

Capital Works Management Framework

Handover

Guidance for commissioning and handover associated with government building projects



The suite of *Capital Works Management Framework* documents is available online (www.hpw.qld.gov.au):

- The **Capital Works Management Framework policy document** describes the capital works management process and contains the policy requirements.
- **Guidelines** complement the policy document and expand on various aspects of the capital works management process, particularly in terms of best practice procedures. The Prequalification (PQC) System guidelines are also included in the *Capital Works Management Framework* suite of documents.
- **Policy advice notes** provide advice on particular policy issues and/or procurement processes relating to the planning and delivery of government building projects.
- The **Online Toolbox** provides online support to assist in the implementation of best practice planning and delivery of government building projects. It includes templates, flowcharts, guides, sample documents, and links to useful information.

Handover: Guidance for commissioning and handover associated with government building projects

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Contents

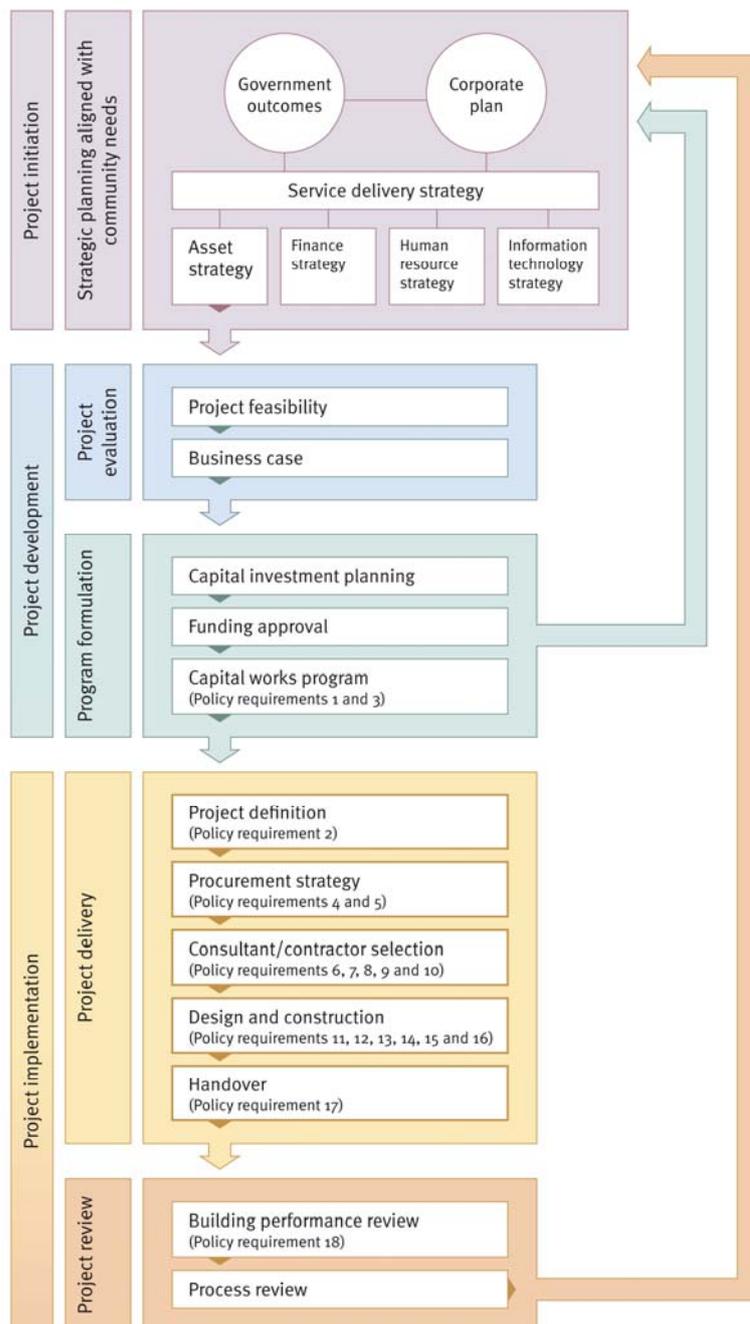
1.0 Introduction	2
1.1 Objective	3
1.2 Target audience	3
1.3 Scope	4
1.4 Roles and responsibilities	4
1.5 Other relevant documents.....	6
2.0 Handover	6
2.1 Pre-handover activities	8
2.2 Practical completion.....	11
2.3 Post-handover activities	12
2.4 Final completion	12
2.5 Project close activities.....	13

1.0 Introduction

This guideline forms part of the *Capital Works Management Framework (CWMF)*. The CWMF is the Queensland Government's key policy for managing risks in the planning and delivery of building projects.

