Redacted

The Pilbara Infrastructure

Cost Determination for the route subject to Brockman Iron's Access Proposal dated 15 May 2013

December 2014

Economic Regulation Authority
WESTERN AUSTRALIA

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DETERMINATION

1. On 23 May 2013, The Pilbara Infrastructure Pty Ltd (**TPI**) submitted an initial determination of costs for a route along the Port Hedland to Cloudbreak mine section of its railway.

2. TPI's determination was provided pursuant to clause 10(2) of Schedule 4 of the *Railway (Access) Code 2000* (WA) (**Code**), in response to an access proposal submitted by Brockman Iron PL (**Brockman**) (**Brockman's Access Proposal**).

3. In this determination by the Authority, TPI's determination is referred to as 'TPI's proposed costs'. TPI's proposed costs have been assessed by the Authority in accordance with the relevant provisions of the *Railways (Access) Act 1998* (WA) (**Act**) and the Code.

4. The Authority originally published a determination on TPI's proposed costs on 12 September 2013. TPI made an application to the Supreme Court which resulted in the Authority's determination being quashed requiring the Authority to remake its determination.

5. The Authority has considered relevant submissions on TPI's proposed costs that were made by TPI and other interested parties in response to public consultation. It has also considered relevant matters made in a further submission provided by TPI on 3 November 2014, and in submissions provided by both TPI and Brockman following provision of a draft determination to the parties on 18 November 2014.

6. Pursuant to clause 10(3) of Schedule 4 of the Code, the Authority does not approve TPI's proposed costs provided to the Authority on 23 May 2013 and has made the following six determinations in respect of TPI's proposed costs. The Authority's determined costs that are to apply to the route sections relevant to Brockman's Access Proposal are shown in Table 3.

List of Determinations

Determination 1

The Authority has determined incremental and total costs to apply to those route sections of TPI's railway which are subject to Brockman's access proposal (the relevant route sections) on the basis of the Modern Equivalent Asset (**MEA**) specification shown at Table 1, which is consistent with TPI's proposed specification.

Determination 2

The Authority has determined the Gross Replacement Values (**GRV**) attributable to the relevant route sections as shown in Table 2 in this determination.

Determination 3

The Authority has determined annualised capital costs for the relevant route sections on the basis of an economic life of the railway of 40 years. The annuities associated with asset components have been calculated on the basis of the lives shown in Appendix A of TPI's costing principles only where these lives are less than 40 years.

Determination 4

The Authority has determined costs to apply to the relevant route sections using a real pre-tax weighted average cost of capital (**WACC**) value of 10.14 per cent, as determined by the Authority to apply from 1 July 2014.

Determination 5

The Authority has determined operating costs to apply to the relevant route sections as being equal to the railway infrastructure management and network management cost components proposed by TPI, and a working capital component recalculated using the appropriate WACC and capital costs determined for those sections. The Authority has determined overhead costs to be an amount equal to the overhead costs proposed by TPI. These proposed costs have been escalated to apply on an equivalent 2014 basis.

Determination 6

The Authority does not approve TPI's proposed determination of its costs as provided to the Authority on 23 May 2013. The costs which the Authority has determined will apply to the relevant route sections are shown in Table 3. These costs are current as at 1 July 2014.

REASONS FOR THE DETERMINATION

Background

7. On 15 May 2013, Brockman submitted an access proposal to TPI.

8. The route the subject of Brockman's Access Proposal is described as being between chainages 23 km and 219.5 km, as measured from Port Hedland. The route is comprised of two sections, existing either side of chainage 174.875 km, which is where the 'Solomon Spur' intersects with the Port Hedland to Cloudbreak line.

9. On 23 May 2013, TPI submitted its determination of costs for the route subject to Brockman's Access Proposal.

10. As TPI's proposed costs were provided to the Authority in response to the submission of an access proposal, clause 10(3) of Schedule 4 of the Code requires the Authority to either approve TPI's proposed costs or, if not, to itself determine the relevant costs. The Authority is required to give approval or make its determination no later than 30 days after:

    - TPI submits its proposed costs determination; or
    - approval is given by the Authority, for the purposes of section 10(1) of the Code, for negotiations to proceed.

11. TPI was of the view that provision of access to the proponent would involve the provision of access to railway infrastructure to an extent that may in effect preclude other entities from gaining access to that infrastructure, and applied to the Authority for a decision to be made under section 10(1) of the Code regarding the approval of negotiations for access. The application was made in accordance with section 11(2) of the Code. The Authority issued and published its final decision in relation to this matter on 14 August 2013.

12. The Authority subsequently published a determination on TPI's proposed costs on 12 September 2013. TPI applied to the Supreme Court to have the original determination quashed.

Supreme Court decision

13. On 26 September 2014, the Supreme Court quashed the Authority determination of costs relevant to Brockman's proposal which was published in September 2013. The Court found that procedural fairness had not been afforded to TPI and that further consultation should be undertaken.

14. To that end, the Authority sought and received Brockman Iron's agreement to an extended deadline for remaking the determination of 19 December 2014, being 12 weeks from the date of the Supreme Court decision. The Authority sought Brockman Iron's agreement, in accordance with clause 11 of Schedule 4 the Code, to enable adequate consultation with TPI.

15. Clause 11 of Schedule 4 of the Code does not allow the Authority to exceed the time limit established in clause 10 of Schedule 4 (30 days) unless with the agreement of the proponent.

16. The timetable proposed by the Authority and agreed to by Brockman incorporated two periods of consultation, aimed to maximise consultation with TPI and Brockman within the allowed timeframe:

> 17 October – 24 October; comments from TPI on economic lives and contingencies
>
> 21 November - 5 December; comments from TPI and Brockman on a draft of the Determination

17. TPI advised on 22 October 2014 that it considered the time afforded it by this timetable was not reasonable, and advised that it required until 19 November to make an initial submission and that the re-determination should not be finalised until at least 27 February 2015.

18. The Authority sought Brockman's agreement to TPI's proposed further extension. Brockman did not agree to the further extension.

19. On 27 October 2014 the Authority offered, to TPI, to extend the deadline for its initial submission (invited on economic lives and contingencies) from 29 October to 3 November 2014.

20. TPI did not respond to the Authority's offer to the extension of the deadline for a submission on economic lives and contingencies. However, TPI provided a submission on 3 November 2014.

Draft Determination

21. The Authority provided TPI and Brockman with a draft of the determination on 18 November 2014.

22. Brockman was requested to provide a submission in response to the draft determination on or before 1 December 2014. TPI was requested to provide a submission on or before 5 December 2014. These deadlines were stipulated in order to enable TPI to incorporate responses to Brockman's comments in its submission.

23. Brockman and TPI each provided a submission to the Authority in response to the draft determination.

Legislative Considerations

Code

24. Schedule 4 of the Code sets out the provisions relating to prices to be paid for access. Clauses 7 and 8 of Schedule 4 prescribe the floor and ceiling price tests.

25. In clause 7 the floor price test provides that an operator who is provided with access must pay an amount not less than the incremental costs resulting from its operations on that route and use of that infrastructure.

26. In clause 8 the ceiling price test provides that an operator provided with access must pay an amount no more than the total costs attributed to that route and associated infrastructure.

27. The results of these tests form a price range to guide negotiations of the access tariff.

28. Pursuant to clause 10(1) of Schedule 4 of the Code, where an access proposal has been made and the Regulator has not determined costs under clause 9, the railway owner is to determine costs referred to in clauses 7 and 8 of Schedule 4 of the Code that are relevant to an access proposal in accordance with the costing principles for the time being approved or determined by the Regulator under section 46.

29. The costs approved or determined by the Regulator under clause 10(3) in respect of an access proposal are the costs that are to apply under clauses 7 and 8 for the purposes of the proposal.

Act

30. In making its decision under clause 10(3) of Schedule 4 of the Code, the Authority must take into account the following matters outlined in section 20(4) of the Act:

    (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.

Incremental and Total Costs

31. The Act and the Code establish a framework for negotiation of access to regulated railways in Western Australia. The Code does not prescribe exactly how negotiations are to be conducted or the specific terms and conditions to be included in an access agreement. The parties are free to negotiate terms, including price, outside the Code, with only limited exceptions in relation to safety. Where negotiations under the Code fail, parties can obtain a binding determination through arbitration.

32. To assist in negotiations on the price of access, floor and ceiling price tests are prescribed in Schedule 4 of the Code. These price tests form the lower and upper limits for the negotiation of access charges. The establishment of a regulated price band allows for price discrimination between access seekers.

33. Clause 10 of Schedule 4 of the Code requires TPI to determine costs in accordance with its Costing Principles. TPI's Costing Principles which were approved by the Authority in May 2013, pursuant to section 46 of Part 5 of the Code, set out the principles, rules and practices to be applied and followed by TPI in the determination of the costs referred to in clauses 7 and 8 of Schedule 4 of the Code (i.e. the costs relevant to the floor and ceiling price test) for TPI's railway.

34. As required by clause 10(2) of Schedule 4 of the Code, TPI has submitted proposed costs as described in clauses 7 and 8 of Schedule 4, that are relevant to Brockman's Access Proposal. However, it is important to note that the Authority does not determine prices in respect of a particular proposal. Prices are negotiated between the railway owner and the proponent subsequent to the approval or determination of the incremental and total costs by the Authority. The Authority does not have a role in establishing specific access prices, except where requested to provide an opinion on the fairness of prices, as described in Section 21 of the Code.

35. The role of the Authority in relation to the determination of costs is to either approve TPI's determination of costs, or to make its own determination of costs, as described in clause 10(3) of Schedule 4 of the Code. In deciding whether to approve TPI's proposed costs or in making its own determination of those costs, the Authority must take into account:

    a) the matters outlined in section 20(4) of the Act (refer to paragraph 30); and

    b) the object of the Act and the Code to encourage the efficient use of, and investment in, railway facilities by facilitating a contestable market for rail operations as set out in section 2A of the Act.

36. Incremental costs is defined in clause 1 of Schedule 4 of the Code, in relation to an operator or group of operators, as the operating costs and, where applicable, the capital costs and 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 that access to the operator or group of operators.

37. Total costs is defined in clause 1 of Schedule 4 of the Code as the total of all operating costs, capital costs and overhead costs attributable to the performance of the railway owner's access-related functions, whether by the railway owner or an associate.

38. The capital components of costs and the approach to estimating these costs are not based on actual costs or on the existing network specification but rather are based on the hypothetical Gross Replacement Value (**GRV**) of the railway infrastructure, where GRV is calculated as the lowest current cost to replace existing assets with assets that –

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

    b) are, if appropriate, modern equivalent assets (**MEA**).[1]

39. Further, clause 4 of Schedule 4 provides that the costs referred to in Schedule 4, including the capital costs, 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.

40. Section 3 of the Code defines a "route section" as the sections of the railways network into which the network is divided for management and costing purposes. For the purposes of this determination, and as approved by the Authority on 22 May 2013, TPI's Costing Principles details six route sections (Costing Principles, Appendix C "Route sections"), including the following two route sections:

    - The route section from chainage 219.5 km to chainage 174.875 km, measured from Port Hedland. This route section is referred to as Section 3 in this determination.
    - The route section from chainage 174.875 km to chainage 23 km, measured from Port Hedland. This route section is referred to as Section 5 in this determination.

41. The two route sections referred to above correspond in total to the route relevant to Brockman's Access Proposal.

42. The Authority notes a discrepancy in relation to the chainage measurements in TPI's Costing Principles and TPI's proposed costs. TPI's Key Physical's Summary indicate that route section 3 is the route section from chainage 219.5 km to chainage 174.319 km, and that route section 5 is the route section from chainage 174.319 km to chainage 23 km.

43. The two route sections referred to in TPI's Key Physical's Summary correspond in total to the route relevant to Brockman's Access Proposal, and are contiguous route sections. The Authority has assessed TPI's proposed costs on the basis that the proposed costs relate to route sections which would be constructed on an alternative alignment were they built as stand-alone replacements for the two route sections described in TPI's Costing Principles.

44. The Authority's determination of costs applies to the two route sections as described in TPI's Costing Principles and in Brockman's Access Proposal.

[1] This is described in detail in clause 2 of Schedule 4 of the Code.

INFORMATION USED BY THE AUTHORITY

Consultants used by the Authority

45. To assist the Authority in making its determination, the Authority engaged a consultant, AECOM, to review TPI's proposed costs and public submissions, and to provide advice to the Authority.

Public Consultation

46. On 27 May 2013, and in accordance with clause 11(1) of Schedule 4 of the Code, the Authority issued a notice calling for submissions from interested parties on TPI's proposed costs. The closing date for public submissions was 11 June 2013.

47. Three public submissions were received, from:

- Brockman Mining Australia Pty Ltd (**Brockman Mining**);
- Flinders Mines Ltd (**Flinders Mines**); and
- Aurizon Holdings Ltd (**Aurizon Holdings**).

48. These submissions were published on the Authority's website on 27 June 2013.

49. TPI did not provide a submission to the public consultation process.

Aurizon Holdings and Flinders Mines Submissions - June 2013

50. The Aurizon Holdings submission commented on the lack of transparency resulting from TPI's claim of confidentiality over its calculation of proposed costs, and recommended that the Authority undertake a clause 9 determination of the entire TPI railway network.

51. The Flinders Mines submission also commented on the lack of transparency resulting from the Authority's decision to keep TPI's proposed costs confidential. Whilst the Flinders Mines submission provided some projected cost outcomes based on material published by the Authority in 2011 (relating to a cost assessment of route sections comprising the original Port Hedland to Cloudbreak line), the analysis was limited to this historical material and was not consistent with the approved Costing Principles. Therefore, the Authority did not place any weight on Flinders Mines submission for the purposes of determining current engineering and cost estimation issues.

Brockman Mining Submission - June 2013

52. The Brockman Mining submission provided costings for a modern heavy haul (120 mtpa) railway specified by Brockman Mining in its submission. The Brockman Mining submission provides some relevant comments on costs proposed by TPI under the following three headings:

- TPI failure to provide costs for proposed access
- TPI failure to provide Costing Model or supporting information
- Factors to be considered in an assessment of costs

53. Under the first heading of its comments on costs, "TPI failure to provide costs for proposed access", Brockman Mining submitted that TPI has not provided costs for the proposed access. In this respect, Brockman Mining says that the Code requires costs to be provided for the proposed date of access.

54. The Authority does not agree that the total costs required to be provided by TPI are costs for the relevant route from the proposed date of access. The Authority is aware that Brockman has proposed operations on TPI's railway from 2016.

55. Section 9(1)(c)(i) of the Code requires TPI to provide Brockman with the floor price and the ceiling price for the proposed access. Section 9(1) does not require TPI to provide this information to the Authority. The Authority is not required to make a decision or determination in relation to those prices or the currency of those prices.

56. The Authority notes that the Code requires TPI, at clause 10(2) of Schedule 4, to provide the Authority with its determination of costs on which the prices referred to in section 9(1)(c) of the Code are calculated.

57. It may be possible to use current costs to determine future prices for the purposes of negotiation.

58. Clause 1 of Schedule 4 of the Code defines incremental costs as costs which the railway owner would avoid in respect of the 12 months following the proposed commencement of access should access not occur. Incremental cost is the floor price.

59. The calculation of all other classes of costs including operating, capital and overhead costs are described in Schedule 4 of the Code as calculations of current costs. The calculation of annuities is required by clause 2 of Schedule 4 of the Code to be by way of applying a current WACC to a GRV, which is described as the lowest current cost to replace existing assets.

60. The Authority considers that the costs required to be determined by TPI, and to be provided to Brockman and the Authority as the basis for calculation of ceiling prices for the proposed access, must be current costs.

