Building Creative Environments:
An online guide for planning arts and cultural buildings in Western Australia
Acknowledgements

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- Architectus
- Artrage
- Kodja Place
- Tonkin Zulaikha Greer Architects
Forewords

Arts and cultural facilities are the tangible, visible assets that form part of the broader network of cultural infrastructure facilitating creative people, environments, communities, and economies across WA. The Department of Culture and the Arts (DCA) ‘Strategic Plan 2010-2014’, ‘Creating Value: An Arts and Culture Sector Policy Framework 2010-2014’ and ‘Cultural Infrastructure Directions 2012-2014’ articulate our commitment to improving and developing culture and arts environments for people living throughout WA.

Over the past five years, DCA has completed several major capital works projects, either as refurbishments and extensions to existing arts facilities such as His Majesty’s Theatre, Art Gallery of Western Australia and Arts House, or more recently as new purpose-built venues such as the State Theatre Centre of Western Australia. The new museum is the next exciting major capital works project for this State.

DCA has also administered several capital related funding programs including the Community Cultural and Arts Facilities Fund, the Arts Capital Fund and the Independent Theatre Initiative. These programs have invested in a range of capital projects that directly benefit the WA community.

Our experience with these projects and the stakeholder feedback from our funding programs indicated that a ‘best practice’ guide would be a useful tool to assist local government, arts and cultural organisations and community groups to develop well-planned arts and cultural facilities.

While arts and cultural facilities can vary greatly in size, function and complexity, the sequence of events for capital works projects is broadly similar. The intention of this guide is to empower and forewarn our stakeholders to fully engage in the process.

Integral to the process is strong community engagement and consultation throughout the planning, development and delivery of the facility. Well-planned arts and cultural infrastructure has the potential to encourage engagement with creativity and culture, foster community connections, and incubate enterprise and innovation.

Allanah Lucas
Director General
Department of Culture and the Arts
Our public buildings, places and spaces reflect our identity and culture. Buildings dedicated to culture and the arts are places where we have some of our most memorable and important experiences. They are places where we can witness great aesthetic achievement, craft and passion; where we may be challenged, provoked and surprised; where we can be engaged and discover new ways of understanding ourselves and each other. It is important therefore to acknowledge the mutual role that good design, culture and the arts share in fostering these experiences as well as creating a strong sense of local character. As a society, our cultural richness is directly reflected in the vibrancy and resilience of our community.

Good design is not just about how things look – but is concerned with build quality, environmental responsibility, functionality and the performance of a building over its lifetime. Achieving good design outcomes in our public buildings requires not just good design expertise, but an informed client with a strong and clear vision and a commitment to design quality throughout project planning and implementation. Successful projects in the cultural arena are reliant on a productive, collaborative relationship between client, user and designer.

Exemplar cultural facilities are an integral ingredient in the identity of places. Globally, in recent years, we have witnessed many examples of dynamic and distinctive new cultural facilities offering potency to the ‘brand’ of cities, towns and regions; and catalysing investment and ongoing development. Innovation and creativity are now important markers for what makes places distinctive. Effective and engaging architecture in our arts and cultural facilities will deliver rich possibilities for both our cultural endeavours and the future of our communities.

This guide, developed by the Department of Culture and the Arts, is an essential tool for the culture and arts community and government decision makers tasked with developing the culture and arts infrastructure of the future. It gives clear guidance as to how good design can be achieved, encourages new civic opportunities for our State’s culture and arts facilities and will ultimately contribute to the creation of vibrant, sustainable and cohesive communities. It acknowledges that great buildings, places and spaces provide both vital support to our cultural and artistic aspirations and enrichment of the public realm.

Steve Woodland B.Arch LFRAIA AIUS MDIA
Government Architect
Office of the Government Architect
Using this guide

This guide is based upon the publication ‘Building excellence in the arts: a guide for clients’, developed by the UK’s Commission for Architecture and the Built Environment (CABE), which is now merged with the Design Council. It is not a technical manual of how to build, but offers step-by-step guidance to the vital elements that need to be considered when developing an arts or cultural building.

The intention is that this guide should be as relevant for a small scale regional arts project as for a large scale cultural complex or precinct. It has been structured to assist organisations that are developing a building project independent of government funding, project management services and advice; and organisations reliant on State Government assistance through either Building Management and Works (BMW) or the Department of Treasury’s Strategic Projects (SP).

The Guide therefore acknowledges two pathways for project planning and delivery. Reference to both sets of guidance when conducting planning is recommended:

- **The Strategic Asset Management Framework (SAMF)** – outlining the principles and standards for the planning and through-life management of projects funded by the State Government; and

- **Prepare, Design, Construct and Use** – the universally accepted framework developed by the Royal Institute of British Architects (RIBA) for standard non-government building projects.

When utilising the Government’s SAMF and the RIBA process, two sets of principles should be universally applied:

- **Principles of Good Design; and**
- **Principles of Managing Good Design.**

These principles begin on pages 6 and 10, respectively. Navigate to the sections addressing these principles by clicking on the numbered links at the end of each principle description. So, for instance, ‘A clear vision’ on page 10 offers links both to section 6 - ‘Develop design’, and to section 8 - ‘Construction’, because a clear vision is vital in both design development and in construction.

Use the reader’s navigational tool or mouse to scroll through the guide.

Each of the 10 sections describes a different step of the planning process.

To make the most of the guide and its navigational tools, view it as a PDF on a computer. It has not been designed to be printed. A glossary and a bibliography are provided.
Principles of good design

Design excellence delivers better buildings that contribute to an overall public value and positive effect on communities, environments and people. It contributes to meeting user requirements, improving operational efficiency and service delivery and enhancing community identity and prosperity.

Good design means paying attention to the full lifetime costs of a building, including operating and maintenance costs, user productivity, environmental impacts and the economic impact of a building on the organisation and the broader community.

Seven key principles of good design to keep in mind through a project include:

- sustainability and durability
- comfort and security
- functionality
- flexibility and adaptability
- accessibility and legibility
- stimulating and inspiring
- sensitive/responsive to context.

Sustainability and durability

Sustainability should be integral to the vision for any capital project. The Building Code of Australia makes specific requirements for the energy efficiency of buildings. It is not enough to simply attach ‘environmentally friendly’ devices to a ‘business as usual’ design - see section 6.3 [page 72]. Sustainable design improves building performance and productivity as well as addressing the health and comfort of building occupants. It is an integrated, synergistic approach, in which all phases of the facility’s life cycle are considered.

Careful thought should be given to using energy efficient construction methods and materials, and most particularly to minimising energy consumption, its cost and associated carbon emissions over the life of the building. Cooling is becoming more significant than heating in our warming environment. What will constitute comfort in the building? What will the acceptable temperature be in the auditoria, foyers, galleries and exhibition spaces? Areas of buildings exposed to natural environments are less immediately controllable and tend to have greater temperature fluctuations. Some argue that such environments are healthier and more stimulating but this must be balanced with other issues.
Maintenance and the specialised skill of replacing equipment and materials in arts and cultural buildings also contribute to life-cycle costs and the overall carbon footprint. Floor finishes are particularly significant. Research shows that quality in these areas is often challenged in budget reviews (value management), particularly in a project’s later stages when contingencies are expended and savings are sought. Systems and materials should be selected with a view to balancing long-term operational and maintenance costs against the initial capital cost. Robust, durable materials that provide good performance in the long-term will reduce maintenance costs and aid sustainability performance. The argument for sustainability performance should be clear and strong in the organisation’s business case.

Green Building Council of Australia (GBCA) provides guidance on sustainability performance for a number of building types, including a performance rating and monitoring tool called Green Star. Early use of this tool is encouraged.

This subject is discussed in sections 1.12 [page 46], 6.3 [page 72], 7.2 [page 80], 8.4 [page 82] and Appendices I [page 93] and II [page 97].

Comfort and security

It is critical that cultural and arts facilities are attractive, inclusive and safe for users and the general public. This involves ensuring that the building performs well environmentally, is easy to access both externally and internally, and considers its impact on its surrounds. Buildings that include art studios and provide 24-hour access will need to accommodate additional security requirements for night visitors. Consideration should also be given to passive surveillance and ensuring that security can be maintained and operated with minimal staff. Maintaining distinct and separate access between public spaces and back of house facilities is a frequent requirement of cultural and art facilities.

This subject is discussed in sections 1.13 [page 48] and 6.1 [page 70] and 6.2 [page 72].
Functionality

Functionality is keeping focused on what the building is actually intended to do; a principle that needs to be adopted from the very beginning. Arts and cultural buildings are functionally complex with specialist requirements. These requirements might include specific acoustic properties and specialised lighting requirements. As buildings they tend to have multiple, demanding stakeholders with high expectations of design quality and capacity to deliver high quality arts experiences. How people such as audiences and artists will use the building requires intensive, professional consultation. Culture and arts buildings demand high quality, fit-for-purpose architecture that responds intelligently to very specific briefing requirements. It is important to consider and discuss the building functionality with consultants and architects in the planning stage. In general, design strategies should optimise functional activity and provide for staff and user efficiency while contributing positively to amenity of the public realm. Efficient planning that supports operational requirements; clear access and movement; and spaces that are the right size, shape, proportion and orientation are critical to ensure that buildings are appropriately fit-for-purpose. Good functionality is required throughout a building’s lifetime, and includes anticipating future needs and future expansion.

This subject is discussed in sections 1.2 [page 25], and Appendix I [page 93].

Flexibility and adaptability

Culture and arts buildings undergo many changes during their lifetime. As objectives and priorities change, different needs are created, expanded, and dissolved. As a consequence, requirements for space change frequently. The flexibility to accommodate continual change needs to be incorporated into the building design from the outset and respected in any subsequent alterations. Flexible building systems (electrical, communications, mechanical etc.) and interior spaces are essential to allow for growth in artistic and cultural programming and commercial business opportunities.

This subject is discussed in Appendix I [page 93].

Accessibility and legibility

Accessibility is more than providing for people with disabilities according to the requirements of the relevant regulations. Accessibility should inform all aspects of the design. The best buildings in this respect are those that are easy to navigate, both physically and conceptually, and that provide a rich and rewarding experience for all users. A building can clearly communicate approaches, entrances and internal pathways to its users. Good ‘legibility’ demystifies how buildings can be used and accessed: from legibility at the street or urban scale, to internal signage and wayfinding.
### Prepare
1. Vision
2. Feasibility study / business case
3. Prepare project definition plan / formal design brief
4. Procurement

### Design
5. Team
6. Develop design
7. Technical design

### Construct
8. Construction
9. Handover

### Use
10. Occupation

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**Stimulating and inspiring**

Buildings have the potential to stimulate and enliven communities. Cultural and arts facilities in particular, as places of expression, imagination and education, can articulate the community’s identity and cultural aspirations. Where possible it is highly recommended that artists and arts consultants are involved in the earliest planning of the project. They can provide specialist advice on how other artists will use space; contribute to the enhancement of the building fabric; offer creative problem solving in collaboration with architects and interior designers; and assist in advice on built form, materials, internal spatial quality, landscaping integration and relationship to site. Cultural and arts buildings should be innovative in all of these areas. Contact DCA for further advice.

This subject is discussed in sections 1.10 [page 40] and 6.6 [page 79].

**Sensitive/responsive to context**

Well-designed cultural and arts facilities should be appropriate to their site, purpose and status. Perhaps more than other buildings, culture and arts facilities should be informed by and well integrated with their cultural context, site conditions and climate. Frequently, culture and art facilities are situated within heritage settings requiring sensitive engagement with the existing built fabric. Historic buildings designated for specialist arts activities are often not fit-for-purpose. This can cause complications, increasing project and construction costs. The WA State Heritage Office is a good source of information of what to consider when developing heritage places in WA.

An holistic design approach is necessary to make the most of opportunities offered by a site before resorting to contrived solutions in either the detailed design phase or through technological ‘fixes’. Through a more integrated response to context, buildings have the potential to offer long-term cost savings, genuine innovation and a stronger sense of local identity (see section 6.2 [page 72]).

The Office of the Government Architect’s (OGA) General Design Standards and Good Design Guide provide more information on these principles. Contact OGA directly to obtain these documents.

This subject is discussed in section 1.8 [page 35].
Principles of managing good design

Achieving good design outcomes requires good project planning and management as well as good design principles. Design quality cannot be simply added during the design phase – it must be embedded in good processes from the earliest opportunity and carried through the program. Seven key management principles to help deliver good design should be kept in mind throughout the project:

- **A clear vision**
- be informed
- assemble an excellent team
- prioritise design quality
- realistic finances and whole life costs
- communication and consultation
- an appropriate procurement route.

**A clear vision**

Before approaching architects, it is important that the desired function of the building is understood. This will allow for meaningful consultation with stakeholders to develop a clear and unambiguous vision that informs all aspects of the process. This vision will relate not only to the building project but also to the immediate and long-term goals of the organisation, which means that a clear link should be established back to the strategic, business and cultural plans of the organisation and/or community.

Project owners need to consider what it is that the building needs to achieve and what is required of it. For example:

- How will a building project help or hinder the development of the organisation and/or community group?
- What will be the operational implications?
- Exactly what is the building project going to deliver?
Preparation of the project brief is the first critical stage of constructing the project brief, encompassing the plan for the organisation’s future, the strategy for delivering it and the role of the proposed building project in that strategy. It is strongly recommended that the DCA ‘Cultural Infrastructure Directions 2010-2012’ be considered at this early stage.

Some clients formally rank their initial collective objectives, scoring each item against its importance in delivering the organisation’s vision, funders’ objectives and the public’s expectations. Formulating a vision is discussed in section 1, which deals with both practical and conceptual issues. Holding on to the vision when it may be challenged in the course of value management is covered in sections 6.5 [page 78] and 8.4 [page 82].

**Be informed**

Gather information about contemporary architecture, visit similar buildings and talk to their owners and managers about their experiences. Basic research to ‘benchmark’ other projects is extremely important and will help guide expectations for scope, cost and quality. The appropriateness of benchmarks should be rigorously tested against the project vision so that the expectations for the project are suitable.

Ideally, organisations developing projects should expect that those involved will:

- understand the process
- expect to see alternatives with considered analysis of their relative merits and drawbacks
- expect engagement from designers and consultants throughout the project.

Reading more about this process in sections 1.4 [page 26], 1.5 [page 27] and 1.12 [page 46].

**Assemble an excellent team**

The client has the central role in selecting the team and it is advisable to directly appoint professional advisers to work in the organisation and/or selected staff members to champion the project. Client organisations will be obliged to select and appoint a range of designers, engineers, specialists, cost consultants and project managers.

An important decision is whether to select whole or partial teams who have worked together on successful projects. When making this decision, consider the vision, business needs and relevant skills and capacity of the organisation. Traditionally, cost consultants and project managers are appointed separately from the design team to avoid conflicts of interest in financial disclosure. It is also considered problematic for the project manager and the quantity surveyor to be from the same consultancy, because conflicts of interest may emerge in the timely reporting of costs.
Prioritise design quality

Delivering good-quality design and construction is fundamental to policies on the built environment.

Good design is not a question of an approved contemporary ‘style’; it can provide greatly enhanced value to the finished project. Good design is about how things work, not just how they look. Notions of design quality extend beyond taste, style and appearance to encompass functionality, sustainability, response to context, structural integrity, flexibility in use and cost efficiency both during construction and over the building’s lifetime.

Decision making that talks about and prioritises good design is very important in achieving quality design outcomes and relies on good leadership and a common understanding of quality objectives across the client team. From an early stage decision makers are encouraged to identify robust quality management processes that will aid the project.

These may include:
- undertaking design benchmarking
- analysing site options
- undertaking early master planning
- engaging life-cycle costing analysis
- requesting independent design review
- seeking independent, expert advice on procurement options, briefing and consultant appointment.

The importance of establishing design quality management processes early in the project is critical. Early acknowledgment will ensure that they can be integrated within the program in a timely and straightforward way and will help communicate the design quality ambitions of the project.

