TRANSPORT

Technical note on the treatment of prior costs in transport cost-benefit analysis

August 2024

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1. Prior costs in transport CBA

Prior costs include project development, land acquisition and early-stage construction expenditures incurred at the point of project economic appraisal. Prior costs are specifically identified and included in project cost estimation report for most transport projects.

To ensure consistency of transport cost-benefit analysis (CBA), all project related costs including project development costs that are attributable to the project scope should be included in a project's benefit-cost ratio (BCR). If a cost stems from a necessary activity to get to the final product, it should be included in CBA.

2. Existing CBA guidance

Prior costs are not the same as sunk costs. Sunk cost is defined as past expenditure that cannot be recovered. In Infrastructure Australia's Guide to Economic Appraisal (IA, 2021, p.97)[1], sunk cost is defined as cost that cannot be retrieved by resale in the market. The emphasis is that sunk cost is not recoverable.

NSW Treasury's Guide to CBA (NSW Treasury 2023, p.20)[2] provides the following guidance relating to past or sunk costs:

> *All costs in a CBA relate to new (i.e., forward looking) expenditures incremental to the Base Case only. All past or sunk costs should be excluded from the analysis.*

To provide more transparency around how past or prior costs should be treated, Economic Advisory has updated the guidance on the treatment of prior costs in the Transport for NSW CBA Guide 2024. In addition, this technical note has been developed to provide further clarification on the treatment of prior costs and recommendations on how specific cost items should be treated when undertaking a CBA.

3. Recommended approach

When assessing whether a prior cost is sunk or whether it should be included in a project's CBA, it is recommended that consideration is given to whether the specific cost has already incurred and cannot be recovered. In general, any cost directly attributable to a project's proposed scope is considered recoverable and therefore should be included in the calculation of the project's BCR.

A project's planning, and design and development costs related to its current project scope (for example, costs of geotechnical studies, concept design and option development) should not be considered a 'past' cost and therefore should not be defined as sunk. Additionally, non-spent funding must not be treated as sunk cost.

Costs incurred on completely scrapped project components should be considered as sunk if the component does not contribute to the final product. However, it is important to take care to not simply exclude all costs related to scrapped project components. Some of those

[1] Infrastructure Australia Guide to Economic Appraisal, Technical guide of the Assessment Framework, July 2021
[2] NSW Government Guide to Cost-Benefit Analysis, TPG23-08

components may have been necessary to get to the final product (e.g. costs incurred while analysing options that are scrapped as part of the usual project development process). Generally, this means excluded costs will be the result of fundamental scope change rendering them wholly unrelated to the final product.

Similarly, costs associated with corridor preservation and protection at the program level should be considered as sunk as it cannot be easily allocated to the project level.

If a cost stems from a necessary activity to get to the final product, it should be included in CBA. In general, all project related costs contribute to the final product or infrastructure and therefore should not be considered as sunk or not recoverable.

4. Implications of excluding prior costs in the BCR

There are implications if all prior costs are systematically excluded in the calculation of the BCR. We can use a simple example to illustrate the impacts of systematically excluding prior costs in the BCR calculation. Suppose we have a project with total costs of $100 and $150 benefits as shown in Table 1. Table 2 shows the BCR calculation including all costs attributed to the project's scope and an approach which excludes prior costs.

Table 1: Costs and benefits of a hypothetical project

Project cost breakdown	Project costs	Project benefits
Strategic Business Case (SBC) development	$5	
Final Business Case (FBC) development	$15	
Construction costs	$70	
Operating and maintenance costs	$10	
Total	**$100**	**$150**

Table 2: Comparison of BCRs based on two approaches (including all costs attributed to the project's scope and excluding prior costs)

BCR estimate and updates at the project cycle	BCR including all costs attributed to the project's scope	BCR when prior costs are excluded	Percentage BCR is inflated by
SBC economic appraisal	1.5	1.6	5%
FBC economic appraisal	1.5	1.9	25%
20% project delivery BCR update	1.5	2.3	52%
50% project delivery BCR update	1.5	3.3	122%
80% project delivery BCR update	1.5	6.3	317%
Ex-post CBA at year 1 of operation	1.5	10.0	567%

It is evident that the BCR is stable when all costs attributed to the project's scope are included while the BCR can be significantly overstated if prior costs are excluded.