61. Also under the first heading of its comments on costs, "TPI failure to provide costs for proposed access", Brockman Mining submitted that TPI should have, in its capital cost valuation, included the infrastructure to be provided by TPI's current expansion, and provide an explanation of the basis of the demand projection on which TPI is undertaking the current expansion as well as a demonstration of TPI's commitment to the expenditure.

62. Contrary to the inference in Brockman Mining's submission, the GRV estimate provided by TPI includes the infrastructure to be provided by TPI's current expansion, and is TPI's (proposed) determination of 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, as required by clause 2 of Schedule 4 of the Code.

63. The Authority acknowledges that this is not observable as the information publicly available does not indicate the railway specification proposed by TPI. The Authority also notes TPI's Costing Principles indicate, at section 3.2.1, that if TPI seeks to include the costs of additional infrastructure to meet projected demand, TPI will

demonstrate the basis of that demand projection and the commitment to any capital expenditure, and that TPI has not included these explanations in its costing model.

64. However, the Authority considers it reasonable to assume that TPI was committed to the capital expenditure associated with the expansion, on the basis that TPI is the sole current above-rail operator on the TPI railway. There has been no indication that the expansion was associated with any prospective access proposal, or use of the railway by a third party.

65. Under the second heading of its comments on costs, "TPI failure to provide Costing Model or supporting information", Brockman Mining submitted that the TPI Costing Principles states that TPI will provide its costing model with its assessment of costs, and states that the costing model was not provided to Brockman, or to the Authority as far as Brockman Mining is aware.

66. The Authority notes that section 2 of the Costing Principles indicates that TPI will provide a determination of costs in accordance with clauses 9 and 10 of Schedule 4 of the Code, and that cost determinations will include a costing model prepared in accordance with the Costing Principles.

67. The Authority notes that, at clause 10(2) of Schedule 4, the Code distinguishes between the provision of costs to the proponent as described in section 9 of the Code and the provision of the determination of costs to the Regulator (the Authority) at clause 10(1) of Schedule 4. The Authority notes that there is no requirement in the Code for the provision of the latter determination of costs to the proponent or other parties.

68. Under the third heading of its comments on costs, "Factors to be considered in an assessment of costs", Brockman Mining submitted that certain principles outlined in clause 13 of Schedule 4 of the Code should apply to the determination of costs. The Authority notes that the clause 13 guidelines are incorporated in TPI's Costing Principles approved by the Authority under section 46 and to which the Authority has had regard in making its determination. Brockman Mining's submission includes a section headed "Brockman Mining's assessment of costs for the route". In this section, Brockman Mining explains that its own costing does not include infrastructure equivalent to that currently under construction, due to a lack of available detail on the current expansion project. Brockman Mining submits that the Authority is better placed to assess the replacement value of the infrastructure that is the subject of the current expansion project, and that the Authority should assess such costs as part of its determination.

69. This determination by the Authority is of costs associated with the replacement value of the relevant sections of the TPI railway, incorporating the current expansion works.

70. The costing provided by Brockman Mining is for a railway of 120 million tonnes per annum (**mtpa**) capacity with track length of 234 kilometres. This compares to the 296 kilometre track length of the railway specified by TPI as a 155 mtpa railway. The reduced track length may reflect fewer or shorter passing loops and turnouts than those used in TPI's MEA.

71. Brockman Mining states that, with regard to freight task on the railway, it has not been provided with any evidence or substantive information regarding Fortescue Metal Group's (**FMG**) statements that they will export 155 mtpa.

72. Brockman Mining has provided quantities for many items as per-kilometre averages. Some items, such as level crossings, buildings and access roads are not explicitly included in Brockman Mining's model, and it is unclear if these have been included within the scope of other items.

73. AECOM has provided the following advice in relation to some major cost items in Brockman Mining's submission:

- the unit costs of major track materials are broadly consistent with the range of probable costs;
- the unit costs for bridges, signalling and communications are low and outside the range of probable costs; and
- the unit costs of earthworks and culverts cannot be assessed on the basis of available information.

74. The Authority notes that Brockman Mining proposes that indirect costs include only a 20 per cent margin for Design, Construction and Project Management (**DCPM**) fees, and that no other allowances are made for other indirect cost items. Brockman Mining's costing does not include an amount for land rehabilitation.

75. The Authority notes the construction period assumed by Brockman Mining for the purposes of calculating financing costs associated with the railway specified by Brockman Mining is 27 months.

76. Brockman Mining has calculated operating costs associated with its specified railway based on historical information relating to TPI's initial railway from Port Hedland to Cloudbreak, with an additional nominal allowance of $1,000,000 for overheads.

77. Brockman Mining's submission includes a section comparing inferred pricing on a per tonne basis between the information provided by TPI, Brockman Mining's own costings, prices for other railways, and publicly available details of other arrangements entered into by TPI.

Submission in response by TPI – July 2013

78. On 29 July 2013, TPI provided a submission in response to the submissions published by the Authority on 27 June 2013. The submission provided by TPI has been published on the Authority's website. The submission provides comment under six headings:

- Provision of costs for proposed access
- Provision of costing model
- Factors relevant to assessment of costs
- Floor and ceiling costs expressed as an annual amount
- 2010 TPI Costing Model
- Indec Consulting – Gross Replacement Value Report

79. Under the first heading of its submission, "Provision of costs for proposed access", TPI submitted that it has provided costs on a route basis in accordance with its current Costing Principles and that its proposed costs relate to the infrastructure of the current expansion works as if those expansion works were complete. TPI also submitted that it is not possible for it to determine costs which comply with section 9(1)(c) of the Code because the values of assumptions contained in Schedule 4 of

the Code are unknown for 2016, being the date from which access is sought by Brockman.

80. The Authority notes that TPI's Costing Principles were amended following the lodgement of Brockman's Access Proposal to define route sections which correspond to those subject to Brockman's Access Proposal.

81. The Authority considers that the route sections defined in TPI's Costing Principles are appropriate for the purposes of determining costs relevant to Brockman's Access Proposal. The Authority also considers that the specification of the MEA railway at nameplate capacity of 155 mtpa is appropriate on the basis that the planned capacity represents current and reasonably projected demand.

82. The Authority does not agree with TPI's assertion that it is not possible to determine costs which comply with section 9(1)(c) of the Code.

83. Section 9(1)(c)(ii) of the Code requires that the railway owner provide a proponent with the costs for each route section on which TPI's floor and ceiling prices referred to in section 9(1)(c)(i) have been calculated. These prices are not the subject of this determination of costs.

84. For the purposes of determining costs, in accordance with the definition of GRV contained in clause 2 of Schedule 4 of the Code, and with the nature of costs described in clause 4 of Schedule 4, the Authority considers that these costs should be calculated as described in TPI's Costing Principles, that is, as current costs, not as costs in 2016.

85. Under the third heading of its submission, "Factors relevant to assessment of costs", TPI submits that the Brockman Mining submission seeks to apply to the calculation of costs principles which are only relevant in the negotiation of access charges.

86. The Authority agrees with TPI that the principles set out in clause 13 of Schedule 4 of the Code are intended to be relevant to negotiation of prices for the provision of access. However, under section 21(1) of the Code a proponent may apply to the Regulator for an opinion on whether or not the price sought by a railway owner in negotiations meets the requirements of clause 13(a) of Schedule 4.

87. TPI submits that the Authority is not required by section 20(4) of the Act to take account of "a railway owner's role as a provider of regulated infrastructure". However, the Authority considers the obligations outlined in clause 16 of Schedule 1 to the *Railway and Port (The Pilbara Infrastructure Pty Ltd) Agreement Act 2004* (WA) (**TPI State Agreement Act**) are firm and binding contractual obligations of TPI which it is required to take into account under section 20(4)(e) of the Act. TPI did not outline the way in which such considerations might impact on the technical specification of the railway route or the associated costing issues.

88. Under the fourth heading of its submission, "Floor and ceiling costs expressed as an annual amount", TPI submitted that it is not required to express its costs as a dollar per tonne amount. The Authority agrees that this is not a requirement under the Code.

89. Under the fifth heading of its submission, "2010 TPI Costing Model", TPI submitted that the capital and operating costs contained in the Costing Model provided to the Authority in 2010 are not representative of the current capital and operating costs of

TPI's railway. The Authority acknowledges that this determination relates to costs as described in TPI's Costing Principles, that is, current costs.

90. Under the sixth heading of its submission, "Indec Consulting – Gross Replacement Value Report", TPI submitted that, for reasons set out in a confidential report from its consultant Calibre Global (**Calibre**), the Indec Report should not be preferred to TPI's 2013 Costing Model.

91. The Authority has not referred to the Indec Report in establishing a technical design basis for the railway. The appropriate MEA standard railway for the purposes of this determination is discussed in the section headed "Level of Service and Modern Equivalent Asset Standard", beginning at paragraph 133 below.

Notice of Potentially Adverse Material

92. On 26 August 2013, the Authority wrote to TPI, providing an opportunity to respond to material being relied upon by the Authority in its consideration of the cost of welding and fuelling facilities, and to provide further explanation of its claim that the economic life of the mines served by the route sections is limited to 19 years. TPI responded on 2 September 2013.

93. [redacted] The Authority has addressed these matters in the sections titled "Track Construction" (paragraph 314) and "Annualised Capital Costs" (paragraph 401) in this determination.

TPI Submission of 3 November 2014

94. On 15 October, the Authority invited an initial submission from TPI on the issues of contingency and economic lives, as presented in the Authority's quashed determination of September 2013. The Authority advised TPI of its view that procedural fairness would require that all submissions and comments provided to the Authority by TPI and Brockman will be provided to the other party, and accordingly the Authority requested that TPI provide to Brockman copies of any comments/submissions that are provided to the Authority prior to the finalisation of the determination.

95. TPI provided the Authority with a submission on 3 November 2014. TPI did not provide a copy of its submission to Brockman and has claimed it to be confidential.

96. TPI raised a number of matters in its 3 November 2014 submission, some of which will not be commented on by the Authority in this determination. [redacted]

97. TPI further commented on whether Brockman's proposal was valid and whether the Code envisages a proposal such as Brockman's as being valid, and whether the ERA

is required at the present time to make a determination under clause 10 of Schedule 4 of the Code.

98. The Authority notes in this respect that a court action challenging the validity of the Brockman proposal was unsuccessful, as outlined in a decision of the Supreme Court on 26 August 2014. TPI has appealed this decision. The Authority has issued a notice of intention to abide in those proceedings.

99. [redacted]

100. [redacted]

Brockman Submission of 1 December 2014 in response to draft determination

101. The Authority provided a draft determination to Brockman and TPI on 18 November 2014. Both parties were invited to make submissions to the ERA on the draft determination.

102. Brockman was requested to provide a submission by 1 December 2014. TPI was requested to provide a submission by 5 December 2014, the additional time being afforded to allow TPI to incorporate responses to Brockman's comments in its submission if it wished to do so.

103. In providing the draft determination to TPI and Brockman, the Authority again advised its view that procedural fairness requires that all submissions and comments provided to the Authority from TPI and Brockman be provided to the other party and so requested that both TPI and Brockman provide the other party with a copy of any comments that they provided to the ERA in response to the Draft Determination.

104. On 1 December, Brockman provided the Authority with a submission in response to the draft determination. With Brockman's agreement, the Authority provided a copy of this submission to TPI.

105. Brockman commented on the transparency of the determination and asserted that:

- the level of transparency was inadequate to enable achievement of the objectives of the Act and the Code;
- it was not possible for Brockman to determine whether the costs proposed are compliant with the Code; and
- that, in any event, an assessment of the proposed costs reveals shortcomings of the costs when considered against the requirements of the Code and against the assessment of costs commissioned by Brockman.

106. The Authority provided a draft of the determination to Brockman entirely unredacted. It is acknowledged elsewhere in this document that TPI's costing model was not provided to Brockman (as part of the determination process) and neither was the supporting information, prepared by TPI's consultant, provided to Brockman (as part of the determination process).

107. The Authority notes that the determination in its unredacted form fully discloses to Brockman the component GRV numbers and calculations implicit in TPI's costing model. The Authority agreed to keep TPI's costing model spreadsheets and supporting documents confidential at the time they were provided in March 2013.

108. The Authority is not able to respond to the statements by Brockman relating to whether the objectives of the Act and the Code are met and shortcomings in respect of the Act and the Code, due to the generality of the statements.

109. Brockman has noted that the Authority considers procedural fairness requires that all submissions and comments provided to the Authority from TPI and Brockman be provided to the other party.

110. Brockman submitted that:

> the failure of TPI to provide sufficient information to Brockman, either because TPI is reluctant to provide it or because the ERA has not taken action to require TPI to provide it, is a fundamental impediment to Brockman being able to meaningfully comment on the determination.

Brockman has asserted that it is therefore able to comment only on the remarks of the Authority's expert and the Authority's related determinations.

111. The Authority requested that all submissions be provided to the other party in the process of remaking this determination. Brockman has complied with this request and TPI has not complied with this request. The Authority notes that TPI has not provided an explanation for its non-compliance with this request.

112. The Authority requested that all comments be shared between the parties in relation to this remade determination. This request was not made in relation to the quashed determination.

113. The Authority has noted in paragraph 107 that the unredacted determination provides Brockman with costings of all components of TPI's railway and related financial parameters used by TPI to establish its proposed costs.

114. Brockman asserted in its submission that because TPI had failed to provide adequate details of the expansion project which was underway at the time, the cost estimate provided by Brockman could not include an accurate assessment of the infrastructure.

115. In this determination, as in the quashed determination, the Authority has made clear that the MEA specified by TPI includes the infrastructure associated with the then current (now completed) expansion. This is noted at paragraph 62 in respect of Brockman's submission to the quashed determination. The MEA associated with that infrastructure is detailed from paragraph 133 of this determination. The Authority acknowledges that Brockman could not have been aware of this at the time of its submission to the quashed determination process.

116. Brockman has advised that its concerns relating to transparency are compounded by the exercise of the Authority's discretion in accepting some costs proposed by TPI where these costs were not accompanied by adequate explanatory information. The Authority has acknowledged this in this determination from paragraph 519 onwards and has also highlighted instances where the Authority's discretion has been exercised in not accepting some costs proposed by TPI, where these costs were not adequately explained/substantiated.

117. The Authority has exercised its discretion in relation to some matters of limited materiality. For example, the Authority has accepted land approvals costs of some [redacted] on the basis that any adjustment to this cost would be immaterial.

118. Brockman referred in its submission to its refusal (as detailed at paragraph 18) to agree to an extension to the deadline for the making of the decision to 27 February 2015. This extension was proposed by TPI for the purposes of ensuring that the Authority had an adequate amount of time to complete the determination. Brockman indicated in its submission that it considered this proposal unreasonable.

119. Brockman has highlighted the period of 12 weeks agreed to by Brockman for the making of the determination as being "triple the time allowed under the Code". The Authority notes that this 12 week period (about 60 working days) has incorporated periods negotiating with respective parties around process and timelines, some weeks in consultation and ERA administrative requirements. The remaining time available for analysis and drafting was not sufficient to enable further review of TPI's costs, particularly because doing so would require the time consuming task of engaging and administering further independent technical advice.

120. In its submission, Brockman provided brief comments on financial parameters used in the determination as follows:

- Brockman asserted that the 2014 WACC gazetted by the Authority on 24 October 2014 was conditional and published to enable the completion of the determination. Brockman submitted that the WACC should be substantially lower.
- Brockman submitted that the 3 per cent price movement used by the Authority to update prices may not be acceptable, due to the current downturn in the mining industry and consequent deflation in the Pilbara. Brockman further submitted that the application of a 'flat number' establishes an unrepresentative regulatory precedent, and that there is 'objective evidence' available to the Authority that costs have not increased by 3 per cent.
- Brockman submitted that without being provided with the Authority's benchmarks and relevant previous determinations, it cannot provide comment on equity raising costs except to question the validity of the 3 per cent figure accepted by the Authority.