For more information on design quality visit section 1.8 [page 35]. Considerations of quality also inform considerations of sustainability (6.3 [page 72]) and (1.10 [page 40]). Maintaining quality and value management are covered in sections 3 [page 56], 6.5 [page 78], and 8.4 [page 82].
Gallery of Modern Art, Southbank, QLD

Client: Queensland Government
Architect: Architectus
Completed: 2006

Queensland’s Gallery of Modern Art (GoMA) embodies the ideals of enhanced public connection and accessibility to art and its architecture. The building emphasises these links both functionally and symbiotically – its design essence is an open, generous and democratic ‘urban pavilion’, which encourages people to approach and engage with the space in various ways.

Art galleries are notoriously inward-looking buildings, with particular requirements regarding the control of natural light, humidity and temperature for exhibiting and housing collections.

A central objective of the GoMA design was to create a building that connected to the exterior environment, without compromising its purpose as a gallery of modern art.

Above: GoMA from the north-east edge of the riverfront
Photo by John Gollings
Realistic finances whole life costs

Building is expensive. The sums of money involved are often of a different order of magnitude from those dealt with in the day-to-day running of an arts or community group or even local government. Clients should not be left surprised by the sum remaining available for construction once fees for consultants, planning and building applications, and allowances for inflation are deducted from the overall project budget. Risks need to be identified and sensible sums set against them before the project proceeds. Careful consideration should be given to establishing specified ‘contingency sums’, to be held in reserve to absorb unanticipated design and construction issues and events. If the business case and cost estimates are well thought-out and based on research, there should be no surprises. In WA, it is particularly important to consider the additional costs of building in regional and remote areas. The Department of Regional Development and Lands produces a Regional Price Index, which provides a cost comparison of goods and services across a number of regional locations to Perth.

Some clients ask their cost consultants to reorder their industry standard cost plans into a list of identifiable items relating directly to the strategy, which gives a sound basis for managing the refinement project cost estimates.

The full implications of the capital project for the organisation should be clearly outlined. Will the project be phased to allow some of the accommodation to be in use throughout? Will the resident organisation/s need to restructure and reduce staff as activities reduce/cease during building/rebuilding? What will the organisation look for when it finally moves into the completed project? Will the new accommodation demand more input, expertise, people, money and time?

Over the lifetime of a building, maintenance and running costs will be several times more than the initial capital cost. Good design plays a crucial role in ensuring that ongoing costs are minimised while the building continues to perform well and meets the needs of an organisation or community. Sustainability initiatives that reduce recurrent costs, construction and building services that allow for efficient operation and adaptation; and planning that enables future flexibility, are all critical things that require consideration and budgeting from the outset of the project. Professional expertise to compile ‘whole life costs’ and analysis will more than likely be required.

The role and responsibilities of ongoing operational and maintenance costs of facilities should be clearly articulated in the early planning stages of the project. For further reading, refer to the DCA ‘Cultural Infrastructure Directions 2010-2012’.

See sections 1.3 [page 26], 2.1 [page 51], 6.5 [page 78], 9 [page 85] and 10.1 [page 91].
Communication and consultation

Within and around a healthy community, organisation or local council there’ll be many people with a genuine interest in the project. These people will include staff, users and visitors. The consultation process can either fully engage this broad constituency so that a sense of ownership has already been created when the building is complete or it can accidentally alienate significant numbers.

If not managed well, effective and wide ranging consultation well may create unrealistic expectations. Brokering these ambitions is a critically important process, which should be recorded. It is sometimes very helpful to revisit these earlier discussions later in the process and manage accordingly. Clear governance structures assist these consultations.

It is essential to establish a decision-making structure and appropriate lines of communication, internally within the organisation and externally with the full consultant team. This may be formal or can be more flexible in smaller projects.

The formality of ‘signing off’ the design at regular work stage intervals is useful. It has to be meaningful; all the necessary parties need to consider the proposals before agreeing to them.

These issues become acute when the project is contained within a much larger project proceeding at its own, commercially driven pace (see section 1.7 [page 32]).

There is more information about communication within the project team in section 6 [page 70]. For communication with staff and users as the project progresses, see sections 8.5 [page 83] and 10.1 [page 91].

‘Working Together: Involving Community and Stakeholders in Decision-Making’, published in 2006 by the Office of Citizens and Civics: Consulting Citizens Series, is a guide that may assist with planning projects with community and stakeholder consultation and input.

An appropriate procurement route

The ‘procurement route’ – the contractual framework within which the construction project is realised – is important. Different procurement options will pose different challenges and opportunities. It should be understood that different procurement strategies offer varying levels of control over the quality of the end product, and that the required performance of a proposed facility should influence decision making on an appropriate approach.
Procurement routes may vary depending upon the project funding arrangements and partnerships in place. Projects that require significant stakeholder input and consultation throughout the planning process need procurement routes that enable flexibility and high levels of client control.

Full client control can come at a potential cost: the client bears much of the risk for the consequences of delays and alterations to the scope of works. Establishing the level of additional costs often leads to some level of conflict which, if not resolved quickly, can escalate and be costly to adjudicate, destabilising the operational planning. Alternative routes have been developed to reduce clients’ exposure but, again, at a cost – the loss of design control. It is very important to secure the necessary expert advice and be clear about the implications of the different approaches.

In order to select the most appropriate procurement option, it is important to:

- understand project drivers and constraints, including design quality, whole life performance, budget, timelines, stakeholder commitments and market capacity
- investigate all possible procurement delivery models before project options are finalised
- seek advice from key stakeholders and experts in planning and development

challenge assumptions to better achieve desired outcomes
- use practical analytical techniques in the decision making process.

There is a number of procurement routes available and choosing the most appropriate method is essential to the project’s success. It is very important to secure the necessary advice and be clear about the implications of the different approaches.

The ‘Infrastructure Procurement Options Guide’ located on the Department of Finance website and the Office of the Government Architect’s ‘Procuring Well-Designed Buildings’ and ‘Procurement Advice Matrix’ are valuable resources that can inform procurement decisions.

More information on procurement is available in section 4 [page 58].
Why are arts and cultural building projects different?

Arts and cultural buildings can often be functionally complex with exacting requirements. These might include the physical expression of an aesthetic contrary to normal building practice; the involvement of an artist within the envelope of the building; or issues related to quality of light, acoustic properties, sophisticated technical systems, stage machinery or very particular environmental conditions.

Arts buildings often require 24-hour access and tend to have many constituencies to satisfy, with high expectations of design quality and impact. Discussions and negotiations tend to be public, while progress – or the lack of it – is highly visible. These buildings frequently demand a disproportionate effort compared with other, more familiar building types, and all involved parties need to be aware of this.

Fast population growth, changing demographics, and emerging technologies also create challenges and opportunities for communities and the arts and cultural sector. These challenges and opportunities should be considered when planning for and designing arts and cultural facilities in WA.

Facilities that recognise potential changes and embrace flexibility are most likely to thrive and be sustainable in the long term. Decision making will involve balancing quality against time against cost. Professional advice and interpretation will be essential in optimising the final mix. Priorities may change through project stages, but it is important to keep in mind the project objectives or ‘vision’ and purpose of the building.

Size, funding and delivery

Arts and culture undertakings are diverse. The breadth of activities requires varied models of services and buildings that support and accommodate for various uses and spaces including:

- administrative centres for arts organisations
- art and craft galleries
- artist studios – working and residential
- commercial – shops and bars
- community arts centres
- concert halls
- craft workshops
- film and digital studios
- indigenous cultural centres and keeping places
- libraries
- museums
Creative professionals often develop innovative ways to use space. Sometimes providing services such as power, water, lighting or temporary seating is all that is required for a performance taking place in an alternative space or outdoor setting. Temporary structures and mobile facilities, such as a moveable stage or large marquee, are one way to accommodate seasonal culture and arts activities. The ephemeral and informal nature of these structures encourages easy access and the development of new audiences.

While some activities need little in the way of equipment and space, others may require highly sophisticated technology and support functions.

Whatever the case, effectively meeting art form requirements means that cultural and arts facilities need to be designed and built for the purpose they are meant to meet. Just as the type and requirements of arts and cultural facilities can vary, so too can the resourcing and delivery of these capital projects. In many cases, these projects will involve funding and delivery partnerships between Federal, State, or Local Government in association with an arts or community organisation.

Funding from these sources may be in the form of seed money, capital investment or operational funding. In some instances, private funding, sponsorship and in-kind support can also make up the project budget. Often the funding and service delivery arrangements of the project and the venue will determine the delivery and procurement methods used.

Project and delivery types are discussed further in the following section.
Non-government projects

The construction industry and its attendant designers, engineers and consultants work within a tightly structured, time-driven framework with in-built penalties for disrupting this rigid process. New design ideas may be generated rather later in the process but this is less than desirable and generally each stage needs to be completed in sequence to the satisfaction of the client and project advisers.

It is necessary to formally sign off each stage because lack of clarity in this process creates ambiguity and confusion over the actual stage achieved. Good governance and planning will clarify who signs off and at what stage. Precision in costing may not match the level of design detail achieved and vice versa. Figure 1 shows the four principal stages around which this guidance is structured: a sequential way of progressing through a capital works project.

Iteration within the work stages is, within reason, useful and desirable. Various options may be developed which will require comparative analysis. Building projects take a surprisingly long time, and five years from the initial idea to the opening is not uncommon. The final project stages and completion may seem distant and can be difficult for the client organisation to generate the essential time and concentration in the critical early stages.

It is important to plan all stages and keep clear records of decisions and supporting arguments so that they can be referenced later in the process if necessary.

Figure 1: Four stages of a building project. Developed by the Royal Institute of British Architects. The stages may overlap by different amounts in different types of procurement.
Government funded and managed projects

WA State Government’s Strategic Asset Management Framework

The State Government uses a process known as the Strategic Asset Management Framework (SAMF) to deliver major public buildings and facilities. SAMF is designed to help facilitate advice and decision making within Government agencies, including the development and review of investment proposals to the Government.

While SAMF is the framework used by government, it provides a helpful insight into a process that assists in delivering major public projects such as schools and hospitals, the State Theatre Centre of Western Australia (opened 2011) and Perth Arena (opened November 2012). The SAMF approach requires rigour and discipline. Any recommendation to invest in an asset – either existing or new – must have a clear strategic justification in terms of meeting the Government’s objectives and demonstrate that the recommended option offers strong value for money. When a conclusion is reached to invest in an existing or new built asset, SAMF requires a whole-of-life approach to planning that should cover the project delivery, ongoing operation, maintenance and eventual disposal of the asset.

The Strategic Asset Plan (SAP) is the initial step in the SAMF planning process and is refined annually in conjunction with a corporate plan. The SAP supports an agency’s overall corporate plan and should be consistent with long-term state and regional development planning. The SAP identifies the initial need for an asset through a gap analysis or needs assessment and provides a context for a range of broad investment proposals, usually for the next 10 years. These proposals can include solutions like asset remediation, maintenance, disposal of property and future land acquisition. The SAP can also address non-asset solutions, such as key human resources and projects that may be associated with planning a new building.

The principles that SAMF is founded on have universal application for asset planning and management regardless of the nature of an agency’s business or the types of public asset involved. SAMF is designed to assist senior decision makers and their staff in all WA government agencies who participate in the annual State Budget and corporate planning process, and who develop and review:

- strategic asset plans, business cases and project definition plans
asset management, progress and benefit realisation reports, particularly for operations, maintenance, and disposal.

SAMF clarifies the practical, efficient approach that should be taken when preparing investment advice.

The full SAMF process is outlined on the WA Department of Treasury website.
1. Vision

The process of deciding on the content of a building project is often known as ‘briefing’. The term is used to refer to the document provided by the client indicating its requirements in terms of important concepts or more detailed room allocations. These first steps are crucially important, as decisions made now will guide the whole project. Brokering a clear vision at this stage can lead to successful outcomes later on when difficult decisions have to be made. Developing the vision and brief will be part of the planning (and approval process if the project is funded through the State Government) and will support the business case and project definition plan. These are outlined in sections 2 [page 51] and 3 [page 56] respectively.

1.1 Gap analysis and needs assessment

The first step in the planning process is to undertake a gap analysis and needs assessment to collect information about the community or organisation, its existing facilities and what type of facility is lacking or inadequate. This may include considering the broader context of regional cultural planning and recognising the strengths in existing assets. The strategic asset planning is also linked closely to the organisation’s corporate planning and therefore the business plan, budget, overall goals or service delivery planning will also need to be considered in this assessment. A gap analysis can assist with deciding whether some objectives can be met through re-organisation and collaborative solutions to asset planning rather than building a new facility. The DCA’s ‘Cultural Infrastructure Directions 2012-2014’ provides key policy statements on alternative infrastructure considerations to the built form.

A gap analysis or needs assessment may include:

- identifying current and future trends including population, audiences, tourism, programming, and technologies
- analysing social indicators and audience/visitor demographics
- reviewing existing facilities and services to identify the type/scale of assets that are needed and not currently available
- assessing similar facilities and services provided in comparable communities/organisations
- community consultation to identify unique skills, demand, usage and future potential
- sourcing skilled managers and technicians.
The gap analysis and needs assessment will help to identify:

- operational problems in existing spaces, including mismatch of skilled managers and technicians in the space
- unfulfilled aspirations caused by lack of space, lack of the right type of space, i.e. too low, too high, too dark, too light
- poor technical facilities
- the threat of demolition through redevelopment
- economic viability threatened by low capacity
- opportunities to regenerate an existing facility within a larger development
- the feel, look and/or condition of the existing space disconnecting and discouraging visitors or audiences
- difficult, uncomfortable and undignified spaces for people with disabilities to participate and attend
- life cycle energy and maintenance costs increasing annually at an unviable rate
- existing heritage, maintenance, or access issues.

An organisation’s strategic and business plans will set out future organisational and/or community objectives and priorities. For this reason, it is important that considerations associated with the design of new facilities or extensions are linked back to these documents.

For local government in particular, this may involve following the guidelines set out in the Integrated Planning Framework, which has been introduced in WA as part of the State Government’s local government reform program.
State Theatre Centre of Western Australia, Northbridge, WA

DCA commissioned a theatre consultant to undertake consultation about the potential structure and content for a new performing arts venue. The consultation with 51 organisations, groups and individuals recommended that the venue should house primarily drama and contemporary dance and consist of a main theatre with a capacity of 525 to 575 seats, and a studio space with a capacity of 200 seats. The project steering committee determined the venue’s location.

From the outset, it was envisaged that the venue had the potential to become an architectural, cultural and civic focal point for the community, contributing to a more vibrant and engaging capital city, a vision that has been achieved with an award winning facility drawing capacity attendance for a range of performances.

Client: WA State Government

Architect: Kerry Hill Architects

Completed: January 2011

Following a series of professional reports and sector consultation, the need for a world class, mid-size theatre for the State was recognised and planning for the State Theatre Centre of Western Australia began in the late 1990s. The theatre was not only needed to replace the aged Playhouse Theatre, but also to provide a contemporary space for the performing arts sector.

Above: Sectional perspective, STCWA

Courtesy of Kerry Hill Architects
1.2 How much building is needed?

This is a key question for the needs assessment. For arts and cultural facilities there may be several development options available, including:

- stand-alone venue – establishing or refurbishing a dedicated facility serving a single or multiple purposes
- co-located and multi-purpose facilities – jointly locating service providers within a facility, usually without integrating services, but involving shared premises and possibly some administrative or other services
- creative or community hub – a collection of venues or facilities clustered together on the same or adjoining sites. There may or may not be interaction between these facilities. Together, they create a focal point for community or sector activity.

There are many benefits to be gained through the joint provision or shared use of arts and cultural facilities including:

- less duplication and maximum use of community facilities and services
- creation of a community hub – a focal point for community activity
- shared capital costs
- reduced operating costs

Facilities that combine a range of uses and functions could maximise the impact of finite resources. Facilities with a range of disciplines have the potential for the organisations accommodated within them to benefit from opportunities and resources not previously considered including new enterprise and development strategies, audiences and organisational relationships.