Handover is a major milestone in the capital works management process (illustrated in Diagram 1), occurring in the transition between project completion and commencement of building operations.

Diagram 1: Capital works management process



During this stage, all construction issues are resolved and the building is deemed ready for use. Commissioning and handover activities should be thoroughly planned from an early stage to ensure that:

- the government building meets its operational requirements
- current and future maintenance needs are identified
- operational and maintenance personnel have received all the information and knowledge they require to strategically and physically manage the new building asset.

Introducing agreed and clearly documented procedures will significantly improve the commissioning and handover process. These procedures will assist departments in identifying and implementing adequate management strategies to maximise the efficiency of their building portfolio and minimise risks.

The risks associated with a poor commissioning and handover process include:

- financial risks, such as:
 - financial loss due to inaccurate accounting and asset management reporting
 - unnecessary financial exposure due to underutilised warranties and defect liability periods
 - unnecessary financial exposure due to a lack of supporting documentation, should legal proceedings related to the building be brought against the crown
- operational risks, such as:
 - deficient asset management due to inadequate building knowledge caused by a lack of documentation (manuals, specifications, certificates, as-built drawings etc)
 - potential disruptions and inefficiencies in building operations/maintenance due to a lack of building services information
 - non-compliance with statutory and/or government policy requirements, including those of the *Maintenance Management Framework*
- design risks in future refurbishments/improvements due to lack of accessible and accurate building information
- health and safety risks to maintenance personnel due to inadequate training and knowledge of building systems, plant and equipment.

1.1 Objective

The objective of this guideline is to facilitate consistency in, and provide guidance to government departments regarding, the management of handover activities to facilitate a smooth transition between project delivery and operations/maintenance.

1.2 Target audience

This document is relevant to the following parties:

- project sponsors (and their representatives)
- building owners/users
- contractors/consultants
- maintenance providers.

1.3 Scope

This guideline applies to the commissioning and handover of Queensland Government building projects, as defined in Attachment 1 of the *Capital Works Management Framework*. In addition to the construction of new buildings, this definition includes other project types such as plant upgrades/replacements, major maintenance projects and building improvements.

This guideline is generic. Each project will have its own specific issues, so the purpose and scope of the commissioning and handover requirements should be clearly defined in the project specification.

1.4 Roles and responsibilities

The roles and responsibilities of the key stakeholders in the handover stage may vary based on the specific contractual arrangements associated with the delivery of the project. Generally, the key stakeholders' roles in the handover stage are as follows:

Project sponsor

The 'project sponsor' is the government department funding the project and includes their nominated representatives, such as the principals representative(s), superintendent(s), client representative(s), or project manager(s); depending on their roles and the specific form of contract. These nominated representatives are generally responsible for managing and coordinating the government building project on behalf of the government department.

Building owners/users

The building owners/users are the government department(s) who own/manage and use the government building. The building owner may also be the 'project sponsor' under the contract.

Contractors/consultants

The contractors/consultants are individuals or organisations responsible to the 'project sponsor' during the design and/or construction stages of the project.

Maintenance providers

The maintenance providers are individuals or organisations that undertake ongoing building maintenance works.

The table on the following page (Table 1) summarises the responsibilities of key stakeholders, highlighting the lead and participatory responsibilities.

Table 1: Key stakeholder responsibilities

	Responsibility	Project sponsor	Building owners/users	Contractors/consultants	Maintenance providers
Pre-handover activities	Develop commissioning program, including the calibration and testing of all building services, systems and equipment where required	P	P	L	–
	Assess contract deliverables	L	–	P	–
	Identify and document outstanding defects	L	P	P	–
	Prepare handover report and conduct handover of all required building documentation	P	P	L	–
	Confirm maintenance arrangements (during and after defects liability period) with maintenance provider(s)	P	L	P	P
	Develop handover training program	P	P	L	P
	Transfer of building documentation to maintenance provider(s)	P	L	–	P
	Achieve all commissioning and handover requirements, as set out in the contract specification	P	–	L	–
	Undertake practical completion inspection	L	P	L	–
Post-handover activities	Identify outstanding defects	P	L	–	–
	Rectify all outstanding defects prior to final completion	P	P	L	–
	Monitor maintenance and update building asset records	P	L	P	P
	Manage building certification inspections prior to Practical and final completion milestones	P	–	L	–
	Undertake final completion inspection to ensure satisfactory rectification of all outstanding defects	L	P	L	–
	Update and maintain asset register and other relevant asset management systems	P	L	–	–
Project close activities	Closing of project files and financial accounts; and releasing final contractor payments after final completion	L	–	P	–

Legend: L = Lead agency P = Participant

Note: Where lead responsibilities are assigned to more than one stakeholder, division of those responsibilities should be determined based on the specific contractual arrangements.

