



Design Procurement & Quality

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A CLIENT GUIDE

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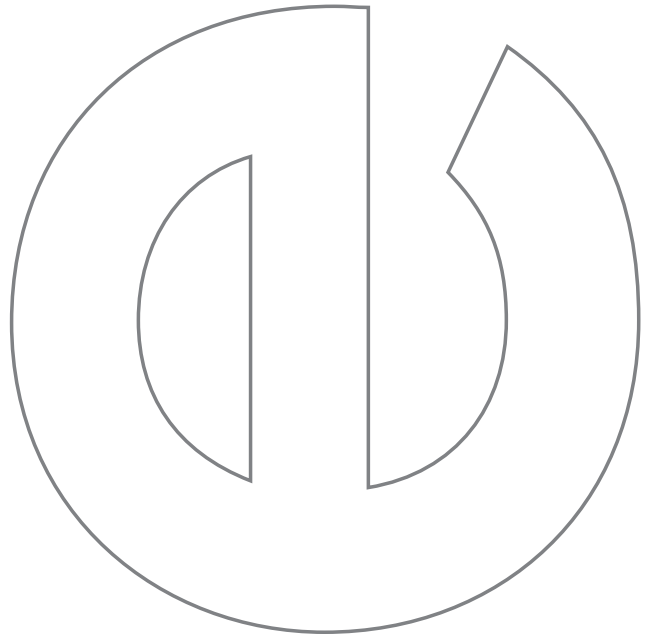


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INTRODUCTION

This client guide serves to assist clients to understand the different ways in which design can be procured, and the importance of good quality design to the quality of a project. It concludes with a summary of seven guiding principles. It reflects almost 100 years of collective experience of the EPM Projects management team in project management.

CHALLENGE

The success of a project critically depends on good quality design. How then can a client procure design that meets its requirements and is complete, accurate and coordinated? This is an important question to answer before commissioning design.

STRUCTURE

This guide is structured in three parts as follows:

Part 1 – Methods for Procuring Design

We explain the different methods by which design can be procured and how the chosen method will influence the quality of design.

Part 2 – Influence of Design on Project Risk and Building Quality

We explain how the quality of design influences project risk and the quality of a building.

Part 3 – Strategies for Good Quality Design

We discuss strategies that can be adopted to obtain good quality design and mitigate design risk.

DISCUSSION

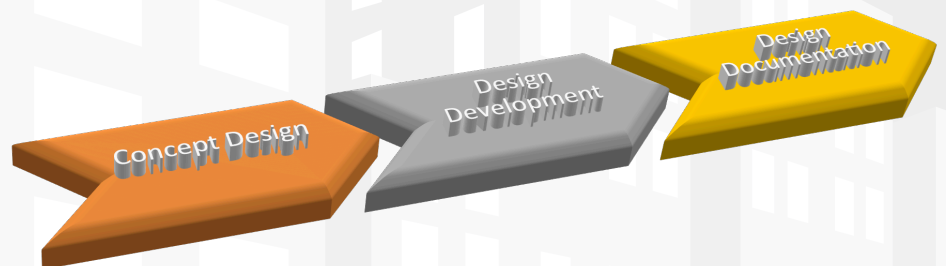
Part 1 – Methods for Procuring Design

There are various methods by which a project can be procured. We discuss these methods and the advantages and disadvantages of each method in a separate Client Guide, entitled Modern Project Procurement Methods. The method by which design is to be procured should significantly influence the decision about how the project is to be procured.

To understand how the method that has been chosen to procure design is likely to influence the quality of design, it is necessary to understand the terms that are used to describe design, and the design procurement process:

- **Design** – The Oxford Dictionary defines the noun “design” to mean “a plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is made”; and the verb to mean “decide upon the look and

Figure 1 – Typical Design Phases



functioning of (a building, garment, or other object), by making a detailed drawing of it".

The design of a building in Australia is generally produced under a three-phase process:

The resolution of design increases through each phase and serves a different purpose, as follows:

- **Concept Design** – The Oxford Dictionary defines "concept" to mean "an abstract idea". At its core, a "concept design" is the initial response to a design challenge.
- **Design Development** – Design moves beyond being conceptual to a greater level of detail. It illustrates how the design might respond to various constraints and opportunities. It is the standard of design that is usually used to obtain statutory planning approvals.
- **Design Documentation** – Design in a format that enables it to be used for construction and usually includes a corresponding commentary or set of instructions (commonly referred to as a specification).