121. In relation to these three points, the Authority notes that:

- In respect of the WACC, Brockman quoted the Authority from its 2014 WACC determination as follows:

  > Authority intends to release a final rail WACC Method review decision later in 2014 or early in 2015, with the resulting updated rail WACC method to apply for the determination

  This quote is incomplete and potentially misleading, as it omits the words immediately following within the same sentence which are:

  > … of the rail WACC for the Freight and Urban Railway Networks for the regulatory year commencing 1 July 2015, as well as for subsequent years.[2]

[2] ERA Determination on the 2014 Weighted Average Cost of Capital for the Freight and Urban Railway Networks 24 October 2014, paragraph 9 (pp. 3-4).

The 2014 WACC used by the Authority in this determination is the WACC determined in accordance with the requirements of Schedule 4 of the Code. It is not conditional and was not completed in order to enable this determination.

- In respect of price escalation, the weighted average eight capital cities Consumer Price Index has been used in previous decisions, and the applicability of that index in preference to Pilbara-specific or commodity-specific indices has been established in those decisions. The Authority has not been presented with the objective evidence which Brockman asserts is available to it in support of lower price escalation for this determination.
- In respect of equity raising costs, the Authority notes that Brockman did not indicate whether it considered the 3 per cent rate used by the Authority for estimating equity raising costs was excessive or inadequate. The Authority has used a rate of 3 per cent consistent with Rate of Return Guidelines developed for the Gas Industry and published on the Authority's website.[3]

122. In an attachment to its submission, Brockman provided comments from its consultant, Indec Consulting, on specific cost elements identified for TPI's railway. These comments are reviewed in the relevant sections of "Discussion of cost elements" in this document.

TPI Submission of 8 December 2014 in response to the draft determination and in response to Brockman's submission of 1 December 2014

123. On 2 December 2014, TPI requested an extension of the deadline for providing its submission from 5 December to 8 December 2014 in order to allow it to review and respond to all adverse comments by Brockman.

124. Due to the timeframes for approving and making the determination, it would not have been possible for the Authority to agree to this request without a further extension of the deadline for making the determination. To enable consideration of TPI's request, the Authority sought Brockman's agreement to a further extension of the deadline for making the determination from 19 December to 24 December 2014.

125. Brockman agreed to the proposed extension and the Authority agreed to TPI's request for a deadline of 8 December 2014 for its submission.

126. On 8 December 2014, TPI provided the Authority with a submission in response to the draft determination. TPI did not provide a copy of this submission to Brockman

127. TPI again raised a number of matters in its submission, some of which will not be commented on by the Authority in this determination. [redacted]

128. [redacted]

[3] Explanatory Statement for the Rate of Return Guidelines Meeting the Requirements of the National Gas Law, paragraph 873, 16 December 2013.

[redacted]

129. [redacted]

130. [redacted]

131. [redacted]

DISCUSSION OF COST ELEMENTS

TPI's Costing Model

132. In order to meet the requirements of section 2 of its Costing Principles, TPI has submitted a costing model which contains its proposed incremental and total costs (referred to as floor and ceiling costs) for the route sections of its railway network relevant to Brockman's proposal.

Level of Service and Modern Equivalent Asset Standard

133. TPI's Costing Principles 'Definitions', at page 4, defines the Modern Equivalent Asset (**MEA**) 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 underutilised assets and allows for potential cost savings that may have resulted from technological improvement.

134. Replacement values must reflect the MEA value, if appropriate, and current market tested unit rates for materials.

135. TPI has specified an MEA railway network commensurate with its 155 mtpa expansion project on the basis that the MEA is adequate to meet its current and reasonably projected demand. Brockman requires 20 mtpa of capacity. The Authority notes, and as submitted by Brockman Mining, the information publicly available does not indicate the railway specification proposed by TPI. The lack of information publicly available regarding the railway specification made it difficult for parties like Brockman to accurately comment. The Authority notes that TPI did not demonstrate the basis of the demand projection and the commitment to the capital expenditure, as indicated in section 3.2.1 of its Costing Principles.

136. However, the Authority notes that since the submission of TPI's proposed costs, the 155 mtpa expansion project has been completed, and that pro-rata tonnages exceeding 155 mtpa are being delivered to TPI's port facility at Port Hedland.

137. Brockman, in its June 2013 submission, proposed a specification for a railway which does not coincide with the MEA accepted by the Authority to apply to this determination. In particular, Brockman Mining's proposed specification does not include all infrastructure components associated with the 155 mtpa expansion project.

138. The Authority acknowledges that TPI is the sole current above-rail operator on the TPI network, and that there has been no indication that the recent expansion is associated with any prospective access proposal, or use of the railway by a third party.

139. The Authority notes that the FMG Quarterly Report of March 2013 stated that Fortescue's annualised run rate is anticipated to increase to 155 mtpa by December 2013. On 11 July 2014, FMG reported to the Australian Stock Exchange that for the month of June 2014 it had achieved an annualised run rate of 160 mtpa.

140. The Authority accepts the 155 mtpa specification of the railway as the MEA for the purposes of this cost determination. This MEA is described in the following table:

Table 1 – MEA Standard

Parameter	TPI Standard/Specification
Track gauge	[redacted]
Axle load (tonnes)	40 tonnes axle load (TAL)
Rail weight (Kg/m)	68 kg/m, to Australian Standard AS 1085.1 [redacted]
Sleeper type, pattern and spacing	[redacted], 40 TAL capacity, Spacing 675 mm, 1480 sleepers/km
Ballast type and minimum depth (mm)	[redacted] 250 mm minimum on underside of sleeper
Fasteners	[redacted]
Formation width	[redacted]
Target maximum operating speed	80 km/h for loaded and empty trains 100 km/h for light locomotives
Horizontal Curve Radii	[redacted]
Maximum Gradient	[redacted]
Train Configuration	[redacted]
Turnouts	[redacted]

141. The acceptance by the Authority of the MEA proposed by TPI as being appropriate to meet the current and reasonably projected demand by current operators on the TPI network, does not mean that the Authority has made a judgment in relation to whether or not Brockman's proposed operations can be accommodated on the MEA infrastructure.

142. If, in the course of any negotiations subsequent to this determination, it is agreed between TPI and Brockman that an extension or expansion is required in order to accommodate Brockman's proposed operations on the TPI network, then this determination of costs will provide a basis for negotiations under the Code on price, in conjunction with separate negotiations around the funding of any required expansion.

143. If an agreement under the Code is reached as a result of any such negotiation, then the costs for the relevant sections of TPI's network will need to be re-determined on completion of the agreed expansion to enable TPI to incorporate the costs associated with the expansion in order to be able to recover those additional costs under the terms of its Over-payment Rules. TPI has prepared Over-payment Rules in accordance with section 47 of the Code.

Determination

Determination 1

The Authority has determined incremental and total costs to apply to those route sections of TPI's railway which are subject to Brockman's access proposal (the relevant route sections) on the basis of the Modern Equivalent Asset (**MEA**) specification shown at Table 1, which is consistent with TPI's proposed specification.

Gross Replacement Value

144. This section contains assessments of GRV under the following headings, which correspond to the categories of GRV provided in TPI's cost proposal:

- Earthworks
- Bridges and Culverts - Bridges
- Bridges and Culverts - Culverts
- Level Crossings
- Track Materials – Rail
- Track Materials – Turnouts
- Track Materials – Ballast
- Track Materials – Sleepers and Jewellery
- Track Construction
- Roads and Shunter Pathways
- Signalling
- Buildings
- Design Construction Project Management (DCPM) Margin
- Land Costs – Surveys and Approvals
- Land Costs – Rehabilitation
- Interest During Construction
- Equity Raising Costs

145. AECOM has provided advice to the Authority in relation to some of the technical items above. AECOM has not provided advice to the Authority in relation to equity raising costs, interest during construction, land costs - surveys and approvals and DCPM margin.

TPI Costing Principles and proposed GRV

146. TPI's Costing Principles (section 3) nominate the assets included in the capital costs calculation that are directly engaged in the provision of rail infrastructure services. These are defined as railway infrastructure under section 3 of Part 1 of the Code and include:

- land;
- railway track and associated track structures;
- tunnels and bridges;
- train control systems, signalling systems and communication systems;
- associated plant, machinery and equipment.

147. TPI's Costing Principles (section 3) indicates that assets that support operating functions are not to be included in the asset base for capital cost calculations. The Costing Principles indicates that such assets will be included in the operating cost or overhead costs calculations, as appropriate.

148. TPI's Costing Principles (section 3.2.1) indicates a maximum allowance for DCPM costs of 20 per cent of the total cost of the infrastructure.

149. TPI's Costing Principles (section 3.2.1) nominates the WACC, as determined by the Authority, to be used as the interest rate for assessing the financing (interest) charges capitalised over the construction period. The costing principles provides for amortisation of financing costs over 50 years.

150. [redacted]

151. The GRV of the relevant route sections has been presented by TPI as totalling [redacted]

AECOM advice and treatment of indirect costs

152. AECOM has provided an assessment of some capital items (and the associated GRV) with reference to confidential information provided by TPI. These assessments are based on industry standards or recent project experience. Assessments appear under separate headings for each category of capital item below.

153. Items subject to capital cost estimates are broken down by direct and indirect costs. AECOM has assessed direct costs as contractor's direct costs and contractor's indirect costs, and indirect costs as contingencies, DCPM, temporary construction and camps.

154. AECOM's assessments of direct and indirect costs appear under relevant capital item headings in this section. General observations relating to indirect costs appear directly below.

155. TPI's proposed costs, and AECOM's assessment of those costs, are on the basis of costs at 1 July 2013. For the purposes of this determination, assessment of the reasonableness of TPI's proposed costs is undertaken on the basis of their currency at 1 July 2013.

156. In its draft of this determination, the Authority proposed to escalate all 2013 prices by 3.0 per cent - being the increase in the weighted average of eight capital cities CPI for the 2013-14 year - such that they are current at 1 July 2014.

157. As noted at paragraph 120, Brockman has submitted that the 3 per cent price movement may not be acceptable, due to the current downturn in the mining industry in the Pilbara. Brockman further submitted that the application of a 'flat number' establishes an unrepresentative regulatory precedent. The Authority's use of the weighted average capital cities Consumer Price Index has been used in previous decisions published on the Authority's website, and the applicability of that index in preference to Pilbara-specific or commodity-specific indices has been established.

158. In its December 2014 submission, TPI supported the use of a 3.0 per cent price escalation.

159. In this determination, the costs determined by the Authority are assessed 2013 costs escalated by 3.0 per cent - being the increase in the weighted average of eight capital cities CPI for the 2013-14 year - such that they are current at 1 July 2014.

INDIRECT COSTS - CONTINGENCIES

160. The capital cost estimates proposed by TPI generally include a contingency allowance of approximately 20 per cent applied to each asset category.

161. In its November 2014 submission, TPI provided a definition of contingencies as:

[redacted]

162. TPI advised in its submission that an estimate of a class 3 level of accuracy was used to calculate the GRV. [redacted]

[redacted]

163. [redacted]

164. AECOM indicated an expected range of probable contingency of 10 to 20 per cent of the total project cost in the context of an analysis of total indirect costs, including contingencies and DCPM.[4]

165. AECOM has confirmed that all per unit capital costs proposed by TPI are based on pre-feasibility standard estimates and that this class of estimate has an accuracy range of minus 10 per cent to plus 30 per cent[5].

166. [redacted]

167. The Authority acknowledges contingencies are generally an appropriate inclusion in engineering studies for project development and budgeting on greenfields sites.

168. In the draft of this determination, the Authority advised its view that TPI had not adequately substantiated the inclusion of a contingency allowance. Consideration of this issue is presented below on the basis of the framework used in the draft determination.

The inclusion of a contingency allowance is not provided for in TPI's costing principles and has not previously been included by TPI prior to this determination.

169. In its December 2014 submission, TPI commented that whilst the costing principles do not expressly include contingencies, they do not expressly exclude them. [redacted]

170. The Authority accepts that contingencies may be an appropriate inclusion in engineering assessments of replacement costs, as acknowledged in paragraph 167. TPI has previously provided a determination of costs, which appears on the ERA's website,[7] which does not include contingencies. Further, the Authority has not previously received a determination from a railway owner, or made a determination of railway owner's costs, which includes allowances for contingencies.

171. In respect of the above matter, the Authority remains of the view that the inclusion of an allowance for contingency is not provided for in TPI's costing principles and has not been included by TPI in the costing material provided to the Authority prior to this determination.

[4] AECOM Report: "Assessment of TPI's Costs for Floor and Ceiling Determination", Table 4, page 11.

[5] The Authority notes that the use of this class of estimate is not consistent with the class of costing information provided by TPI for a cost determination in 2010 which were related to actual build amounts. PwC reported in relation to that costing exercise that TPI's cost estimates were subject to an accuracy range of minus 10 per cent to plus 10 per cent. This is also the costing standard adopted by WNR/Brookfield for all previous cost determinations related to their network.

[6] AECOM Report: "Assessment of TPI's Costs for Floor and Ceiling Determination", part 3.1.1 d), 5 September 2013, p. 12.

[7] http://www.erawa.com.au/rail/rail-access/the-pilbara-infrastructure-pty-ltd/floor-and-ceiling-costs

The MEA specification of a replacement railway is considered by the Authority to be a well-developed design and the determination of costs is undertaken using a greenfields approach[8].

172. In its draft determination, the Authority noted the following:

- The advice from AECOM that the extent of contingency allowance should reduce as the design development of a project progresses. That is, the requirement for contingencies will diminish as the design unit quantities become more certain towards the completion of construction.
- In the case of the TPI railway, which was constructed relatively recently, it can be assumed that the design in place is a reasonable proxy for the optimal design underlying the Modern Equivalent Asset that is the subject of this access proposal.
- As the Authority considers that a reasonable proxy of the optimal asset design is in place, the risk of omission of costs associated with design unknowns from the cost determination is low and may not warrant the inclusion of contingencies.

173. In its December 2014 submission, TPI commented that all experts in the judicial review proceedings agreed that on a 'greenfields' approach to estimating the cost of an MEA in accordance with section 3.2.1 of TPI's Costing Principles, that a contingency would apply.

174. The Authority notes that section 3.2.1 of TPI's costing principles uses the term 'greenfields' such that it requires the exclusion of costs associated with constructing around rail traffic, surface restoration and other surface diversions from the GRV. Section 3.2.1 of TPI's Costing Principles also refers to the 'existing rail alignment', and the 'network as constructed', in conjunction with the exclusion of costs associated with diversions around existing infrastructure, in the specification of Gross Replacement Value.

175. [redacted]

176. [redacted]

177. [redacted]

178. The Solomon Spur route section is not part of Brockman's proposal. The Authority accepted the specification of the expanded route sections 3 and 5 as an MEA for the existing network relevant to Brockman's proposal. This MEA was accepted on the basis that the expansion project was underway and a fully developed design.

[8] For greenfields projects, costs relating to constructing around rail traffic, surface restoration and other surface diversions are excluded from the GRV.

179. The Authority has taken into consideration that the railway expansion works consistent with the MEA for this determination were, at the time the quashed determination was made, not 'still on the drawing board' but well underway and were complete by December 2013.

180. In respect of the above matters, the Authority remains of the view that the MEA specification of a replacement railway is considered by the Authority to be a well-developed design.

The appropriateness of including contingencies is influenced by whether the cost estimates are the 'most likely' estimates within a range of uncertainty

181. In its draft determination, the Authority noted the following:

- The Authority considers that the concept of contingencies is distinguishable from the concept of accuracy of a particular class of cost estimates. In this regard, the Authority notes that AECOM has advised that, in its opinion, a number of cost estimates provided by TPI are at the upper end of the reasonable range. These cases are highlighted in the relevant section of this report for each asset.

