

† This document is a working appraisal of the proponent's cost benefit analysis of the proposal. As the project has developed, more information has been provided, which may supersede or respond to questions arising from earlier assessments. This working appraisal was prepared in April 2011 as an input into the Project Assessment Brief prepared by the Office of the Infrastructure Coordinator.

WORKING APPRAISAL FOR BENEFIT COST RATIO MODERATION (2010/11 Submissions)	
<b>Project name</b>	Adelaide Rail Freight – Goodwood and Torrens Junctions Project
<b>Brief project description</b>	Consists of constructing grade separations at two at-grade freight/passenger rail intersections, the removal of 4 level road-rail crossings and modifications to one other level crossing (one on Adelaide's Inner Ring Road and 4 on local roads), and associated works in and near the Adelaide inner suburbs of Bowden and Goodwood
<b>Reported BCR @ 7%DR</b>	1.30
<b>Capital cost total</b>	\$418 million (P90 including risk allowance and 6% escalation) \$352 million (P90, including risk allowance)
<b>% costs bid for (where relevant)</b>	100% (p 34)
<b>Source documents for review</b>	Government of South Australia, Submission to Infrastructure Australia, December 2010, Prepared by DTEI, <i>Adelaide Rail Freight Goodwood and Torrens Junctions Business Case, #5063708</i> <i>Infrastructure Australia Priority List, SA Government Response to IA Minimum Information Requirements</i> , 'Goodwood and Torrens Junctions Project: Benefit-Cost Analysis', Final Report, 13 July 2010 GHD (2010), <i>Report for the Inner Adelaide Rail Capability Study: Goodwood and Tonsley Junctions Concept Planning Report</i> , June 2010 GHD (2010), <i>Report for the Inner Adelaide Rail Capability Study: Torrens Junction and Park Terrace Grade Separations Concept Planning Report</i> , June 2010 Deloitte (2011), Peer review of cost benefit analysis work, prepared for Department for Transport, Energy and Infrastructure, 4 February 2011 Government of South Australia, Submission to Infrastructure Australia, February 2011, Prepared by DTEI, <i>Adelaide Rail Freight Goodwood and Torrens Junctions Business Case, #51400026 v6</i> (the Dec 2010 submission revised in tracked changes) DTEI (2011), DELOITTE PEER REVIEW OF DTEI CBAs SUBMITTED TO INFRASTRUCTURE AUSTRALIA, DTEI RESPONSE REPORT, 7 February 2011 DTEI (2011), DTEI response to Infrastructure Australia Questions (questions posed during teleconference in week beginning 7 February 2011, February 2011)
<b>Date of review</b>	2010/11
<b>Key changes from previous submissions</b>	BCR has varied from 1.7 (2009/10) to 2.16 (2010/11: July 2010) <sup>1</sup> to 1.30 (2010/11: February 2011) <sup>2</sup> [Note: February 2011 question response indicates some BCR amendments have been made but BCR not provided in response document]