1.5 Other relevant documents

- *Building Code of Australia*
(Australian Building Codes Board) www.abcb.gov.au
- *Maintenance Management Framework: Policy for the maintenance of Queensland Government buildings*
(Department of Public Works) www.hpw.qld.gov.au
- *Project Review*
(CWMF guideline, Department of Public Works) www.hpw.qld.gov.au
- *Rectification of building defects or omissions after final completion*
(CWMF policy advice note, Department of Public Works) www.hpw.qld.gov.au

2.0 Handover

In the lifecycle of a government building, the handover marks the transition from project delivery to occupation and operations. The strategic objectives of the handover stage are to ensure the building is free from identified defects, fully functional and operational, and to prevent disruption to operations during the handover transition. An efficient handover strategy will also ensure the required building information and knowledge is transferred from the design and construction team to the operational and maintenance staff, improving the latter's ability to manage the short and long term performance of the building.

Diagram 1 illustrates the handover process. Handover activities may vary in accordance with the specific project and contractual arrangements. The handover may be progressively staged (during project delivery), with each stage following the completion of an agreed level of partial building works as specified in the contract.

The handover stage consists of:

- pre-handover activities (including commissioning)
- practical completion
- post-handover activities
- final completion
- project close activities.

Diagram 1: Handover Process

Pre-handover activities

- Contractor establishes commissioning program
- Contractor calibrates, tests and runs building equipment, services and systems
- Project Sponsor reviews designated contract deliverables
- Project Sponsor identifies and documents defects
- Contractor rectifies defects impacting on safety and service delivery
- Contractor submits building documentation to Project Sponsor
- Project Sponsor and Building Owners/Users confirm maintenance arrangements with Maintenance Provider(s)
- Contractor commences handover training with Building Owner/Users and Maintenance Provider(s)
- Contractor prepares and submits handover report
- Project Sponsor/Contractor undertakes Practical Completion inspection with Building Owner/Users

Post-handover activities

- Project Sponsor identifies and documents defects/omissions
- Contractor rectifies outstanding defects/omissions
- Project Sponsor and Building Owner/Users monitor service maintenance and maintain defect rectification records
- Contractor arranges Final Completion inspection with Project Sponsor and Building Owner/Users to ensure satisfactory rectification of all outstanding defects
- Project Sponsor and Building Owner/Users accept final handover report
- Handover training is completed
- Building Owner/Users update asset register
- Defects/maintenance issues identified by owner/user brought to the attention of the maintenance provider

Project close activities

- Project Sponsor closes auditable project files
- Project Sponsor releases final payment to Contractor
- Project Sponsor/Building Owner(s) close financial accounts
- Project Review – refer to CWMF Project Review Guideline

2.1 Pre-handover activities

2.1.1 Commissioning

Policy requirement 17(a) – Commissioning and handover

Departments are required to ensure that commissioning is adequately planned and undertaken as required under relevant building and development codes, including production of documents, certificates, warranties, inspection and maintenance schedules.

A government building is commissioned prior to handover to ensure that it is functioning, operational and ready for use. Defects, or any outstanding work, under the contract should be identified and documented during commissioning. This approach will ensure a clear understanding of work to be completed during the project's final stages.

The contractors/consultants should prepare a building commissioning program (which should include key dates and activities) for the project sponsor and building owners/users. Generally, under the contractual arrangements, the contractor is responsible for the commissioning of the building.

Commissioning activities may include:

- calibrating, testing and running of building systems, services and equipment, as required, to ensure the building is ready for use. In some cases, the manufacturer's representatives may be present on site to authorise the operation of services and equipment. This may be followed by a report demonstrating that the services and equipment have been correctly installed and is functioning, in accordance with manufacturer specifications.
- calibrating the control instruments and systems to ensure energy conservation and environmental conditions are maintained.
- the commencement of handover training for the operation and maintenance personnel; which should continue to the end of handover.

