



**NEW ZEALAND**  
GOVERNMENT PROCUREMENT

# Whole-of-Life

## Construction Procurement Guidelines

October 2019

v1.0



**MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT**  
HĪKINA WHAKATUTUKI

## Construction Procurement Guidelines

The purpose of the Construction Procurement Guidelines is to provide government agencies with guidance on the government's standards of good practice for the development of their construction procurement strategy. The Guidelines are intended to support government agencies to improve the quality and consistency of their construction procurement practices.

The Guidelines consist of a suite of sections, each covering a subject matter area. They are considered to be live documents which we may update and added to, from time to time, to ensure they remain current and relevant. You can download the latest version of each section, along with any accompanying tools and templates, from [www.procurement.govt.nz](http://www.procurement.govt.nz).

To provide feedback on the Guidelines, email [procurement@mbie.govt.nz](mailto:procurement@mbie.govt.nz).

## Major infrastructure project guidance

Major infrastructure projects by their very nature are large scale and complex – they have bespoke issues, risks and challenges that may require more sophisticated project planning, management, procurement and governance approaches. The New Zealand Infrastructure Commission - Te Waihanga, publishes major infrastructure guidance for projects with a total cost of ownership of greater than \$50m.

For more information about major infrastructure project guidance and the support provided by the Infrastructure Commission, see [www.infracom.govt.nz](http://www.infracom.govt.nz) or contact the Infrastructure Commission at [info@infracom.govt.nz](mailto:info@infracom.govt.nz).

## Disclaimer

The information presented in this guideline is intended for general use only. It should not be construed as legal advice, and should be read in conjunction with any relevant policy, legislation and regulations. While every effort has been made to ensure the accuracy, currency and completeness of this guideline, the Ministry of Business, Innovation and Employment (MBIE) cannot accept any liability for the accuracy, currency or completeness of material contained herein. MBIE cannot be held responsible for, and makes no warranties as to: the suitability of the information in this guideline for your specific circumstances; or any actions taken by third parties as a result of you relying on information contained in this guideline.

Version 1.0 released October 2019

ISBN 978-1-99-000437-7 (Online)

## New Zealand Government

### New Zealand Government Procurement

PO Box 1473 | Wellington 6140 | New Zealand

[www.procurement.govt.nz](http://www.procurement.govt.nz) | [procurement@mbie.govt.nz](mailto:procurement@mbie.govt.nz)



Unless otherwise indicated for specific items or collections of content, this work is licenced under the Creative Commons Attribution 4.0 International License. In essence, you are free to copy, distribute and adapt the material, as long as you attribute it to Ministry of Business, Innovation and Employment and abide by the other terms of the licence.

The permission to reproduce material in this work does not extend to any material that is identified as being protected by copyright owned by a third party. This includes material on websites you may access via links from, or footnotes to, this work. We cannot grant permission to reproduce such material: you must obtain permission directly from the copyright owner(s).

Please note that this licence does not apply to any logos, emblems, trade marks, photography and imagery in this work. These specific items may not be re-used without express permission. If you wish to reproduce any images in this work, please contact us at [info@mbie.govt.nz](mailto:info@mbie.govt.nz).

# Whole-of-life

## Overview

Awarding construction contracts based on lowest price rarely represents good public value. Long-term value over the life of the asset is a much more reliable indicator. It is the relationship between long-term costs and the long-term benefit achieved by you as a client that represents public value.



Agencies must describe, through their business case and project brief, how they will define whole-of-life outcomes for the project.

Whole-of-life thinking is relevant when you are considering whole estates, whole facilities, individual buildings or structures, and when comparing alternative investment scenarios such as:

- retain and refurbish or build new
- alternative design solutions
- alternative specifications.

It is particularly used to justify alternative solutions with a higher capital cost.

At its highest level, you can consider whole-of-life thinking in terms of three inter-related components:

- **Through-life-cost:** the costs of developing, running, maintaining and disposing of a facility over its intended life.
- **Benefits:** the benefits that the facility will result in and how well the facility performs in meeting the required functionality.
- **Environment:** how the facility performs in terms of minimising its cost to the environment; achievement of Green Star ratings, energy efficiency, and reducing carbon emissions.

### A framework for whole-of-life thinking

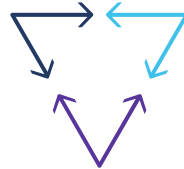
#### Through-life-cost

- › Land purchase costs
- › Finance costs
- › Rental and rates
- › Operating and occupancy
- › Energy
- › Facilities management
- › Component replacement
- › Disposal
- › Development, construction and operational risk
- › Income eg sales



#### Environment

- › Green Star rating
- › Energy per m2 per annum
- › Carbon use per annum
- › Total carbon use during life
- › Carbon use related to construction materials



#### Benefits

- › Benefits of investment
- › Functional performance
- › Design quality
- › Flexibility and adaptability
- › Accessibility

These three components can be considered together to arrive at optimum whole-of-life outcomes, for example:

- a design that goes beyond code compliance to create a higher standard of insulation for a building may result in a higher initial capital cost, but lower overall through-life-cost via energy savings, resulting in a better-quality environment for occupants, and a reduced cost to the environment
- a design that incorporates safe access systems for roof maintenance may cost more to build initially, but this could be offset over the life of the facility by avoiding costly rope-access maintenance, and reducing health and safety risks for maintenance crews.