However, multi-purpose facilities must be strategically planned. The DCA’s ‘Cultural Infrastructure Directions 2012-2014’ is helpful to assist in understanding the policy issues of cultural infrastructure. The needs of community facilities differ dramatically from those of professional arts organisation. Multi-purpose facilities cannot be a blanket resource that automatically meets the function and programming needs of a broad and incongruent range of user groups. The success of integrated infrastructure is entirely dependent on careful design and governance to ensure it can meet the specific needs of the range of interests using them.

‘Cultural Infrastructure Directions 2012-2014’ has a key principle that cultural buildings should be fit-for-purpose and support best practice of specialised arts and cultural activities; this should be central to the considerations of what form of building to pursue.
1.3 Is a new building needed?

A building might not be the best solution to the organisation or community need. The needs assessment could identify possibilities for alternative solutions such as modification of an existing operation or it may highlight a more sustainable option to revitalise existing accommodation.

Regardless of whether the building is a stand-alone venue or a multi-purpose facility, it is imperative that the project results in a fit-for-purpose facility and that this is a core value throughout the development of the project.

What other impacts will a new building have on operations (both positive and negative) in the short term during fundraising and construction, and in the longer term after completion?

Important considerations include allowing sufficient space for future expansion, including audience numbers and appropriate provision for recurrent maintenance costs for the new building.

1.4 Who is the client and how will they govern?

Various client/project structures are possible and this will impact on the size and scope of a project team. However, the principles of assembling an excellent team apply regardless.

The term ‘project champion’ is often used to identify the lead client, the single point of contact. One of their first tasks is to design and establish a relevant and sustainable, credible and transparent working structure. Some decisions will need to be taken quickly. Everyone involved should be absolutely clear about their own level of authority but the project champion, who must have the authority, or at least rapid access to the authority, is required to drive the project effectively.

In smaller organisations, the champion may well be the chief executive officer or the owner. In larger organisations, a senior executive should be nominated. Whoever takes on the role should be skilled in:

- understanding and giving form to a vision
- brokering priorities
- organising the client side of a complex project
- staying within the approved project scope, cost, schedule and risk parameters to achieve value for money in the delivery stage
prepare

- alerting stakeholders to any emerging material variations and advising on how they should be addressed
- financial control, assessing value and risk
- assembling a thorough and comprehensive brief
- team leadership and motivation.

Financial input and organisational change may be required to give the champion the time to take on the role. If they are still working full time on their day job this may be difficult. In some cases an outside consultant working freelance may be appointed to assist with the more practical elements of the role. This can prove valuable in that such consultants may be able to bring their knowledge of similar projects to bear.

Section 2.2.2 of CABE’s ‘Creating Excellent Buildings’ document also refers to the desirability of having a ‘design champion’, particularly in larger projects. This person is responsible for maintaining design quality at every stage of the process. Such a role can be combined with the project champion role, especially in small organisations with the lead client possibly taking on this responsibility.

1.5 Be an organised client

Building projects require participants with different interests and skills that come into play throughout different stages of the project. It is necessary to assemble a project team progressively from within the organisation and from other stakeholders and specialists and to be clear in allocating responsibility. The contribution of some roles, such as the integration of artists, usually requires early planning for selection and appointment during the development and design stages. Be aware of allocating appropriate timelines and maintain regular and open communication with all stakeholders and specialists throughout the project.

The table on the following pages summarises roles that may be important in the early stages of the project. Not all of these roles will be necessary, appropriate or affordable in smaller projects, where the project champion may take on several roles. In such cases, they may require assistance to manage the workload.
### Prepare

<table>
<thead>
<tr>
<th>Role</th>
<th>Contribution</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project board</td>
<td>The senior collective decision makers. Good to have wide spread of skills</td>
<td>Strategic decisions on policy, asset investment priorities, expenditure and the</td>
</tr>
<tr>
<td>(essential)</td>
<td>represented, including experience of the construction industry.</td>
<td>vision.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appoints executives and, most particularly, the project champion.</td>
</tr>
<tr>
<td>Executive client</td>
<td>The officers who run the organisation, led by a chief executive.</td>
<td>Develops the vision, assembles the plan, proposes and reviews options.</td>
</tr>
<tr>
<td>(essential)</td>
<td></td>
<td>The project will add considerably to their day-to-day workload.</td>
</tr>
<tr>
<td>Project champion</td>
<td>Leads the project for the client organisation.</td>
<td>Answers to the board.</td>
</tr>
<tr>
<td>project director</td>
<td>Represents the organisation.</td>
<td>May be sourced from the executives, often the chief executive.</td>
</tr>
<tr>
<td>Project steering</td>
<td>Focused advisers and specialists without day-to-day involvement in the project.</td>
<td>Monitors developments, communicates progress, reports to board.</td>
</tr>
<tr>
<td>group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts business team</td>
<td>Internal financial officers. May be supplemented by external arts</td>
<td>Identifies the financial drives for the vision, establishes realistic model</td>
</tr>
<tr>
<td></td>
<td>business consultants.</td>
<td>for growth, assesses risks and establishes their potential effects on the</td>
</tr>
<tr>
<td>Arts technical team</td>
<td></td>
<td>life cycle health of the organisation.</td>
</tr>
<tr>
<td>(theatre/gallery/museum/public art consultants)</td>
<td>Internal staff may be supplemented by external consultants with prior knowledge of capital projects to assist in concept/detail development.</td>
<td>Technical and conceptual ideas will need to be quantified and brokered against other demands in achieving the vision.</td>
</tr>
<tr>
<td>Role</td>
<td>Contribution</td>
<td>Responsibility</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>Building management team</td>
<td>Larger organisations may have a facilities manager, or building issues may rest with a member of the administration staff in smaller organisations. Continuity of knowledge and understanding will be critical to success, particularly in sustainable, low-energy buildings.</td>
<td>Includes a raft of compliance requirements, life-cycle maintenance and renewals and ownership of the building management control system. There may need to be a more formal arrangement, sometimes outsourced, at a cost.</td>
</tr>
<tr>
<td>Client adviser (external)/project manager (essential)</td>
<td>May be the internal appointment of a construction industry professional, someone with project management experience, particularly of capital arts projects. May be an external appointment. Either way the appointment should be formal and clear in its scope and length, and related to the project work stages.</td>
<td>A critical appointment. Some independent advisers specialise in the arts. Trust and good working relationships with the organisation at all levels are essential. Advice on setting up the feasibility study and interpreting its outcomes, the choice of procurement route and the selection of consultants and the contractor.</td>
</tr>
<tr>
<td>Sector/cultural advisory committees</td>
<td>May include Indigenous cultural advisory groups and subject specialists.</td>
<td>Review and provide advice on vision, building design options, exhibition design and content proposals. Provide cultural and regional advice.</td>
</tr>
<tr>
<td>Audience/visitors</td>
<td>Existing and potential audiences form the key constituency and may be challenging to access for views on the emerging vision and design.</td>
<td>This direct community will make or break the project. Communication needs to be effective and the responses disseminated and integrated into the project.</td>
</tr>
</tbody>
</table>
### Prepare

<table>
<thead>
<tr>
<th>Role</th>
<th>Contribution</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public interest/ the community</td>
<td>The wider community will be involved through the permissions process.</td>
<td>The planning process is very much affected by public consultation. Elected councillors ultimately decide in committee. Planning officers may be able to decide for small projects. Indigenous places will involve cultural permission and approval.</td>
</tr>
<tr>
<td>Funders</td>
<td>Provide finance for capital spend. Likely to be several complementary funders eg. Lotterywest; local, state, and federal government.</td>
<td>Each funder will have its own agenda and apply it to the project. Managing multiple expectations, conditions and procedures will be demanding.</td>
</tr>
<tr>
<td>Local authority</td>
<td>Planning, development and building control permissions will be required. May be a project funder or building/site.</td>
<td>Multiple interests best gauged and brokered by regular meetings from earliest stage.</td>
</tr>
</tbody>
</table>
State Theatre Centre of Western Australia, Northbridge, WA

To ensure a technically superb facility that was relevant to current and future arts organisations and performers, an advisory pool of sector representatives provided input into the development of the technical design requirements and the venue’s programming and management policies.

The expertise, skills and experience of these people have ensured that the business planning, design and construction of the State Theatre Centre of Western Australia is of world class standard and on the cutting edge of theatre practice.

Client: WA State Government
Architect: Kerry Hill Architects
Completed: January 2011

Planning, design, construction and fit-out of the new theatre involved more than 70 specialists that all contributed to the development of the detailed design and functionality of the venue. These experts included: artists; architects; specialist consultants and planners; designers; acousticians; theatre, program, heritage, ethnographic and archaeological consultants; quantity and land surveyors; structural, mechanical, civic, façade, fire, environmental and traffic engineers.

Top left: The staircase leading up to Heath Ledger Theatre, STCWA
Photo by Eva Fernandez

Left: View of the flytower from The Courtyard, STCWA
Photo by Eva Fernandez
1.6 Become an informed client

Visit similar buildings and organisations, interview other clients, attend their events and become familiar with contemporary architectural design culture.

Identify sources of advice. Published books and articles may well offer useful insights. The Australian Institute of Architects has a specialised architectural bookshop with a wide range of titles and the WA Office of the Government Architect may also be a useful source of information for state and local government organisations in WA.

Section 6 of CABE’s ‘Creating Excellent Buildings’ also offers some introduction.

1.7 Identify and consult with stakeholders

1.7.1 Identifying users, audiences, visitors and other stakeholders

Potential and known stakeholders should be identified and their roles understood early in the planning process. This is not an easy task as there will be multiple stakeholders, each with different needs, views and opinions.

The list of stakeholders might cover a range of internal and external groups that should be considered as partners in the successful delivery of the project, including:

- the wider client body
- the project team
- existing and potential audiences and users
- the public
- funders
- people with disabilities
- young people
- volunteer groups
- other local and national stakeholders including public agencies, arts organisations, artists and craftspeople, civic groups, business groups, schools and the academic community.
1.7.2 Design consultation

Consultation for the building design should be strategic in that it should communicate and exchange information, identify priorities, values and needs and build a relationship with the proposed building. It should also be effective, focused and balanced and aim to explore a range of viewpoints and constructive points of view. Interpreters and experienced facilitators may be required where appropriate. Such consultation will help establish a shared vision among stakeholders and provide a range of values and facts to inform good design.

Relevant protocols should be observed when engaging with Indigenous communities. Art form-specific protocols are available through the Australia Council for the Arts and more general consultation advice is available from the WA Department of Indigenous Affairs.

The most appropriate methods of consultation will depend on the nature of the project, the groups concerned and their experiences. Consultation may vary in scope and detail and professional facilitators may be appointed. Typical methods include:

- well designed and informative websites – crucial
- the media – especially local newspapers and radio stations
- questionnaires or surveys – with carefully constructed questions, so as not to ‘lead’ the interviewees
- focus groups.

Consultation should be designed to take place at a number of different stages in the project but particularly at the pre-design stage and regularly as the design is developed.

Findings from consultation can often be overridden or only interpreted in a limited way as many other pressures come to bear. Arts and cultural capital projects need to embrace a detailed assessment of the objectives, values and opinions of all stakeholders in order to be sustainable and relevant in the long term.

- public meetings and community consultations – supported by exhibitions, brochures and flyers
- newsletters – updating progress in design and fundraising
Kodja Place, Kojonup, WA

The first step of the project involved building relationships between the local cultural groups of Noongar, Italian, Maori and Wadjela peoples in order to develop the project together. This included a period of talking in gatherings, in the bush, on video shoots, in local homes, the Kodja Place kitchen, and at the footy.

The project leaders chose to put locals in the driving seat by adopting locally driven curatorial and project management. Implementing this approach enabled the team to work within their community in a collaborative way, with ready access to local information and people. A team of local volunteers was formed and their skills and interests were matched to the tasks required.

Working closely with the community allowed the project team to gain access to people, information and opportunities that would have been hard for external consultants to achieve. As a result, the interpretative centre, through its architectural design and curatorial displays, truly reflects the Kojonup district.

Above left: volunteer committee

Courtesy of Shire of Kojonup

Kodja Place is the result of the Kojonup district’s cultures working in harmony with a single goal. An architecturally designed, purpose-built rammed earth interpretive centre houses a multifaceted display of artefacts, stories, interactive displays, exhibits, pictures and entertaining hands-on devices adjacent to a spectacular rose maze.
1.8 Selecting a site or building

If the clear decision is that a new or adapted space is required and is the most suitable response to a business need, the essential next step is to establish the amount and type/s of space needed. This will require an outline brief, considering the fit of activities and spaces.

Don’t forget that circulation, plant, service and equipment and ancillary spaces can count for 30 per cent of the overall total floor area. Space costs money. The floor area and cost are inextricably connected, particularly so at this very early stage when building costs tend to be estimated at square metre rates. This will inform the brief for the site and building, which can be circulated to local agents, local organisations, local authorities and colleagues to assist a site search in the desired locality.

Site quality and associated issues can impact on the design outcome, particularly for specialist arts and cultural facilities. While a design solution for most sites is possible, this may not be cost effective due to site constraints. Some criteria and considerations for site selection and/or land acquisition may include:

- accessibility for the probable audiences/visitors to be served, their size and their locales
- relative cost of the site including land development, construction or renovation, and related costs
- proximity to other businesses, dining facilities and public attractions and services
- opportunities and space for possible future expansion
- whether the site is particularly attractive to one or more likely tenants/users
- whether the site is easily accessed by public transportation and pedestrian traffic
- potential to co-locate several arts or community organisations on the one site
- the engagement of the site with surrounding public space
- planning considerations including car parking and outdoor spaces, landscaping, drop-off and delivery areas.

Should land need to be acquired, it should be based on a clear understanding of the scope of the project and associated criteria to ensure that it is suitable and can accommodate the proposed facility. Land may already be designated for future projects but a due diligence review is required prior to any business case to ensure that it remains suitable for the scope of the project, which can change over time, and that there are no constraints to the land, which can also change over time (eg. changing environmental legislation).
Be aware that, in the case of a large master plan for redeveloping an area, uncertainty might mean that not all the plan will be delivered to deadline. If the arts and cultural capital project depended on completing the greater master plan for attracting visitors, it pays to discuss the time scale with the developer, the local authority and local property agents. An important consideration in locating a new site or building is the heritage, cultural or environmental significance of the site. These factors may place significant restrictions on developments that can be undertaken.

Conversely, they may add value or be a significant position or motivating factor, such as the appropriate location for a cultural place like a museum.

The State Heritage Office maintains the State Heritage Register. Works that may affect a registered site must be referred to the Heritage Council of Western Australia for consideration before any work is undertaken, as per the Heritage Act of Western Australia 1990.

The Department of Indigenous Affairs maintains a register of Aboriginal sites. Anyone wishing to use land for research, development or any other cause must determine if there is an Aboriginal heritage site on the land, and comply with the restrictions and procedures as per the Aboriginal Heritage Act 1972.
Carriageworks, Eveleigh, NSW

Three fully serviced, flexible theatre spaces (small, medium and large), rehearsal rooms, administrative offices, workshop space and amenities are housed in discrete concrete boxes. These are clearly articulated from the heritage fabric, which retains its patina of age and use and its remaining industrial artefacts. The new forms stand free of the rows of original cast iron columns, creating circulation routes in the interstitial spaces with views through the building.

Bay 17 is a large performance space that was designed for experimental and physical theatre. This required removal of a portion of the original wrought iron framed roof to achieve the briefed height. The new elevated roof echoes the rhythm of the original roof monitors and reads as a glowing beacon. The original trusses have been reused as a sculptural entry structure, located on Wilson Street, to herald the new use.

Client: ArtsNSW and RailCorp (formerly StateRail)
Architect: Tonkin Zulaikha Greer Architects
Completed: 2007

The NSW State Government through ArtsNSW, transformed the former 1888 Carriage Workshops building at Eveleigh into an innovative new centre committed to the conception, development and presentation of a wide spectrum of performance. Tonkin Zulaikha Greer’s adaptive reuse of the building as the Carriageworks Contemporary Arts Centre has embraced the building’s past while providing it with a bold new future.