The performance data gathered from these activities should be retained for use in ongoing performance benchmarking. An effective commissioning process is particularly valuable to the operation of complex mechanical and electrical systems as it provides a benchmark for the optimum operational performance levels. Where special building systems (eg alternative energy generation, waste reclamation) are installed, adequate operational training and access to system information is essential for the maintenance of these systems.

The depth of the commissioning process should be appropriate to the complexity of the building and its systems. Minimum requirements and recommendations for the installation and commissioning of most building systems (eg. air-handling and water systems, fire detection and alarm systems) are specified by statutory technical standards, including the *Building Code of Australia*. The project sponsor should ensure that the required certification is provided by the contractor (who has obtained certification from a qualified building

certifier). If the handover of the building is progressively staged, the contractor should ensure minimal disruption to building operations.

The handover training program, involving building owners/users and maintenance provider(s), should begin during commissioning. This program may include information sessions aimed at familiarising operational staff with the use and maintenance of building equipment/systems. Refer to [Section 2.1.4](#) for more detailed information on handover training.

At the conclusion of commissioning, a final inspection is undertaken. This activity should allow key project personnel (including the project sponsor, contractors/consultants and building owners/users) to ascertain the building's readiness for handover. A satisfactory inspection will result in the issue of a Certificate of Practical Completion.

2.1.2 Receipt of building documentation

Policy requirement 17(c) – Commissioning and handover

Departments are required to ensure that key project documentation is produced and handed over to the appropriate officer for recording on a departmental register and kept available for access by the officers responsible to operate and maintain the facility.

Prior to handover, the contractors/consultants should transfer all building documentation to the project sponsor. Copies of this documentation should then be provided (by the project sponsor) to the building owners/users and the maintenance provider(s).

The building documentation may include:

- 'as-built' building plans and commissioning data
- statutory authority permits and approvals, including progressive building certifier approvals
- plant, equipment, services and system information/schedules, including recommendations related to lifecycle costing
- service maintenance requirements
- operation and maintenance manuals covering design and operating parameters, service maintenance schedules, maintenance and cleaning products/tools and spare parts
- certificates, warranties and guarantees
- occupational instructions and/or any training packages
- lists of outstanding defects identified during commissioning which are to be rectified prior to practical completion.

Departments should ensure that systems and processes are in place prior to handover for the acceptance and retention of building information. The officers responsible for building operation and maintenance should have access to this information, so they can validate and maintain them in accordance with relevant policies and legislation.

Traditionally, building documentation has been transferred and stored as hardcopy i.e. paper-based files. However, given the space-saving potential and improvements to accessibility, electronic storage media such as DVDs should also be considered. Wherever possible, departments should ensure that building documentation is handed over and stored in an industry-standard format compatible with their asset management systems. The mode of transfer should be clearly noted in both the contract document(s) and handover requirements.

In accordance with the CWMF, copies of all building code assessment documents (including 'as-built' plans and approvals) must be provided to the Department of Public Works. This information will then be available for access by all departments.

2.1.3 Confirming maintenance arrangements

Prior to handover, the project sponsor and contractors/consultants should assist the building owner/maintenance provider(s) to determine the building maintenance requirements. Their determination should be used by the building owner/maintenance provider(s) to facilitate planning and budgeting for maintenance operations, as per key government policies, including the *Maintenance Management Framework* (MMF).

2.1.4 Handover training

Policy requirement 17(b) – Commissioning and handover

Departments are required to ensure that training associated with handover is undertaken, utilising the services of members of the design and construction teams where appropriate.

The project sponsor may be required to coordinate training sessions to familiarise the building owner/user and maintenance provider personnel with building equipment and systems. It is good practice, if possible, to utilise the expertise of the design and construction teams (including subcontractors where appropriate) in providing these training sessions. Effective training will ensure building owners/users have the required knowledge to successfully manage/operate the building and its fixtures, fit-outs, equipment, services and systems. The training sessions may involve occupational instructions and may coincide with the handover of building documentation. It is recommended that handover training be commenced as early as possible during commissioning to prevent disruptions to operations once handover is complete.

2.1.5 Handover report

It is best practice to document all handover activities in a handover report. This report is generally prepared by the contractor. The scope of this report will depend of the complexity of the project. The handover report provides the project sponsor with key building documentation and acknowledges that:

- practical completion has been reached and all elements of the project have been delivered

- commissioning has been undertaken and all building elements are fully functioning and ready for use at the time of handover
- identified major defects have been rectified
- all required building documentation has been provided to the project sponsor
- handover training has been completed.