There are two principal methods by which design can be procured:

Method 1 - Wholly by Project Owner

Under this method, the project owner appoints consultants to prepare the design in its entirety, from concept to documentation.

Method 2 - Shared with Building Contractor

Under this method, the project owner usually procures the concept design. At that point, the project owner may:

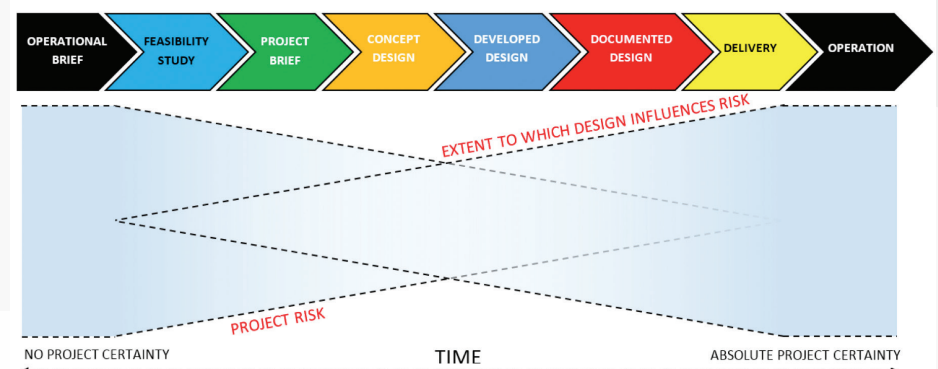
- appoint consultants to develop the design and then hand responsibility to document the design to a building contractor; or
- hand responsibility for design development and documentation to a building contractor.

Each method will influence the quality of design in different ways. In the first method, there is naturally a greater focus on design that enables the building to look, feel and function in the ways that motivated the original idea. In the second method, there is naturally a greater focus on the building process itself. This isn't a criticism or endorsement of either method. Rather, an acknowledgement that the owner of a building will naturally be more focused on design as it relates to look, feel and function than a builder who will be more focused on design that is buildable within the allocated timeframe and the contract price.

Irrespective of whether it is the project owner or builder who procures design, good quality design should enable a building to look, feel and function in accordance with the requirements of the project owner, while also being able to be reliably priced and efficiently built.

PART 2 - Influence of Design on Project Risk and Building Quality

Figure 2 – Design Influence on Risk



Building work in Australia is typically procured through a competitive process in which selected builders are invited to submit tenders. This technique is generally used for all methods of procurement for reasons that go beyond price alone. Irrespective of the method that is selected by which to procure a project (which is discussed in our Client Guide, Modern Project Procurement Methods), the extent to which design influences risk increases over the course of the project, and continues well beyond its completion. This theory is demonstrated in Figure 2 below:

Examples of the extent to which design influences risk over time includes the extent to which design:

- reflects the requirements of the project owner
- is informed by the constraints to development
- addresses the statutory development controls and building codes
- enables a building to be constructed and used safely as required by WHS legislation
- is fit for its purpose and thereby avoids conflict between builder and project owner
- can be constructed within agreed budgets and timeframes
- enables the building to look, feel and operate in the ways required by the project owner

The impact of poor quality design goes well beyond the construction phase of a building. Unlike the impact of poor quality design on cost and time from which a client may recover, poor quality design has an enduring impact on the quality of the building. This may include:

- excessive repair, maintenance and running costs
- adverse impacts on organisational culture and staff turnover
- the need to replace facilities well before the end of their useful economic life

For the reasons discussed in Part 1 above and in our Client Guide, Modern Project Procurement Methods, EPM recommends caution about a method that attempts to manage the risk of the quality of design by making the builder responsible for design. In our experience, this risk can be successfully managed without the need for the project owner to surrender control over design, which we discuss further in Part 3 below.

PART 3 - Strategies for Good Quality Design

Good quality design is the consequence of a combination of factors, as follows:

Consultant Selection

It is important to select a consultant who is experienced, equipped and who has the capacity to properly service the requirements of the project. This decision should also consider the capability of the people who will undertake the work. We also recommend that the “key people” are nominated under the consultant’s contract.

Consultant Services Brief

The quality of design and the design process will largely depend on the quality of the brief that has been given to the consultants. It’s astounding therefore that consultants are often engaged based on nothing more than a phone conversation.

A consultant brief should comprise two parts:

- Project Brief – this describes the scope of the buildings that are to be the subject of design.
- Services Brief – this describes the services that are required of the consultant.

