and Brown Infrastructure. The proposed costs for the 2009 review are $954,678 which represents an increase of 10.7 per cent on the cost in the 2006 determination.

194. WNR has indicated that the three categories of overhead costs have been allocated to the rail routes and route sections by an equal combination of GTK's and train movement numbers.

WNR's Proposal – Operating Costs

195. As for its overhead costs, WNR has proposed operating costs in 2009 dollars unlike the unit prices in the report by its consultant, GHD, which are presented on a 2008 basis.

196. WNR has escalated operating costs by 7.8 per cent (based on CPI movements) between June 2006 and June 2008 and has inflated these costs by a further 2.75 per cent to arrive at a June 2009 figure.

197. Operating costs are allocated in accordance with the allocation rules in the Costing Principles and are based on WNR's regional budgets for the 2008-09 financial year. WNR has not changed the allocation method for these costs since the 2006 review.

198. Train control costs are based on the assumption, included in the APM, that train control is centralised. The train control costs have been directly allocated to the six main routes based on the number of train controller's required to manage each route. The train control system which manages the entire network is allocated to route sections based on the proportion of train movements in the relevant section divided by total network train movements consistent with the 2003 determination.

199. Network management costs, which include train scheduling and emergency management functions, are allocated to routes and route sections by train movements.

200. WNR has included operating costs associated with civil, control and signalling head office and regional administrative support functions. Control and signalling elements of operating costs are allocated to route and route sections by GTK's.

201. WNR has adopted the methodology outlined in the Costing Principles for its calculation of working capital for each of the routes under the current review.

202. WNR's proposed operating costs by routes and route sections, as contained in its submission, are outlined in Appendix 2 of this Draft Determination.

PwC/Maunsell's Assessment of WNR's Proposal

203. PwC/Maunsell assessed WNR's proposed operating and overhead costs by benchmarking these costs against those of other rail owners.

204. In particular, PwC/Maunsell compared WNR's operating and overhead costs with those of the Australian Rail Track Corporation (**ARTC**) on a per track kilometre, per train kilometre and per GTK basis. The results are shown in Table 11 below.

Table 11 - Operating and Overhead cost external reference

	2009 WNR Proposed	2006-07 ARTC Costs	2009 WNR Costs as % of ARTC Costs
Train control and access management costs per '000 train km	$198	$343	58%
Operating and Overheads per track km	$15,090	$14,400	105%
Operating & Overheads per '000 GTK	$1.28	$1.59	81%
Operating & overheads per '000 train km	$546	$411	133%

205. As a cross check, and notwithstanding the differences in the networks, PwC/Maunsell also compared WNR's overheads ($323 per 1000 train kilometres) and operating costs and overheads ($546 per 1000 train kilometres) against those of the Public Transport Authority ($348 per 1000 train kilometres for overheads and $538 per 1000 train kilometres for operating cots and overheads).

206. PwC/Maunsell concluded that a comparison of the costs across the WNR and ARTC networks is not possible on a one-to-one basis due to the variations in the nature of the rail operations in the two networks. However, considering the costs of other rail owners as a reference point, WNR's proposed operating and overheads costs do not appear unreasonable.

207. PwC have recommended that the 2008 to 2009 escalation of operating and overhead costs proposed by WNR be modified such that this escalation is 2 per cent compared to 2.75 per cent proposed by WNR. PwC/Maunsell's recommended operating and overhead costs are shown in Table 12 below.