<b>OVERALL SUMMARY</b>	<p><b>Overall summary</b> (2-3 paragraphs on overall robustness of analysis and major points raised)</p> <p>Overall, the project is economically viable with P90 capex estimates now included. There are potential issues with some benefits, such as urban regeneration benefits and residual value, and the BCR may fall below 1.0 if these aspects do pose methodological issues. These issues have been conveyed to SA DTEI and it is understood that SA are currently considering aspects relating to some of the benefits, however have not yet adjusted the BCR to reflect these areas.</p> <p>Since the 2009/10 July 2010 submission, the capex used in the CBA has been changed from P50 to P90 estimates (including risk contingency). The previous 2009/10 submission did not appear to use either P50 or P90 estimates, rather high level costs including a 40% contingency. In addition, other key changes have been made to the 2010/11 submission to improve the appraisal: high level WEBS estimate removed, and benefit no. 6 (freight customer delay reduction) parameter has been reverted to common practice parameter values and approach</p> <p>Relating to the 2010/11 submission, some potential issues include:</p> <ol style="list-style-type: none"> <li><b>Benefit 1/Residual value (largest benefit)</b> is based on an annuity factor of 70 years after the 30 year appraisal period (i.e. assuming average economic life of 100 years), despite some aspects of the project having components with 30 and 50 years – either capex for new stations and track work or major periodic maintenance would be required if this factor is used (25% of benefits) <ul style="list-style-type: none"> <li>The following query was posed to SA DTEI in Feb 2011: Provide justification why a 70 year annuity factor is assumed for estimation of the residual value, when some of the assets (track work and stations) will only have a life of 50 and 20 years respectively beyond the appraisal period. Explain whether this 70 year assumption was complemented by additional capex or major periodic maintenance being assumed at year 30 and 60 for stations and year 50 for stations (Business Case p 31)) (Deloitte also discuss this benefit: 'Estimate of benefit in this table needs to be confirmed based on the available capacity in the network to realise these benefits without further infrastructure investment.')</li> <li>In SA DTEI's response to IA's February 2011 queries, the latest version of the spreadsheet shows asset lives of 100, 50 and 30 years depending on the project, with a separate annuity stream calculated for each asset. It is not clear if this is the approach included in the submitted 1.3 BCR, nor if Deloitte's peer review query relating to further investment to support ongoing benefits has been incorporated. Given the scale of the benefit relative to others, may warrant further explanation, or a sensitivity test if the residual of costs approach is applied.</li> </ul> </li> </ol>
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<sup>1</sup> Infrastructure Australia Priority List, SA Government Response to IA Minimum Information Requirements, 'Goodwood and Torrens Junctions Project: Benefit-Cost Analysis', Final Report, 13 July 2010

<sup>2</sup> Government of South Australia, Submission to Infrastructure Australia, February 2011, Prepared by DTEI, *Adelaide Rail Freight Goodwood and Torrens Junctions Business Case, #51400026 v6* (the Dec 2010 submission revised in tracked changes)

2. **Benefit 8/Urban regeneration benefit and Benefit 5/train operator delay reduction** should potentially be excluded due to double counting and issues including property values in a CBA where travel time is already captured (combined 10% of benefits) In the February 2011 response to IA questions, DTEI indicate they are considering an alternative approach for urban regeneration. In the February 2011 response to IA questions, DTEI clarified the 30 min delay assumption for train operator delay reduction but not the double counting issue