- For example, in relation to the quantity of earthworks, the quantities underlying the GRV estimate provided by TPI is an average height of embankment (or depth of cut) of [redacted]. AECOM has advised that, while such height/depth frequently occurs in a typical railway in the Pilbara, the embankment height proposed by TPI is considered to be at the high end of a likely value for an average, particularly as the Chichester Ranges mostly fall outside Sections 3 and 5.

182. [redacted] TPI quoted Justice Edelman as follows:

> *If the Regulator concluded that some of the direct costs were higher than should be allowed, and that overall this meant that the Base Estimate was higher than should be allowed, then a lower Base Estimate should be chosen. There would still be a contingency applied to that lower Base Estimate.*

183. The Authority accepts that there is a difference between contingency provisions and the uncertainties inherent in various classes of cost estimates.

184. The uncertainties associated with Concept Stage and Prefeasibility stage cost estimates are greater than the uncertainties associated with bankable or feasibility study stage cost estimates. TPI's proposed costs were based on prefeasibility (class 3) estimates.

185. The Authority considers that ideally the unit costs proposed by the railway owner would be well developed 'bankable' costs. This class of cost estimate is considered a financing requirement as a project nears commencement.

186. The Authority does not consider that it has accepted base estimate costs which were higher than should be allowed but did accept some costs which were considered to be at the high end of the acceptable range.

TPI has not sufficiently documented the calculation of the contingency amounts.

187. In its draft determination, the Authority noted that AECOM advised that project contingency should be built using a risk register, identifying the risk, mitigations, cost on realisation, likelihood and consequence. In assessing what may be considered to be a reasonable contingency, the following factors would normally be considered:[9]

- Level of design development – contingency in a project estimate should reduce as design development progresses, representing the mitigation of risks as scope becomes firm. Increased design development results in reduction in the number of risks, and the likelihood of them occurring, thus reducing the required contingency allowance.
- Experience and knowledge of the project task and the environment (physical, regulatory, social) in which it is constructed – increased knowledge and experience decreases the need to account for unknown risks (as all risks likely to occur have already been experienced on previous projects). As a result, the number of risk items contributing to contingency should be reduced, and likelihoods and cost allowances more closely aligned with actual experience.

188. In its draft determination, the Authority indicated that, given TPI's recent experience and knowledge of actual costs and outcomes for building its existing railway, and based on AECOM's advice,[10] the Authority considered that there is a reasonable expectation that the calculation of contingency amounts would be properly documented.[11]

189. [redacted]

190. [redacted] The Authority notes that TPI did not seek to provide more detailed analysis for the Authority's consideration over the two week period provided to it for comment on the draft determination, or indeed over the period following identification of the shortcomings in the level of detail during court proceedings. Furthermore, the Authority is of the view that a prudent railway owner operating subject to the third party access code could reasonably anticipate the need for preparing cost estimates for access proponents and should reasonably have sought to prepare and maintain estimates of all relevant cost components.

[9] AECOM Report: "Assessment of TPI's Costs for Floor and Ceiling Determination", part 3.1.1 d), 5 September 2013, p. 12.

[10] Ibid.

[11] The fact that the T155 railway was under construction at the time of the determination ought to have an effect on the contingencies associated with scope and material quantities, as these would have already been known.

191. In relation to the above matter, the Authority considers that TPI has not provided sufficient documentation of contingency analysis to enable the Authority to approve the proposed contingency costs.

There is regulatory precedent in not allowing contingency costs in similar regulatory regimes.

192. In its draft determination, the Authority referred specifically to the proposal by Vodafone Australia Limited (Vodafone) to include contingencies in a submission of costs to the Australian Competition and Consumer Commission (ACCC) which was rejected by the ACCC.[12] Vodafone included contingencies that the ACCC said could not be verified or supported.

193. The Authority also noted in its draft determination that Vodafone appealed this decision to the Australian Competition Tribunal. The Australian Competition Tribunal upheld the ACCC's decision and found that it could not verify the reasonableness of the contingencies proposed by Vodafone.[13]

194. [redacted]

195. The Authority has considered TPI's comments and does not accept that they relate to the reason why the ACCC did not accept contingency amounts, which was because the claim for a contingency allowance was inadequately verified or supported.

196. As noted above, the Authority considers that it is able to contemplate contingency allowances which are adequately verified or supported. [redacted]

197. The Authority is not required to include a contingency allowance in a determination of a railway owner's costs in all circumstances. [redacted] The Authority has decided that a contingency allowance is not warranted in the circumstances defined by the reasons outlined above and below, including that it has not been provided with adequate analysis supporting a particular quantum of contingency for each asset class.

198. In relation to the above matters, the Authority remains of the view that there is a relevant precedent for not allowing contingency costs in similar regulatory regimes.

[12] Re Vodafone Network Pty Ltd & Vodafone Australia Limited [2007] ACompT 1, 2007.

[13] Ibid.

[14] [redacted]

The Authority notes and agrees with AECOM's advice that a 20 per cent allowance for contingencies appears relatively high.

199. The Authority noted, in its draft determination, AECOM's advice that the combined level of DCPM (discussed in the next section) and contingency costs appears to be high when compared to similar projects in the Pilbara. AECOM notes that the West Pilbara Iron Ore Project[15] had an allocation for DCPM and contingencies of 15 per cent in total.

200. AECOM noted in its report that each project has a unique risk profile and without detailed information as to how the contingency is calculated it is difficult to assess the reasonableness of specific contingency numbers. AECOM indicated that less contingency would be expected for the TPI assessment, in comparison to a railway that had not already been partially constructed in the recent past.[16]

201. [redacted]

202. In its submission, TPI commented that the 20 per cent contingency allowance applied by TPI was within the range of probable costs as determined by AECOM, being 10 to 20 per cent of the total project cost. The Authority has noted in paragraph 164 that this advice was provided as part of an analysis of DCPM and contingencies as indirect costs.

203. As noted (in paragraph 190) TPI did not attempt to provide further supporting evidence in relation to contingency amounts, [redacted]

204. In relation to the above matter, the Authority has noted AECOM's advice that a 20 per cent allowance for contingencies appears relatively high.

Authority Assessment: Contingencies

205. [redacted] The Authority has noted AECOM's advice that a properly constructed contingency analysis might be expected to justify an allowance of somewhere between 10 and 20 per cent in circumstances similar to that of TPI in considering a replacement value for its railway.

206. The Authority does not accept the global 20 per cent contingency allowance as proposed by TPI. TPI has not provided the Authority with an empirical assessment of sufficient rigour to enable the Authority to incorporate a specific indirect cost allowance for contingencies for each asset class.

[15] ASX Release 05 July 2010.

[16] AECOM Report: "Assessment of TPI's Costs for Floor and Ceiling Determination", part 3.1.1 d), 5 September 2013, p. 12.

207. Having not accepted the contingency margin as proposed by TPI as an indirect cost component, the Authority has further considered provisions for contingencies in conjunction with its consideration of DCPM margins, in the following section.

208. The DCPM margins included in previous cost determinations for the South-west freight network have been included as management margins and not as indirect costs attached to each asset item. The 20 per cent DCPM allowance in WestNet Rail's costing principles was determined in the context of market tested primary rates with no additional indirect costs such as contingencies and owners costs. [17]

INDIRECT COSTS – DESIGN CONSTRUCTION PROJECT MANAGEMENT (DCPM) MARGIN

209. The Authority has noted that TPI's costing model provides for a DCPM margin of 20 per cent to be applied to the total of all other GRV outcomes for capital items.

210. [redacted]

211. TPI's consultant provided capital cost values incorporating an 11 per cent Engineering Procurement Construction Management (**EPCM**) margin within each capital cost item.

212. [redacted]

213. AECOM has referred to EPCM and DCPM interchangeably in its report. In this determination, reference is made only to DCPM, consistent with TPI's Costing Principles.

214. In its costing model, TPI has removed the 11 per cent DCPM margin provided for by its consultant and replaced it with a global 20 per cent DCPM margin. TPI has not provided a rationale for the increase in project management margin from 11 per cent to 20 per cent, but has referred to its Costing Principles as justification for the inclusion of the 20 per cent DCPM margin.

215. In its report, AECOM has identified a typical cost structure for a project delivered by a DCPM entity[19] showing 'owner's costs' of 5 per cent of GRV additional to DCPM. AECOM has advised that owner's costs refer to the owner's management and administration costs, and legal and insurance costs.

216. For the purposes of its review, AECOM has evaluated TPI's proposed 20 per cent DCPM margin distributed over each capital item separately. AECOM has done this in order to include DCPM in its consideration of indirect costs, consistent with industry

[17] Determination of the Independent Rail access Regulator "Costing Principles to Apply to WestNet Rail", September 2002, pp. 28-30.

[18] AECOM Report: "Assessment of TPI's Costs for Floor and Ceiling Determination", part 2.1.2, 5 September 2013, p. 4.

[19] Ibid

practice. Therefore, the AECOM assessments of indirect costs include consideration of the DCPM margin.

217. [redacted]

218. As noted at paragraph 193 above, [redacted] TPI's costing model shows that the 11 per cent DCPM allowance recommended by Calibre has been increased to 20 per cent,[20] resulting in the total of DCPM costs and contingencies being equal to 34 per cent of the total capital cost.[21] AECOM has advised that the combined level of DCPM and contingency costs appears to be high when compared to similar projects in the Pilbara. In relation to the West Pilbara Iron Ore Project,[22] the combined DCPM and contingencies cost was 15 per cent of the total capital cost.

219. In its December 2014 submission, Brockman advised its view that DCPM costs are quoted and negotiated as part of a competitive tendering process and that there are no available benchmarks. Brockman submitted that during peak project demand in the Pilbara during 2010-2013, DCPM margins may well have been above 20 per cent, but that since then as projects have been deferred, contractors' margins may now be well below 20 per cent.

220. TPI did not respond to this submission material provided by Brockman in its submission of 8 December 2014.

Authority Assessment: DCPM

221. The Authority has considered AECOM's advice that an appropriate combined level of DCPM and contingencies may be indicated by recent experience in the West Pilbara, and that the combined margin would be 15 per cent on that basis (refer to paragraphs 194 and 218 above).

222. The Authority has considered Brockman's submission that the downturn in the mining sector has put downward pressure on competitive DCPM rates quoted by engineering firms in 2014, and noted that TPI did not provide a response to this submission from Brockman in its subsequent submission of 8 December 2014. The Authority has noted that TPI's consultant initially recommended an 11 per cent margin for DCPM

223. The Authority has therefore decided that it will not accept TPI's proposed DCPM margin of 20 per cent.

Authority Assessment: DCPM and Contingencies

[20] 20 per cent is the maximum DCPM allowable in TPI's Costing Principles.

[21] The 34 per cent outcome is the result of TPI using different denominators in the calculation of its indirect cost percentages. DCPM costs are represented as a fraction of the total project cost, contingencies as a fraction of direct cost plus DCPM and Total Indirect Cost as a fraction of total project cost.

[22] ASX Release 05 July 2010.

224. [redacted]

225. In its draft determination the Authority approved a DCPM of [redacted] and did not allow contingencies.

226. On the matter of contingencies, the Authority indicated in the draft determination that it would have been able to reconsider the balance of indirect costs if it was provided with a properly documented contingency analysis of the type referred to by AECOM (paragraph 187). The Authority notes that TPI, in its response to the draft determination, did not provide further contingency analysis or information.

227. Given that Class 3 cost estimates have been provided by TPI, the Authority could have determined, as an indirect cost, a separate contingency margin for each item of GRV had TPI provided the Authority with an adequate contingency analysis.

228. In the current circumstances where the Authority has limited time and TPI has provided inadequate information, the Authority is unable to make a separate determination of contingencies for each asset component.

229. On the matter of the DCPM, the Authority has considered Brockman's assertion in its December 2014 submission that although DCPM margins of [redacted] may have been justified during peak project demand in the Pilbara during 2010-2013, DCPM margins may now be well below [redacted].

230. Following Brockman's December submission, TPI requested additional time to respond to Brockman's comments, and the Authority provided agreement to that request. TPI did not subsequently provide any comment on Brockman's submission about the quantum of DCPM.

231. The Authority noted, in its draft determination, AECOM's advice that the combined level of DCPM and contingency costs for a recent project in the West Pilbara was 15 per cent.[23]

232. AECOM's advice and Brockman's submission together suggest that a DCPM allowance of [redacted] is likely to overstate the DCPM for a railway built in the Pilbara in 2014.

233. On the basis that a DCPM of [redacted] is likely to be too high an allowance for DCPM, and a zero contingency is likely to be too low an allowance for contingencies, and in the absence of specific information that would provide a reasonable estimate of each parameter, for the purpose of this determination, the Authority has applied a combined allowance for contingencies and DCPM of 20 per cent. This combined allowance is to be applied as a global margin on top of the total GRV for all track construction items, and not as indirect costs attached to the GRV of each component asset.

[23] The Pilbara Infrastructure Cost determination for the Route Subject to Brockman Iron's Access Proposal, 15 May 2013, November 2014, paragraph 141. The Authority has also noted this at paragraph 199 of this determination.

234. In this way, both contingencies and DCPM are treated as an engineering/management allowance, rather than as discrete indirect costs attached to each asset component. The Authority notes that this approach is equivalent to the approach proposed by TPI, as TPI proposed a single margin for contingencies to apply equally to all track construction items, and has not identified discreet contingency margins for each track construction item separately.

235. TPI's Costing Principles defines a separate capital cost for DCPM. Therefore, a separate capital item heading for DCPM/Contingency margin appears below, at paragraph 357, for inclusion in the GRV determination by the Authority.

INDIRECT COSTS – TEMPORARY CONSTRUCTION AND CAMP COSTS

236. The Authority notes that indirect costs for the following asset groups includes a total of [redacted] for camps:

- Earthworks
- Bridges and Culverts – Bridges
- Level Crossings
- Track Materials – Rail
- Track Construction
- Roads and Shunter Pathways
- Signalling
- Communications
- Buildings

237. The Authority notes AECOM's advice that the costs proposed for construction of camps are reasonable for a peak construction workforce of 950. The Authority accepts TPI's proposed costs for camp construction, and notes that these costs relate to the costs associated with an appropriate peak construction workforce, and not an average workforce camp cost over the construction period.

238. [redacted]

239. It follows that the allocation of camp costs to the remaining capital cost items are correspondingly higher than they would otherwise be.

240. AECOM has advised at page 20 of its report that the rationale for the allocation of costs of camps to the rail supply item is not clear, although overall capital costs of camps is considered reasonable.

241. AECOM has advised that the proposed costs for [redacted] are not net of any salvage value associated with the retirement of these facilities at the close of construction.

242. [redacted]

243. [redacted]

244. The GRV component values proposed by TPI, AECOM assessments and the Authority's considerations are shown by capital item below.

EARTHWORKS

245. Earthworks is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

246. AECOM has advised that, in order to make a meaningful assessment of this proposed costing, the following additional information would be required to derive unit cost data:

- bills of Quantities;
- breakdown of cost by layer type (capping, bulk earthworks) and cutting requirements (rock, granular material);
- details regarding earthworks balance and borrow; and
- details relating to longitudinal drainage.

247. AECOM has advised that, while the overall quantities used to derive the GRV are stated to be based on the 155 mtpa design, the earthworks quantities used within the capital cost estimate were derived by developing a specific model of a theoretical rail formation approximately along the existing alignment.

248. AECOM has noted that the sections of TPI's rail network subject to this determination include a significant portion of track that is duplicated or provided with additional track length in passing loops or yards. The total route length of Section 3 and Section 5 are 45 km and 151 km respectively. The total track lengths for these sections [redacted] are 60 km and 236 km respectively. AECOM has assessed that a total of 15 km of track in Section 3 and 85 km of track in Section 5 has been duplicated.

249. A wider formation at higher cost is required to accommodate duplicated tracks.

250. AECOM has analysed the quantities underlying the GRV estimate provided by TPI and has calculated that the average height of embankment or depth of cut is [redacted] metres.