Table 12 – Operating and Overhead Costs

	2006 Authority-determined costs ($)	2009 WNR-proposed costs ($)	2009 PwC-recommended costs ($)
Centralized Train Control	3,474,437	3,847,287	3,820,352
Operating: Network Management	1,140,990	1,263,432	1,254,587
Operating: Infrastructure Management	6,477,000	7,172,062	7,121,850
Total Operating	**11,092,427**	**12,282,781**	**12,196,789**
Overhead WestNet	11,701,868	12,957,623	12,866,906
WNS Corporate Support Services	3,629,500	4,018,990	3,990,853
Overhead Corporate	862,158	954,678	947,994
Total Overheads	**16,193,526**	**17,931,291**	**17,805,753**
Total Operating and Overheads	**27,285,953**	**30,214,072**	**30,002,542**

Authority's Assessment – Draft Determination

208. The Authority agreed with the recommendations from PwC/Maunsell to the effect that WNR's proposed overhead and operating costs for 2009 should be adjusted to be consistent with a 2.0 per cent escalation of its 2008 overhead and operating costs, as per Table 12 above.

209. The Authority determined the floor and ceiling costs shown in Appendix 3 based on adjusting WNR's proposed 2009 overhead and operating costs so that the escalation from 2008 to 30 June 2009 costs is 2.0 per cent not 2.75 per cent as proposed by WNR.

210. It was noted by the Authority, that Amendment 1 of the Draft Determination required WNR to change its 2009 overhead and operating costs to be consistent with the Authority's determined costs as set out above.

Public Submissions on the Draft Determination

211. In its submission on the draft determination, WNR commented that the final year price escalation should be based on the latest CPI information available at the time of the final determination, and that the escalation should therefore be 2.2 per cent, based on the Perth All Groups CPI for the year to March 2009.

212. As outlined earlier, the Authority considers that the inflation forecast for 2008-09 should be based on the most recent forecasts published by the Reserve Bank. Based on the Reserve Bank's May 2009 Statement on Monetary Policy, the appropriate inflation forecast for 2008-09 is 1.5 per cent.

Authority's Assessment – Final Determination

213. The Authority has determined that WNR's proposed 2009 overhead and operating costs should be adjusted so that the escalation from 2008 to 30 June 2009 costs is 1.5 per cent not 2.75 per cent as proposed by WNR.

Track Maintenance Costs

Costing Principles

214. WNR uses a track maintenance model which calculates the cost of maintaining the track infrastructure with the following assumptions:

- the track infrastructure is new at year 1 and is maintained to realise the defined economic life of components of the asset;
- the infrastructure maintenance levels and the frequency of the activities are deemed to comply with the Australian Standard AS4292 Parts 1 and 2 which specify safety requirements of the Railway Safety Management System;
- WNR's maintenance practices also comply with the Codes of Practice for both the SG and NG network;
- the maintenance regime is broadly classified into routine maintenance and cyclical maintenance;
- there are two major activity classifications within routine maintenance, namely routine inspections (include patrolling, on-train inspection, track condition monitoring, defined event inspections by patroller and structures inspection), and routine maintenance (which is the corrective action taken as a follow up to routine inspections); and
- cyclical maintenance represents tasks that are undertaken at regular intervals which are necessary to achieve the expected asset life (e.g. track resurfacing, rail grinding, ballast top up and cleaning, rail defect removal and structures maintenance to achieve economic life, as well as firebreaks, scrub slashing, drainage, access roads and road seal on level crossings to meet operational and safety requirements).

215. As the level of maintenance activity varies over the life of the asset, the net present value of the projected stream of maintenance costs that occurs over the life of the asset is calculated and annualised to derive an average annual maintenance charge over the life of the asset.

216. The cost of repairing incidents such as fire and flood, or damage caused to the track as a result of derailments or accidents has been included in maintenance costs but only to the extent they are not recoverable from insurance or operators. The cost of repairing incidents will not be included if it can be shown that WNR is negligent in its responsibility as a railway owner. WNR intends to calculate incident costs based on a historical cost approach.

217. Routine maintenance of signalling and communications is based on industry accepted inspection regimes and fault history. It includes specified periodical inspections and procedures (including testing) and responses to faults. Cyclical maintenance is significantly less important for signalling and communications and includes component rebuilds to achieve economic life. The signal and communications maintenance model is incorporated as part of the APM. The annual

charge is based on an annualised value of the net present value of maintenance costs stream.