  - o Suggest to consider appropriateness of including an urban regeneration benefit (no. 8). Travel time savings are already captured for road users and freight (noting BITRE's Facts and Furphies has guidance on this). Also consider whether it is possible to document/provide evidence to support the % of values attributable to this project alone. It is recommended to remove this benefit due to double counting (Deloitte suggest: 'In the short term, it is recommended that the current regeneration benefit be included as a sensitivity test scenario and excluded from the core analysis results.'). DTEI indicate they are currently considering what might be appropriate values for use in the Adelaide setting and have indicated they are considering an alternative approach
  - o Suggest to consider appropriateness of including a train operator delay reduction (no. 5), which captures train operating cost savings for train operators from reduced 30 min delay and consider and provide documentation why this benefits is not considered as double counting with the train operating costs already considered in benefit 3 given the calculation method of both relating to the same costs (i.e. costs of a freight train customer and costs of a freight train operator. In the February 2011 response to IA questions, DTEI clarified the 30 min delay assumption but not the double counting issue. (No comment from Deloitte relating to this benefit)
3. **Demand.** Demand projections for freight (largest contributor to benefits) are based on high-level annual growth rates as opposed to robust, bottom-up analysis of freight demand and tonnages demanding trains. Passenger rail demand appears to be based on planned addition to capacity by the SA Government, not necessarily considering the response of passengers to take up capacity (noting however that passenger rail benefits comprise a small proportion of total benefits). In addition Road demand is based on a population estimate (Scenario D in the MASTEM model) that was not described. Given these aspects it is difficult to understand whether the demand is achievable. (Deloitte's peer review similarly queries demand, e.g.: 'The future growth in interstate freight rail markets is uncertain. Because of this, it would be useful to include a lower demand growth rate scenario sensitivity test in the evaluation.'....and 'Is there adequate capacity in the Melbourne-Adelaide and Adelaide-Perth interstate corridors to allow 3.3 percent annual growth in rail freight between 2021 and 2042? Further discussion confirming that this capacity exists or is expected to be added would be useful.')
4. **Other possible benefits:** Deloitte suggest that there may be reliability benefits and some demand induced from road to rail as a result of this project that may be understating project benefits. SA DTEI responds to this in 'DTEI RESPONSE REPORT, 7 February 2011': The improvement in reliability of rail was considered to be captured in the freight value of time benefit item. Also, they analysed potential for improvements in rail reliability to increase rail's share of total freight volumes hauled between Melbourne and Adelaide. On the basis of the following factors, it was assumed that the project would not grow the rail market.)
5. **Clarifications on benefits:** Deloitte also suggest SA provide more info on how some benefits were estimated (eg train utilisation Benefit 4 quantification, an average loading per passenger train of 100 passengers in Benefit 7, suggesting it appears low). DTEI clarified these in 'DTEI RESPONSE REPORT, 7 February 2011'