251. AECOM has advised that, while such height/depth frequently occurs in a typical railway in the Pilbara, the embankment height proposed by TPI is considered to be at

the high end of a likely value for an average, particularly as the Chichester Ranges mostly fall outside Sections 3 and 5.

252. However, AECOM has advised that the order of magnitude of overall earthwork volumes derived from TPI's information do not appear to be excessive, and supports the methodology adopted by TPI.

253. AECOM has not been able to ascertain from the costing information provided by TPI the appropriateness of the quantities between different ground types and their effect on overall capital costs.

254. AECOM has advised that the unburdened unit rates for earthworks components used by TPI have been broadly assessed against actual and estimated recent rates on comparable projects and are considered to be reasonable.

255. However, AECOM has noted that [redacted], and has advised that the magnitude of indirect costs for this item exceeds what would reasonably be expected. [redacted]

256. [redacted]

257. Brockman submitted in December 2014 that on a track kilometre basis, TPI's earthworks costs are [redacted], and that this proportion is high. Brockman did not indicate the components of generally quoted Pilbara Rail costs used in this comparison and whether, for example, these included DCPM and contingency margins or other indirect costs. The Authority considers that an internally consistent comparison may be made by comparing TPI's proposed earthworks costs as a proportion of its own proposed below rail costs,[24] which is [redacted]

258. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for earthworks, including the removal of the 20 per cent contingency allowance as shown below.

Earthworks for Track	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		772 703 195

[24] Excluding equity raising costs, approvals and rehabilitation liabilities, but including interest during construction.

259. The breakdown of the Authority's determination of GRV for earthworks by route section is shown in Table 2 at the end of this section.

BRIDGES AND CULVERTS - BRIDGES

260. Bridges is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

261. AECOM has noted that limited or no information has been provided by TPI with respect to the foundation, deck width and protection works associated with the bridgework specified in TPI's determination. Bridges have been specified by TPI at:

- East Turner River ([redacted])
- Chinaman Creek ([redacted])
- Gillam Creek ([redacted])
- Turner River ([redacted])
- BHPBIO Overpass ([redacted])
- Coorong Creek ([redacted])
- Yule River ([redacted])
- Coonarie Creek ([redacted])

262. AECOM has advised that the direct costs attributed to bridgework by TPI are in the range of [redacted] per metre of bridge, and that these costs are considered reasonable and are in line with the average cost of bridges in the Pilbara.

263. AECOM has advised that part of the direct costs relate to the replacement of dual deck bridges, and these costs will depend on the geographical location of the bridges.

264. AECOM has advised that the indirect costs attributed to bridgework are not inconsistent with typical bridge projects.

265. Brockman submitted on 1 December 2014 that it had insufficient information on the number type and dimensions of bridges to comment on the reasonableness of TPI's proposed costs.

266. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for bridges, including the removal of the 20 per cent contingency allowance as shown below.

Bridges	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		176 662 118

267. The breakdown of the Authority's determination of GRV for bridges by route section is shown in Table 2 at the end of this section.

BRIDGES AND CULVERTS - CULVERTS

268. Culverts is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

269. AECOM has advised that [redacted] AECOM has advised that, while this approach is consistent with the overall approach to assessing earthworks MEA, it is inevitable that any inaccuracy in the earthworks model will extend to culvert lengths.

270. AECOM has assessed the overall quantity of culvert length based on experience in rail networks in similar geographical areas and has assumed average culvert lengths for a notional double track embankment with an indicative number of barrels per location. AECOM has advised that, on this basis, the quantities provided in TPI's estimate are considered to be within a practical range.

271. AECOM has advised that direct and indirect costs including rock protection where applicable have been compared with the corresponding rates of historical costs of existing railways and proposed similar projects in the Pilbara and are assessed to be within a reasonable range.

272. AECOM has advised that the indirect costs attributed to culverts are not inconsistent with typical bridge projects.

273. Brockman submitted in December 2014 that it had insufficient information on the number type and dimensions of bridges to comment on the reasonableness of TPI's proposed costs.

274. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for culverts, including the removal of the 20 per cent contingency allowance as shown below.

Culverts	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		44 821 995

275. The breakdown of the Authority's determination of GRV for culverts by route section is shown in Table 2 at the end of this section.

LEVEL CROSSINGS

276. Level Crossings is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

277. AECOM has noted that the level of detail provided by TPI (as to width of level crossing, type of road surface, earthwork and drainage requirements) is inadequate to fully assess the replacement cost of each of the 18 level crossings specified. However, AECOM noted that the type of level crossing surface (i.e. passive or active) will impact the cost.

278. Nonetheless AECOM has advised that direct costs for level crossings are within the expected range, but are in the upper half of this range.

279. AECOM has advised that indirect costs are within a reasonable limit.

280. Brockman submitted in December 2014 that it had insufficient information on the ratio of active/passive crossings on the TPI system, to comment on the reasonableness of TPI's proposed costs.

281. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for level crossings, including the removal of the 20 per cent contingency allowance as shown below.

Level Crossings	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		4 894 572

282. The breakdown of the Authority's determination of GRV for level crossings by route section is shown in Table 2 at the end of this section.

TRACK MATERIALS - RAIL

283. Track Materials - Rail is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

284. [redacted]

285. AECOM has advised that, after adjustment for supply to Port Hedland and other escalations, the direct unit cost of rails used by TPI [redacted]) is reasonable in relation to various alternative supplies. AECOM has noted the estimate is in the upper half of the reasonable range.

286. Alternative supplies considered by AECOM are:

- a 2008 quote for supply FOB (free on board) in China of $1100 per tonne plus an allowance of $200 - $400 per tonne for shipment to Port Hedland.
- a 2010 quote for supply CPT (carriage paid to) Perth by Australian Suppliers of $1650 - 1750 per tonne.

287. AECOM has advised that indirect costs for [redacted], and that indirect costs to this order are considered higher than would reasonably be expected.

288. The Authority notes that the allocation of [redacted] to rail contributes to the total indirect cost and that the rationale for this allocation is not clear.

289. Brockman submitted in December 2014 that TPI's rail costs appear reasonable.

290. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for rail, including the removal of the 20 per cent contingency allowance as shown below.

Track Materials Rail	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2103	[redacted]	[redacted]
ERA Determination 2014		84 294 568

291. The breakdown of the Authority's determination of GRV for rail by route section is shown in Table 2 at the end of this section.

TRACK MATERIALS - TURNOUTS

292. Track Materials – Turnouts is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

293. TPI has provided a breakdown of the quantities and unit rates for the different turnouts specified in the MEA. These are:

Section 3
- [redacted] x 1:20 SNC motorised turnouts

Section 5
- [redacted] x 1:20 SNC motorised turnouts
- [redacted] x 1:12 SNC motorised turnout
- [redacted] x RBM motorised turnouts
- [redacted] x 1:20 SNC motorised turnouts (yards and passing track)
- [redacted] x 1:12 SNC motorised turnout (yards and passing track)
- [redacted] x 1:12 RBM motorised turnout (yards and passing track)

294. The unit rates used by TPI to cost these turnouts have been compared to vendor quotes in 2012 for a similar project in the Pilbara and in other parts of Western Australia. AECOM advises that the unit costs used for 1:20 turnouts are within the middle third of the probable range, and that the unit costs used for 1:12 turnouts are in the upper half of the probable range.

295. However, AECOM has advised that the direct costs used by TPI are considered within an acceptable range. AECOM has advised that indirect costs are considered to be in the higher end of the range.

296. Brockman submitted in December 2014 that TPI's turnout costs appear reasonable.

297. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for turnouts, including the removal of the 20 per cent contingency allowance as shown below.

Track Materials Turnouts	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		22 771 704

298. The breakdown of the Authority's determination of GRV for turnouts by route section is shown in Table 2 at the end of this section.

TRACK MATERIALS - BALLAST

299. Track Materials - Ballast is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

300. A quantity of [redacted] of ballast has been used in the estimate, including a [redacted] allowance for wastage. This equates to [redacted] of ballast per metre length of track. AECOM has translated this to a quantity of [redacted] cubic metres per metre of track, which AECOM advises is within a reasonable range.

301. The direct unit cost for supply of ballast used is [redacted], including supply and transportation to a centralised track depot or supply station for the ballast trains used for track construction. The cost of transport of ballast from the centralised supply station to installation is excluded from this unit cost and is accounted for in track construction costs.

302. AECOM has shown additional unit cost information for other projects at Table 11 of its report. AECOM has advised that the direct costs of ballast proposed by TPI are reasonable, and are in the lower half of the probable range.

303. Brockman submitted in December 2014 that the TPI proposed cost of ballast, at [redacted], is significantly higher than ARTC costs and ERA approved costs for

the WestNet Rail network in 2007 of between $24 and $30. The Authority notes that the WestNet Rail determination cited by Brockman is now 7 years out of date, and that the most recent determination for that network, made on 30 June 2014, approved ballast costs of between $30 and $55, depending on location.

304. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for ballast, including the removal of the 20 per cent contingency allowance as shown below.

Track Materials Ballast	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		39 223 782

305. The breakdown of the Authority's determination of GRV for ballast by route section is shown in Table 2 at the end of this section.

TRACK MATERIALS – SLEEPERS AND JEWELLERY

306. Track Materials – Sleepers and Jewellery is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

307. AECOM has combined its assessment of these two items.

308. AECOM has advised that the quantity of sleepers appears reasonable based on the MEA spacing of 675mm.

309. AECOM has advised that the unit rates for sleepers and jewellery are considered consistent with current market rates, however, they are at the high end of the probable range.

310. AECOM has advised that the level of indirect costs is considered to be in the higher end of the probable range, when compared with typical experience in the industry.

311. Brockman submitted in December 2014 that the track configuration (and therefore number of sleepers) must be ascertained in order to comment on the reasonableness of sleeper costs. The Authority notes that AECOM has advised that quantities of sleepers appears reasonable. Brockman provided some sleeper cost comparisons for the ARTC network - which does not use 40 tonne axle load sleepers - and which excludes fasteners/jewellery.

312. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for sleepers and jewellery, including the removal of the 20 per cent contingency allowance as shown below.

Track Materials Sleepers and Jewellery	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		69 552 767

313. The breakdown of the Authority's determination of GRV for sleepers and jewellery by route section is shown in Table 2 at the end of this section.

TRACK CONSTRUCTION

314. Track Construction is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

315. AECOM has confirmed that the requirements for transportation of rails, welding, loading of sleepers, loading of ballast, track laying, tamping, installation of turnouts, installation of track signage and buffer stops are consistent with the length of rail infrastructure and the track schematics for the 155 mtpa specification.

316. AECOM has advised that indirect costs of track construction activity comprise [redacted] of the direct costs.

317. AECOM has advised that the direct costs of track construction are generally consistent with the unit costs of other railway projects with similar characteristics in the Pilbara.

318. AECOM has advised that for tracklaying, the unit costs of [redacted] (total direct costs) and the GRV of [redacted] (total TPI cost) are considered high compared with the cost information obtained from other railway projects in Western Australia.

319. AECOM has indicated a current reasonable contractor cost of tracklaying in the Pilbara of $363 per metre.

320. AECOM has indicated a current range for gross tracklaying cost in the Pilbara of $540 - $594 per metre in brownfield conditions, and has noted that brownfield construction is expected to be more expensive than a new greenfields construction.

321. AECOM has suggested that the high total unit cost of [redacted] may be related to the inclusion of [redacted], and camps costs, in indirect costs. AECOM has advised that the cost allocated to the welding facility for the TPI railway is towards the upper end of plausible costs when compared to historical cost information available from other railways in the Pilbara. AECOM has advised a reasonable cost for flashbutt welding facilities for a similar construction project of TPI's size in the Pilbara is $40-50 million.

322. In response to a request for further explanation of its costs for the facilities, [redacted]

323. Regardless of the location, AECOM has advised welding facilities of various specifications and operating costs may be used for a range of rail construction projects. [redacted]

324. [redacted]

325. After consideration of AECOM's advice, for this determination, the Authority has subtracted [redacted] from the temporary construction category of track construction proposed by TPI to accommodate a flashbutt welding facility of [redacted].

326. Brockman submitted in December 2014 that AECOM's recommended track construction costs are comparable to track construction costs established for ARTC.

327. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for track construction, including the removal of the 20 per cent contingency allowance as shown below.

Track Construction	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		301 935 380

328. The breakdown of the Authority's determination of GRV for track construction by route section is shown in Table 2 at the end of this section.

ROADS AND SHUNTER PATHWAYS

329. Roads and Shunter Pathways is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

330. TPI has not provided an explanation of the purpose of sealed roads.

331. On the basis of an indicated 20 km of roads and shunter pathways, the per kilometre direct cost proposed by TPI is [redacted]. AECOM advises that this is within a reasonable range.

332. Brockman submitted in December 2014 that more detail on layout, type and extent of roads and shunter pathways would be required for Brockman to comment beyond questioning the need for sealed roads in the Pilbara.

333. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for roads and shunter pathways, including the removal of the 20 per cent contingency allowance as shown below.

Roads and Shunter Pathways	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		30 052 019

334. The breakdown of the Authority's determination of GRV for roads and shunter pathways by route section is shown in Table 2 at the end of this section.

SIGNALLING

335. Signalling is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

336. AECOM has advised that a detailed breakdown of the cost of core signalling items and performance specifications underlying the signalling system used for calculating the GRV are unavailable and could not be reviewed.

337. AECOM has noted that the unit cost of signalling systems increases with traffic density and associated increase in risk and complexity of the rail network. Typically, signalling costs are also susceptible to higher escalation over time and more volatility due to limited number of suppliers and skilled labour available to service the market. Technological options for systems enhancement are limited by the initial selection of the particular system and supplier, who can 'lock in' costs if a future upgrade is required.

338. AECOM has advised that signalling costs are difficult to benchmark as unit costs show very large variation. AECOM has advised a cost range for signalling on iron ore railways in WA of between $22 000 - $1 400 000 per km.

339. AECOM has advised that the direct cost per kilometre of track proposed by TPI is [redacted] which is within the range indicated above.

340. On this basis, AECOM has advised that signalling costs do not appear to be unreasonable considering the complexity of train operations for a partially duplicated railway carrying 155 mtpa.

341. Brockman submitted in December 2014 that it cannot comment on signalling costs without details of the type of signalling in use. The Authority notes that the relevant technology is the Modern Equivalent Asset (MEA) technology, not the technology currently in use.

342. The Authority has considered AECOM's advice and Brockman's submission and has determined a GRV for signalling, including the removal of the 20 per cent contingency allowance as shown below.

Signalling	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		163 761 318

343. The breakdown of the Authority's determination of GRV for signalling by route section is shown in Table 2 at the end of this section.

COMMUNICATIONS

344. Communications is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

345. AECOM has undertaken a high-level comparison of per kilometre cost with those of existing operational systems. The direct communications cost proposed by TPI for the route is [redacted] AECOM notes that geography of the Pilbara significantly impacts on communications costs due to the need to establish network coverage where none exists as well as costs associated with establishing power supplies, including the installation of solar panels.

346. In the absence of reliable benchmarking information from railways of similar characteristics in the Pilbara, AECOM has referred to the estimated communications costs of a non-Pilbara Greenfield heavy haul iron ore project designed for an annual capacity of 100 mtpa. The comparisons suggest a similar order of cost on a per-tonne basis. AECOM has noted that TPI's proposed communications costs are [redacted] of the total cost of below-rail infrastructure, which is generally in line with the typical costs for communications in freight rail projects in Australia.

347. AECOM has advised that TPI's proposed communications costs are not unreasonable considering that the railway is located in the Pilbara and requires installation of accompanying infrastructures for telephony coverage and power supply.