218. Track and signalling maintenance costs are directly allocated to routes based on the nature and population of the infrastructure. These costs are then allocated to route sections according to train movements.

219. Major periodical maintenance (**MPM**) is set at zero on the understanding that MPM is an asset renewal program to maintain the infrastructure in perpetuity. However, re-railing, rail grinding and re-surfacing, and ballast cleaning may be permitted as cyclical maintenance activities if they were considered necessary to achieve the targeted life of the assets.

WNR's Proposal

220. WNR has proposed track maintenance costs in 2009 dollars in the main body of its submission (page 12). These costs are also presented in 2008 dollars by WNR's consultant GHD in its report (page 23).

221. GHD's proposed 2008 maintenance costs, for the routes under review, are the 2006 determined maintenance costs on a per kilometre basis escalated by 15.4 per cent using the producer price index for non-building construction. WNR escalated this by a further 2.75 per cent to arrive at the proposed 2009 maintenance rates.

222. WNR has indicated that the proposed maintenance costs includes routine and cyclical maintenance for track, signalling and communications infrastructure. Routine maintenance is the corrective action taken as follow up to routine inspections. Cyclical maintenance covers tasks that are undertaken at regular intervals which are necessary to achieve the expected asset life. MPM activities which extend the life of the asset are excluded. WNR stipulates that maintenance activities are consistent with those prescribed in Schedule 4 of the Code and approved in its Costing Principles.

223. WNR's proposed maintenance costs by routes and route sections, as contained in its submission, are outlined in Appendix 2 of this Draft Determination.

PwC/Maunsell's Assessment of WNR's proposal

224. PwC/Maunsell has assessed WNR's track maintenance costs on the basis of the 2008 unit prices outlined on page 23 of the GHD report. It is noted that the 2009 costs also quoted by WNR have been based on escalating GHD's 2008 prices by 2.75 per cent as described above.

225. In undertaking its assessment, PwC/Maunsell has indicated that efficient track maintenance costs typically vary dependent on a number of factors including axle loads, traffic volume, signalling system, asset age and route geometry. PwC/Maunsell compared WNR's proposed maintenance costs with those of Queensland Rail, based on the broad categories of high volume trunk lines and lower volume lines, and also considered WNR's actual maintenance costs.

226. Based on the above assessments and taking into account the requirement of considering track maintenance costs based on a 'new' railway under the GRV approach under the Code, PwC/Maunsell considered that WNR's proposed track maintenance prices were reasonable.

227. PwC/Maunsell's recommended prices for track maintenance are shown in Table 13 below.

Table 13 – Track Maintenance Prices

	2006 Authority-determined prices ($/km)	2008 WNR-proposed prices ($/km)	2008 PwC-recommended prices ($/km)
South West Main Line	17,610	20,322	20,322
South West Main Line Terminal	9,392	10,838	10,838
Eastern Goldfields Railway	18,784	21,677	21,677
Eastern Goldfields Railway Co-op Book Handle	18,784	21,677	21,677
Standard Gauge Leonora	9,392	10,838	10,838
Standard Gauge Esperance	11,740	13,548	13,548
East Collie to Premier	17,610	20,322	20,322
Grain Line (16 t)	9,392	10,838	10,838
Grain Line (19 t)	5,400	6,232	6,232

Authority's Assessment – Draft Determination

228. The Authority accepted PwC's recommendation that WNR's proposed 2008 track maintenance prices were reasonable. The Authority determined the floor and ceiling costs shown in Appendix 3 based on escalating WNR's proposed 2008 track maintenance prices by 2 per cent to convert these to 30 June 2009 prices.

Public Submissions on the Draft Determination

229. There were no comments made in public submissions on the issue of track maintenance costs.

Authority's Assessment – Final Determination

230. The Authority confirms its position on track maintenance costs as outlined in its draft determination.

Determination of WNR's Floor and Ceiling Costs

231. Based on the assessment outlined above, the Authority's final determination of WNR's proposed floor and ceiling costs for the rail lines included in its submission, to apply from 1 July 2009, is shown in Appendix 3.