**Possible adjusted BCR**

- **Headline BCR** – 1.30 (7% discount rate)
- **Adjustments**
  1. Add additional capex or major periodic maintenance for stations and trackwork to align with the 70 year annuity factor assumed in the residual value (no. 8) (high level test in the table below by reducing the residual value by a value of 50/70)
  2. Remove urban regeneration benefit (no. 8) and train operator delay reduction (no. 5)
  3. Reduce base case capex avoided to the 2009 and July 2010 previous submission levels

• **Adjusted BCR**

Adjustments	BCR
1	1.21
2	1.15
3	1.24

	1. Reported information (lift text directly if possible)	2. Supporting information provided (list key documents, not content)	3. Extra information required / requested / received	4. Benchmark / Questions / Things to look for	5. Assessment of variance or methodological weaknesses	6. Notes re: degree of variation to BCR (any calculation / reasoning)	7. One line summary of argument / rating	8. Rating
<b>Guidance</b>	"Cut and paste" text from proforma if possible	List supporting materials not included in proformas but included with bids (formally and informally)	List all information requested by IA: please note which materials were, and were not provided by jurisdictions. Also list areas to follow up / potential questions	See below	Insert the explanation of any differences or issues with theory, methodology or data used by the jurisdiction	Use this column, if required, to explain any reasoning for making an assessment of the scale of impact on the BCR, using figures if possible	Please insert one sentence summary of argument and conclusion reached	Significantly overstated; slightly overstated; broadly neutral; slightly understated; significantly understated.
<b>Robustness of demand forecast</b>								
<b>1. Has demand been modelled in a robust and 'bottom-up' manner?</b>	<p>Interstate rail freight is expected to grow by 3.3 percent pa (central case)</p> <p>Passenger train services are expected to grow by 80% by 2016 when the Future Public Transport Network has been implemented</p> <p>Road vehicle journeys are based on MASTEM forecasts (Scenario D population scenario)</p>	<p>Existing ARTC timetable imported within RailSys</p> <p>GHD 2009 <i>Adelaide Rail Freight Movements Study – Discussion Paper</i> cited in the Concept Planning Report to have established a medium scenario for freight growth of 3.6% pa</p> <p>It appears that passenger train services growth rate are from the explicit targets of the future public transport network</p>	<p>Could be useful to understand if/how the following align: demand in the CBA vs. demand in Section 2 of the GHD June 2010 G&amp;TJ <i>Concept Planning Report</i>. It is not currently clear if/how they align – though the GHD report provides more detail that could help understand the demand assumed in the CBA.</p> <ul style="list-style-type: none"> <li>Reasoning/source behind the 3.3% interstate freight growth not clear (Last submission appears to have been 3.5%)</li> <li>Not clear what Scenario D population growth assumes</li> <li>Not clear what train utilisation rate was applied to the passenger train numbers (e.g. will there be a ramp up of demand increasing once the FPTN is first implemented as opposed to attaining 80% increase immediately)</li> <li>Not clear of the impact on results if the 80% service increase does not result in pax increase.</li> </ul>	<ul style="list-style-type: none"> <li>Has demand been modelled by a reputable transport modelling organisation?</li> <li>Evidence of use of a city wide travel model which adds the proposal as a new option &amp; measures diversions</li> <li>How close to capacity is the service in the high AM peak hour</li> <li>Have different fare levels &amp; elasticity been evaluated &amp; will service offer customer VFM against alternatives?</li> </ul>	<p>Rail freight forecasts are not sourced, though may be from ARTC estimates as per the previous submissions</p> <p>Road vehicle journey growth: submission does not describe what 'Scenario D' population scenario reflects</p> <p>The assumption of passenger train services growth of 80% appears to be based on 'planned service frequency' not 'demand', so may be overstated</p>	<p>The growth projections are fairly high level % growth assumptions from current levels, not based on bottom-up analysis, and could be optimistic. As these projections impact directly on the benefit streams, it has a significant impact on the BCR (in particular rail freight projections)</p> <p>GHD's G&amp;TJ 2010 report indicates the passenger stations are among the lowest patronage of stations in Adelaide, suggesting the 80% service increase will not significantly affect these stations</p>	<p>High level % growth assumptions above population growth forecasts (approx 0.7% pa as per 2009/10 submission)</p> <p>Appears to be slightly lower than past submission (3.3% not 3.5%), using MASTEM and only 80% FPTN impact. Passenger train projections are higher in earlier years in the 2010/11 submission though</p>	<p>Potentially slightly overstated</p> <p>Though projections appear to be slightly lower than 2009/10 submission</p>
<b>2. Are the underpinning residential, employment and economic growth figures robust?</b>	No projections were provided to support growth		Provide historical data, and other possible justification	<ul style="list-style-type: none"> <li>Are current State or ABS projections used?</li> <li>Are central growth forecasts used?</li> <li>Are the transport demand forecasts directly linked to this data?</li> </ul>	No projections were provided to support growth	No projections were provided to support growth	High level % growth assumptions above population growth forecasts (approx 0.7% pa as per 2009/10 submission)	Insufficient information, but see Q1
<b>3. Achievability of the demand forecast?</b>	No information supporting the achievability of demand was provided		As per Q1 & Q2	<ul style="list-style-type: none"> <li>Is the forecast justified by an in-depth analytical paper?</li> <li>Is the forecast endorsed by independent Expert Peer Review?</li> <li>Does forecast feature a gradual ramp-up (i.e. &gt;4yrs)?</li> <li>What % of patronage is induced demand (should typically be &lt;20%)</li> <li>Forecast patronage has been benchmarked to be broadly consistent with outcomes achieved on similar services?</li> <li>Has the proponent factored the costs of greenhouse gas emissions</li> </ul>	<p>Potential issues relating to achievability of the demand forecast:</p> <ul style="list-style-type: none"> <li>Rail freight growth assumed would require significant mode shift from road to rail to be achievable.</li> <li>Rail passenger growth is not based on demand, and is significantly higher than the 0.7% historical PT growth in Adelaide.</li> <li>Road traffic growth is higher than the 'high' and 'medium' population forecasts for SA. Is counter-intuitive to the significant</li> </ul>		The growth assumptions appear to be slight optimistic	Potentially overstated