348. Brockman submitted in December 2014 that it cannot comment on communications costs without details of the type of communications in use. The Authority notes that the relevant technology is the Modern Equivalent Asset (MEA) technology, not the technology currently in use.

349. The Authority's has considered AECOM's advice and Brockman's submission and has determined a GRV for communications, including the removal of the 20 per cent contingency allowance as shown below.

Communications	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination		58 359 648

350. The breakdown of the Authority's determination of GRV for communications by route section is shown in Table 2 at the end of this section.

BUILDINGS

351. Buildings is included as a capital item in the TPI costing model, and the TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

352. TPI's capital cost estimate for buildings includes construction of a fuel facility which constitutes [redacted] of direct cost. The fuel facility is costed at [redacted], and is stated to be built to enable construction.

353. AECOM has questioned the extent to which a facility of this total cost is attributable to below-rail construction only, or to a temporary facility. AECOM has said that the cost provided is high for a temporary [redacted]. AECOM has advised that a technical or operations specification for this facility was not provided by TPI, and it is therefore difficult to make an assessment of reasonableness.

354. Notwithstanding AECOM's concerns, for the purposes of this determination, the Authority has exercised its discretion and accepted the proposed GRV for a temporary fuelling facility. The Authority notes that this results in a higher determination of costs than would be the case if the proposed GRV had been disallowed.

355. The Authority has considered AECOM's advice and determined a GRV for buildings, including the removal of the 20 per cent contingency allowance as shown below.

Buildings	TPI proposal	ERA assessment
- TPI Direct	[redacted]	[redacted]
- Contractor Indirect	[redacted]	[redacted]
Total Direct	[redacted]	[redacted]
- Camps & Temp Construction	[redacted]	[redacted]
- Contingencies	[redacted]	[redacted]
Total Indirect	[redacted]	[redacted]
GRV 2013	[redacted]	[redacted]
ERA Determination 2014		23 044 171

356. The breakdown of the Authority's determination of GRV for buildings by route section is shown in Table 2 at the end of this section.

MARGIN FOR CONTINGENCIES & DESIGN CONSTRUCTION PROJECT MANAGEMENT (DCPM)

357. [redacted] This allowance amounted to the following additions to GRV in the TPI Costing Model

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

358. As outlined in paragraphs 221 to 235 of this determination, the Authority has considered Brockman's submission that the downturn in the mining sector has resulted in a lowering of DCPM rates quoted by engineering firms in 2014, and has noted that TPI did not provide a counter argument in its subsequent submission of 8 December 2014. The Authority has noted that TPI's consultant recommended an 11 per cent margin for DCPM.

359. The Authority has made provision in its determination for the inclusion of a combined margin for DCPM and contingencies of 20 per cent, to be applied as a global allowance on the total of all track construction items, in the same way that DCPM was proposed to be applied by TPI.

360. Due to the manner in which the DCPM and contingency margin is calculated, that is, as a combined global allowance over all asset classes and not as a discreet indirect cost for each asset class, the annual capital cost associated with the DCPM and contingencies is calculated over a common period.

361. The calculation of the margin for contingency and DCPM is shown in Table 2 at the end of this section.

LAND COSTS – SURVEYS AND APPROVALS

362. Land Costs – Surveys and Approvals is included as a capital item in the TPI costing model, and the TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

363. These land costs are nominated by TPI to be for the following:

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

- [redacted]e

364. The Authority has sought advice from the Environmental Protection Authority, and has been advised that the following studies may not be necessary for a railway build of this type in this location:

- [redacted]
- [redacted]
- [redacted]
- [redacted]

365. The advice the Authority has received does not include a reliable estimate of a nominal value for these studies and so the Authority has used its discretion and accepted TPI's overall costing for land surveys and approvals.

366. The Authority notes that the cost proposed by TPI for land costs-surveys and approvals constitutes [redacted] of proposed track cost and [redacted] of proposed total GRV, and that the potential inclusion of unnecessary studies would have an relatively minor impact on ceiling costs.

367. The Authority's determination of costs for land costs – surveys and approvals, is shown in Table 2 at the end of this section.

LAND COSTS - REHABILITATION

368. Land Costs - Rehabilitation is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

369. [redacted]

370. This is justified as a land-related capital cost and by reference to section 32(2) of the TPI State Agreement Act, which states:

> 32(2) Upon the cessation or determination of this Agreement:
>
> (a) the Minister may by notice to the Company require the Company to, at the Company's cost, remove the SRL Railway and any Additional Infrastructure from the Railway Corridor and return the land in the Railway Corridor to a condition as near as possible to the condition that land was in prior to the grant of authority under the LAA [*Land Administration Act 1997* (WA)] in respect of the land as contemplated by clause 4; and
>
> (b) (i) the Port Facilities, that part of the Railway which is in the Port and the Port Additional Infrastructure constructed under this Agreement shall become and remain the absolute property of the Port Authority; and

> (ii) unless the Minister gives notice under subclause (2)(a), the SRL Railway and Additional Infrastructure located outside the Port shall become and remain the absolute property of the State,
>
> without the payment of any compensation or consideration to the Company or any other party and freed and discharged from all mortgages and other encumbrances and the Company shall do and execute all such deeds, documents and other acts, matters and things (including surrenders) as the State may reasonably require to give effect to the provisions of this subclause.

371. [redacted]

372. [redacted] This is because the Authority is of the view that rehabilitation costs should be recovered from all users of the railway over the remaining life of the TPI State Agreement Act, and not as a once-off payment in 2013-14.

373. For the purposes of its determination, the Authority has calculated the GRV-equivalent value for rehabilitation as the present value of the stream of equal annual payments required to be made in order to accumulate the amount required in 2054.

374. The future equivalent of the current rehabilitation cost is calculated by applying an inflation rate of 2.47 per cent[25] over each year until 2054, being the date of expiry of the TPI State Agreement Act.

375. TPI proposed that all rehabilitation capital cost estimates include a contingency of [redacted]

376. AECOM has advised that it is not possible to compare detailed unit prices of decommissioning costs for the railway with other Rehabilitation Fund rehabilitation liability categories (effectively an industry benchmark) in the *Mining Rehabilitation Fund Regulations 2013* (WA) (**Mining Rehabilitation Fund Regulations**) due to a lack of detail provided by TPI.

377. TPI did, however, provide adequate detail in relation to rehabilitation of the haul road. The unit rates provided by TPI in relation to rehabilitation of the haul road are [redacted] higher than the per hectare unit rate for the rehabilitation liability category for a haulage road (Category C) as shown in the Mining Rehabilitation Fund Regulations. By removing the [redacted] contingency allowance, the two unit rates are similar.

[25] This inflation rate is consistent with expected inflation used in the determination of WACC for railway owners for 2013-14. Expected inflation is calculated using the geometric mean based on 10 years of inflation forecasts out from 2013. The Reserve Bank of Australia's (RBA) May 2013 Statement of Monetary Policy reported estimates of June 2013, 2014 and 2015 inflation forecasts as 2.25, 2.5 and 2.5 per cent respectively. Thereafter, the mid-point of the RBA's inflationary target band of 2-3 per cent was used.'

378. The Authority has therefore determined current rehabilitation costs on the basis of TPI's proposed costs minus the [redacted].

379. The Authority has not included the [redacted] combined DCPM/contingency margin to rehabilitation costs, as the Authority has decided to apply this margin to track construction items only. [redacted]

380. The Authority notes that there could reasonably be a provision for the salvage value of assets[26], [redacted] The Authority has considered Brockman's submission that salvage values would apply to steel components in rail track and bridges.

381. The Authority has used its discretion and has accepted [redacted] that the salvage value of all materials following rehabilitation is zero. This has the effect of increasing the annual cost determined for rehabilitation provisions, as the net cost of rehabilitation is higher than if positive salvage values were included.

382. The Authority notes it is not certain that TPI will be required to rehabilitate the railway corridor.

383. [redacted]

384. [redacted]

385. The Authority has therefore used the (nominal pre-tax) WACC figure as an interest rate for the purposes of the present value and payment functions required to make the calculation of annual requirements, on the basis that TPI is providing for rehabilitation costs by investing provisions in its own business, and not in a dedicated sinking fund.

386. The Authority's determination of costs for land costs – rehabilitation, is shown in Table 2 at the end of this section.

INTEREST DURING CONSTRUCTION

387. Interest During Construction is included as a capital item in the TPI costing model, and TPI's proposed GRV for this category is:

[26] Which would diminish the annuity calculated for rehabilitation, by inserting a "future value" amount in the MS Excel PMT function used to calculate the annuity.

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

388. TPI has calculated this amount by applying the WACC to the average monthly drawdown of the total track cost over a construction period of [redacted].

389. The application of the WACC for this purpose is consistent with TPI's Costing Principles.

390. The June 2013 submission provided by Brockman proposed a shorter construction period associated with an MEA providing less capacity. The December 2014 Brockman submission commented that the construction period associated with the TPI rail build was dictated by the ballast lift method employed to progressively increase capacity, and that this was done to enable commencement of shipping 'for FMG purposes' rather than on an efficient basis.

391. The Authority notes the 18 month construction period associated with the initial 40 mtpa build of the Port Hedland to Cloudbreak line. The technical advice received by the Authority in relation to a determination of costs for TPI in 2011[27] indicated that the 'ballast lift' method was used at least partly in order to overcome supply shortages of ballast due to the large amounts required for construction, and that this was an appropriate construction method for a railway of that size in that location. The Authority accepts the [redacted] construction period proposed by TPI.

392. The Authority has recalculated the interest during construction component of TPI's proposed GRV, employing TPI's proposed method in conjunction with a re-determined track cost and the current WACC published by the Authority on 24 October 2014, which is 10.14 per cent.

393. The Authority's determination of interest during construction, is shown in Table 2 at the end of this section.

EQUITY RAISING COSTS

394. Equity Raising Costs is included as a capital item in the TPI costing model, and the proposed GRV for this category is:

Section 3	[redacted]
Section 5	[redacted]
Total Route	[redacted]

[27] http://www.erawa.com.au/cproot/9639/2/20110607%20-%20D68350%20-%20PricewaterhouseCoopers%20Draft%20Report%20of%20the%20Review%20of%20Floor%20and%20Ceiling%20Cost%20Proposal%20of%20The%20Pilbara%20Infrastructure%20Pty%20Ltd.pdf, page 26

395. [redacted]

396. Equity raising costs proposed by TPI is [redacted] of equity calculated on this basis.

397. The June 2013 submission provided by Brockman proposed an equity raising cost of 1.25 per cent. The December 2014 submission from Brockman did not propose an alternative margin, but advised its view that the validity of the [redacted] figure was questionable.

398. The Authority accepts the [redacted] equity raising cost proposed by TPI on the basis of recent determinations for other infrastructure owners made by the Authority and by other regulators.

399. The Authority has recalculated the equity raising cost component of TPI's proposed GRV, employing TPI's proposed method in conjunction with a re-determined track cost.

400. The Authority's determination of equity raising cost is shown in Table 2 at the end of this section.

Determination

Determination 2

The Authority has determined the Gross Replacement Values (**GRV**) attributable to the relevant route sections as shown in Table 2 in this determination.

Table 2 – Summary of GRV Outcomes

	Section 3	Section 5	Total Route
Earthworks for Track	232 912 719	539 790 476	772 703 195
Bridges and Culverts - Bridges	5 401 591	171 260 527	176 662 118
Bridges and Culverts - Culverts	13 448 552	31 373 443	44 821 995
Level Crossings	1 379 329	3 515 244	4 894 572
Track Materials - Rail	16 732 105	67 562 462	84 294 568
Track Materials - Turnouts	3 766 865	19 004 839	22 771 704
Track Materials – Sleepers / Jewellery	13 639 645	55 913 121	69 552 767
Track Materials - Ballast	7 731 400	31 492 383	39 223 782
Track Construction	41 543 412	260 391 968	301 935 380
Roads and Shunter Pathways	513 519	29 538 499	30 052 019
Signalling	24 757 055	139 004 263	163 761 318
Communications	12 235 846	46 123 801	58 359 648
Buildings	506 776	22 537 395	23 044 171
Margin for Contingency & DCPM	74 913 763	283 501 684	358 415 447
Land – Approvals Capital Costs	2 193 974	8 589 253	10 783 227
Land – Rehabilitation Capital Cost	3 423 253	12 776 819	16 200 072
Interest During Construction	78 545 982	297 247 358	375 793 339
Equity Raising Costs	11 088 600	41 963 407	53 052 006
Total GRV	544 734 385	2 061 586 943	2 606 321 329

Annualised Capital Costs

TPI's Costing Principles

401. Section 3.2.4 of TPI's Costing Principles outlines the method that TPI will use to calculate annuities associated with replacement values of capital items. TPI has undertaken to use the PMT formula provided by MS Excel with the following inputs:

- Rate: to be set at the relevant WACC as defined in the Code
- Nper: expressed in years and based on the relevant economic life of the track sections
- Pv: the GRV of the relevant route section
- Fv: the salvage value, if any, which remains at the end of economic life
- Type: to be set as an 'annuity due' by inputting "1"

402. Section 3.2.2 of TPI's Costing Principles states that the asset lives assumed by TPI will be based on the economic life of the infrastructure or the estimated lives of the individual assets based on MEA. Section 3.2.2 defines the economic life of the railway as the shorter of the economic life of the mines served by the railway infrastructure and the technical life of the railway.

403. TPI's Costing Principles state that the economic life assumption used to calculate capital costs will be based on the economic life of assets listed in Appendix A of the Costing Principles, unless a shorter life is adopted due to the assets servicing a limited time project, and that the Authority will be advised as to the reasons for any shorter life assumption.

404. The Authority has assumed zero salvage value for all assets at the end of their economic life.

405. In relation to the WACC, section 3.2.3 of TPI's Costing Principles "Rate of Return", states as follows:

> In accordance with the Code, the WACC as applied to TPI will be determined by the ERA and reviewed (by the ERA) each year at 30 June as applied to TPI.

TPI's Proposal

406. TPI applied a WACC of [redacted] in the calculation of its capital annuity charge for determination of its costs in July 2013 terms. The Authority-determined WACC for 2013 was 9.76 per cent.

407. TPI has nominated a uniform economic life of 19 years for all capital items. These lives are shorter than the lives nominated in Appendix A of TPIs Costing principles.

408. TPI has nominated "data source references" for economic lives as:

- Chichester Hub Reserve Statement 6 September 2011, and
- Solomon Hub Reserve Statement 20 May 2011

409. TPI has advised the Authority that TPI's proposed economic life of mines is based on FMG's 2011 Ore Reserve Statements for the Chichester hub (Cloudbreak and

Christmas Creek Mines).[28] The 2011 Reserve Statement shows Ore Reserves of 1.7 billion wet tonnes at a production rate of 90 million tonnes per annum. This indicates an extraction period of 19 years. TPI has indicated that 1.7 billion wet tonnes equates to 1.5 billion dry tonnes for export, but has not indicated a per annum export rate.

Brockman Mining's Submissions

410. Brockman's June 2013 submission (at page 2) provides a view that the economic life of the mines served by the TPI railway network is in excess of 50 years, and that this is based on a Mineral Resource indicated in FMG's 2012 Annual Report of 6,626 million tonnes, exported at 80.8 million tonnes per annum.[29] TPI has advised the Authority of its view that Brockman's proposed approach should be rejected, as it is based on FMG's total Mineral Resources, including its Inferred Mineral Resources.

411. In its draft determination, the Authority noted that the 6,626 million tonnes referred to by Brockman is the total Mineral Resources for the Chichester and Solomon Hub, and includes Inferred Resources. The Authority notes that by excluding Inferred Resources, the Mineral Resources of the Chichester and Solomon Hubs reported in the 2012 FMG Annual Report are 3,210 million tonnes.

