



Brownfield Generic Cost Allowances and Rates

Prepared for Auckland Council
Prepared by Beca Limited

27 June 2024



Contents

1 Introduction.....1

2 Methodology for Developing Cost Allowances 1

2.1 Cost Allowances for Generic Projects adopted for use within a Brownfield Environment 2

2.2 Allowance for Property Costs 5

2.3 Contingency and Risk Allowance 5

2.4 Renewals 5

2.5 Review and Verification 6

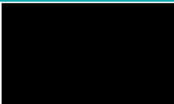
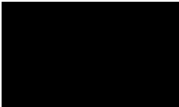
Appendices

- Appendix A – Cost Schedules
- Appendix B – Renewals

Revision History

Revision N°	Prepared By	Description	Date
1	Nipuna Mohottige	Issued for Council Review	14/06/24
2	Nipuna Mohottige	Draft	27/06/24

Document Acceptance

Action	Name	Signed	Date
Prepared by	Nipuna Mohottige		27/06/24
Reviewed by	Varshen Pillay		27/06/24
Approved by	Rob Mason		27/06/24
on behalf of	Beca Limited		

© Beca 2024 (unless Beca has expressly agreed otherwise with the Client in writing).
This report has been prepared by Beca on the specific instructions of our Client. It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.

1 Introduction

The purpose of this report is to set out the process and cost allowances adopted to inform Auckland Council's considerations of funding and financing of transport infrastructure in brownfield environments. The cost allowances outlined in this report are intended to be referenced and applied to brownfield programmes to obtain an indicative cost.

A brownfield environment refers to a developed area, usually in an urban setting and has existing infrastructure in place.

For cost allowances adopted for greenfield environments, refer to the greenfield report.

The report has been developed in collaboration with Auckland Council and Auckland Transport.

2 Methodology for Developing Cost Allowances

The process for developing the cost allowances for projects within a brownfields context can use specific detailed designs where available. Where these designs are not available, reasonable engineering and cost judgement has been applied. Accordingly, generic cost rates have been developed for a brownfield environment to establish a consistent approach that allows project costs to be directly compared.

The cost allowances that have been developed are consistent with the requirements of the Cost Estimation Manual (CEM)¹ for preparation of a Programme Business Case Estimate (PBE). These are normally prepared as part of a Programme Business Case (PBC) and used to provide budgets for forward works programming. Usually, the PBE is based on limited knowledge of the project, with a broad range. The estimate life cycle of a project is illustrated below (Figure 2-1), together with the perceived amount of risk at each stage.

The cost allowances provide an indication of infrastructure funding requirements at a base date and do not reflect programming over time. Therefore, escalation is not included directly in these cost allowances.

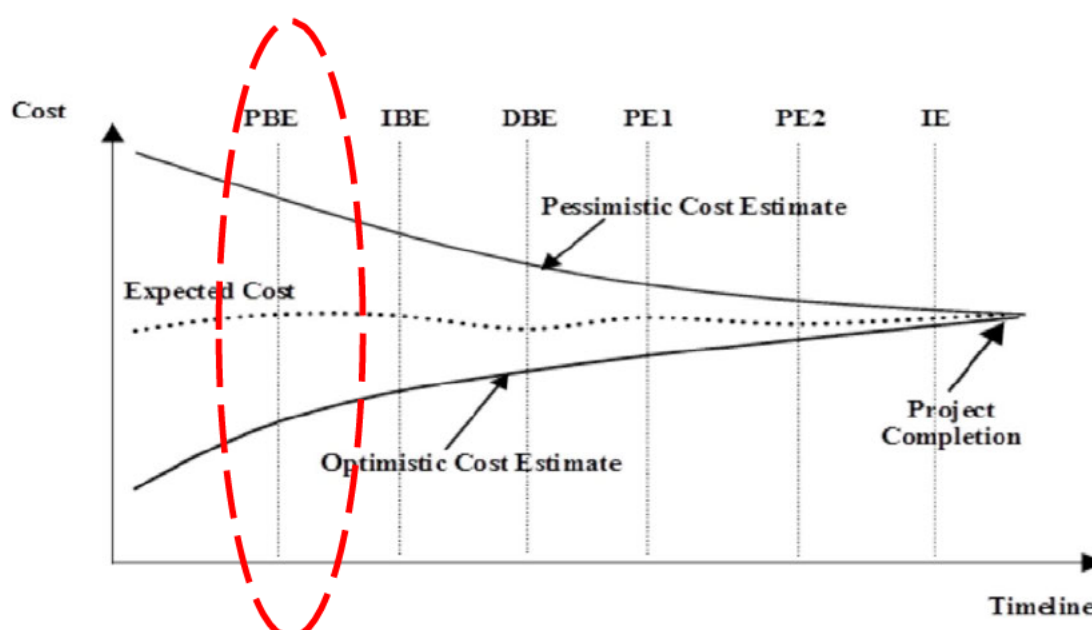


Figure 2-1: Estimate Lifecycle (extracted from section 3.4.1 of the CEM)

¹ "Cost Estimation Manual", Waka Kotahi, version 2 - August 2021

2.1 Cost Allowances for Generic Projects adopted for use within a Brownfield Environment

The accuracy of a cost estimate is dependent on the level of design detail that is available. For projects within a brownfield environment, where the final design solution is not known, the cost allowances need to be based on several assumptions that are summarised in this report.