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				into their economic planning, including obligations under the Carbon Pollution Reduction Scheme?	rail freight and passenger growth (whole-of-network point of view required)			
4. Sensitivity of BCR to demand	None conducted		Ideally, demand would be sensitivity tested	<ul style="list-style-type: none"> <li>Does a 30% drop in demand significantly alter the BCR?</li> </ul>	None conducted			Broadly neutral
5. Is the base case realistic and fundable?	The base case is a do minimum case with \$31.2m of costs that are assumed to be avoided in the Project case		There is little description of the base case projects and what they involve, as well as how the Project is expected to make it avoidable	<ul style="list-style-type: none"> <li>What is Base Case patronage growth – is it in line with historical trends?</li> <li>From the available information, is the base case capex and patronage a likely scenario, or is it overly loaded or light?</li> </ul>	<p>Given that other alternatives are described as unlikely, the base case appears reasonable and fundable</p> <p>There are PV\$15 million of base case costs assumed to be avoidable with the Project</p>	<p>Appears that \$31.2m undiscounted (\$15m discounted) is assumed in the base case costs but potentially not in the benefits (i.e. if these costs are assumed in the base case then the benefits of these investments should also be reflected in the base case)</p> <p>It is not clear if the \$31.2m capex assumed in the base case to be avoided in the project, will reduce some of the incremental project benefits (e.g. some of the \$31.2m may already reduce delays and some of the incremental benefits attributed to the Project).</p> <p>SA clarified, in its response to 7/2/11 IA queries, that the base case capex avoided with the project increased from a discounted value of \$15m in 2009 and July 2010, to \$27.3m in the December 2010 submission, because of a change in methodology applied to capex</p>	3 stations and a road grade separation project are assumed as costs in the base case that can be avoided. This is not explained clearly as to what it pertains to and to whether this would comprise 'do minimum'	Insufficient information
6. Does hourly patronage profile match conventional AM & PM peak flows	310 annualisation factor applied to passenger rail projections		Can the 310 annualisation factor be justified as being appropriate for the passenger rail demand?	<ul style="list-style-type: none"> <li>Is the model scaled up to full year in a justifiable manner (e.g. annual patronage is normally 250-300 times AM high peak hour)?</li> </ul>			310 annualisation factor applied to daily passenger train movements may be high	Slightly overstated (but passenger rail comprise lower & of benefits vs. Freight rail, so minimal impact overall)
<b>Robustness of cost base</b>								
7. Robustness of capex forecasts	The capex is estimated to be: (i) \$418 million (P90 including risks and escalation @ 6%); and (ii) \$352 million (P90, undiscounted.)	P90 cost is based on Currie and Brown P90 cost estimates (including escalation and 'most likely' contingencies) including risk items	The 2 GHD <i>Concept Planning Reports</i> provide cost estimates for options for select developments. It shows that probabilistic info was undertaken	<ul style="list-style-type: none"> <li>Is the capex estimate supported by significant in depth work?</li> <li>Was it produced by a reputable independent organisation?</li> </ul>	Source and assumptions provided in GHD Concept Planning Reports			P90 now included in CBA (as opposed to previous submission: P50)
8. Robustness of opex forecasts	No change in recurrent costs			<ul style="list-style-type: none"> <li>Is the opex estimate supported by significant in depth work?</li> <li>Was it produced by a reputable independent organisation?</li> </ul>	Appears reasonable	Appears reasonable, as same demand is assumed in the base case and Project case		Broadly neutral