Above: New entrance to the Carriageworks. Photo by Michael Nicholson

Above: Main Foyer - entry to Bay 19
Photo by Michael Nicholson
1.9 Commit to design quality

The commitment to design quality is fundamental to the success of the project from the beginning. CABE’s publication series, ‘Design Reviewed’, provides clear guidelines for clients on how to set up a project to achieve high quality design.

Good design is much more than contemporary styling and public buildings have a bigger role in contributing positively to their surroundings. Good design is challenging and taxing in time and effort and a strong commitment to its delivery is a core element of the vision.
The ‘white box’ gallery, which is expressed with lightness and openness, contrasts with the darkness and intimacy of the ‘black box’ cinematheque spaces. Restrained palettes of concrete, zinc, glass, plaster and tallow wood provides a subtle setting for both art and people.

**Client:** Queensland Government  
**Architect:** Architectus  
**Completed:** 2006

As an extension of site considerations, the gallery's main circulation is an easily recognised pattern. Visitors easily move to the ‘centre-of-plan’ – to a place of orientation and information – and from here they can decide what parts of the gallery they wish to go to.

Above: Level three view of central void main axis, GoMA  
Photo by John Gollings

Above: East to west section, GoMA  
Courtesy Architectus
1.10 Commit to accessibility

Designing for accessibility provides opportunities for creative thinking about how people will experience the completed project. This may include considering the journey sequence by which people will arrive at the site, find their way to the entrance and negotiate the entrance doors. At this stage it will be necessary to consider much broader aspects of accessibility than the need for step-free access. For example, to obtain the information they require at a reception or information desk, people need to be able to see clearly the faces of the reception staff in order to talk or, if necessary, to lip-read. Meanwhile, the acoustic environment should enable everyone to communicate with their companions or with staff, while illumination, surfaces and colours should enable everyone to see comfortably and without glare. These considerations can result in highly innovative, colourful and stimulating buildings.

The development of the design proposals in consultation with an access consultant and representatives of people with disabilities can assist architects to understand how to respond sensitively and creatively to the needs of people with disabilities in order to achieve projects that are both of high architectural quality and truly inclusive. In the best of these projects, inclusive design is so integral to the underlying concept that, instead of being designed for people with disabilities, the scheme has clearly been designed to be used and enjoyed by everybody.

The project should also include a long-term commitment to inclusive management for the foreseeable future.

Australian Commonwealth and State legislation requires that all new developments are constructed with ease of entry and services for people with disabilities.

To achieve functional access and meet legislative requirements it is recommended that access issues be planned for at a number of stages during the documentation and construction stages of a development.

In some cases the design team may have expertise in designing and access auditing, and in other cases it is appropriate to engage an access auditor as part of the project consultancy team to ensure compliance with the regulatory and legislative requirements. This is particularly recommended for major new developments or redevelopments, as informed planning can save on costly remedial works later.
To ensure compliance and quality control, it is recommended that access requirements are specifically considered at the following six stages during the documentation and construction process.

1. Developing the brief:
   Ensure that regulatory access requirements and universal design principles are incorporated and the responsibility for access planning designated.

2. Schematic design/design concept:
   Examine, evaluate, report and progressively provide input throughout the schematic design stage to define approaches and solutions necessary to ensure compliance with the regulations and a universal design approach.

3. Design development:
   Review design development details progressively to identify any potentially non-compliant items and propose compliant, creative and cost effective solutions. Clarification and agreement at this stage will avoid unresolved issues later in the project.

4. Contract documentation:
   Examine and review the contract documents, drawings and specifications to ensure compliance. The works should be signed-off at this stage which is always prior to calling tenders. Alterations or additions after this time could incur time delays and/or cost variations.

5. Construction:
   Conduct site visits at critical phases to ensure that the construction works comply with the detail drawings. Reach prior agreement with the architects as to appropriate phases to monitor.

6. Practical completion:
   Conduct a final inspection of the works on completion to ensure compliance. It should be noted that this inspection is to ensure compliance and the correctness of the constructed details.

For further information, consult with the Disability Services Commission and refer to the latest Australian Human Rights Commission advisory notes on access to premises. The advisory notes have been produced to assist developers construct new buildings and facilities consistent with the requirements contained in the Disability Discrimination Act 1992.
Subiaco Arts Centre, Subiaco, WA

The Perth Theatre Trust (PTT), which manages the building, decided that further work needed to be done to make the artistic works and performances more accessible to patrons with vision impairments. Through DCA’s Disability and the Arts Inclusion Initiative, PTT, in partnership with Subiaco Arts Centre, Barking Gecko Theatre Company and Senses Foundation, set about creating a tactile theatre performance and familiarisation tour at the centre for people with low vision.

PTT now also offers audio transcription services in their venues as part of their hiring agreements.

**Client:** City of Subiaco and DCA  
**Architect:** Sandover Pinder  
**Completed:** 2006

The building’s functionality and accessibility were greatly improved with enhanced utilisation of spaces for community activity. The needs of the professional performing arts were addressed with the upgrading of rehearsal, studio and theatre spaces.

Accessibility upgrades included installing an universal access lift to all levels of the building, accessible signage in Braille, and the addition of tactile sensors on floor surfaces and stairs.

**Above:** Subiaco Arts Centre interior  
*Photo by Frances Andrijich*

**Above:** Subiaco Arts Centre exterior at dusk  
*Photo by Frances Andrijich*
1.11 The involvement of artists

Investigating and procuring public artists early in the project development and ensuring clear communication channels during each stage ensures a solid foundation for highly successful collaborations between artists, craftspeople, capital project teams and clients.

Achieving meaningful integrated artistic contribution into the building fabric is demanding but essential. It requires early planning and early selection and appointment of the artist/s to ensure all creative options are explored and analysed.

Enhancing the essential components of the building can be an exciting way of characterising a contemporary building, but this contribution needs to be embedded in the design and construction drawings and specifications.

In WA, the State Government operates a Percent for Art Scheme that must be applied to new State developments and buildings and some local governments have public art policies or schemes of their own. Additionally, organisations such as Artsource and FORM can offer consultancy services to assist in the procurement of artists, provide curatorial advice and run artists-in-residence initiatives.
Artworks at the State Theatre Centre of Western Australia, Northbridge, WA

Artists were involved in the project from the beginning, working with the architects during the design development stages to ensure harmony between the artworks and the building.

The theatre site is intertwined with the history and heritage of Perth. As part of the construction, two buildings belonging to the old Perth Central School were demolished. The significance of the site both as a former educational facility and its earlier history as a wetland and meeting ground for Aboriginal people, provided a unique opportunity to create an original and thought-provoking interpretative experience.

The result was Intervala, a sound installation and series of stainless steel panels with text and imagery by Arif Satar, Audrey Fernandes-Satar and Sam Landels, which has been integrated into the James Street entrance.

In this instance ‘voice’ was given to the architecture by implanting behind the walls a continuous and ever changing play of sound and voice, recalling memories, conversations, tasks and chores. The poetic spoken text is the result of research into the written and oral histories of the site.

**Client:** WA State Government  
**Architect:** Kerry Hill Architects  
**Completed:** January 2011

Two compelling artworks are part of the structure of the State Theatre Centre. Commissioned under the State Government’s Percent for Art Scheme, the artworks use 21st century technology to connect the history of the site with its present and future.

Above: Intervala text panels by Arif Satar, Audrey Fernandes-Satar and Sam Landels  
Courtesy of DCA

Artworks at the State Theatre Centre of Western Australia, Northbridge, WA
Artworks at the State Theatre Centre of Western Australia, Northbridge, WA (continued)

For artist Mathew Ngui, shooting stars were the perfect analogy for fame and stardom and his floor-based artwork, Falling from Heaven to Earth, the Shooting Star, at the entry from Roe Street uses light on glass to suggest the heat and the cold of outer space. Hues of fire and ice play momentarily and apparently at random. An interactive component of the artwork, triggered by a camera that seeks and then reacts to visitors as they traverse the glass entry floor, draws sparkling light or sullen dark tails behind them as they move. Unaware of their impact, each person simultaneously creates and becomes a star making their entrance.

Although both works of art are entirely different, fittingly, there is a sense of performance in each, and they reflect how visual art installations can enhance a space designed for performance.

Above: Falling from Heaven to Earth, the Shooting Star by Matthew Ngui
Photo by Bohdan Warchomij
1.12 Sustainability

As arts and cultural buildings tend to be centrepieces for a community and have extremely high usage, they should aim to meet standards far higher than the minimum levels of energy conservation measures required by building regulations. Visitors, audiences and artists expect high standards from showcase buildings and this is needed to be balanced carefully with value for money.

Building operators or owners will be responsible for the environmental performance of their buildings long after the designers and contractors have moved on. All arts building operators are challenged by funding and resource issues and excessive expenditure on utilities such as electricity, gas or water may affect programming and even the viability of the organisation. Ongoing costs need to be estimated and minimised through good design.

The Australian Government has developed publications to provide guidance in minimising the environmental impact of buildings. ‘ESD Design Guide for Office and Public Buildings’ gives an introduction to the key environmental issues surrounding ecologically sustainable development, and outlines what can be done to address these in a building project.
Kodja Place, Kojonup, WA

Client: Shire of Kojonup
Architects: Marco Vittino Architect in association with Arbor Vitae/Phillip Gresley Architects
Completed: 2004

The Kodja Place project used locally available materials including stabilised rammed earth walls using locally quarried earth, which in turn encouraged the use of locally available skills.

The low energy building incorporated many sustainable elements in the design and functionality including:

- comprehensive climatic analysis to highlight design constraints
- design based on the use of materials with a high thermal mass in enclosed areas
- creation of semi-courtyard model for maximising protected northern aspect
- implementation of integrated landscape elements for solar control
- insulation to lightweight walls and ceilings
- controlled airflow through roof space including passive roof space ventilation grille system
- concrete flooring used throughout as thermal mass in conjunction with carefully designed shaded openings to promote heat gain in winter
- use of appropriate materials in suitable locations to promote passive solar design performance
- solar control from deciduous tree planting.
1.13 The outline brief

An outline brief should flow naturally from the initial assessments of business purpose and should be expressed primarily in terms of the client’s objectives rather than specific built solutions.

It divides up the project into ‘key areas’: overview; organisational concerns; individuals and workstyles; physical environment; external influences; specialist considerations; and maintenance needs and running costs. You should revisit these questions as the project progresses.

Overview

Stakeholders
- Who are the major stakeholders within the client organisation?
- Who else is involved in the project? Funders?
- How will the project management be structured?
- Who should be consulted during briefing?
  Don’t forget your audience and visitors.
- Who is authorised to make which decisions?

Aims and background
- What does the client hope to achieve?
- What is your vision?
- Why has this project come about?
  What are the negative and positive drivers?
- What are the fixed constraints?
- What decisions are fixed before briefing starts?
- What finances are available for the project? Which grants/donations are promised? Which are likely?
- What are the matching funding requirements?
Prepare

Communication
- Who will communicate with whom?
- How, where, and how often?
- Which people/groups will need to be located near to one another?

Space, furniture and equipment requirements
- What equipment will be used in the building?
- What furniture and equipment are necessary?
- How much space is needed for different activities?
- Will existing equipment or furniture be reused? Don’t be over optimistic.

Physical environment

Security
- Which areas will require public access?
- Which areas will need to be secure?
- What about after hours access?

Circulation requirements
- Is the building designed to be accessible for all?
- How will audiences and visitors move through the building?
- What are the requirements for lifts, staircases, and ramps?
- How will equipment/sets/exhibits be moved around?

Transport and parking
- How many staff car parking spaces are needed?
- How many spaces are required by visitors?
- What is public transport like in the area?
- How often do deliveries take place?

Design

Appearance
- How will you broker between preferences relating to the look of the building, eg. scale, choice of materials, colour (both external and internal)?
- What are the external pressures, such as planning?

Inspirations, be an informed client
- What other buildings are used for similar purposes?
- Are there any buildings for other purposes that may also provide inspiration?

External influences

Laws and codes
- Will specific legislation need to be considered, other than that related to construction?

New technologies
- Are changes likely to happen over the next few years that will impact on the way that the building is designed?
- What about the opportunities for new media or new performance styles?

Competitors and interested parties
- How do the proposals compare with competitors’ buildings?
- Are there any interested parties who may be able to provide useful input to the design?
Specialist considerations

Environmental policies
- Arts buildings generally have a strong environmental imperative. How will it be manifested in yours?

Cooling and heating requirements
- Are there any pieces of equipment/areas with specific cooling/heating requirements? Remember cooling is very energy intensive.
- What does ‘being comfortable’ mean for you, your colleagues and visitors?

Acoustics
- Arts buildings are very likely to have specific acoustic requirements. What are the implications for the design?

Lighting
- Which areas require natural lighting?
- Some arts activities require very specific lighting. How will this be activated?

Contamination protection
- Will any equipment/areas have specialist requirements, eg. ventilation, humidity, protection against dust and dirt?

Loading requirements
- Will there be any unusually heavy equipment or loads to deliver and move about?

Maintenance needs and running costs
Critical issues to be thought about at the beginning:
- What is the estimated lifespan of the building?
- The life required of its materials, structure?
- Who will be responsible for maintenance?
- Running costs are likely to be very important. Don’t forget insurance and maintenance agreements.
- How will refuse be stored and removed?
- What areas will have specific cleaning requirements?

See Appendix I [page 93] for detailed item checklists and art form and culturally specific issues that should be considered in these areas.
## 2. Feasibility study / business case

The initial thinking process may be presented in a formal feasibility study setting out the proposed project’s scope that can be used to secure funding. It is important that a value management exercise be undertaken early in the business case stage so, for example, that the most important elements are understood if the budget requires variation as the project progresses. Importantly, systems and materials should be selected with regard to balancing long-term operational and maintenance costs against initial capital cost. Value management is discussed further in section 6.5 [page 78] and section 8.4 [page 82].

### 2.1 The feasibility study

The feasibility study is an extremely important document. It will demonstrate the implications of implementing the vision in basic architectural terms and may offer different options. It will form the basis for all subsequent project discussions with funders in terms of size, costs and timings.

The study will test the outline brief and it is important to cover each of the following:

- technical - relating to the building or site and the prospects for achieving the necessary permissions
- financial - including capital fund raising and subsequent organisational revenue cost implications
- organisational - considering the ability of the organisation to carry out the project
- program - timetable requirements of all parties, not least those of the likely funders.

### 2.2 Who should conduct the feasibility study?

Technical support may be needed to carry out the feasibility study, depending on the expertise available within the organisation. Input may be needed from an architect, quantity surveyor, estate agent, arts business consultant and/or technical consultants.
## Typical contents of a feasibility study

The study should certainly include and consider:

- a diagrammatic configuration of spaces and their sizes, interconnections and basic characteristics
- whether the broad grouping of spaces physically fits within the existing building, an extended building, or site for a new building
- whether new space is really needed, or whether the existing space could be reorganised effectively and cheaply to deliver the vision
- how appropriate the selected site is for the proposed artistic activity, and whether it will contribute to or hinder the delivery of the business case
- whether the site has hidden problems: poor ground conditions, inadequate utilities or access, inadequate expansion space
- whether planning permission is likely to be granted
- whether the project will enhance and help regenerate the local area
- whether there are other legal considerations
- the likely required construction budget
- the likely overall project budget including all organisational on-costs, relocation costs, interim costs, financing costs, fees and inflationary allowances

### 2.3 The business case and the project budget

The business case and the project budget should be developed in tandem throughout the life of the project. Good information will be needed from the cost consultants.

A business case should articulate the underlying purpose of the project and the basis for change in the intensity and type of arts activities, alongside current and projected financial statements. The business case must evolve with the project. It should address:

- the various possible funding sources and their requirements
- realistic estimates of revenues resulting from increased visitor attendance and/or audience
## Prepare

- expectations of visitor spending patterns
- capital and revenue costs.

Sensitivity analysis studies varying key inputs like ticket sales, types of overhead or anticipated grant income and will reveal which assumptions most expose the project to financial problems. If some assumptions are recognised to be over-optimistic the capital budget should be moderated. The analysis could consider the impact of small but unpredictable changes to key assumptions for targets and patterns of cash flow.