Final Determination

Amendment 3

WNR should revise its proposed floor and ceiling costs to be consistent with the Authority's determined floor and ceiling costs as shown in Appendix 3.

232. The Authority has assessed the difference between its determined floor and ceiling costs (Appendix 3) compared to WNR's proposed floor and ceiling costs (Appendix 2) for each of the rail lines under review. A summary of the cost differences is outlined in Table 14 below.

Table 14 - Summary of Floor and Ceiling Cost Changes

Rail Line	Floor (%)	Ceiling (%)	GRV (%)
Kwinana to Bunbury Inner Harbour	-0.35	-9.76	-3.70
Brunswick to Premier	-2.19	-6.74	-4.06
Forrestfield to Kalgoorlie	-0.01	-15.98	-9.36
Kalgoorlie to Leonora	-0.97	-14.77	-6.88
Kalgoorlie to Esperance	-1.25	-15.33	-8.79
Terminal Ends	-0.13	-5.84	-2.94
Avon to Goomalling	-0.48	-14.74	-6.54
Katanning to Tambellup	-0.48	-14.76	-7.92
Kulin to Yilminning	+ 96.41	-12.59	-11.79
Kwinana to Soundcem	-2.02	-14.47	-7.93

233. The table shows reductions in the WNR proposed ceiling costs that are in the range of 6 per cent to 15 per cent for the SW mainline, Worsley line, Terminal Ends and Kwinana-Soundcem line. Reductions in ceiling costs for the three mainlines terminating at Kalgoorlie are around 15 per cent. The differences are similar for the three grain lines with reductions to the proposed ceiling costs up to 15 per cent. This is primarily due to reductions in unit costs for 41kg rail.

234. The floor and ceiling costs indicated in this Final Determination will apply from 1 July 2009 to 30 June 2012 with annual adjustments as set out in WNR's Costing Principles. WNR will be required to submit its proposed revisions to its floor and ceiling costs nine months prior (1 October 2011) to the date from which the next determination on its floor and ceiling costs will apply (1 July 2012).

APPENDICES

Appendix 1: MEA Standard for Certain Rail Lines

WNR Proposed 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)

WNR Proposed MEA Standard for the Main Lines (excluding Terminal Ends) and Kwinana to Soundcem line.

Main line	Kwinana to Bunbury (SWM)	Brunswick to Premier	Kwinana - Soundcem	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)	24 tn (70/80)	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	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	1.5
Rail (kg/m)	50	50	50	60	50	50
Ballast depth (mm)	250	250 (Concrete sleepers) [3] 150 (timber sleepers)[4]	250	300	200	250
Sleeper Type & spacing/km	Concrete/ 1,500	Concrete/1, 500 Timber/1,47 0	Concrete/1, 500	Concrete/1, 500	1 in 4 Steel/1,500	1 in 2 Steel/1,640

[3] For the section Brunswick East to Worsley

[4] For sections East and North of Worsley

Appendix 2: WNR's Proposed Floor and Ceiling Costs, to apply from 1 July 2009, for Route Sections (by Cost Function)

Kwinana to Bunbury Inner Harbour

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$'000	$'000	$'000	$'000	$'000	$	$'000
Kwinana to Mundijong Jn	29.11	5 987 707	4 295	608	210	371	504	366 195	42 333
Mundijong Jn to Pinjarra	47.73	8 883 253	6 395	997	312	507	672	540 031	63 390
Pinjarra to Pinjarra East	1.47	670 811	258	31	13	145	224	117 876	2 534
Pinjarra East to Alumina Jn	0.23	670 314	143	5	7	200	315	155 665	1 378
Pinjarra East to Pinjarra South	1.06	318 327	135	22	7	60	94	49 889	1 334
Pinjarra to Wagerup	33.52	5 389 876	3 938	700	192	236	324	254 170	40 361
Wagerup to Brunswick Jn	42.97	7 466 542	5 644	897	276	276	374	353 224	56 918
Brunswick Jn to Picton Jn	22.08	4 966 923	3 481	461	170	350	505	377 703	34 321
Picton Jn to Bunbury Inner Harbour	3.52	1 700 790	996	74	49	230	352	203 680	9 805
Total Route	181.69	36 054 544	25 286	3 794	1 235	2 375	3 364	2 418 433	252 374