412. Brockman's December 2014 submission provided comments endorsing the Authority's consideration of the relevance of the TPI State Agreement in the context of the Section 10 decision made by the Authority on 14 August 2013 (referred to at paragraph 11).

413. Brockman commented, further, that the operation of the TPI State Agreement and the application of it to TPI's operations have great relevance when considering the determination of costs and the matters the ERA must consider in accordance with section 20(4) of the Act.

414. Brockman did not provide further comment on the matter of economic lives in its December 2014 submission.

415. In its December 2014 submission, Brockman provided comment on the appropriate WACC as detailed in paragraph 120 of this determination. This comment is considered by the Authority as inaccurate, and is reviewed at paragraph 121 of this determination.

TPI's submissions

416. In its November 2014 submission, TPI provided comment on the issue of economic lives as addressed by the Authority in its quashed determination of September 2013. The material provided by TPI in this submission is similar to the material provided on the issue of economic lives in its response of September 2013 to the Authority's

[28] TPI have advised that the Ore Reserves reported in FMG's 2012 Annual Report are not materially different to those reported in the 2011 report. The Authority notes that, nonetheless, the Mineral Resources shown in the 2012 report for the Chichester Hub are 32 per cent greater than those reported in the 2011 report, or 18 per cent greater, excluding Inferred Resources.

[29] 6 626 million tonnes exported at 80.8 million tonnes per annum implies an 80 year export task.

"Notice of Potentially Adverse Material" detailed in paragraphs 92 and 93 of this determination, with addition of the following points:

- TPI submitted that the reference to mines served by the TPI railway should not include Brockman's ore reserves or resources.
- TPI considered that the Authority's reference to ore reserves and mineral resources in the Pilbara in determining the economic life of the railway is not appropriate as TPI's railway can only serve mines which are in reasonable proximity to the railway.
- The objective of the annuity is to provide a return on capital (achieved through the rate of interest or WACC) and return of capital (achieved through the number of periods or economic life). According to TPI, if the GRV is not repaid during the period of economic life, the railway owner will not recover the cost that would be incurred by an efficient new entrant in a competitive market over the same period as that efficient new entrant. Under-recovery would act as a disincentive to investment and is inefficient. Therefore, TPI considers that it is of critical importance that the economic life used in calculating the annuity of the capital costs for TPI's railway infrastructure reflects the period over which those assets are expected to be productive.
- [redacted]

417. In its December 2014 submission, TPI revisited the arguments provided in November 2014, with further emphasis on its view that the economic life of the railway cannot be considered in conjunction with possible third party operations into the future, and that the Authority "should not consider speculative possibilities that may or may not eventuate in the future".

418. [redacted]

419. [redacted]

420. [redacted]

421. [redacted]

Authority's Assessment

422. The Authority notes that TPI has based the annuity calculations for capital costs of all asset classes on a uniform 19 years, and that this differs from the lives of assets nominated in Appendix A of TPI's Costing Principles.

Relevant Mines

423. TPI submitted that the reference to mines served by the TPI railway should not include Brockman's ore reserves or resources.

424. The Authority notes that TPI's Costing Principles refers to the economic life of the infrastructure as the shorter of the economic life of the mines served by the railway infrastructure and the technical life of the railway infrastructure.

425. The Authority considers that the ore reserves of Brockman may be relevant to the economic life of the railway if an access agreement is made with Brockman, and therefore should be considered in conjunction with an assessment of costs relevant to Brockman's proposal.

426. In particular, Brockman's access proposal relates to access over a 25 year period, and so that period of time is relevant to this determination, as this determination is made for the express purpose of informing negotiations on that proposal.

427. The Authority is aware that TPI is negotiating to provide above-rail (haulage) services to miners in the Pilbara. The Authority does not have any information regarding the impact of any above-rail customers on the economic life of TPI's railway assets.

428. The ore reserves associated with non-FMG miners within the proximity of the TPI railway, including miners who currently own railroads, might also be relevant to the economic life of the railway if they are potential above-rail operators on the TPI railway in the future.

429. It does not automatically follow, therefore, that TPI rail assets will become uneconomic after the end of the current known Mineral reserves of FMG mines. The mines served are not confined to those of FMG as FMG is only one of a number of potential haulage clients of TPI, and TPI is only one of a number of above rail operators who might operate on TPI's network.

Availability of Mineral Resources

430. In considering the appropriateness of the asset lives proposed by TPI, the Authority has considered information about the availability of mineral resources.

431. The Authority notes that, in making public reports, ASX-listed mining companies are required to comply with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). The Authority has referred to the 2012 edition of the JORC Code.

432. An Ore Reserve is defined in the JORC Code as the "economically mineable part of a Measured or Indicated Mineral Resource". A Mineral Resource is defined as a

resource of "such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction".[30]

433. A Mineral Resource is classified as Measured, Indicated or Inferred, depending on the level of geological confidence, with an 'Inferred Mineral Resource' having the lowest level of confidence. The JORC Code states that an Inferred Mineral Resource estimate may not be used for planning in pre-feasibility or feasibility studies; whereas a 'Measured Mineral Resource' is estimated with sufficient confidence to support detailed mine planning and evaluation of the economic viability of a deposit.

434. The Authority is aware that the Chichester Hub Reserve Statement of September 2011 includes statements that there is considerable upside potential to mine life and that Inferred Resources provide significant potential for Reserve upside.

435. The manner in which ore reserves may increase dramatically is illustrated by the recent growth in FMG's own ore reserves, which have increased from 1,547 mt in 2011, on which the 19 year mine life is based, to 2,374 mt in 2014[31], which is an increase of over 50 per cent.

436. The Authority has noted FMG corporate presentations available in the public domain, and in particular the ASX announcement of 19 March 2013, which indicates current gross mineral resources[32] in excess of 15 billion tonnes with an annual growth of 1.5 billion tonnes per annum.

437. This data is replicated in a chart included in an Investor Presentation in Hong Kong, dated March 2013[33] entitled "Resource Portfolio Sets Expansion Platform". The title of this chart implies that expansion plans are based on the Inferred Mineral Resources shown in FMG's 2012 Annual Report.

Other Regulatory Decisions

438. TPI has advised the Authority of its view that the economic life of the mines served by TPI's railway should be determined on the basis of FMG's Ore Reserves and not FMG's Mineral Resources. TPI has sought to justify this on the basis that an Inferred Mineral Resource cannot be converted to an Ore Reserve for JORC-compliant reporting.

439. TPI has stated that the establishment of economic life on the basis of Ore Reserves is consistent with the approach adopted by the Australian Competition and Consumer Commission and the Independent Pricing and Regulatory Tribunal in respect of the Hunter Valley coal network.

[30] The guidelines for the JORC Code state that the term 'reasonable prospects for eventual economic extraction' implies an assessment in respect of all matters likely to influence the prospect of economic extraction, including mining parameters.

[31] From FMG Annual Report 2014.

[32] The "Gross Mineral Resources" referred to by FMG include the Inferred Mineral Resources shown in its 2012 Annual Report.

[33] http://www.fmgl.com.au/UserDir/AsxAnnouncement/ASX%20Release%202013%2003%2019%20-%20Latest%20Corporate%20Presentation708.pdf

440. The Authority notes the most recent ACCC decision in relation to the ARTC Access Undertaking for the Hunter Valley Network[34] requires that the "useful life" of a route section be determined having regard to a number of measures of resources, specifically:

- the average remaining mine life of coal mines utilising the Pricing Zone of which that Segment or group of Segments forms part;
- average mine production levels anticipated during the Term having regard to Coal Chain Capacity at any time; and
- marketable coal reserves estimated for each mine existing at the time of the determination or expected to commence during the 5 year period following the time of the determination.

441. Marketable Coal Reserves are defined in the JORC Code as beneficiated or otherwise enhanced coal product where modifications due to mining, dilution and processing have been considered. Marketable Coal Reserves must be publicly reported in conjunction with, but not instead of, reports of Coal Reserves.

442. Given the discussion regarding reserves and resource in the previous section and that the regulatory context for the ARTC's undertaking differs to that of the TPI railway, the Authority does not consider that the approach to determining "useful life" outlined in the ACCC Access Undertaking for the ARTC railway should apply to the establishment of economic life of railway assets for the purposes of this determination.

Length of State Agreement

443. TPI has submitted that the 50 year term of the TPI State Agreement should not be relied upon as a meaningful indicator of the economic life of the railway.

444. The Authority notes that the State Agreement established the railway as an open access railway intended to allow/promote third party access, i.e. above rail operators were to be permitted access and use of the railway infrastructure over the term of the Agreement. Therefore, the Authority is of the view that potential third party operations should be considered when determining the life of the infrastructure.

445. The Authority considers that it must consider possibilities that may or may not eventuate in the future. As TPI has conceded that it may potentially have haulage customers in the future, it must also be conceded that there is the potential for third party operators to seek access to TPI's railway in order to offer haulage services in the future.

446. Further, the TPI State Agreement is a commercial contract between the State of Western Australia and TPI. The contract implies that the State considered a 50 year life of the railway as feasible, on its best advice, when that contract was made.

447. In its December 2014 submission, TPI provided its observation that the Authority's view - that the 50 year term of the TPI State Agreement indicates that the State considered that the railway would be feasible for 50 years – is merely an assumption which is unsubstantiated, and that the Agreement includes mechanisms for variation including truncation or extension of the Agreement prior to its expiry.

[34] http://www.artc.com.au/library/AS_HV_Undertaking_2011.pdf

448. The Authority notes that any mechanism for shortening or extending the term of the Agreement have not been invoked by either party to the Agreement, and the Agreement remains in place and under the current arrangements will remain in place for a further 40 years.

Authority Assessment: Economic Life

449. The Authority does not accept the reasons provided by TPI for limiting the life of the mines served by the two route sections relevant to Brockman's Access Proposal to 19 years.

450. The Authority has considered TPI's argument that the railway does not have an indefinite life.

451. The Authority does not agree that the economic life of the railway is determined only by a measure of FMG's reserves or resources, and that the potential demand for use of the railway associated with third party resources is a valid consideration in relation to this determination.

452. This potential demand is catered for by the TPI State Agreement Act and the nature of the railway as an open access railway is defined by that Agreement. The demand might take the form of TPI haulage services provided to FMG or to other mine owners, of rolling stock operations of other mine owners, or of haulage services provided to other mine owners by rolling stock operators other than TPI.

453. The Authority has considered Brockman's and TPI's comments in relation to the operation of the TPI State Agreement and the relevance of the Agreement to this determination. The Authority considers that the existence of the railway as an open access railway cannot be assured by the terms of the State Agreement beyond that time.

454. On this basis, the Authority has decided to limit the economic life of the railway to 40 years, being the remaining term of the TPI State Agreement, instead of using the technical lives of the assets shown in Appendix A of TPI's Costing Principles.

455. In the draft determination the Authority assumed the railway did not have a fixed economic life, i.e. the railway had an indefinite life. The Authority accepts that it is appropriate to specify an economic life for the railway as a whole.[35] The Authority does not accept TPI's submission that the Authority "… should not consider speculative possibilities that may or may not eventuate in the future".[36] The Authority considers that, in the absence of more certain information, the contract term of the State Agreement is the most reasonable indication of the railway's economic life as this contract agreement established the railway. The Authority concedes that there are provisions for varying the term of the State Agreement, including the removal of the railway from Schedule 1 of the Code, but that these provisions have not been invoked to date and that the remaining term of the contract stands at 40 years.

456. The Authority has considered the submissions on the economic life of the railway provided by TPI and Brockman. The Authority considers that determining a 40 year

[35] This is particularly the case for railways of this type in the Pilbara in contrast to the South-West Freight network, where an indefinite life is a reasonable assumption.

[36] TPI submission 8 December 2014, p. 7.

life of the railway is the most reasonable approach, given the information available and in view of an uncertain future. The effect of shortening the economic life to 40 years is about 1 per cent of total costs.

457. The Authority notes that not all technical lives for component assets stipulated in Appendix A of TPI's costing principles are in excess of 40 years. For example, the determination of an economic life of the railway of 40 years involves the shortening of the annuity period (and therefore an increase in annuity amounts) for the following asset components of the GRV for track construction cost items:

- Earthworks for track (technical life 100 years)
- Bridges (technical life 50 years)
- Culverts (technical life 50 years)
- Track construction (technical life 50 years)
- Sleepers and Jewellery (technical life 50 years)

458. As detailed in paragraph 360 of this determination, the annual capital cost associated with the combined DCPM/contingency margin is calculated as an annuity over a common period. That period is 40 years, being constrained by the economic life of the railway as determined.

459. The Authority has considered its decision to limit the economic life of the railway to the remaining term of the TPI State Agreement in conjunction with the decision to allow for the recovery of potential rehabilitation costs. The Authority considers that the inclusion of the proposed rehabilitation costs by TPI is consistent with other provisions of the State Agreement, and therefore gives weight to including the term of the Agreement itself.

460. The Authority has not included any salvage value as a (future value) discount in the annuity payment function which calculates capital costs. The Authority notes that this results in a higher determination of costs for this component of total costs than would otherwise be the case, but does not affect incremental costs.

461. As noted by Brockman in its December 2014 submission, the main salvage values are associated with steel components of rail and bridges, and that there is negligible salvage value associated with earthworks and ballast, among the remaining significant asset components. The Authority notes that the technical life of the rail iron is 25 years[37] and the technical life of bridges is 50 years. Therefore there is likely to be some salvage value for rail that has not been factored into the Authority's calculation of the rail GRV.

462. The resulting total annuity for capital items is shown in Table 3 as part of the Authority's determination of costs.

[37] The Authority has applied an economic life of 25 years to all track rail for the purposes of this determination. The Authority notes that TPI's Costing Principles allow shorter economic lives for track rail curves. [redacted] On the basis of the track rail quantities provided for the 2010 determination of costs for the Cloudbreak to Port Hedland section, and as the two route sections subject to this determination are wholly contained within that section, the Authority has assumed the proportion of curved rail for the two route sections subject to this determination to be less than 10 per cent. The Authority considers making an adjustment on this basis to the economic life of track rail to allow for a shorter economic life of curved rail is not warranted.

Determination

Determination 3

The Authority has determined annualised capital costs for the relevant route sections on the basis of an economic life of the railway of 40 years. The annuities associated with asset components have been calculated on the basis of the lives shown in Appendix A of TPI's costing principles only where these lives are less than 40 years.

Availability of debt financing

463. [redacted] The Authority's expectation is that debt will be renegotiated on a rolling basis, as is typically done with any other long term investment.

464. The Authority's regulatory practice is to treat regulated assets as stand-alone, efficient benchmark entities. The Authority is of the view that TPI as a stand-alone entity is an investment grade credit rated company. In the Authority's calculation of WACC for TPI, a credit rating of BBB- is currently applied and this has not been challenged by TPI.

465. The Authority considers that the term used in the WACC can be longer than the period indicated by the existing FMG mine ore reserves.

The Appropriate WACC

466. [redacted]

467. The Authority gazetted a 2014 update of the rail WACC for TPI – of 10.14 per cent – on 24 October 2014. The gazetted WACC is the applicable WACC for calculating the incremental and total costs, at the current time, irrespective of the future commencement date of access by any access seeker.

468. Taking into account the above considerations, the Authority has determined that the appropriate WACC to be used for this determination is the gazetted 2014 WACC determined by the Authority as 10.14 per cent.

Determination

Determination 4

The Authority has determined costs to apply to the relevant route sections using a real pre-tax weighted average cost of capital (**WACC**) value of 10.14 per cent, as determined by the Authority to apply from 1 July 2014.

Operating and Overhead Costs

469. TPI has provided proposed costs in this category at the network level and has allocated these to route sections 3 and 5 on the basis of the allocations nominated in its Costing Principles.

TPI's Costing Principles – Operating Costs

470. TPI's Costing Principles (section 4) state that operating costs are costs directly associated with operational management of the network. They reflect a centralised train control service, track maintenance equipment, signals/control systems and a train/track monitoring system.