An outline project budget should be assembled and include budgets for all feasible options out of the preferred project scope and content. There may be options in terms of size and content and a notional phasing plan for delivering the full project. The outline project budget will act as a baseline throughout the project development. It should include the projected costs for at least the following:

- land acquisition
- construction cost, including phasing options;
- fitting out and specialist equipment
- professional fees: contingency sums, to be assessed with the cost consultants
- costs to the organisation of closure, redeployment, reduced operations, restructuring if necessary

## Design

- financing costs
- inflation
- cost of the move itself
- life cycle cost estimates
- operating costs.

### 2.4 What happens to the feasibility study?

The feasibility study will retain its relevance in planning the early stages of the project, informing the emerging brief (see section 3 [page 56]) and the formal appointment of the design team (see section 5 [page 62]). It will often be used to establish the project budget and a figure to be communicated to internal and external stakeholders.

The feasibility study should present the proposed project’s original specification and objectives, with conclusions and recommendations for the next phase. The study should highlight the advantages and disadvantages associated with each option and outline the way forward.
The Bakery Complex, Northbridge, WA

After seven years of gradual and piecemeal adaptation of the Bakery into a multi-arts venue, a master plan for the venue's refurbishments was developed. In order to value manage the project with a limited budget, Artrage began actively sourcing materials and infrastructure from salvage, auction and second hand avenues, and negotiating sponsorship and in-kind support for the project. This included the acquisition of an entire large bar fit out, including all refrigeration and tap system basics from a pub closing auction, that defined major revisions to the interior plans. In addition to being cost effective, it was also fitting with Artrage's artistic outlook and innovative approach to its work.

This extended into the design of the facility. In-kind support came in the form of the SOCO Cargo mobile container bar, donated to the project by Lion Nathan – equating to $650,000 worth of infrastructure. The highly customised and fitted out containers were developed for Lion Nathan in 2005, and travelled around various Australian festivals including an Artrage Festival in 2007. Set up in a closed square, they made a complete instant outdoor addition to the venue with bar, lounge and stage. Additional second hand containers were acquired and adapted to purpose, including a refrigerated container that was converted into a permanent keg room for the new tap infrastructure.

Client: Artrage
Designer and Project Manager: Marcus Canning assisted by Matt Stack
Builder: Habitat 1
Completed: 2010

Artrage is a not-for-profit cultural organisation and producer of festivals and art programs in WA. Since 2002 Artrage has operated The Bakery, which began as a series of derelict commercial tenancies leased from Western Power on a peppercorn lease through an ongoing sponsorship arrangement.

Above: The Bakery exterior courtyard
Photo by Richard Jefferson
The Bakery Complex, Northbridge, WA (continued)

The Bakery venue operations were shut down for longer than initially intended to accommodate this procurement approach. Through managing the project and assessing the impacts on the organisation, the stakeholders agreed to extend the timeline for build completion to allow for a more ambitious and extensive result. This also allowed Artrage to generate additional resources to put towards the build. Through maintaining tight controls of the process and understanding the value management process, the short-term cost to the project will result in better long-term outcomes.

The venue now has capacity for more than 900 patrons; increased bar service area off centralised back-end services; a newly attenuated main performance room with a larger capacity, accessibility and better sight line and sound infrastructure; a permanent ‘container courtyard’ and new front of house and backstage infrastructure and services. The redevelopment met all the main aspirations for the master plan.

Above: The Bakery exterior courtyard
Photo by Richard Jefferson
3. Prepare project definition plan / formal design brief

A Project Definition Plan (PDP) is mandatory for all investment proposals in government with a total cost of $5 million or more. A scaled version can be done for proposals that involve less cost and risk, as clear thinking in the definition stage will reduce the potential for delays and cost increases later.

A PDP for buildings should clarify the master plan, functional, design, technical, architectural, and engineering criteria and land assembly matters to the level of detail needed by project managers and service providers in industry to prepare tenders to deliver the asset successfully. The plans for any related non-asset initiatives should also be defined.

Guidance with developing a PDP is available on the Department of Treasury website.

A good brief is not necessarily a simple list of ‘required spaces’. Reflecting all the client’s thinking, it should clearly set out aspirations and fixed factors/parameters, while allowing scope for creative design solutions to emerge.

The briefing process and the role of the formal brief are shown in Figure 2 (next page). To progress a project, the client needs to produce a clear statement of their requirements, emphasising what they want, but not necessarily how it should be achieved. This leaves scope for the interaction with the design team to creatively produce solutions none of the parties could have initially imagined.

The resulting statement of requirements and constraints is the formal basis for a whole set of relationships and contracts. It must be well researched and align with the budget for not only the project, but also the broader ongoing business plan for the organisation as a whole.

As the design and construction proceed, unexpected problems and opportunities will arise and the formal brief should be amended if required. It is important that any changes are carefully considered with and clearly agreed upon by appropriate stakeholders, and that the viability is tested and reflected in both the project budget and the business case. In addition,
these changes should be compared with the vision and the priorities in the outline brief to ensure that critical features are not being incrementally lost, at least not without an explicit decision to do so. This becomes crucial when pressure suddenly emerges for cost cutting – which is not uncommon.

**Figure 2: The formal brief process**

- Strategic / business plan
- Strategic asset plan
- Project vision
- Outline brief
- Business case / feasibility study
- Project definition plan / formal design brief
4. Procurement

Having established and tested the requirements for the facility, the next step, subject to the availability of funding, is to identify the procurement routes most suitable for the:

- quality of design outcomes
- type of construction
- project timelines
- the desired level of client control over the design process.

Procurement means purchasing: how to buy a product or service, such as a builder or a designer. For independent non-government organisations, it may be important to seek out independent advice on procurement routes before considering procurement options.

Different routes will require different sets of skills and will have a range of impacts on the quality of outcomes. Partnership agreements may also affect the choice of procurement. It is important to select a procurement approach that best suits not only the building project but also the partnerships and governance structures that are in place for an organisation. This is particularly true for arts organisations, which often have multiple and complex funding and partnership agreements in place.

The Infrastructure Procurement Options Guide* provides further procurement guidance for WA public sector agencies. This guide is primarily intended to apply to ‘government owned’ infrastructure and to encourage design excellence, fit-for-purpose functionality and positive community impact, however it may provide assistance with deciding the most suitable procurement route for other projects.

The Office of the Government Architect has valuable advice on procurement options within the ‘Procuring Well-Designed Buildings’ case study document and ‘Procurement Advice Matrix’.

*Warning: large file size (10.7MB). Published by the former Centre for Excellence in Infrastructure Delivery, now merged within the Building Management and Works (BMW) function of the Department of Finance.

4.1 Procurement routes

Possible routes for procuring construction projects have multiplied over the last few years and the route chosen will depend on the type of project delivery, the complexity of funding arrangements/partnerships in place and whether the client is part of government or independent (as discussed on [page 19] and [page 20]).

If the project owner is a State Government agency, formal advice on the government process should be
sought from BMW, within the Department of Finance. In WA, the separation and centralisation of the ‘delivery’ of discrete capital works from organisations who deliver specialised services has been in place since the introduction of the Public Works Act 1902.

When government provides capital grants to a non-government organisation to support planning or construction costs, some specific procurement requirements may be negotiated or placed on the agreement in order to acquit the expenditure of public funds.

Consideration of the procurement routes relative to the partnerships, funding arrangements and grants need to be assessed.

In smaller projects, the construct only model is a common procurement route; this is where a client decides what is wanted and then appoints a designer, agrees with the plans and selects a contractor to build the project against those plans. This procurement route is well understood by the design and construction industry; enables the most client control over design outcomes; provides flexibility to consult broadly and adapt proposals as required; and offers the best opportunity to achieve excellence in whole life performance.

Several other routes are available, all of which hand over some client and design responsibility to other parties in the quest for project processes that may provide cost and time efficiencies in their delivery.

The following are examples of procurement routes used in Australia:

- Construct Only (one or two stage)
- Design and Construct (DC)
- Managing Contractor (MC)
- Construction Management (CM)
- Early Contractor Involvement (ECI)
- Design, Construct and Maintain (DCM)
- Alliance Contracting (AC)
- Direct Managed (DM)
- Public Private Partnership (PPP).

They differ in:

- ways of choosing the participants, especially design and construction teams
- responsibilities of different participants
- extent of risks for different participants
- control over the certainty of the final cost of the project
- skill level and control required of the client
- consideration for whole life costs
- emphasis on design quality.
4.2 Procuring Design Services

Engaging skilled design expertise is a critical factor in project success. There are many ways to engage design services today, with varying implications for good design and value for money. It is critical to prioritise assessment of a design team’s design credentials in a consultant selection process. Design quality outcomes are directly linked to the design expertise available.

Design credentials can be evaluated in the following ways:

- **The selection process is informed by expert knowledge and research.**

- **Expert selection panels** - form Evaluation Panels with relevant architectural expertise appropriate for the evaluation of design based selection criteria. Communicate upfront the membership and expertise of the evaluation panel.

- **Seek the upfront nomination of the design team** - to provide opportunity to make an informed evaluation of the expertise offered.

- **Set an expectation of design quality** - include ‘visioning’ text in project overviews and design criteria. Set selection criteria on the basis of qualification and expertise using appropriately weighted criteria.

- **Seek an outline of design approach** - detail provided about design methodology provides a better opportunity for an evaluation panel to properly judge a firm’s capacity, capability and suitability for a project, rather than simply relying on previous project experience.

- **Undertake interviews** - design consultant appointment should not be reliant on a written submission alone. Following an initial evaluation of consultant submissions, consider short-listing three or more firms and conduct interviews to:
  - make better use of evaluation panel time.
  - allow evaluation panel members the opportunity to gain a better appreciation of the design team’s understanding of the nature and scope of the project, understanding of project issues, commitment to project ambitions, understanding of the nature and scope of the project, coordination and understanding of roles.
  - reveal, first hand, the team’s communication skills – an important part of project delivery.
  - allow for a far more thorough understanding of the teams abilities and expertise.
- provide opportunity for the evaluation panel to pose questions directly to the design team.
- identify whether the submission text has been purposely written by the design team rather than as a standard company marketing material.
- allow the opportunity for the design team to outline a potential design approach.
- provide a more appropriate forum for designers to communicate their expertise – use pictures rather than words.

For appropriate projects, use a limited or open design competition to:
- allow for upfront consideration of a design proposal.
- provide tangible evidence of expertise of the lead designer and project teams and approach to design problems.
- enable client agency to explore the design approach and working methodology of each team.

There are many ways in which to appoint a design team. Consider seeking expert advice to guide decision making on design service procurement.

- Use clear and succinct Request for Tender (RFT) documents – avoid extraneous and repetitive information.

For appropriate projects, use a design charrette, or design workshop to:
- serve as a way of quickly generating an understanding of design approach while integrating the interests of a diverse group of stakeholders.
- provide tangible evidence of expertise offered.
5. Team

Having established the most appropriate procurement route to take, make formal appointments for key team members for the project, subject to the availability of funding. The below table indicates which roles that are essential to any project and those that are highly recommended, though much is dependent on project scale.

It is important to emphasise that culture and arts facilities are not often built, therefore architects and other professionals on the design team may not have a vast level of experience in designing these highly specialist buildings. For this reason, it is vitally important that art consultants (such as museum, gallery or theatre specialists) provide independent advice from the project definition planning stage onwards.

5.1 Design management and cost consultant team

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<tr>
<th>Role</th>
<th>Contribution</th>
<th>Responsibility</th>
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</thead>
<tbody>
<tr>
<td>Architect (essential)</td>
<td>Becomes immersed in client organisation.</td>
<td>Early briefing stage: gives outline form to requirements, tests configurations of spaces, generates options.</td>
</tr>
<tr>
<td></td>
<td>Helps give form to the vision.</td>
<td>Assists to develop early design propositions. Communications the design to certain stakeholders.</td>
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<tr>
<td></td>
<td>Gathers detailed requirements and incorporates them into emerging design.</td>
<td>Responsible for generating adequate, coordinated and coherent information for the construction team.</td>
</tr>
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<td></td>
<td>Lead role in obtaining permissions.</td>
<td>Is proactive in managing value, reducing cost with minimal loss of content, critical to delivering the 'vision'.</td>
</tr>
<tr>
<td></td>
<td>May lead the whole design team depending on appointment. This would require collateral agreements with the client.</td>
<td>Leads the co-consultants and specialists and directs the coordination of design and construction information.</td>
</tr>
<tr>
<td></td>
<td>Delivers design quality.</td>
<td>Stays within approved design parameters.</td>
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<td></td>
<td>Is present and attentive throughout construction as the contract requires.</td>
<td></td>
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<tr>
<td>Role</td>
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<tr>
<td>Structural engineer (essential)</td>
<td>The design of the building’s structure above and below ground, and possibly below ground drainage. Civil engineering refers to more substantial infrastructure (refer Engineers Australia).</td>
<td>Provides advice regarding the considerable costs that may reside in the structural skeleton of the building. Possible compliance with any recent legislation to do with partial collapse and fire integrity. Important to anticipate these complexities. Important sustainability issues.</td>
</tr>
<tr>
<td>Civil engineer</td>
<td>Traffic, transport, highways planning, road design.</td>
<td>May be required by planning process.</td>
</tr>
<tr>
<td>Traffic and highways engineers</td>
<td>Design of the internal environmental conditions and the means to obtain them: light, ventilation, heat, temperature control, acoustics, fire safety, drainage, water supply and the electrical and mechanical systems infrastructure. Compliance with building regulations and guidance on energy performance, fulfilling renewable energy requirements (refer Engineers Australia).</td>
<td>Increasingly important role in delivering sustainable buildings. More than specifying equipment, move to more conceptual role optimising the building’s environmental performance at minimum carbon cost. Sophisticated simulation tools are more widely available to predict the performance of a design.</td>
</tr>
<tr>
<td>Mechanical and electrical engineers (environmental engineers) (essential)</td>
<td>Design the appropriate acoustics and advise on its delivery. Counter-productive to delay appointment if the acoustics are central to delivering the vision.</td>
<td>The design intervention required may dictate volume, construction methods and finishes. It may also require isolation, separation within the very structure of the building. Potentially an important cost item.</td>
</tr>
<tr>
<td>Acoustics consultant (highly recommended for performing arts venues)</td>
<td>Design the appropriate acoustics and advise on its delivery. Counter-productive to delay appointment if the acoustics are central to delivering the vision.</td>
<td>The design intervention required may dictate volume, construction methods and finishes. It may also require isolation, separation within the very structure of the building. Potentially an important cost item.</td>
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2. Feasibility study / business case
3. Prepare project definition plan / formal design brief
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5. Team
6. Develop design
7. Technical design

Construct
8. Construction
9. Handover

Use
10. Occupation

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Role | Contribution | Responsibility
--- | --- | ---
Interior designer | Non-structural design of the interior, its surfaces and materials, its fixtures and fittings. | May be part of architect’s team.
Artists and crafts people and cultural advisers (highly recommended) | Enhancement of the building fabric and surrounding public space. Specialist advice on how artists and cultural groups will use space. | Potentially highly productive collaborations between artist/architect/interior designer.
Landscape architect (essential) | Design of all exterior spaces, approaches to the building, hard and soft landscape, design of internal landscape, planting schemes. Deliver sustainable design, ie. water runoff, pedestrian facilities, cyclists and disabled people. | Critical to the success of a high quality design. Close collaboration required with architect, mechanical and electrical engineers, lighting specialists, traffic engineers and access consultants. Costs often underestimated and/or reduced in final stages of project.
Access consultant (highly recommended) | Advises the client on matters of health and safety in the design, construction and maintenance of buildings; coordinates health and safety aspects of design. | Access strategy at brief stage, access statement at planning and building control submissions, and post occupancy evaluation. Early consultation and engagement with disabled people to identify any relevant access issues is essential.
## Prepare