5. Treatment of prior cost items in CBA

Table 3 provides recommendations on how specific prior cost items should be treated and considers whether they should be defined as sunk in the estimation of the BCR.

Table 3: Recommendations on the treatment of prior cost items

Cost items	Include in BCR calculation?	Reason to include/exclude in BCR calculation
Strategic planning	No	• The costs for strategic planning, area planning and network planning leading the identification of the need for investment can be considered as sunk if it is not specifically related to the project
Corridor preservation and protection	No	• Cost of corridor preservation and protection at the program level should be considered as sunk. It cannot be easily allocated to a project level. • Cost of corridor protection in terms of hardship acquisition can be considered as part of project cost. The cost of corridor protection can often be offset from land and property acquisition savings. In this case, the cost is not sunk.
Land acquisition	Yes	• Cost of land acquisition is not sunk as it can be repurposed and always has alternative uses.
Property acquisition	Yes	• Cost of property acquisition should form part of the project cost as it is an integral part of project delivery if the project is still being delivered. • Cost of property acquisition is sunk if the project is scrapped and the acquired property has been demolished.
Strategic Business Case (SBC) development	Yes	• At Gate 1, the cost of SBC development should be included in the BCR. • Cost of SBC development is not sunk if the project is carried on. The SBC cost may include option development and relevant preliminary design, costing, patronage, and geotechnical studies. • Cost of SBC development is sunk if the project is scrapped. The cost can be sunk if the SBC is outdated (e.g., more than 5 years old that the previous studies are deemed unreliable). • Systematic exclusion of SBC cost in the Gate 1 CBA may inflate the BCR around 3% to 7% dependent on the relativity of SBC cost to the total project cost.
Final Business Case (FBC) development	Yes	• At Gate 2, the cost of SBC and FBC development should be included in the BCR. • Cost of FBC development is not sunk if the project is carried on. • Cost of FBC development is sunk if the project is scrapped. The cost can be sunk if the FBC is outdated (e.g., more than 5 years old that the previous studies are deemed unreliable). • Systematic exclusion of FBC cost in the Gate 2 CBA may inflate the BCR around 20% to 30% dependent on the relativity of FBC cost to the total project cost.

Cost items	Include in BCR calculation?	Reason to include/exclude in BCR calculation
Cost of stages in a Program / Staged project delivery	Yes	• A program BCR should be estimated that includes costs for all stages. The BCR can be biased if whole program benefits are included while only staged cost is used in the BCR calculation.

6. Treatment of prior costs post-Gate 2

Between Gate 3 and Gate 5, the BCR should be updated if the cost and/or project scope has changed. As discussed above, the key factor is consideration of whether or not the specific cost stems from a necessary activity to get to the final product. If it was a necessary activity, then it should be included in the CBA. Systematic exclusion of prior costs in the project development and partial project delivery can severely bias the BCR.

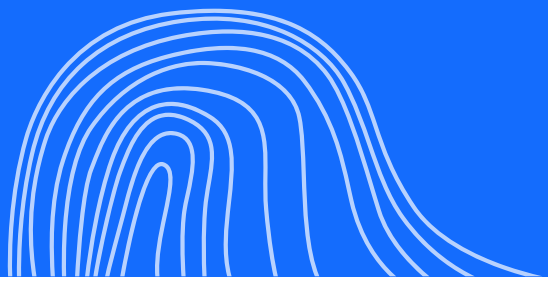
For Gate 6, ex-post CBA and post completion review, actual costs of project delivery should be used. This includes any additional costs incurred that were not captured in the ex-ante CBA.

Document control

Version	1.0
Date	August 2024
Author	Economic Advisory
Branch	Investment & Assurance
Division	Finance, Technology & Commercial

Economic Advisory
Investment & Assurance
Finance, Technology & Commercial

EconomicAdvisory@transport.nsw.gov.au



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