It is important that there are no gaps between the briefs of the various consultants, and ideally no overlaps. Writing an effective consultant brief requires a technical understanding of the subject matter as well as an understanding of the roles and responsibilities of all the other consultants involved in the design process.

EPM has made a significant investment over 15 years in developing coordinated template consultant briefs across more than 20 disciplines.

Consultant Team Structure

It is the practice of EPM to make the architect the “lead design consultant”. While EPM retains responsibility for the overall management of the project, we hold that the architect is best placed to manage and coordinate the integration of design. It is important that the architect regularly meet with the consultant team including those who design as well as those who provide advice to inform design e.g. an acoustic consultant.

Design (or Technical) Brief

It's natural that someone might start designing before articulating their requirements in a written statement. However, commissioning design for which the parameters have not been clearly spelled out first is a recipe for disaster. The design of a building may start with a series of high-level illustrative concepts, however they develop into something far more complex which to the untrained can be difficult to understand. Furthermore, whether or not a design will enable a building to meet the expectations of the person who has commissioned the design will not necessarily be evident simply by looking at a drawing.

We recommend that clients insist on the preparation of a “design brief” or “technical brief” before or at the least hand-in-hand with the preparation of design. While one may not understand drawings, a written statement prepared by a design consultant should assist a common understanding by client and consultant. The role of the client to diligently review and provide feedback about a design brief cannot be overstated. While this can be somewhat of an arduous task, it's not a responsibility that should be transferred to someone outside the client.

It is good practice to prepare ‘room data sheets’ (RDS) as part of the brief, albeit that these would usually be prepared later in the design development process. RDS provide greater details about the way in which a room is to be designed.

Development Constraints

Good quality design also responds to the constraints to development. This includes constraints from environmental planning and building controls and the restrictions on the title of land. These constraints should be investigated in advance of the preparation of design.

Design Approval Gateways

It is important that the design process involve “approval gateways” where designers progressively present the evolving design to their client, and explain how the design meets the design brief and responds to the development constraints. This avoids a situation where design has substantially progressed in a manner that doesn't meet the expectations or requirements of the client.

Design Change Control

After all the work has been done to properly brief, assemble and structure a consultant team, the team has diligently articulated their understanding of the requirements of the client for design, and design has been prepared accordingly and approved by the client, it is unfortunate when a change is then made that has not been approved by the client. For this reason, EPM recommends a design change register that forms part of a design (or technical) brief. This register serves as a single point of reference about the timing of material changes in the requirements of the client for the design of a building.

Design Specification

It is important that design documents integrate with and facilitate the contract between the client and the building contractor. For this purpose, EPM has developed a “design specification” to align the design documents with the general conditions of the contract between the client and the builder and that brings consistency in terminology.

Design to Cost

The EPM Client Guide, Modern Project Procurement Methods, discusses the importance of selecting a project procurement method based on the priorities of the project. Of the three variables - time, cost and scope - it is our experience that clients are usually not prepared to trade off control over cost. This means that consultants must design in a manner that meets the expectations of the client about the cost of construction. This requires a partnership between design consultant and cost consultant. Together, they must regularly review the developing design so that the cost to construct the design is known well in advance of the completion of design. This should enable the client to make decisions about the other two variables, scope and time in order to manage the delivery of the project within the budget expectations of the client.

SUMMARY OF GUIDING PRINCIPLES

Good quality design is the consequence of a deliberate strategy; rarely is it due to good luck. The foregoing can be summarized in the following guiding principles:

1. Accept the centrality of good quality design to the success of a project.
2. Carefully select, brief and structure the consultant team.
3. Insist on a design brief before or at least hand-in-hand with the preparation of design.
4. Establish design review and approval gateways.
5. Establish a means to control changes in design.
6. Establish a method to ensure a 'common language' between design documents.
7. Design to a cost to avoid cost surprises.

ABOUT THE AUTHOR

Andrew Graham is the CEO of EPM Projects Pty Ltd. Andrew's project management experience includes work in a range of organisations including Leighton Contractors, the Sydney Organising Committee for the Olympic Games and Optus Communications. It includes a large number of projects across the commercial, education, and aged care sectors. A portfolio of the work carried out by Andrew and his team at EPM can be found at www.epmprojects.com.au. Andrew can be contacted by email at agraham@epmprojects.com.au or by telephone +61 2 9452 8300 or on mobile phone at +61 419 732 021.



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