1. **Vision**
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<tr>
<td><strong>Project manager (essential)</strong></td>
<td>A variety of potential roles: The contract administrator, externally appointed, is responsible for issuing all instructions to the contractor during construction, managing the design team, during tender, construction and completion. Internal project director who may be the client advisor for the early stages before an external project manager takes over. It is important to separate this role clearly and unambiguously from the quantity surveyor; they should not come from the same practice.</td>
<td>Trust and good internal relationships are key to successful construction projects. Good communication and understanding are important. Previous experience of constructing for the arts is recommended. Arts buildings do not necessarily present the same management challenges as construction projects in general.</td>
</tr>
<tr>
<td><strong>Quantity surveyor, cost consultant (essential)</strong></td>
<td>Provides independent cost estimation using experience and industry prices. Assembles cost plan for the construction project and whole project costs if client desires. Separate this role clearly from that of the project manager. Australian Institute of Quantity Surveyors provides appointment conditions that are explicit about the role and optional responsibilities.</td>
<td>Usually a separate appointment from the design team. Can only put costs to the design and overall project from the best information provided by the client. Wisdom and experience a critical element in judging likely outturn cost and sensible contingencies. May lead to value management exercises. Experience of arts projects important.</td>
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### Role | Contribution | Responsibility
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Arts management consultant (essential) | Advice on organisational/operational issues and associated costs. Market analysis and prediction. | Gathering and assembling organisational and business costs, and risks, to be factored into overall cost plan. |
Exhibition development team (highly recommended) | Multidisciplinary staff team (producers, researchers, collections, managers, conservators, audience advocates). | Charged with planning, developing, and producing exhibition content and interpretation. |
Arts technical consultants - theatre/gallery/museum specialists (essential) | Brings prior experience of specialist arts projects: conceptual/technical knowledge and advice. | Provides independent arts technical advice and assists in developing the vision. |
Exhibition designer (recommended for museums and galleries) | Collaboration required with the architectural team to ensure exhibition requirements are taken into consideration in overall space design. | Heads the creative team that delivers the exhibition content (including but not limited to specimens, objects, graphics, multimedia and interactive models) in a given space. |
Museum fit out team | Multidisciplinary staff team (graphic design, layout, technology, display furniture, multimedia production, lighting contractor, graphics production etc.). | Charged with planning, developing and producing the museum fit out. |
Communications specialist | Manages all internal and external communications regarding project. May also manage stakeholder consultation. | Develops and implements communications protocols and provides communications advice. |
Choosing the team

Become an informed client. Research and visit projects of a similar nature, and talk to those clients about their experience of the process and of the professionals involved. Attend their events and experience new spaces.

If the client is a Government body, Building Management and Works (BMW) or Strategic Projects (SP) is likely to be involved in the selection process and can provide advice. There are also consultancy panels available for Government clients whereby the consultants have already been selected to provide services based on previous experience and capability.

Choosing the right designer is one of the most important decisions to be made during the project. Good client–architect relations are an important factor in achieving a design solution. In view of the importance of the design team to the success of a project, it is worth making a particular effort to ensure that the team selected is not only skilled but also able to understand the client objectives in a good working partnership.

The chosen architect may help select engineers and landscape and/or interior designers. The different design professionals will have to work closely together, so it is important that they form an effective team. If the traditional procurement route is used, the designer may become the leader of the design team.

The Office of the Government Architect provides leadership and strategic advice to Government to improve the design of public buildings and spaces and enhance the quality of the built environment. The Government Architect has a whole of Government focus and can provide advice to local government where required. Guidelines and design standards are available on the Office of the Government Architect’s website.

Best value

Best value, not lowest cost, should always be the criterion at all stages of selection and this should be demonstrated through good planning during the business case work. When cost considerations are significant, as is often the case when selecting contractors, tenders must be based on a detailed set of requirements so that all tenderers are aware of exactly what they must deliver. This will reduce the likelihood of failure to meet the requirements as a result of cost constraints.

It is not appropriate simply to employ consultants because they are personally known to project managers and/or are local.

Competitive selection: the process

The process of selecting a design team may vary depending on the project’s procurement route and partnership structure. Generally, designers and contractors are chosen through a competitive process that requires a well-structured procedure, clear timetable and transparent set of criteria.
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The WA Local Government Association can provide services and advice to local government authorities regarding this.

Applicants should be shortlisted to make final selection and all applicants can be asked to provide information in a standard format including:
- quality of their previous work and commitment to design quality
- size of firm – ‘big’ is not necessarily ‘good’
- financial stability
- number of professionals
- expertise of individuals
- range of skills
- size and type of completed projects
- availability during the project period
- references from previous clients
- equal opportunity policies
- quality assurance procedures
- health and safety record and procedures.

The shortlist should include three of four firms. If possible, visit relevant built examples of their work engaging the best possible expertise is one of the most critical factors in achieving good design outcomes and value for money for the project.

When appointing a design team, consider carefully what criteria are used and how they are weighted. As a general guide, global best practice for Quality Based Assessment for architectural services is:
- design skill and expertise, 40 - 60 per cent
- methodology/approach to the projects, 20 - 30 per cent
- capacity to complete the work, 10 - 20 per cent.

Do not be afraid to ask for design excellence from the consultants. A selection criterion that is qualification and expertise based should request:
- evidence of lateral thought in design, such as innovative responses to site, client, budget and other project constraints
- evidence of projects that have met with community approval
- evidence of projects that are sustainable and environmentally responsible
- evidence of projects that rate highly in terms of impact on the community, build quality and functionality (available from the OGA).
For an outline of the methodology or specific design approach, requests should:

- demonstrate an understanding of challenges and opportunities generally and design issues specifically
- provide evidence of how the design of the project might be approached
- include appropriate examples of previous work which reinforce claims
- include an approach to sustainability.

An articulated design methodology provides a better opportunity for an evaluation to properly judge a firm’s capacity, capability and suitability for a project, rather than simply rely on previous project experience.

Each project will vary slightly and some may include criteria specific to its context in addition to these criteria. It is always a good idea to seek independent expertise for advice on how best to approach the design market. Consider also the possibility for alternatives to standard tendering to appointing design consultants appointment processes such as design competitions; two-stage tender with a design charrette (intensive hands on workshop); invited tenders and design tenders; are of particular value where the project has special interest in a high quality design outcome. These appointment processes can also be valuable where the client has yet to develop a robust scope or where there is particular need for innovation in the face of physical constraints for the project.

Many clients find a formal presentation at the interview to be very helpful. Insist on meeting the actual individuals who will manage and deliver the work. This is as applicable to contractors as it is to architects and other professionals.
6. Develop design

6.1 Creating the design concept

The design concept or schematic design includes:

- strategic, structural, mechanical and electrical proposals
- an outline specification (a written account of proposed materials)
- forms of construction and performance standards for the building envelope and its key spaces
- a preliminary cost plan.

At this stage it is also important to consider conceptual design options not only within the context of the site, but also in relation to the surrounding environment. This is where opportunities for mixed use and other commercial uses could be considered to add value to the project and the broader community.

Designers work in different ways. The concept design will be expressed more fluidly in these early stages than at later stages in:

- economical diagrams to explore likely options
- evocative concept sketches
- ‘inside-out’ concept
- elementary models

Project teams should not hesitate to ask for detailed explanations of architects’ drawings and their conventions. Working models can be effective, presentation pieces that can be cut apart and adjusted quickly and put to a variety of uses including publicity and fundraising. This is the work stage in which to explore all the likely and perhaps some less likely options. Design work can release unanticipated options and enhance and even change the brief.

In some cases, mocking up a proposed space in wood or plastic sheets as the design emerges has been particularly effective, especially when the project involves making alterations to an existing building. This approach allows users and other stakeholders to get a feel for the new space.

Mock up spaces can also be piloted for specific activities with future building users, such as practical workshops in proposed activity spaces. This approach tests the space against the requirements of the activity it is designed for. Contributors to the process will feel that they have participated in the design process and an ownership of the finished space.
Kodja Place, Kojonup, WA

Client: Shire of Kojonup
Architects: Marco Vittino Architect in association with Arbor Vitae/Phillip Gresley Architects
Completed: 2004

The strong working relationship forged between the architects and the client was key to the success of the Kodja Place project. Phil Gresley from the architect/design team took on a mentoring role for the design process. He helped meld display briefs and content into a framework that worked well for visitors, and allowed for ongoing local involvement through readily changeable media.

The key issue for the project team was finding ways to involve their large team in the design process without compromising design. This was achieved by committing to clearly identified decision making stages. The design briefs were community written and turned into concept plans by the designers. They were then agreed to by the Noongar community and the team of volunteers, with the designers then developing the final products.

Two concept plans worked in parallel: the display plan from the professional designers and a similar but more detailed curation plan drawn from the community’s messages, and collected material, to guide collecting and curation of the interpretative centre displays.
6.2 Design development

Design development is defined as more of the same but to a finer level of detail and specificity. The design comes into focus as working hypotheses are adapted for the configuration of spaces, the structural and constructional nature of the enclosure, the essential materials, the roof forms, the pattern and nature of openings and connections, the spaces between and outside and the interaction with the public realm.

Design development culminates in a full set of information to support a detailed planning application. This will require every face of the building to be described, every elevation, all the plan levels including the roof, and representative cross sections. Often the planning authority will want to see images and larger scale detailed drawings of the proposed building/rebuilding set in the public realm, especially if historic buildings approvals are required or the building is in a conservation area (see section 6.6 [page 79] for information about approvals).

A design review should consider:
- the site, the context and the contribution to the public realm made by the project
- access, landscaping and orientation
- how well the organisation will be able to function in the new spaces
- sustainability/energy efficiency considerations
- whole life costs, energy, maintenance and replacement
- visual impact
- adaptability to different uses.

6.3 Design for sustainability

Environmental features of sustainable buildings

The design of sustainable buildings should consider measures to:
- reduce energy consumption and associated emissions of carbon dioxide
- minimise the use of resources such as water and construction materials
- reduce the release of pollutants
- maximise the use of sustainably sourced and recycled materials (eg. timber)
- promote sustainable travel choices through public transport and cycling provision
- conserve, or enhance, biodiversity.
In terms of the design:

- the shape, form, orientation of the building, and the sizing, positioning and design of openings should make maximum use of natural forces such as daylight and wind, and minimise the need for applied energy
- the building fabric should be highly insulated and well-sealed to prevent unwanted heat losses by conduction and unwanted air infiltration (including draughts)
- the placing and quantity of glass in the external walls should be carefully considered in terms of avoiding excessive heat gains in summer and heat losses in winter however, mechanical cooling and air conditioning are very energy intensive and costly to run, so investigate passive options
- use efficient lighting, heating and ventilation technologies, complete with control and metering systems that encourage and support efficient energy and environmental management practices and minimise consumption of fuel, power and water
- components, materials and systems should be chosen to minimise environmental impact and protect biodiversity
- regional climatic conditions need to be taken into consideration – this is particularly critical in the North West region of WA. Consider the effects of cyclones, dust, heat, and humidity on the building and its purpose.

Life cycle features of sustainable buildings
It is vital that the focus is on whole life value and not just the initial capital costs, ie. looking beyond the initial capital cost to take into account future maintenance and running costs. It is essential to ensure that there is sufficient funding and/or income to cover the ongoing maintenance and running costs.

Delivering sustainable buildings in practice requires focus and determination. Designs should not overestimate the expertise available on completion to manage the building services. A building management computer-controlled system that demands the operator has a degree in engineering may be unsuited to an organisation that has access to the services of a part-time caretaker. Simple systems that automatically switch off when not needed are often best.

See Appendix I [page 93] for a more detailed checklist.
Case Study

Gallery of Modern Art, Southbank, QLD

Client: Queensland Government
Architect: Architectus
Completed: 2006

The environmental conditions for a contemporary art gallery were rigorously researched and implemented. Issues included the control of temperature and humidity, electric and natural light, air pollutants, energy use, building services, waste management, building materials, shading, embodied energy, insulation and air distribution.

The design of the generous roof solves around 90 per cent of the issues facing the Gallery of Modern Art (GoMA) by shading the walls at critical times of the day.

Above left: North west elevation, view from Kurilpa Park
Photo by John Gollings

Above right: Louvered roof elements and vertical blades
Photo by John Gollings

Fifteen gallery spaces have their own particular character and function. Each differs in scale, material and use of light. Modern art by its very nature is unpredictable. Consequently successful galleries anticipate events and installations, as well as exhibitions of various media, art forms and practices. GoMA’s approach is to provide a serviceable and flexible venue for the art, catering both for the artefact and the life that the art creates.

The Architectus design process carefully considered the artists’ and curators’ needs. The flexibility of the overall structure accommodates the variable nature of contemporary art. As a result, GoMA has generous openings for big works, the potential to move walls and ready access to the technological capacity for optional lighting systems and interactive multimedia exhibits.
6.4 Cost and risk management

Risk management is about managing known potential problems that can be minimised through good risk mitigation strategies. Risk may still lie in the unknowns at each stage of the project and in the earlier design stages informed assumptions will need to be made by the professional team before accurate information is generated. Judgments will need to be made as to when to commission surveys and investigations and appoint more specialised consultants.

Potential problems in capital works projects can include:

**Client team**
- hidden agendas, unexpressed conflicting aims in different parts of the client body or between parts of the delivery team
- design champion or sponsor with no time, no power or misunderstanding their role
- key decisions not based on proper balance between design quality, time and cost
- inability to assemble and check all the necessary dates for a full brief
- misunderstanding of the design proposals
- not enough time devoted to the project when needed
- lack of effective communication and engagement with stakeholders

**Procurement**
- wrong route selected – this is a major cause of failure
- contracts not suitable
- contracts not covering all aspects fully
- delays or changes in associated projects.

**Design**
- poor development of scope and brief
- design quality aspirations not articulated from an early stage
- new untested design ideas without proper regard to research and development
- flawed technologies used
- construction team not involved early enough
- well known solutions used badly, eg. because of lack of feedback
- over-optimism about move-in dates
- consider lack of effective communication and engagement to stakeholders
- poor detailed brief or unclear objectives
- not enough funds when needed
- change of client circumstances or senior personnel
- unrealistic aspirations/horizons.
### Prepare
- insufficient attention to the open spaces flanked by the building
- insufficient attention to the local context and stakeholder needs
- problems with supplies, eg. a single source for essential material
- problems fitting new equipment with old, eg. extending heating system
- fit out and design poorly integrated leading, eg. to insufficient use of space
- behind the scenes spaces overlooked, eg. inadequate staff areas, insufficient storage
- whole life design issues ignored, leading to excessive running costs.

### Design
- personality clashes
- team members lacking professional indemnity insurance.

### Approvals and context
- legislative changes;
- delays in planning permission or other approvals;
- permissions refused
- local opposition.

### Site/construction
- poor site selection
- problems with ground and foundations
- important archaeological finds on site
- unplanned structural matters, for example in heritage buildings where some problems may require solution before the next development phase can proceed
- difficult weather conditions
- lack of quality control
- a key supplier or contract goes bankrupt
- inadequately trained labour
- insufficient site supervision on client’s behalf
- building not properly finished
- services and systems not properly commissioned.

### Project Team
- lack of integration in the team
- capability of consultants, designers or contractors not matched to the project
- design team not experienced in translating concept to real buildings
- industrial relations problems
- poor project planning and management
- poor communications within teams
- failure of communications between teams: design and construction, or contractor and subcontractors
Subiaco Arts Centre, Subiaco, WA

As a heritage listed building with no maintenance or upgrade work undertaken for a considerable period, the building was generally in a poor condition. Besides the latent issues identified by the architects during the initial project investigation stage, a number of other significant issues became apparent during the demolition.

These included:

- the building was poorly built and in need of extensive improvement, this included extensive concrete cancer
- when walls were demolished and excavation occurred, additional works were required to remove undocumented material to enable the new design to proceed
- storm water and sewerage systems were initially thought to require only minor improvements but later found to be inadequate to handle the new scope and had to be replaced
- an initial investigation to determine the presence of asbestos in the building only covered selected areas where construction works would be occurring but due to unforeseen building issues, construction occurred in other areas where asbestos was discovered, which required stabilisation and removal.