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9. Consequential costs	Land acquisition costs are included (p 69 GHD G&TJ report, Table 20)			<ul style="list-style-type: none"> <li>Are consequential costs to other parts of the network or other stakeholders taken into account?</li> <li>E.g. land acquisition, higher costs due to the need to maintain service continuity &amp; / or constructing around live traffic</li> </ul>	None identified	None identified		Broadly neutral
10. Revenue treatment	None included			<ul style="list-style-type: none"> <li>Is the treatment according to ATC guidelines and in line with best practice?</li> </ul>	No revenue included, as per convention. Public Transport revenue is not assumed to increase (as no mode shift or induced demand is assumed)	No revenue included as PT revenue not assumed to change		Broadly neutral
11. Construction cost inflation	6% escalation rate on the P90 undiscounted cost.			<ul style="list-style-type: none"> <li>Is the construction cost inflated by a margin above CPI (e.g. construction cost CPI)?</li> </ul>	None	None	If there is 6% inflation in the discounted cost, this cost element could be slightly high (not clear in report)	Potentially slightly understated
<b>Key methodological questions</b>								
12. Inflation rate	None			<ul style="list-style-type: none"> <li>What inflation rate is assumed and are any costs or benefits escalated by a different rate?</li> <li>Do values reflect realistic real wages growth (e.g. 1.5% per year)?</li> </ul>	Consistent with ATC guidelines	None, consistent with ATC guidelines is prepared in 'real' terms		Broadly neutral
13. Time period used	2009-2042  The evaluation period is 33 years, commencing the 30-year period from 2012 which appears to be after construction (MIN, p 10)			<ul style="list-style-type: none"> <li>Is the period of assessment valid given the lifespan of the project assets?</li> </ul>	Best practice evaluation involves an evaluation period commencing with a base year which is the year in which the study was undertaken and the evaluation period commencing in the first year of opening (i.e. analysis over 30 years + construction period)	None, consistent with ATC guidelines	If construction only ends in 2013/14 (MIN, p7) then the appraisal period could extend to 2044	Slightly understated
14. Residual value	Residual based on average asset life of 100 years, therefore 70 years of annuity at end of the 30 years  Based on annuity of benefits, not residual of costs	No source	In SA DTEI's response to IA's February 2011 queries, the latest version of the spreadsheet shows asset lives of 100, 50 and 30 years depending on the project, with a separate annuity stream calculated for each asset. It is not clear if this is the approach included in the submitted 1.3 BCR, nor if Deloitte's peer review query relating to further investment to support ongoing benefits has been incorporated. Given the scale of the benefit relative to others, may warrant further explanation  Sensitivity if residual of costs approach applied could assist consider the implication of this assumption	<ul style="list-style-type: none"> <li>Are residual values given when appropriate?</li> <li>Are the values used justified?</li> </ul>			Economic life assumes asset lives of 100, 50 and 30 years depending on the project  This benefit is the largest in the CBA (25% based on Feb 2011 revised submission)	Potential to be significantly overstated  This benefit is the largest in the CBA
15. Start and end timing, and phasing	Construction occurs from 2011/12 to 2014/15	No source	Construction phasing and its rationale is discussed in February 2011 submission	<ul style="list-style-type: none"> <li>Does benefit stream period start at the commencement of operation and cost stream at first expenditure?</li> <li>Are construction costs ramped up in according with standard</li> </ul>	Construction phasing and its rationale is discussed in February 2011 submission		Most capex is assumed to occur later in the project not upfront, and justification of this would assist to	Broadly neutral