Brunswick to Premier

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$'000	$'000	$'000	$'000	$'000	$	$'000
Brunswick North - East	0.91	194 901	109	19	5	12	49	10 603	1 072
Brunswick - Brunswick East	1.03	549 858	325	21	16	35	153	37 854	2 948
Brunswick East - Worsley	22	3 798 905	2 905	459	142	87	206	231 568	28 476
Worsley - Worsley North	2.32	692 015	414	48	20	42	168	34 909	3 987
Worsley North - Hamilton	8.58	1 233 821	859	96	42	58	179	35 718	8 623
Worsley East - Worsley North	1.07	186 630	118	12	6	11	41	7 230	1 158
Worsley - Worsley East	1.89	353 934	190	21	9	23	110	10 957	1 925
Worsley East - Ewington Jn	28.24	4 121 074	3 309	314	162	79	257	83 168	33 282
Ewington Jn - Premier	2.39	477 761	403	27	20	5	23	7 262	3 941
Total Route	68.41	11 608 900	8 632	1 018	422	351	1 186	459 270	85 412

Forrestfield to Kalgoorlie

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$'000	$'000	$'000	$'000	$'000	$	$'000
F'Field Sth to Midland	25.71	8 599 902	6 420	573	314	647	647	800 567	59 915
Midland to Millendon Jn	28.25	7 651 143	5 969	629	292	394	367	491 427	55 339
Millendon Jn to Toodyay West	125.14	27 658 158	22 239	2 787	1 086	844	701	1 295 855	208 633
Toodyay West to Avon Yard	51.83	12 262 318	9 731	1 154	475	479	423	651 754	90 959
Avon Yard to West Merredin	190.94	43 652 362	35 544	4 253	1 736	901	1 218	1 486 264	333 005
West Merredin to Koolyanobbing	191.98	40 516 619	32 686	4 276	1 597	829	1 128	1 304 655	307 338
Koolyanobbing to West Kalgoorlie	204.33	42 407 758	32 840	4 551	1 604	1 294	2 119	1 468 302	305 392
West Kalgoorlie to Border	6.21	2 171 770	1 735	138	85	99	114	101 473	16 240
Avon to West Merredin Sidings	18.05	2 590 629	2 087	402	102	0	0	90 452	18 741
West Merredin to Koolyanobbing Sidings	9.61	1 390 038	1 121	214	55	0	0	48 135	10 085
Koolyanobbing to W Kal Sidings	4.75	655 891	525	106	26	0	0	23 779	4 680
Total Route	856.78	189 556 587	150 898	19 083	7 371	5 486	6 718	7 762 662	1 410 327

Kalgoorlie to Leonora

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$'000	$'000	$'000	$'000	$'000	$	$'000
Kalgoorlie to Malcolm	237.5	28 667 471	24 399	2 645	1 192	198	233	677 284	250 165
Malcolm to Leonora	24.54	3 469 954	2 897	273	142	99	60	143 695	29 621
Menzies sidings	0.33	33 649	29	4	1	0	0	814	294
Total Route	262.4	32 171 074	27 325	2 922	1 335	297	293	821 793	280 080