471. TPI's Costing Principles (section 4) also state that operating costs include network management, comprising operation of the train control centres, operation of signal cabins and centralised train control systems and operation of telecommunication facilities.

472. TPI's Costing Principles (section 4.2) state that TPI will test whether proposed operating costs 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 consumption and scope are efficient; and
- actual costs may also be used where the costs come from a competitive market or are regulatory costs.

473. TPI's Costing Principles (section 4.2) state that in measuring efficiency, TPI recognises that these costs change over time especially as a result of innovation and technological change.

474. TPI's Costing Principles (section 4.3) state that track and signalling maintenance costs are directly allocated to route sections based on the nature and population of the infrastructure and centralised train control costs will be apportioned directly to routes based upon actual train control resources managing traffic over each route.

475. TPI's Costing Principles (section 4.3, Appendix B) state that the allocation of non-sector specific operating costs to route sections will be performed in accordance with the allocation rules using Gross Tonne Kilometres (**GTKs**) or train numbers. Train numbers will be linked to network management functions and the management of maintenance related functions will be linked to GTKs.

476. TPI's Costing Principles (section 4.1) state that TPI has developed 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;
- the maintenance regime is broadly classified in routine maintenance and cyclical maintenance;
- there are two major activity classifications within routine maintenance, namely routine inspections (include patrolling, on-train inspections, track condition monitoring, defined event inspections by patroller and structures inspections) and maintenance activities which typically follow the inspection process, routine maintenance being therefore a 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, firebreaks, scrub slashing, drainage, access roads and road seal on level crossings to meet operational and safety requirements).

477. Section 4.1 of TPI's Costing Principles states that, 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 by a track maintenance model to derive an average annual maintenance charge over the life of the asset.

478. TPI states in its Costing Principles (section 4.1) that a signal and communications maintenance model is incorporated into the Costing Model, and that routine maintenance of signalling and communications is based on industry accepted inspection regimes. It includes specified periodical inspections and procedures (including testings) and responses to faults. Cyclical maintenance is significantly less important for signalling and communications and includes component rebuilds to achieve economic life.

479. Appendix B of TPI's Costing Principles indicates that signalling and communication costs are allocated to route sections according to train numbers.

480. Section 4.1 of TPI's Costing Principles states that major periodical maintenance is not included in maintenance activities that are required to maintain MEA infrastructure on the understanding that it is an asset renewal program to extend the economic life of the assets.

481. Section 3.2.4 of TPI's Costing Principles stipulates that TPI will include an allowance for working capital as an operating cost. The rationale for inclusion of working capital is described as compensation for the effects of the form of the function used to calculate capital annuities.

482. In section 3.2.4 of its Costing Principles, TPI has undertaken to use the PMT formula provided by MS Excel which calculates annuities on the basis of the start of each period (by setting "type" to value 1). Section 3.2.4 states:

> This formula calculates the costs at the beginning of the period which does not reflect the payment cycle for access charges. The appropriate methodology is to calculate the change monthly in arrears but this is not possible under the definition of the Code where the economic life for the GRV of the railway infrastructure is to be expressed in years as the number of periods. To allow for this,

TPI will include in its operating costs a proxy for the working capital required because of the effects of this formula.

Costing Principles – Overhead Costs

483. TPI's Costing Principles (Section 5.1) defines overheads as overhead costs attributable to the performance of TPI's access-related functions whether by TPI or FMG. Although it is a separate legal entity with an overhead structure which relates to its business of access provision (TPI overheads), TPI also sources corporate and related functions from FMG (corporate overheads).

484. In its Costing Principles (Appendix B), TPI has nominated overheads as including corridor management, access compliance, information technology (IT) and software costs, motor vehicle costs, office accommodation and support services, accreditation costs and TPI management costs.

485. In its Costing Principles (Appendix B), TPI has nominated corporate overheads as including legal and public relations costs, payroll, human resources, accounting/finance costs, treasury and insurance management, corporate procurement and governance.

486. It is stated in TPI's Costing Principles (section 5.1) that only those overheads attributable to activities related to the Code's definition of railway infrastructure (section 2 of Part 1 of the Code) will be included in the costs determination.

487. The TPI Costing Principles (Appendix B) nominate two allocators for overheads. GTKs are to be used to allocate costs which vary more in quantum due to volumes moved, and train numbers are to be used to allocate costs which vary more in quantum due to the number of train movements.

TPI's Proposal – Operating and Overheads Costs

488. TPI has provided the following current costs for operations and overheads attributable to the entire TPI railway network for the 2013 year.

Railway Infrastructure Management	$
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
Network Management	
[redacted]	[redacted]
Overheads	
[redacted]	[redacted]
[redacted]	[redacted]

489. TPI has nominated the following matrix of allocators for sections 3 and 5.

	Total Network	Section 3	Section 5
Gross Tonne Km (m)	[redacted]	[redacted]	[redacted]
No. of Trains	[redacted]	[redacted]	[redacted]

490. [redacted].

491. On the basis of the above allocation methods, and in accordance with its Costing Principles, TPI has proposed the following operating and overhead costs to apply to route sections 3 and 5 for 2014.

	Section 3	Section 5	Total Route
	$	$	$
Railway Infrastructure Management (allocate on GTK)			
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
Network Management (allocate on train numbers)			
[redacted]	[redacted]	[redacted]	[redacted]
Working Capital (allocate on capital annuities)			
[redacted]	[redacted]	[redacted]	[redacted]
Overheads (allocate 50:50 on GTK and train numbers)			
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

AECOM advice – Operating and Overheads Costs

492. AECOM has analysed the data provided by TPI and has advised that the data provided shows numbers and types of personnel engaged in maintenance and is useful in identifying the components of operating costs. AECOM has advised that, in the absence of an accompanying narrative or report, it is not able to fully assess the method used by TPI to calculate the cost figures or the reasonableness of assumptions underpinning the calculation.

493. AECOM has advised that computations of operating costs provided by TPI incorporate costs related to operations and maintenance of both below- and above-rail assets. The calculations are consolidated and separately identify below- and above-rail components. Again, the absence of a narrative to describe the calculations have prevented AECOM from verifying that the allocation of total costs to above- and below-rail cost items is accurate.

494. AECOM has advised that it has undertaken work on a freight rail system that indicates current maintenance costs per km ranging from $26,000 to $48,000 per kilometre for

trunk freight and passenger routes with axle loads up to 26 tonnes. Previously assessed maintenance costs for another non-Pilbara railway within WA are at the lower end of this range for the more heavily trafficked lines. There is an order of magnitude difference in comparison of TPI's figures with that for these two example railways.

495. AECOM has advised the following:

> "There is an expectation that maintenance costs will be higher for a 40 tonne axle load railway in the Pilbara region in comparison to general use railways elsewhere in Australia. This is for the following reasons:
>
> - Higher annual tonnages (155 mtpa, in comparison to a reference rail network which has no more than 15 mtpa on its busiest lines).
> - Pilbara region location – the area is remote and subject to cyclonic activity, increasing the amount of support and the frequency of unplanned maintenance activities. In addition, the Pilbara region attracts a premium on labour rates that is not necessarily experienced elsewhere in Australia.
> - In TPI's case, there may be an initial period of consolidation of maintenance regimes whilst the infrastructure is used early in its design life.
>
> Establishing a true and reasonable estimation of maintenance costs is difficult for the following reasons:
>
> - Unlike capital costs, which are typically visible to third parties during design and construction of railways, operating and maintenance costs remain part of the railway owner's proprietary business information and as such, are typically less transparent.
> - No two railways are physically the same, although similar locations and freight tasks can be assessed for a reasonable comparison.
> - Maintenance and operating costs vary considerably with annual tonnage and axle loads.
> - The composition of cost data is not always readily apparent. For example, how items such as overheads are treated can vary widely, and between private and public owned rail infrastructure owners.
>
> As a result, making an assessment as to whether the absolute cost of maintaining the TPI railway is reasonable is difficult due to the difficulty in obtaining a direct comparison from third parties, and considering that the railway is assumed to be early in the operating phase of the project lifecycle.
>
> Maintenance rates depend upon a number of variables associated with the specific nature of the line being considered:
>
> - Axle loading – higher axle loads lead to greater wear and tear per train movement.
> - Traffic volume – higher volumes lead to the need for more frequent maintenance and renewal intervention.
> - Asset age – newer assets will require less maintenance than those that have been in service for a long time
> - Structures number and type – more structures on the route will result in the need for increased requirements for activities such as bridge audits and resulting renewals.
> - Route geometry – Higher numbers of low radii curves will increase the need for maintenance effort.

- Signalling system type – fixed signalling equipment will require higher maintenance effort.

On the basis of the discussion above, even if direct comparison with a comparable railway in the Pilbara was available, it would be difficult to fully assess TPI's determination of operating and overhead costs without undertaking a detailed analysis of individual cost components."

Brockman's submissions

496. Brockman's June 2013 submission provided a total cost for operating and overheads costs in relation to the network it has specified for consideration in its submission, which is similar to that determined by TPI. The Authority notes, however, that the network MEA specified by Brockman Mining does not coincide with the MEA accepted by the Authority for the purposes of this determination.

497. Brockman's December 2014 submission provided a comparison of TPI, Aurizon and ARTC maintenance costs (including overheads) which shows that the maintenance cost for TPI is almost [redacted] that of ARTC and [redacted] that of Aurizon on a per track kilometre basis. Brockman noted that the Aurizon network is considerably larger than the TPI network.

498. Brockman commented that it is not possible for it to provide comment on an appropriate level of overhead costs as they relate only to the Code's definition of railway infrastructure.

Authority's Assessment

499. The Authority considers that it is not reasonable to compare maintenance or operations/overheads costs between railway owners on a per kilometre track basis due to the large differences in axle loadings and track lengths between railways.

500. In terms of machinery utilisation and crews employed in maintenance and inspection activities, significant economies of scale have the potential to apply to networks of different sizes. The Authority notes also that the axle loadings on the TPI network are considerably greater than those of the ARTC and Aurizon network, which impacts on differences in per kilometre maintenance costs.

501. [redacted]

502. The Authority accepts the railway infrastructure management and network management cost components of operating costs as proposed by TPI, and the overhead costs proposed by TPI.

503. The Authority accepts the method proposed by TPI for the calculation of the working capital component of operating costs and has recalculated working capital by this method, using the capital costs and the current WACC determined by the Authority.

Determination

Determination 5

The Authority has determined operating costs to apply to the relevant route sections as being equal to the railway infrastructure management and network management cost components proposed by TPI, and a working capital component recalculated using the appropriate WACC and capital costs determined for those sections. The Authority has determined overhead costs to be an amount equal to the overhead costs proposed by TPI. These proposed costs have been escalated to apply on an equivalent 2014 basis.

Incremental Costs

504. TPI has calculated a cost relevant to the floor price test for route sections 3 and 5 as [redacted]. The rationale for this calculation is not explained in TPI's proposal.

505. Section 3.2.4 of TPI's costing principles allows for TPI to include working capital as a class of operating cost to compensate for the discrepancy between the payment cycle implied by the required annuity formula (which is annual) and the usual access payment cycle (which is monthly).

506. [redacted]

507. Schedule 4, clause 1 of the Code defines incremental costs, in relation to an operator or group of operators, as:

> (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;

508. The Code defines the floor price test in the following terms (at clause 7 of Schedule 4):

> 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.
>
> 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 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.

509. The Authority considers that the calculation of incremental costs should be consistent with the definition of incremental costs shown in clause 1 of Schedule 4 of the Code, which is shown above.

510. [redacted]

511. For the purposes of this determination, the Authority has decided that incremental costs for the route subject to Brockman's Access Proposal will be calculated as Brockman's share of operating and overheads costs, on a tonnage basis, relevant to Brockman's first year of proposed operations.

512. Brockman has proposed to use the TPI railway to move 11 million tonnes in the first year of its proposed access, and so the calculation of incremental costs has been made as 11/155 of total operating and overheads costs.

513. Brockman and TPI were provided with a draft of this determination which included calculation of incremental costs on the basis indicated above. Neither Brockman nor TPI commented on the calculation of incremental costs in their submissions of December 2014.

514. The Code at Schedule 4 requires that overheads costs be included in incremental costs "where appropriate". The Authority has decided that, as the overheads proposed by TPI relate to a fully utilised 155 mtpa railway, and as TPI does not currently have third party above-rail operations on its railway, that Brockman's proposed operations would require additional overheads commensurate with, on a pro-rata basis, the current overheads for the network.

515. There are means by which the incremental cost defined in this way may be escalated to a future date if it is necessary to do so, for the purposes of calculating an incremental cost for a future time period.

516. In this determination, the Authority defines the incremental cost to be a nominal cost current for the 2014 - 2015 financial year.

Determination of TPI's Costs

517. Based on the assessments outlined in the previous sections, the Authority's determination of costs for the route sections relevant to Brockman's Access Proposal, to apply from 1 July 2014, is shown in Table 3 of this document (see below).

518. In making this determination, and in particular when exercising its discretion under the Code, the Authority has been mindful of the matters it must consider which are prescribed in section 20(4) of the Act, which include a range of conflicting objectives. Ultimately, the Authority's determination has involved a balancing of the section 20(4) objectives in a way that it believes best achieves the object of encouraging the efficient use of, and investment in, railway facilities by facilitating a contestable market for rail operations, consistent with the object of the Act and the Code.

519. The Authority has been required to exercise its discretion in relation to a number of areas where inadequate information has been provided by TPI, or where time constraints associated with the legislative deadline for the making of this determination has impacted on the Authority's ability to obtain further information.

520. In a number of instances, this discretion has been exercised to accept TPI's proposed costs. [redacted]

- [redacted]
- [redacted]
- [redacted]

521. As capital costs are not a component of incremental costs, any allowance for costs associated with the factors listed above does not impact on incremental costs.

522. [redacted] The Authority has accepted these costs on the basis that it would not be in the public interest or TPI's legitimate business interests to extend the review of these costs as such a review would be at the cost of additional time and consultants' expense to both TPI and the Authority. The acceptance of these costs may have resulted in the cost outcome being higher, within the appropriate range, than it otherwise might have been.

523. On the other hand, the Authority's decisions to provide for an economic life of the railway assets beyond the 19 year period proposed by TPI and to reduce the cost of TPI's welding facility were guided by considerations in section 20(4)(g) and (h) of the Act, that is, the economically efficient use of the railway infrastructure and the benefits to the public from having competitive markets.

524. In making this determination the Authority is mindful that clause 12 of Schedule 4 of the Code allows it to re-determine TPI's costs in respect of these route sections at any time if the Authority considers there may have been a material change in any of the circumstances that existed at the time this determination was made. Such circumstances may include the completion of further extension or expansion works by TPI, or changes in the level of general prices, the WACC, or asset-specific prices, which occur between the date of this determination and the date of commencement of above-rail operations to which this determination applies.

Determination

Determination 6

The Authority does not approve TPI's proposed determination of its costs as provided to the Authority on 23 May 2013. The costs which the Authority has determined will apply to the relevant route sections are shown in Table 3. These costs are current as at 1 July 2014.

Table 3 – ERA Determination of Incremental and Total Costs for Route Sections 3 and 5 of TPI's railway network as described in TPI Costing Principles Appendix C.

Section Name	Section 3	Section 5	Total Route
	$	$	$
Gross Replacement Value	544 734 385	2 061 586 943	2 606 321 329
ANNUAL COSTS			
Annuity for all Capital	[redacted]	[redacted]	[redacted]
Railway Infrastructure Management	[redacted]	[redacted]	[redacted]
Network Management			
Working Capital			
Overheads			
Operating and Overhead Costs			
INCREMENTAL COST	1 197 148	5 073 375	6 270 524
TOTAL COST	68 877 407	270 808 582	339 685 988