Client: City of Subiaco and DCA
Architect: Sandover Pinder
Completed: 2006

The functionality of the building has been greatly improved with enhanced utilisation of spaces for community activity and the needs of the professional performing arts addressed with the upgrading of rehearsal, studio and theatre spaces.

Above: Subiaco Arts Centre interior
Photo by Frances Andrijich

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Above: Subiaco Arts Centre interior
Photo by Frances Andrijich
6.5 Value and risk management

Clients can achieve success through the careful and informed prioritising of all the elements comprising the total project. This process should begin at the business case stage. Priority order is derived from the contribution each element will make to deliver the vision and the business case that supports it, by the various funders’ priorities and objectives and by other stakeholders’ objectives. Attaching numerical weightings to each element can be helpful so that when required to reduce the scope of the project, decisions have already been argued through.

Cost information needs to be intelligible to the client and organised into meaningful elements which relate to recognisable pieces of the project.

Risk register

Risks can be formally identified and assessed in terms of the severity of the consequences if the risk occurs, perhaps from one to five, and the likelihood of the risk occurring, again, perhaps, from one to five. Overall scores can be calculated for each risk, with mitigating actions devised and the consequent reduction in risk quantified. Sums from the project budget can be set aside proportionally against the catalogue of risks, called contingency sums.

The contingency should be five to 10 per cent of the overall budget where possible; in order to allow for maximum flexibility later although for government projects the contingency is calculated line by line item. As the likelihood or possibility of each risk recedes or subsides completely, the contingency can be diminished or absorbed back into the main budget. Either the quantity surveyor or project manager will keep the risk register and revisit it with the project manager and the full team as required.

Perhaps the most fundamental potential problem is confrontation arising between the client and the contractor or other team members. In complex funding or shared use situations there is also a potential problem that the objectives of the funding or partner organisations are not fully compatible with each other or not capable of resolution in the same timeframe. A firm understanding of all the funds and client group identities at the outset is an essential component in risk reduction.

Systematic risk management can help to:

- deal with unforeseen circumstances
- minimise damage caused by identified problems
- identify and prioritise objectives
- identify and prioritise constraints on the project
- inform decisions
- enable more efficient cost management
- improve accountability.
Risks can be minimised by adopting some of the following rules:

- put time and energy into appointing advisers
- obtain and consider objective advice, even if unwelcome
- put time and energy into defining the brief
- accept realistic targets
- keep abreast of progress reports
- avoid changes and keep to ‘signed off’ decisions
- apply best value assessment, balancing quality and cost
- start risk mitigation planning earlier, ie. at the business case stage.

### 6.6 The approvals process

Building projects are also governed by a range of legal requirements, known as approvals. The two main approvals required prior to commencement of building in WA are:

1. Development Application – an official request to the local council for permission to carry out development
2. Building License – providing certification that submitted plans meet national, regional and local building codes.

As a guide both of these approvals will take nine to 12 weeks each to obtain from the local council.

Other approvals specific to particular buildings and sites are sometimes needed such as:

- common walls between adjoining owners. The client may need to engage a surveyor to carry out this work
- changes to roads, access paths and laneways
- environmental plans and surveys
- conservation orders. Subsequent to completion of the project, various operating permissions may be needed, such as licences for entertainment, provision of alcohol and food, photography
- heritage development applications. The State Heritage Office can assist local governments with heritage planning, maintaining local heritage inventories and the development of grants and incentives for heritage conservation.
### 7. Technical design

#### 7.1 Technical design

Detailed technical design is all about precision and rigour as the proposed building work is accurately defined in larger scale general arrangement drawings, customarily at 1:50 scale, big enough to visualise whole spaces and how they should be furnished.

To some extent the various engineers’ drawings and written descriptions of their work and their specifications, follow on from architects’ general arrangement drawings. Invariably, the proliferating numbers of consultants and specialists find themselves working on slightly different versions of the overall project. It is important to allow time for engineers’ drawings and specifications to become harmonised and to realise that changes required in this stage resonate through interlinked packages of information.

It is important to have the full contribution of necessary specialists at this stage, so that they have ‘room’ in the program and budget to contribute effectively. Value management is critically important at this stage. Contractors and subcontractors may not be involved at this stage; however there are various ways in which the people who will build the building are able to contribute to the development of its construction information. Value management is described in section 8.4 [page 82].

As the design becomes very specific, it is essential that it is audited for compliance with the various pieces of legislation described earlier, principally health and safety and access.

Ultimately at this stage the sustainable elements the new building will be cast. How much of the original strategy survives? As the likely cost of the project becomes clear with the input of the specialists, what will be lost? This is where having a clear vision, strong initial business case and list of priorities can be invaluable.

#### 7.2 Environmental sustainability – technical issues

Delivering genuinely sustainable construction will require the project manager and design team to consider:

- the essential construction elements – windows, doors, insulation, air-tightness
- the origin and properties of the materials chosen
- the components to buy, particularly the light fittings and their controls
- heating and ventilation and their controls
- the use of water.
8. Construction

8.1 Mobilisation and construction

As soon as the successful contractor is appointed there will be discussion between the project manager, the cost consultants, the design team and the contractor about the actions necessary to allow the contractor to take possession of the site. If the organisation is a Government body, the site is likely to be Crown land or land vested to a Minister and any implications should be considered in the timeframe. From this moment the contractor has jurisdiction over the site and the client will need permission to enter and view progress.

If the work is to an existing premises and the current resident organisations are remaining in part of them, residents will need to be closely involved in planning for protection and isolation of ways in and out of the building, deliveries and fire escape routes. These may change sequentially if the project proceeds through several phases. Main services may need to be switched off periodically.

The project client will need to be fully informed of the cycle of payments to be made against certificates confirming the amount of work completed to date. The cost consultant will be able to provide a predicted cash flow. The rate of spend will not be constant and gives a good indication of real progress on site.

8.2 Consultation during construction

Relevant stakeholders will need to be kept up to date about the physical works and disruption, changes in plan and progress. The agreed governance structure of the project should guide this process as well as any reporting back to the approving body of issues and concerns that fall outside of the approved parameters of acceptable variations. This can apply to matters arising of a financial nature but also other concerns such as expectation management.

Physical reconstruction is sometimes associated with organisational restructuring, either voluntary or involuntary. Those with a stake in the organisation may be anxious and consultation during construction is important for maintaining relationships and managing expectations.

8.3 The construction program

The preparation and status of the program can be contentious. Additional payments can be argued for on the basis of certain kinds of delay, arguably client-induced in some way. A spirit of over-optimism quite often inhabits construction programs until close to the end date.

Within the program, certain sequences of work will be essential in order to achieve progress. It is
possible to identify them and connect them into a critical path. Construction programs can become very complex diagrams even for relatively small projects. Ask for an executive summary for the organisation’s needs, the completion of phases and the return of refurbished spaces, within which activity can restart.

### 8.4 Value management

This is a formalised approach to planning and managing a project through its whole life to achieve best value for money. It often uses multidisciplinary workshops with a facilitator to discuss at appropriate moments whether better value solutions are possible within the constraints of the brief and the project. It is good practice to produce monthly cost reports. These will be assembled by the cost consultant after meetings with the contractor and an inspection of the works. The governance structure will need to take into account the decision making required for implementing any outcomes of a value management exercise.

There will be a prediction of outturn cost, based on the pluses and minuses in the cost of works to date, the release of those contingency sums held in reserve and the expenditure of other specified sums reserved for particular pieces of work on unknowns at the time of tender.

As part of the team, the skill of the project manager and project champion is to respond to trends in the cost reporting and know when to take action. Value management during construction can be problematic and as discussed in section 6.5 [page 78] the process of prioritising project elements should begin at the business case stage to assist with any value management decisions during the project. The reporting on such decisions cannot be left to the project team but need to be considered in consultation with partners and the overall governing structure.

Funders and other partners, either direct or indirect, will normally take a keen interest in the cost reporting and their representatives – or ‘monitors’ – will take a view. There is no point in being anything other than wholly transparent.

Experience has shown that even what might appear to be a relatively modest change in the design during construction can attract what may appear to be disproportionate costs.

Are consultants delivering construction information fast enough to fuel the contractor’s progress? Given that late information is one of very few mechanisms for receiving additional payments, it has been known for the flow of information to be misrepresented. Some modern contract variants require claims and counter-claims to be resolved quickly and as they happen, rather than waiting, leaving them unresolved and escalating until completion. Unresolved claims make it much more difficult to be confident about the final outturn cost and to manage value on the way.
Construction is exciting and project stakeholders and the community in general will want to see progress. With good planning, not least in health and safety, it should be possible to tour the site once or twice during the process. If the cost can be carried, webcams are popular, connected to the organisation’s website. It is worth considering giving the building team a tour, physically or virtually, of the organisation’s work, rationale, vision for future and the role the new building will play in realising it. Increasing communication, understanding and empathy can only help, but remember that whereas this may not be first and foremost on the organisation’s agenda, the construction industry always works towards making a profit. Relations deteriorate when this is threatened.

8.5 Communications

It is vital to maintain communication within the construction team and with staff and other stakeholders, which may include the general public and the media.

- Involve communications experts as part of the project team from the beginning of the project
- Develop communications protocols which outline processes for all parties to follow including spokespeople for media, site visits, photography, promotions etc

- Program regular meetings with the project team to keep clients informed, usually after the monthly cost report is completed
- Walk the site regularly
- Keep all internal and external stakeholders informed at all stages through regular briefings, industry articles, newsletters and websites
- Invite the construction team to the organisation’s events
- Develop a media strategy
- Communicate any significant changes to relevant people in the organisation, and related organisations, including the approving authority
- Send out media releases in consultation with the funding partners to arts journals and local newspapers and radio/TV stations at key stages of the process
- Stage events, for example the turning of the sod ceremony
- Arrange completion events for project team and contractors before the formal opening.
State Theatre Centre of Western Australia, Northbridge, WA

From the outset, the project held a high profile. From the 30 year gestation period during which stakeholder consultation occurred, to the international architectural design competition, to the choice of location and innovative means to deliver requirements over the obvious limitations that the location imposed, the project has been in the public eye. There has been much interest in the architectural, structural and construction design and implementation, from professionals and the public alike.

It was therefore important for information on the project and its key milestones to be promoted and made easily accessible to any interested members of the sector and community.

Initially, a specific website was created to promote the CentreStage international design competition for the new venue. Once the architects were appointed, DCA maintained communications on project development via a dedicated page on its website as well as sending out our regular e-newsletters to stakeholders with updates and images of project progress.

Above left: STCWA from Roe Street
Courtesy of DCA

Client: WA State Government
Architect: Kerry Hill Architects
Completed: January 2011
9. Handover

The transfer of responsibility of a building to the client is a critical stage. This is also sometimes referred to as ‘handback’. This is when the best information will be available about exactly what the building construction comprises, how to maintain it and what transformations it may be capable of over time.

9.1 Practical completion and defects liability

The contract administrator will decide - and the client should not influence him or her - exactly when the project is complete and can be beneficially occupied by an organisation. Inevitably, work will remain to be finished, but not of a magnitude to prevent it from being occupied and activities being resumed. This said, for arts and cultural buildings with very high levels of public use, it is especially important to understand what is acceptable to be finished. This is a critical contractual moment because it releases the contractor from any obligation to pay damages to the client for further delay or reimburse for additional rental payments or cancelled events. Work remaining is described on ‘snagging lists’ and experience has shown that often finishing all the items is a protracted and frustrating business.

Initially the design team will carry out inspections. However the client team needs to participate to learn what will need to be reviewed over time. There is a period (usually a year) set down as a condition of the building contract when the contractor is required to put right any failures that occur; this is called the defects liability period. It may be appropriate to address ways of providing incentives to the contractors to deal with these final issues, or disincentives to them not being completed effectively and speedily. This may include financial incentives or penalties. For example, the client can withhold a proportion of the total contract value for the defects liability period. This sum, referred to as ‘retention’, may be in the order of 2.5 per cent.

The client should seek advice about this from their project manager or quantity surveyor.

Final touches, fitting out

At this stage in the project, the detailed management routines for the facilities management team can be planned and the installation of additional items such as small artworks or planting can be selected and installed. If outside organisations will be operating facilities such as catering or a shop, their contractors will need to see the site as soon as it is sufficiently complete for them to do so. Site visits need to be planned so that they do not disrupt the construction process.
9.2 Commissioning and handover

Effective commissioning is vital to ensure services are operating efficiently and as designed and are delivering the performance specified or required. Elements that need commissioning will include mechanical and electrical systems and the controls that govern them. Constructional elements such as opening windows and solar shading devices may also require commissioning.

The testing and checking of all environmental and technical elements of a commissioned contemporary building is a major exercise. It is about much more than spotting where a coat of paint is missed. Often the program under-provides for these checks and/or the time runs out. The occupants can really suffer from this in the early period of occupation.

The contract should mandate that a full set of ‘as built’ plans and manuals for the building services and temperature controls are given to the client. These need to be in a handy, manageable form for everyday use, as well as in detailed documents or computer programs. The project manager should set up systems to ensure that all information is stored correctly, eg. occupational health and safety files and records of drawings. These manuals, drawings and records become essential later down the track when procuring services for maintenance, replacement or upgrades.

The design team should systematically assemble all material relevant to a building in a log book and the operating and maintenance manuals. The log book should give a summary of the facility and purpose of the building services, the zoning arrangements, the location and features of the relevant plant and equipment and a schedule of the building’s energy supply meters and sub-meters (including their location, fuel type, and how to read them). The log book should also describe the operational and control strategies of the energy-consuming services and provide instructions on how to achieve the specified performance, including the actions required daily, monthly, seasonally and annually. Information should also be provided on how to calculate the energy performance of the facility from the individual metered energy readings and compare it with published good practice benchmarks.

Consider a ‘dress rehearsal’ at handover

The design team should be contracted to provide support (including on-site training and advice to the facilities management team and occupants after handover) and to remain available to ensure the building is operating as planned. Most buildings have systems for lighting, security, heating and ventilating that, even after initial testing, will need to be fine-tuned to give optimum performance in use.
Drainage systems for outdoor stages, studio extractor fans, museum and gallery temperature controls and theatre fly-systems are just some examples of essential elements that need trials and checks. Allocating time and money for checks is particularly important for arts and cultural buildings, which will often combine high use with high tech and environmental needs.
10. Occupation

Modern buildings, particularly low-energy, sustainable buildings that meet new legislation and targets, have complex controls and building management systems that need to be systematically and rigorously commissioned. Contractually, this is called the defects liability period and the ‘fine tuning’ requirements should be written into the contract. This period may take up to three months to undertake prior to practical completion and a full year’s cycle to fine-tune and monitor performance beyond practical completion. It is recommended that whatever this stage is called, it is thoroughly provided for in the building control and consultant appointments and contracts.

The first stages of occupation

The client must plan for occupation from the business case stage. The new project may need new staff and changes to the working lives of staff members. This will have a number of potential impacts, including:

- recruitment and job training will be needed at appropriate stages and training for the use of a new building can be considered at the same time
- security systems are likely to have been modernised and catering or public areas may be totally changed
- staff will need information about all aspects of the new building and location. The new working rules should be explicit. Will new delivery arrangements have to be planned with existing suppliers?

A staff user group can help sort out which issues will need explanation or training. Staff visits of groups of staff to the site may help to highlight issues that need clarification. It is best not to wait until move-in day to hand out information about changes. Early communication can forestall speculation and misinformation.
The opening and launch

The completion of a project is often celebrated with an official opening launch. The project budget should plan for this stage from inception and depending on the scale of the event, planning and organisation may begin at least 12 months out.

It is important that the defects and commissioning period has concluded before an official launch. There may be scope for a wide variety of opening events that needs to be planned well in advance, such as:

- soft launch to test staff routines
- private previews of the building, particularly for project funders
- media launches
- cultural respect and protocols, such as Welcome to Country
- staff previews
- events for the project delivery team
- related arts launches – new plays, book launches, special exhibitions or a special week.
State Theatre Centre of Western Australia, Northbridge, WA

All communications were run through one point, which reduced confusion across a number of involved agencies. All invitations and seating plans for the opening events (which included an official civic ceremony as well as a public performance) were run past the Protocol Office at the Department of Premier and Cabinet to ensure that all important officials were invited and seated appropriately.