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				construction timetables?			understand the reasonableness given the impact on the NPV/BCR  Capex of \$418m allocated over 4 years \$20m, \$104.5m, \$167.2m and \$125.4m)	
16. Benefits allocation	There are some questionable benefits such as urban regeneration benefits, as well as some potential double counting. Also externalities are not calculated.		A negative benefit was included in the 2008/09 and July 2010 submissions (1,800 metre track costs in addition to project case), which has now been fully been removed from the appraisal. SA advises that all but one of the ARTC crossing loop extensions between Adelaide and Melbourne have now been completed, with the final one at Ambelside to commence construction in the near future.. 1800 metre trains would be able to operate on the corridor if the restrictions at Goodwood and Torrens junctions were removed.	<ul style="list-style-type: none"> <li>Is the rule of half correctly applied (e.g. to benefits from existing PT users who change modes)?</li> <li>Are all significant benefits identified?</li> <li>Are all beneficiaries identified (e.g. benefits of roads to non road users?)</li> </ul>	<p>1,800 metre trains: Deloitte raised an issue that has been discussed with SA in previous submissions: justification of how this project is the final link that allows for 1,800 m trains. Deloitte comments: 'It would be useful to confirm in the report, that there are no further bottlenecks in the rail corridor beyond Adelaide which would hinder running 1,800 metre trains. Additionally, some discussion of the ability for 1,800 metre trains to be accommodated in the rail freight yards at either end of the corridor would strengthen the premise that the benefits of moving from 1,500 metre to 1,800 metre trains can be realised.'</p> <p>The DTEI response was that the hindrances to 1,800 metres train length operation between Adelaide and Perth, and Adelaide and Melbourne, arise from the two elements of crossing loops lengths and terminal capacity:-</p> <ul style="list-style-type: none"> <li>Trains between Adelaide and Perth have been able to operate at 1,800 metres since the early 1980's with additional crossing loops and crossing loop extensions having been progressively completed.</li> <li>The ARTC is now completing work on the Adelaide to Melbourne corridor to allow operation of 1800 metre trains.</li> </ul> <p>Existing intermodal facilities in a number of instances are unable to hold an 1,800 metre train, but require trains to be split into two or more sections (as an example Iron Ore trains bound for Outer Harbor, are split into 4 sections to access the intermodal within the container terminal). New intermodal facilities (for example the soon to be opened SCT intermodal at Penfield) will have the capacity to accommodate 1800 metre trains.</p> <p>It is understood this has been separately discussed between SA and IA. In SA's February response to IA</p>		May be overstated because there are some questionable benefits such as urban regeneration benefits, as well as some potential double counting  Some source of understatement also likely however, because some benefits e.g. externalities are not calculated.	Potentially overstated

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					<p>queries, they describe that 1,800m trains can already operate on the remaining ARTFC line]</p> <p>The following benefits should potentially be excluded:</p> <ul style="list-style-type: none"> <li>Benefit 8: Urban regeneration/TODs benefits (5%) – would not conventionally be included in the BCR analysis as travel time savings are already captured for passengers and freight (BITRE's Facts and Furphies has guidance on this). Very challenging to support the % of values attributable to this project alone so recommend removing</li> </ul> <p>The following benefits may potentially measure benefits already captured in the CBA (note SA are considering some of these – see notes below review table):</p> <ul style="list-style-type: none"> <li>Benefit 5: Freight train delay benefits for train operators (6%) – captures train operating cost savings for train operators from reduced 30 min delay. The 30 min delay not substantiated, and it potentially double counts the train operating costs already considered in benefit 3 given calculation method</li> <li>Benefit 6: Freight train delay benefits for freight customers (10%) – Large benefit. May not be reasonable to capture the same 30 mins twice (in No. 5 then no. 6), as the saving for the train operator gets passed on to the freight customer. See below for further issue with no. 6 valuation parameter</li> </ul> <p>Other benefit considerations:</p> <ul style="list-style-type: none"> <li>Benefit 6: Freight train delay benefits for freight customers (10%) Parameter applied is \$1.33 with a sensitivity test of the \$0.79 value per tonne hour in Inland Rail study: <a href="http://www.artc.com.au/library/IRAS_Appendix_L.pdf">http://www.artc.com.au/library/IRAS_Appendix_L.pdf</a></li> <li>Benefit 9: Road vehicle delay benefits (11%) – assume gates are closed for 5% of the day and simply applies the closure time to 5% of traffic...no description whether the trains are generally in peak/off peak times and how the train times align with volume of traffic at different times of the day...if in off peak then this would be overstated (Benefit 10 (4%) considers period of day in its calculation)</li> </ul>			