## Benefits

### Benefits of whole-of-life costing

The benefits of a whole-of-life approach to the design process include the following:

- encouraging analysis of business needs and communication of these to the project team
- optimising the total cost of ownership/occupation by balancing initial capital and running costs
- ensuring risk and cost analysis of loss of functional performance, due to failure or inadequate maintenance, occurs
- promoting realistic budgeting for operation, maintenance and repair
- encouraging discussion and recording of decisions about the durability of materials and components at the outset of the project
- providing data on actual performance and operation, compared with predicted performance, for use in future planning and benchmarking.

### Design quality

Money spent on good design can be saved many times over in construction and maintenance costs. An integrated approach to design, construction, operation and maintenance, with input from constructors and their suppliers, can:

- improve health and safety, sustainability, and design quality
- increase buildability
- decrease waste
- reduce maintenance requirements, and
- subsequently reduce through-life-cost.



#### **Influence of delivery model in whole-of-life thinking**

It is important to take a whole-of-life approach to an asset, whether or not the same team is responsible for design, construction, operation and maintenance.

Delivery models that bring together all these components help to optimise holistic whole-of-life thinking.

Ensuring that there is good whole-of-life thinking from the outset, through specialist expertise and support, will ensure that the design and development of the specifications reflect good whole-of-life outcomes (see What skills and expertise do I need?).

A key part of any whole-of-life cost assessment must be to address the sustainability aspects of the facility. In some areas there are clear links between whole-life costs and sustainability, such as the direct costs of energy usage. Even if the project team does not operate and maintain the facility, it should be designed for convenient, cost-effective and safe operation and maintenance.

For more information, see [Sustainable Construction](#).

## Getting started

### Whole-of-life thinking starts at the beginning

Most of the cost of running and maintaining a facility is fixed through decisions made early in the design process. A focus on whole-of-life thinking should start with the business case, which should explore options for increased capital investment (eg through a higher standard of design), that reduces through-life and environmental costs, and maximise benefits.



Design and whole-of-life thinking should be a top priority in the procurement process. A comprehensive business case and procurement strategy that focuses on whole-of-life outcomes should be developed. This will require the earliest possible engagement between clients, users, designers and contractors.

Budgets based purely on previous experience may reflect earlier procurement projects based on lowest capital costs, rather than through-life-costs. Clients, designers and contractors need to spend time agreeing on the performance requirements that should be considered before the costing exercise is commenced. Only acceptable solutions should be costed.

The goal should be to achieve an initial whole-of-life cost plan, which can be modified as the design and construction is undertaken and as details of specifications become available.



Agencies must describe how whole-of-life outcomes will be delivered in their procurement strategy/plan.

### Who is involved?

The investment decision maker is accountable for any decisions related to the cost of a project or programme.

Whole-life costings should provide the information necessary to make the best decisions in terms of procurement strategy.



The senior responsible owner (SRO) holds responsibility for ensuring that budgetary estimates are based on whole-of-life costs.

The project team has an essential part to play in delivering public value. The team members responsible for design and construction should work together to identify the most cost-effective whole-of-life design solution. The project team should advise on how the design will affect cost during construction and the operational efficiency of the completed facility. They should also advise on buildability and health and safety.

Project team members should work together to update the whole-of-life model. At project inception, the model might be developed in-house or by the whole-of-life advisor. Tenders may be evaluated based on whole-of-life costs, and so, at tender stage, the bidder may prepare the model. Where a panel arrangement is already in place, the panel supplier might be the most appropriate organisation to develop the model.

## What skills and expertise do I need?

The skills and expertise of the project team are critical to achieving a design that delivers good whole-of-life outcomes. The earlier the whole-of-life implications are considered and assessed, then the greater the influence a client can have on the whole-of-life performance for that project.



Agencies must ensure any design and cost consultant scopes of services incorporate whole-of-life outcomes.



### Procuring your team

Consider the following:

- › Whole-of-life design/costing should be part of the designer and cost consultant's scope – it is not normally included as standard in a commission.
- › Appoint suitably-skilled designers who have experience in integrating whole-of-life thinking into their work.
- › Engage a whole-of-life advisor, appointed specifically to manage, report and advise on the whole-of-life performance of the proposed facility. Do this early.

Their role may include:

- › development of a whole-of-life dashboard report
- › reviewing design options and offering whole-of-life design advice
- › development of a detailed whole-of-life cost model.
- › successful whole-of-life outcomes require the whole-of-life advisor to be an integral part of the design team.
- › For many projects, the whole-of-life advisor may be part of the cost consultant appointment, however, for large or complex projects a separate appointment may be more appropriate to provide a targeted focus on whole-of-life outcomes.
- › It is important that the whole-of-life advisor has the required expertise in financial modelling techniques ie discounted cash flows and sensitivity analysis of the variables used in the financial model (eg discount rate, study period, predicted design lives of components, assumptions about running costs etc).