The contents of the handover report are generally agreed between the project sponsor and contractor at practical completion. Before agreement is reached, the following issues may need to be addressed:

- identification of outstanding issues to be addressed by the contractor and project sponsor
- confirmation that the contractor has satisfied any contractual obligations and complied with all relevant legislation.

2.1.6 Building/asset registration

Upon practical completion, the relevant department should ensure that building details are entered into its asset register. This entry must comply with minimum field requirements prescribed by Queensland Treasury; the contractor may therefore be required under the contract, to work with the Building Owners/Users and vice versa to provide the necessary data. It is the responsibility of Departments to ensure that the information in their asset register is kept up-to-date and accurate. This building asset information should be used to inform strategic asset planning decisions.

Where required, an audit should be undertaken to identify the location, type and condition of any asbestos containing material in buildings constructed prior to 1990. Where asbestos containing materials have been found to be present, it must be recorded in the registers of asbestos containing material administered by the Department of Public Works (or the Department of Housing in relation to domestic premises which it controls). These registers must also be updated where any building work, such as refurbishment, alteration, extension or improvement, has involved the removal or replacement of known/suspected asbestos containing material.

Departments are responsible for ensuring the accuracy, currency and completeness of building information. This responsibility includes efficient collection, storage, access, use, and disposal of the building asset information over the entire lifecycle of the building.

2.2 Practical completion

The practical completion milestone generally signals the end of the construction stage and the time when the building is handed over to the building owners/users. Practical completion is achieved when project requirements have been delivered, in accordance with the project brief, approved design and intent, contractual obligations and statutory requirements.

Confirmation of practical completion usually occurs at the conclusion of Commissioning/Pre-handover activities. It is at this time that the maintenance provider(s) should be advised of all maintenance-related design and construction issues.

Prior to practical completion, the contractor receives a Building Code Assessment Summary (which is similar to a Certificate of Classification) from the Building Certifier; this document grants the right of occupancy to the building owners/users. The project sponsor and building owner(s) receive a copy of this document, which must be kept available for inspection until the building (or the part of the building to which it relates) is demolished or removed. If this document replaces an existing assessment summary, this should be reflected in the building owner's asset management and building records.

Major defects that may significantly impair the service delivery of the building or expose the building users to risk must be rectified before practical completion. However, there is further opportunity to identify and address minor omissions and defects during the defects liability period, which begins immediately at practical completion.

2.3 Post-handover activities

2.3.1 Defects liability period

Most building contracts have a defects liability period, typically for twelve months from the practical completion milestone. During this period, the contractor (or their nominee) is responsible for:

- addressing minor omissions and defects outstanding at handover
- rectifying building defects identified during the defects liability period.

The project sponsor should inform the building owners/users of the contractual responsibilities retained by the contractor after handover. All defects identified during the defects liability period should be documented, and the rectification actions agreed with the contractor. Defect rectification should cause minimal interference with building operations. The contractor (or their nominee) must be notified of any required rectification work and be given the opportunity to complete this work by the project sponsor.

During the defects liability period, maintenance activities should be monitored and maintenance records should be continually updated to reflect any new defects and/or rectification works. These records should be incorporated into a defects report, which includes details of maintenance activities undertaken, defects identified and/or rectified and other building issues requiring attention. These records should also be retained in the maintenance manuals for easy access to information on the condition of assets. By the end of the defects liability period, the building should be fully operational and all identified defects and omissions should have been addressed.

2.4 Final completion

Final completion marks the conclusion of the government building project. The Certificate of Final Completion (issued following satisfactory final completion inspection) confirms that all contractual requirements have been met, including the rectification or acceptance of all outstanding defects and attendance to all omissions.

If defects or omissions are identified by the building owner after final completion, reference should be made to the CWMF Policy Advice Note: *Rectification of building defects or*

omissions in the first instance. Where appropriate, the matter may then be referred to the Department of Public Works for advice.

2.5 Project close activities

Following final completion, project files and accounts are to be closed in a way that allows easy auditing in the future. In addition to the key documents produced during the course of the project, substantial records created or received by the design and construction team must be sorted, indexed and stored to create an auditable project trail; this archiving process must adhere to all relevant legislation, regulations and departmental instructions. The project sponsor's administrative procedures for retaining hard copy signatures or physical stamps, as well as the handover of information to regional offices, should be considered at this stage.

In closing the project accounts (and all related financial cost centres), care must be taken to store all financial records securely, as required by applicable financial management procedures. Generally at this stage, the project sponsor will release the final retention payment to the contractor, in accordance with the contractual arrangements.