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					<p>The following benefits/costs could be included:</p> <ul style="list-style-type: none"> <li>Environmental costs not calculated (but only applicable if net tonne km or vehicle kms decrease under the project)</li> <li>Benefits if modelling of travel times and costs against elasticities indicates that some freight/passenger road users would switch to rail/PT as a result of the project</li> </ul>			
17. Sensitivity analysis – risks? (Capital costs – Construction duration – Operating costs – Discount rate at 10% - changes in oil price)	Sensitivity analysis of varying discount rates, higher costs and lower benefits, with an Adelaide freight bypass, ARTC value of freight delay and including WEBS			<ul style="list-style-type: none"> <li>Do the reported sensitivity tests, for instance to the price of oil, suggest significant risks surrounding the central case?</li> <li>How significant are +/-20% construction cost variations?</li> <li>Does economic viability become negative at a 10% discount rate?</li> </ul>				Some sensitivity analysis conducted
18. Other methodological issues?				<ul style="list-style-type: none"> <li>Any there any other issues regarding the accuracy of methodology used that may significantly impact on the comparability of the BCR?</li> </ul>				
<b>Values benchmarking</b>								
19. Value of time savings: business, non business, freight; and Vehicle operating costs	<p>Train operating costs are \$2.11-2.24 cents per ntk</p> <p>Freight train delay benefits for train operators \$749 per hour</p> <p>Freight train delay benefits for freight customers \$1.33 per tonne hour (updated from \$7.64)</p> <p>\$12 per hour travel time for rail passengers</p> <p>\$19.02-36.74 per hour travel time for road users</p> <p>\$2.062m per fatality for train and road crashes, 0.3 fatalities per crash</p>			<ul style="list-style-type: none"> <li>Are the values used recommended by the ATC?</li> <li>Are these constant real through analysis period or do they factor in real growth (i.e. caution if real growth is &gt;2%)</li> </ul>	<p>Train operating costs source ARTC and BITRE, and appear reasonable</p> <p>Issue with freight train operator parameter discussed in Q16 – appears high and double counts with benefit no. 6</p> <p>\$12 per passenger hour train delay benefits appear reasonable</p> <p>Road user travel time sourced from NSW RTA</p>		Freight travel time parameter initially appeared overstated, but this was amended and sensitivity testing also undertaken	Broadly neutral
20. Value of carbon emissions	None calculated			<ul style="list-style-type: none"> <li>Is there a nexus with the patronage forecast?</li> <li>Are the values used recommended by the ATC?</li> <li>Has the proponent calculated the direct emissions of their proposal? (i.e. include all carbon emissions)</li> </ul>	None calculated, though only applicable if net tonne km or vehicle kms decrease under the project)	Air pollution benefit only applicable if net tonne km or vehicle kms decrease under the project)		Broadly neutral/potentially understated

✦ This document is a working appraisal of the proponent's cost benefit analysis of the proposal. As the project has developed, more information has been provided, which may supersede or respond to questions arising from earlier assessments. This working appraisal was prepared in April 2011 as an input into the Project Assessment Brief prepared by the Office of the Infrastructure Coordinator.

	1. Reported information (lift text directly if possible)	2. Supporting information provided (list key documents, not content)	3. Extra information required / requested / received	4. Benchmark / Questions / Things to look for	5. Assessment of variance or methodological weaknesses	6. Notes re: degree of variation to BCR (any calculation / reasoning)	7. One line summary of argument / rating	8. Rating
				from the construction or operation of the structure <ul style="list-style-type: none"> <li>Has the proponent calculated indirect emissions of their proposal?</li> </ul>				
21. Death/injury/crash costs, physical fitness and health impacts.	Accidents have been valued at \$50m per accident for train-train collision			<ul style="list-style-type: none"> <li>Are the values used recommended by the ATC?</li> </ul>	Requires further detail. May be understated if fatality, injury and damage not included. Though may be overstated if the \$50m is not applicable.	May be understated if fatality, injury and damage not included. Though may be overstated if the \$50m is not applicable		Insufficient information
22. Noise, particle emissions and other environmental pollutants (NOX, NMVOCs, SOX, CH4, N2O) Noise impacts	None calculated			<ul style="list-style-type: none"> <li>Are the values used recommended by the ATC?</li> </ul>	None calculated, though only applicable if net tonne km or vehicle kms decrease under the project)	Enviro benefits only applicable if net tonne km or vehicle kms decrease under the project)		Broadly neutral