Kalgoorlie to Esperance

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$'000	$'000	$'000	$'000	$'000	$	$'000
West Kalgoorlie to Hampton	17.88	3 243 679	2 451	249	120	221	203	239 873	24 053
Hampton to Kambalda	38.25	5 877 892	4 377	532	214	341	413	313 713	43 334
Kambalda to Salmon Gums	229.6	31 430 665	25 146	3 196	1 228	715	1 145	944 853	250 770
Salmon Gums to Esperance	111.6	16 510 528	13 376	1 554	653	375	553	600 830	132 179
Kambalda siding	0.61	66 015	55	8	3	0	0	1 907	547
Norseman Siding	0.52	58 989	49	7	2	0	0	1 641	492
Salmon Gums Siding	1.28	151 156	127	18	6	0	0	3 993	1 270
Total Route	399.73	57 338 924	45 582	5 565	2 227	1 652	2 314	2 106 811	452 645

Terminal Ends

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
		$	$'000	$'000	$'000	$'000	$'000	$	$'000
Inner Harbour 485 Pt to Alcoa (Inbound)	0.51	478 247	84	6	4	67	318	21 875	851
Inner Harbour 486 Pt to ALCOA (Outbound)	0.38	334 806	90	4	4	41	195	13 706	902
Inner Harbour 487 Pt to Worsley (Outbound)	0.33	228 228	76	4	4	25	120	8 653	762
Inner Harbour 485 Pt to 486 pts	0.08	431 313	48	1	2	65	315	20 788	465
Inner Harbour 486 Pt to 487 pts	0.06	166 383	20	1	1	25	120	7 969	198
Inner Harbour 487 Pt to Woodchips	3.18	510 233	450	35	22	0	2	8 096	4 883
Kwinana no3 points to bauxite junction	1.85	530 482	218	21	11	56	225	25 746	2 212
Alcoa Bauxite Jn - Alcoa Bauxite Sdg	1.3	345 225	125	14	6	39	161	13 175	1 329
Alcoa Bauxite Jn - Alcoa Caustic Sdg Pts	1.89	262 884	160	21	8	14	60	8 547	1 735
Alcoa Caustic Sdg Pts - Alcoa Alumina Sdg	0.94	122 137	79	10	4	5	24	3 868	855
Total Route	10.52	3 409 938	1 350	117	66	338	1 539	132 424	14 192

Kwinana to Soundcem

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
		$	$'000	$'000	$'000	$'000	$'000	$	$'000
Kwinana to Soundcem	18.54	3 206 148	3 206	3 206	3 206	3 206	3 206	168 906	3 206

Grain Lines

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
		$	$'000	$'000	$'000	$'000	$'000	$	$'000
Avon to Goomalling	57.69	5 989 441	5 168	369	252	151	48	210 985	53 630
Katanning to Tambellup	46.71	4 724 402	3 768	299	184	438	35	169 155	39 021
Kulin to Yilminning	99.81	9 053 351	8 008	486	391	156	12	142 754	82 552

Appendix 3: Authority's Determined Floor and Ceiling Costs, to apply from 1 July 2009, for Route Sections (by Cost Function)

Kwinana to Bunbury Inner Harbour

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$	$	$	$	$	$	$
Kwinana to Mundijong Jn	29.11	5 416 957	3 787 163	600 385	163 416	367 906	498 087	364 421	40 919 659
Mundijong Jn to Pinjarra	47.73	7 948 572	5 557 651	984 436	239 813	502 938	663 734	538 485	60 542 694
Pinjarra to Pinjarra East	1.47	634 128	228 055	30 342	9 841	144 467	221 424	117 529	2 448 361
Pinjarra East to Alumina Jn	0.23	651 915	130 420	4 806	5 628	199 768	311 294	155 655	1 355 267
Pinjarra East to Pinjarra South	1.06	296 664	116 697	21 864	5 035	60 169	92 899	49 828	1 263 148
Pinjarra to Wagerup	33.52	4 798 609	3 406 090	691 473	146 973	233 829	320 244	252 254	38 651 320
Wagerup to Brunswick Jn	42.97	6 698 927	4 956 144	886 294	213 858	273 510	369 122	351 355	55 075 323
Brunswick Jn to Picton Jn	22.08	4 507 794	3 073 470	455 502	132 620	347 667	498 535	377 464	33 196 295
Picton Jn to Bunbury Inner Harb	3.52	1 581 628	892 911	72 648	38 529	229 369	348 171	203 080	9 604 977
Total Route	181.69	32 535 195	22 148 599	3 747 751	955 712	2 359 623	3 323 510	2 410 073	243 057 044