The cost allowances have been developed to align with the requirements of the CEM and includes an assessment of the total sum of all the elements that make up the estimate.

This value includes:

- Property Costs where relevant
- Project Development Phase
- Pre-Implementation Phase
- Implementation Phase Costs
 - Physical Works Costs
- Construction Management and supervision (MSQA)
- Environmental Compliance
- Traffic Management and Temporary Works
- Preliminary and General (P&G)

For projects within a brownfield DC policy, generic generic linear rates and interventions have been developed which can be applied individually or across the length of the respective project. The rates have been purposefully developed to represent the majority of the intervention physical works cost. Appropriate example projects were used to inform and understand the need, assumptions and scope for transport interventions. These were reviewed and identified as a suite of generic interventions. Specific project costs were developed for a small number of non-generic interventions which significantly differed from the assumptions and scope of the generic projects (these are not covered in this report).

This report documents each of these generic costs and how they can be applied.

2.1.1 Cost Allowances for Generic Treatments

The generic rates set out in Table 2-1 were developed for projects within the Auckland Housing Programme (AHP). A sense check was undertaken by Auckland Transport Quantity Surveyors for appropriate for use within a generic brownfield context and programme. Refer to Appendix A for the detailed schedules and assumptions.

Note these rates reflect the cost to be allowed for physical construction works only, excluding any allowance for Traffic Management, Environmental Compliance or P&G (additional allowances for these items are identified in 0). Client managed costs are also excluded from these linear rates (additional allowances identified in Section 0). The above were based on Auckland Transport's Cost Estimation Guide.

Table 2-1: Generic Rates for Transport Elements (Brownfield)

Ref .	Description, application and schedule reference (where applicable)	Rate	Unit	Assessment year (Baseline)
1	Intersection upgrade low - upgrade to an existing intersection with low level intervention.	\$200,000	each	2024
2	Intersection upgrade medium - upgrade to an existing intersection with medium level intervention. This includes: - medium level roundabout (Ref 2-P1) - medium level signals (Ref 2-P2)	\$600,000	each	2024
3	Intersection upgrade medium/high - Upgrade to an existing intersection with medium/high level intervention. This includes: - medium/high level roundabout (Ref 3-P1) - medium/high level signals (Ref 3-P2)	\$750,000	each	2024
4	Intersection upgrade high - upgrade to an existing intersection with high level intervention. This includes: - high level roundabout (Ref 4-P1) - high level signals (Ref 4-P2)	\$1,500,000	each	2024
5	Midblock low - upgrade to a midblock section with low level of intervention. - Local and collector road upgrade with no changes to carriageway width or kerb lines - On-road cycle lanes	\$2,000	m	2024
6	Midblock medium - upgrade to a midblock section with medium level of intervention. - A bidirectional facility with a kerb line moved on one side. - A shared path with a kerb line moved on one side.	\$4,200	m	2024
7	Midblock high - upgrade to a midblock section with medium level of intervention. Collector/arterial road upgrades with more significant changes involving reconfiguration of the kerb lines on both sides.	\$6,900	m	2024
8	Local area traffic management - Speed table (Ref 8-P1) - Speed threshold signage and marking. (Ref 8-P2) - Chicane with traffic island (Ref 8-P3)	\$100,000 \$5,000 \$10,000	each	2024
9	Zebra crossing (At-grade)	\$50,000	each	2024

Ref .	Description, application and schedule reference (where applicable)	Rate	Unit	Assessment year (Baseline)
10	Footpath - Upgrading an existing sub-standard footpath	\$470	m	2024
11	4 lane transport corridor (urban)	\$13,500	m	2024
12	Footpath/cycle path retrofit Active mode facility	\$480	m	2021

2.1.2 Physical Works Allowances

The physical works allowance includes both the construction costs for the project, as well as costs for setting up and managing the site. The additional components that are required for managing the site are:

- **Environmental Compliance:** Management of environmental compliance requirements, preparation and management of compliance management plans, construction of permanent erosion and sediment control measures, maintenance and monitoring, noise attenuation and earthworks bunds.
- **Traffic Management and Temporary Works:** Implementation of traffic management plans, public notification, lane changeovers, road diversions, temporary roads, plant, and equipment hire costs, temporary construction.
- **Preliminary and General (P&G):** Site establishment, operation, disestablishment, and clean-up; site management, bonds, and insurances, preparing and maintaining quality, health & safety, security, temporary erosion and sediment control, temporary traffic management plans, programming, and reporting.