Brunswick to Premier

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$	$	$	$	$	$	$
Brunswick North - East	0.91	178 795	94 701	18 791	4 086	12 362	48 854	10 351	1 023 148
Brunswick - Brunswick East	1.03	513 762	294 444	21 143	12 705	34 387	151 083	37 857	2 872 644
Brunswick East - Worsley	22	3 382 752	2 530 767	453 811	109 203	85 570	203 401	223 413	27 184 677
Worsley - Worsley North	2.32	641 404	370 670	47 772	15 994	41 140	165 828	34 830	3 872 944
Worsley North - Hamilton	8.58	1 195 097	751 539	177 061	32 429	57 255	176 813	53 909	8 259 692
Worsley East - Worsley North	1.07	180 422	103 201	22 009	4 453	10 710	40 049	9 373	1 111 511
Worsley - Worsley East	1.89	344 174	165 833	38 882	7 156	23 250	109 054	14 982	1 843 754
Worsley East - Ewington Jn	28.24	3 938 084	2 898 728	582 502	125 080	78 048	253 726	143 473	31 965 344
Ewington Jn - Premier	2.39	451 939	359 333	49 195	15 505	5 077	22 828	12 355	3 808 090
Total Route	68.41	10 826 428	7 569 216	1 411 164	326 612	347 800	1 171 636	449 225	81 941 804

Forrestfield to Kalgoorlie

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$	$	$	$	$	$	$
F'Field Sth to Midland	25.71	7 624 038	5 535 392	565 697	238 852	645 155	638 941	802 983	57 051 591
Midland to Millendon Jn	28.25	6 697 733	5 101 880	621 561	220 146	391 798	362 348	493 733	52 344 352
Millendon Jn to Toodyay West	125.14	23 591 870	18 510 740	2 753 306	798 738	836 521	692 565	1 305 422	193 705 847
Toodyay West to Avon Yard	51.83	10 436 094	8 054 852	1 140 306	347 567	475 204	418 165	653 461	83 662 558
Avon Yard to West Merredin	190.94	36 388 912	28 848 088	4 201 069	1 244 795	891 609	1 203 351	1 484 019	299 966 659
West Merredin to Koolyanobbing	191.98	33 102 884	25 829 025	4 223 996	1 114 522	820 665	1 114 676	1 297 622	270 060 957
Koolyanobbing to West Kalgoorlie	204.33	35 731 259	26 710 110	4 495 678	1 152 541	1 279 725	2 093 204	1 463 402	276 463 500
West Kalgoorlie to Border	6.21	1 921 410	1 508 148	136 633	65 077	98 644	112 908	101 094	15 460 982
Avon to West Merredin Sidings	18.05	2 101 391	1 633 777	397 117	70 497	0	0	89 351	16 511 656
West Merredin to Koolyanobbing Sidings	9.61	1 118 281	869 435	211 331	37 516	0	0	47 549	8 786 883
Koolyanobbing to W Kal Sidings	4.75	552 446	429 512	104 400	18 533	0	0	23 490	4 340 839
Total Route	856.78	159 266 317	123 030 957	18 851 094	5 308 786	5 439 322	6 636 158	7 762 127	1278 355 824

Kalgoorlie to Leonora

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$	$	$	$	$	$	$
Kalgoorlie to Malcolm	237.5	24 482 149	20 555 318	2 612 613	886 962	197 006	230 249	670 045	233 653 745
Malcolm to Leonora	24.54	2 908 480	2 378 507	269 954	102 633	98 527	58 860	142 947	26 878 308
Menzies sidings	0.33	28 341	23 741	3 575	1 024	0	0	804	270 631
Total Route	262.36	27 418 970	22 957 566	2 886 143	990 619	295 534	289 109	813 796	260 802 684