The physical works allowance adopted for brownfield environments are indicated in Table 2-2

Table 2-2: Physical Works Allowances

Phase	Allowance
Environmental Compliance	3%
Traffic Management and Temporary Works	Typical brownfield -13% Intersection -20%
Preliminary and General	Onsite Overheads – 20% Offsite Overheads – 10%

2.1.3 Client Managed Costs

Client managed costs are incurred throughout the project lifecycle and would vary depending on each project. Basic elements that make up Client Managed Costs include:

- **Reviews:** Economics Peer Review, Cost Estimate Peer Review / Parallel Estimate, Technical Peer Reviews, Constructability Review, O&M Review, Road Safety Audit
- **Investigations:** Geotechnical Investigations, Utility Location, Pavement Investigations
- **Third Party Physical Works:** Enabling Works such as utilities

- **Communications and Engagement:** Open Days, Production of Engagement Collateral, Iwi Engagement, Communications Consultant
- **Third Party Professional Services:** Procurement Support, Property acquisition support, Investigation and Design, Specialist Advisors, Legal Review, Engineer to Contract, etc
- **Consenting:** Council lodgement and hearing fees, Environment Court / EPA Costs, Legal Advice, Consent Monitoring by Council, Building Consent
- **Post Construction Monitoring:** Noise Monitoring, Traffic counts, speed surveys, consent conditions
- **Miscellaneous Costs:** Insurances, Procurement Disbursements, Statutory Compliance, Revocation costs

A lower project-development allowance is applied to take into account that some projects would have pre-work already undertaken by developers, such as for collector road upgrades.

Table 2-3. Allowances for Client Managed Costs

Phase	Description	Allowance
Project Development	Preliminary Design, Implementation Business Case, Investigations, Engagement	1%
Pre-Implementation	Specimen/Detailed Design, Investigations, Statutory Applications	9%
Implementation	Procurement, Construction Monitoring and Supervision	9%

2.2 Allowance for Property Costs

Property costs allowances and the methodology for estimating land acquisition costs have been developed by Auckland Council. These are recorded in the separate methodology document for the council's Development Contributions policy.

2.3 Contingency and Risk Allowance

A contingency is required for cost estimation in accordance with the CEM and is added to the 'Base Estimate' to provide for uncertainty in relation to the estimate inputs and specific project related threats and opportunities with a cost impact.

For brownfields, the cost estimates have been developed using generic interventions and rates. Therefore, they reflect a programme wide approach where the specific scope and extent of works is undefined, resulting in significant uncertainty in quantities. The physical works cost allowances include a 70% contingency, reflecting the uncertainty in the final form of the projects.

2.4 Renewals

Renewals relate to existing assets which are being replaced or renewed by a project prior to the end of its life or when it would typically get renewed. From a DC policy perspective, the intention is to allocate the appropriate costs to developer contributions, on the basis that growth related developer contributions should not be used to subsidise existing costs that would otherwise be met by Auckland Council.

As the confirmed project timing is unknown, it's difficult to determine (with appropriate certainty) the condition of assets during project initiation, and if they need to be considered as renewals. The following method has been developed to estimate the percentage of renewals for each generic intervention.

- Identify existing assets which are being renewed. This has been based on the site clearance and demolition details to estimate what's currently there and being replaced by a project.

- Calculate the proportion of asset cost which can be contributed as renewal. This is based on the expected life of the asset and programme timeline. Example, for an asset with an 80-year life cycle and a 30-year project horizon, there is a 30/80 (38%) chance it will get renewed within project window. Therefore 38% of the cost can be attributed to renewal. If an asset has life below 30 years, 100% will be attributed as renewal.
- Calculate the chance of project lining up with the renewal time of asset. It is assumed that taking the life of an asset into account, we are often not going to be able to line up the timing of a project with when the asset is due to be renewed, resulting in a working assumption that on average half the remaining life of the asset is deemed to still be existing at time of project being undertaken. Therefore for example above, the renewal component will be 38% x 50% = 19% of asset value

The above methodology has been applied to each generic cost to obtain the following renewal percentages. Refer to Appendix B for a detailed breakdown.

Table 2-4 : Summary of renewals

Ref	Description	Renewal %
1	Intersection upgrade – low	8%
2	Intersection upgrade – medium	9%
3	Intersection upgrade – medium/high	10%
4	Intersection upgrade - high	13%
5	Midblock – low	5%
6	Midblock – medium	9%
7	Midblock - medium/high	10%
8	Local area traffic management	1%
9	Active mode crossing - zebra crossing	0%
10	Footpath	4%
11	4-lane transport corridor	8%
12	Footpath/cycle path retrofit	4%

2.5 Review and Verification

The cost estimates were prepared and reviewed by AT quantity surveys and deemed appropriate for application within a generic brownfield DC policy.

A

Appendix A – Cost Schedules

B

Appendix B – Renewals