Kalgoorlie to Esperance

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
	km	$	$	$	$	$	$	$	$
West Kalgoorlie to Hampton	17.88	2 911 514	2 152 336	245 899	92 873	219 910	200 495	239 268	23 277 747
Hampton to Kambalda	38.25	5 209 034	3 773 250	525 984	162 816	339 084	407 901	312 975	41 393 063
Kambalda to Salmon Gums	229.6	26 642 077	20 750 710	3 157 211	895 393	707 518	1 131 245	928 653	229 861 927
Salmon Gums to Esperance	111.6	13 560 650	10 648 820	1 534 609	459 497	371 417	546 308	592 157	116 272 872
Kambalda siding	0.61	56 766	46 390	8 374	2 002	0	0	1 884	516 586
Norseman Siding	0.52	48 843	39 915	7 206	1 722	0	0	1 621	444 484
Salmon Gums Siding	1.28	119 847	98 082	17 533	4 232	0	0	3 945	1 088 852
Total Route	399.73	48 548 731	37 509 502	5 496 816	1 618 535	1 637 928	2 285 949	2 080 504	412 855 531

Terminal Ends

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
		$	$	$	$	$	$	$	$
Inner Harbour 485 Pt to Alcoa (Inbound)	0.51	463 885	74 539	5 632	3 216	66 760	313 736	21 862	828 290
Inner Harbour 486 Pt to ALCOA (Outbound)	0.38	321 981	80 965	4 180	3 494	40 248	193 094	13 694	881 069
Inner Harbour 487 Pt to Worsley (Outbound)	0.33	217 905	68 151	3 608	2 941	24 677	118 527	8 643	743 563
Inner Harbour 485 Pt to 486 pts	0.08	422 627	44 136	891	1 904	64 530	311 165	20 786	460 391
Inner Harbour 486 Pt to 487 pts	0.06	162 766	18 466	605	797	24 535	118 363	7 968	195 474
Inner Harbour 487 Pt to Woodchips	3.18	450 124	395 645	35 015	17 072	466	1 925	7 999	4 768 135
Kwinana no3 points to bauxite junction	1.85	498 849	192 303	20 384	8 298	55 801	222 063	25 833	2 137 104
Alcoa Bauxite Jn - Alcoa Bauxite Sdg	1.3	325 154	108 391	14 268	4 677	38 943	158 876	13 143	1 278 720
Alcoa Bauxite Jn - Alcoa Caustic Sdg Pts	1.89	237 798	138 215	20 824	5 964	13 491	59 304	8 489	1 663 163
Alcoa Caustic Sdg Pts -Alcoa Alumina Sdg Pts	0.94	109 828	67 930	10 341	2 931	5 213	23 414	3 840	818 710
Total Route	10.52	3 210 917	1 188 740	115 748	51 294	334 666	1 520 468	132 257	13 774 618

Kwinana to Soundcem

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
		$	$	$	$	$	$	$	$
Kwinana to Soundcem	13.08	2 086 022	1 741 095	269 799	75 128	0	0	140 269	18 635 538

Grain Lines

	Section Length	Total Ceiling	Capital	Maint-enance	Working Capital	Operating	Overhead	Floor	GRV
		$	$	$	$	$	$	$	$
Avon to Goomalling	57.69	5 106 874	4 355 478	364 917	187 939	150 718	47 822	209 973	50 122 815
Katanning to Tambellup	46.71	4 027 083	3 128 026	295 476	134 974	433 994	34 613	168 336	35 930 784
Kulin to Yilminning	99.81	7 913 578	6 373 905	1 097 945	275 034	154 616	12 079	280 378	72 815 926

Appendix 4: Map of WestNet Rail Network