This included a dry run-through which allowed Government security personnel to assess the venue and officials to feel comfortable with their roles on the day.

Above left: Opening Gala Performance
Photo by Bohdan Warchomij

Client: WA State Government
Architects: Kerry Hill Architects
Completed: January 2011

The opening of the State Theatre Centre of Western Australia was successful due to a dedicated communications plan for the opening events, as well as the convening of an Opening Committee that approved and oversaw the events associated with the opening, including the appointment of an Artistic Director to manage the event.
10.1 Evaluation

No project is perfect on day one. The first few weeks are the time to iron out any obvious problems, while giving staff and visitors the chance to settle into the new facility. After the initial period of familiarisation, users should be asked to report back on how well the facility is functioning and to identify any improvements that might be needed or can easily be achieved.

‘Post occupancy evaluation’ means assessment of the new building’s performance in the key areas after moving in and occupying the building. Generally, a full post occupancy evaluation for large projects should be undertaken no later than a year after completion. The results should be made available to the funders, the building users and the project team. Any general lessons learnt should be summarised and broadcast for the benefit of future projects.

Early commitment by the whole team to the need for feedback about the project process and the outcome has a role to play in creating a good design and a building for which feedback will be generally good.

10.2 Management practices

Operating a building sustainably is about much more than the systems specified in its design. Consider a range of different management practices to maximise its sustainability in use:

Environmental
- Appoint a person to be responsible with the duty to manage energy and water use, and other aspects of environmental sustainability.
- Monitoring and targeting – establish a routine for reading meters regularly and recording and analysing energy and water use in a spread sheet. This will enable benchmarking against typical buildings of the same type, and the identification of unexpected changes in consumption patterns, together with their probable causes. Ideally, stringent but realistic targets for reducing consumption will be set.
- Identify good energy housekeeping practices that prevent unnecessary waste of energy and water. Ensure these are drawn together into a walk-round energy checklist and staff training material.
- Undertake a periodic energy walk-round of the premises at different times of day and night with the energy checklist to identify sources of energy waste, such as heating, lighting or ventilation operating when it is not required.
- Staff awareness and training including introducing new staff to good housekeeping practices. Routinely promote these practices through staff awareness campaigns.
- Consider a poster or similar competition been considered to promote energy-saving practices and/or identify new opportunities.
10.3 The future

New buildings seem to boost morale amongst their occupants if the first experiences of occupation are broadly good. It is worth going to great lengths to make this happen. Buildings with problematic early days attract a kind of weariness and distance amongst their occupants and users, which is to be avoided. It will take a big effort and it may be exhausting by this stage, but the new building has received a tremendous amount of careful consideration in its design, construction and successful completion. It is now that the real story begins.

- Celebrate success and recognise staff efforts when energy and water use targets are met.
- Carry out periodic inspections undertaken to look for opportunities to improve efficiency through investment in energy-saving technologies.
- Consider catering energy. Match the size of equipment to catering needs, ensure white goods meet the highest efficiency standards and that cooking appliances are well insulated. Ensure catering appliances have heat recovery where appropriate and that controls on catering equipment are clearly visible and indicate when the equipment is switched on or running. Ensure equipment has an economy setting and check that electricity, gas and water supplies to catering facilities sub-metered, as this is essential for benchmarking and diagnosing usage. Sub-metering is also helpful if catering services are subcontracted out as caterers can be re-charged for the supplies they use, providing an incentive for them to use energy wisely.
Appendix I
Functionality design checklists

Appendices are a guide only and do not constitute an absolute checklist.

A. Performance spaces

Auditorium and rehearsal areas
- Should the performance area accommodate a range of performance arts – drama, dance, music, opera and circus?
- Will the space be used for cinema? Will it be used for conferences? Large and small productions? Will productions change frequently? What is the likelihood of this range altering in the future? Depth of stage and size of wings are crucial factors, heights and clearances especially for large productions and the overall size and proportion of the space both for visual and acoustic reasons.
- Will the stage area need modifying in relation to the audience? Will an orchestra pit or gallery be needed? Will any performances be held in exterior space beyond the building?

Audience areas
- What is the desired and attainable audience size? What formats will be used for audience seating? What type of seating will be needed – promenade, flat, tiered, in the round? Will the seating be stackable or retractable? Where will the seating be stored when not in use? How will the seats be configured?
- Will seats need to be linked?
- What arrangements will be made for access and seating locations for people in wheelchairs and their companions?
- Will there be coat and bag stores?

Behind the scenes
- Will there be the need for scene changes? Will scenery be made on site and if so where and what health and safety requirements need to be considered?
- Will costumes or props be made on site? What are the storage requirements for scenery, props and costumes?
- Will clean and dirty workshops be needed?
- Will change rooms be needed for large groups such as orchestras and choirs? Is secure storage needed for musical instruments?

Lighting
- How adaptable do lighting systems need to be?
- How much space is required for projection acoustic and lighting control? Is the equipment permanent?
Acoustics
- Finishes and construction systems will affect the acoustics. The right acoustic environment for drama is not usually right for music. An acoustic expert may need to be consulted. Amplification systems may be necessary.
- Audio loops for the hearing impaired will need to be available.

A useful reference which details the specific requirements of performing arts centres is ‘Oh You Beautiful Stage! Benchmarks for Performing Arts Centres’, published by the Victorian Association of Performing Arts Centres in 2006 (second edition).

B. Displays, galleries, exhibitions and museums
Exhibitions
- What art forms will be displayed, eg. small, large, heavy installations, cinematic: video, static or mobile? Indoor/outdoor? Are desired exhibitions affordable? Do they demand electricity and data?
- Will more than one exhibition area be required?
- Will they be separate, jointly supervised?
- Will it be necessary to dismantle one exhibition while another is open to the public?
- Will the gallery accommodate educational groups? Will space be provided for wet activities?
- Will there be artists or crafts people in residence? Any special provision for them?
- What large collection items will be displayed in the building? Consider access doors and clear paths for large object movement.

Display
- Can display items be securely delivered, unloaded, stored and manoeuvred through the building? Will they be adequately weather proofed? Will any holding spaces be necessary for acclimatisation and disinfection?
- Will special conditions be required for humidity, temperature and lighting controls?
- Will the exterior skin of the building, windows and doors, be designed to help maintain environmental conditions in sensitive areas?

Display Surfaces
- What characteristics are essential: fire retardant; suitable for a variety of displays; possible to fix exhibits to surfaces; re-paintable, easily maintained and cleaned; uninterrupted expanse; able to take heavy loads; mobile/removable?
- Will mobile screens be stable? Where will they be stored? How readily can they be moved?
- Are anchor points needed? How will Items be attached to permanent walls or ceilings?

Lighting
- What transition is provided between daylight and any reduced light levels?
- Is daylight needed and if so, how will its deleterious effect be controlled? Is it important to retain the colour rendering of natural light? Can the windows be blocked out?
Will artificial lighting need dimmers or other devices to vary the visual mood? Will switches and controls be secure but conveniently located?

Will light level monitoring units need to be installed; will they automatically dim the lighting as needed?

**Floors**
- Will they have fixing and cabling points built in? Can it screw in and later repair?
- Will it be scratch and water resistant and easy to clean? Will it be possible to change the colour?
- Will children be expected to sit on it?

**Storage**
- Will the storage allow for access to some items without disturbing others, eg. special stores for display items, packaging, shop, catering and cleaning supplies, administrative/stationery supplies, refuse items, items waiting recycling?
- Are quarantine areas required, ie. for museums? If so, quarantine areas should not be linked to collection areas.
- Loading areas need to be adequate for size of objects or artworks.
- How will the collections be stored? Open racking, closed cabinets, compactors? How much space is required for different types of collections and what are the storage requirements for these? Consider light levels, temperature and humidity, fire detection and suppression.

Consider general storage as well as crate storage. Some travelling exhibitions require environment controls for crate storage as well as the exhibition material.

**C. Workshops, studios, creative and educational** (Special features in additional to any other above)
- Are there particular needs such as mirrors, acoustic requirements, soundproofing, data points, warmth for dancers, ventilation, flues for kilns, dust filtration, blackout, sinks and drainage, storage for tools, materials and finished products, special provision for children?
- What size groups will use the spaces?
- What support spaces such as lunch areas, changing rooms and lockers, showers etc. will they need?
- Are wet or chemical areas required? Ensure appropriate storage of hazardous materials.

**D. Administrative areas**
- What sort of work patterns will need to be accommodated?
- Who needs to be near front of house?
- Who, if anyone, will have offices? How large?
- How much space is needed for other staff?
- Will there be shared desks, mobile or itinerant staff?
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<td>Will office space be provided for warders, guides, reception and information staff?</td>
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<td>Will new furniture be needed? If so, what type?</td>
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<td>What size and number of meetings should be allowed for?</td>
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<td>Is the work confidential? What are the associated storage requirements?</td>
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<td>How much storage is needed? Is it possible to change storage systems and patterns as part of the change to reduce the need for dead storage? Can off site archiving be used?</td>
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<td>What is the typical workplace requirement for power, data and telecommunications?</td>
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<td>Is there a shop and can it stock a wide range of goods?</td>
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<td>Are parts of the building complicated to access for people with disabilities?</td>
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<td>At peak times, say when performances end, is there enough space for people to collect belongings, and meet each other?</td>
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<td>What provision, if any, should be made for visitors who smoke? How is it signed posted?</td>
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<td>Is there comfortable seating for visitors?</td>
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<td>Has shelter been provided outside at the bus stop or taxi stand?</td>
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E. Visitor care

| Prepare | Design |
| Is the reception welcoming and secure? |
| How many people may be waiting at one time? |
| Is an information desk or exhibition planned to tell visitors about the organisation? Is it well located and displayed? |
| Is it easy to find the way if the building is unfamiliar? |
| Is there a sufficient number of female toilets for the visitors/audience? |
| Are toilets nearby, with provision for the elderly, children, disabled and baby changing? |
| Is there a café or public seating area provided with power points, TV, data or other information technology? |
Appendix II
Sustainable design checklist of issues to consider

A. Transport
- Travel plan – transport to arts facilities may be a major source of environmental impact. Has a travel plan been prepared to encourage more sustainable forms of transport? Will information be provided to staff and users about bus routes and other sustainable forms of transport?
- Cycle paths and safe routes – is the facility accessible by safe cycle paths? And/or are quiet streets that give access to the facility adequately signposted and are there road markings and cycle-friendly road layouts to encourage users to cycle to the facility?
- Measures to encourage cycling – will simple measures to encourage cycling to the facility by staff be provided, such as covered cycle parking and the provision of one or more staff showers?
- Site features and potential – has the site been assessed for its ecological value and its microclimate to ensure the shape and planning of the building make best use of daylight, solar gains, wind and landscaping to enhance building performance, reduce reliance on mechanical services for heating, lighting and ventilation and provide sheltered entrances?
- Combined cooling and power – has the potential for combined cooling and power been examined?
- Wind power – has the feasibility of using wind power to generate electricity been examined?
- Photo-voltaic panels – has the potential of photo-voltaic panels been examined?
- Solar-thermal panels – has the potential of solar-thermal panels for reduced energy costs been considered?
- Rainwater harvesting and use of grey water – has the feasibility of rainwater harvesting been investigated? Can grey water be filtered, treated and recycled?
- Conserving water runoff – has surface water runoff been designed in ways that help to conserve water and follow best practice for sustainable urban drainage systems, eg. by channelling water from paving, roofs and pitches to soak wells or balancing ponds?

B. Site appraisal and renewable energy
- Exploiting neighbouring opportunities – are there opportunities to share the outputs from a combined power plant with other adjacent buildings?
C. Protecting and enhancing biodiversity

- Assessing plants and wildlife; avoiding harm to existing biodiversity; enhancing existing biodiversity – have statutory and non-statutory nature conservation organisations been consulted? Have all precautions been taken to reduce harm to existing flora and fauna on the site? Where the site has limited biodiversity value, have opportunities been taken to create features that can enhance existing flora and fauna?

- Ecological management plan – has an ‘ecological management plan’ either independently or as part of the ‘landscape plan’ been prepared, setting out good practice guidelines for the management and maintenance of biodiversity features?

- Giving priority to native species – has priority been given to specifying native tree and plant species, which usually offer better habitat opportunities for wildlife than introduced or exotic species?

- Drought-resistant plants – to reduce the need for watering, have plants that are known to be drought-resistant been chosen?

- Protecting landscape features during construction – have precautionary measures been taken to ensure existing trees, plants and all other significant landscape features are adequately protected during construction work? Tree felling should be done only when absolutely necessary and after ascertaining that no tree preservation orders are in force.

- Planting schedule – has a landscape plan been prepared showing proposals for trees, shrubs and other plants, including the time of year when each is to be planted and complete with a maintenance schedule?

D. Building design

- Building shape and form – has careful use been made of orientation, plan form and three-dimensional shape to reduce heat losses, to exploit natural light and ventilation, and to reduce artificial lighting, heating, cooling and ventilation loads, while avoiding glare and overheating?

- Location of offices – have offices been located on external walls to allow daylight and views over the approach to the building?

- Space planning – have spaces requiring intensive servicing, such as auditoria, been located adjacent to plant rooms to minimise ducting and increase the potential for heat recovery?

- Design for maintenance – does the plant room layout allow adequate space for safe inspection, maintenance and upgrading or replacement of equipment and plant? Is there external access to ensure minimum disruption?

- Zoning – has the adjacency between spaces been considered to minimise unwanted transfer of heat or humidity?
Design for management sub-metering – have electricity, gas, and water sub-meters been provided to encourage effective monitoring and management, particularly for: areas of high-energy intensity (such as auditorium, studio and kitchens) and larger usage plant items (air handling units and humidifiers)? Ideally, sub-metering should be at plant item or motor control centre/panel level, and linked to a Building Energy Management System (BEMS) if installed. Sub-metering is particularly relevant where, for example, management of a café or bar may be contracted out; it will allow energy costs to be monitored and re-charged.
## Case studies

### Carriageworks, Eveleigh, NSW
- page 37 – vision, selecting a site or building
- Client: ArtsNSW and RailCorp (formerly StateRail)
- Architects: Tonkin Zulaikha Greer Architects
- Completed: 2007

### Gallery of Modern Art, Southbank, QLD
- page 39 – vision, commit to design quality
- page 90 – managing good design, prioritise design quality
- Client: Queensland Government
- Architects: Architectus
- Completed: 2006

### Kodja Place, Kojonup, WA
- page 34 – vision, design consultation
- page 47 – sustainability
- page 71 – design consultation
- Client: Shire of Kojonup
- Architects: Marco Vittino Architect in association with Arbor Vitae/Phillip Gresley Architects
- Completed: 2004

### State Theatre Centre of Western Australia, Northbridge, WA
- page 24 – vision, gap analysis and needs assessment
- page 31 – vision, be an organised client
- page 44 – the involvement of artists
- page 84 – communications
- page 90 – the opening and launch
- Client: WA State Government
- Architects: Kerry Hill Architects
- Completed: January 2011

### Subiaco Arts Centre, Subiaco WA
- page 42 – commit to accessibility
- page 77 – cost and risk management
- Client: City of Subiaco and DCA
- Architects: Sandover Pinder
- Completed: 2006

### The Bakery, Northbridge, WA
- page 54 – feasibility study / business case
- Client: Artrage
- Designer and Project Manager: Marcus Canning assisted by Matt Stack
- Completed: 2010
Glossary

Many terms in this document are specific to the construction industry or are used differently from other contexts. Some have been used and explained in the course of this manual and are not repeated here. Others have not been referred to but are included here in case they are encountered in the course of a project. Definitions are not set in stone.

Access consultant
Access consultants are specialists in design to enable access by all, without discrimination against those with any form of physical or mental disability.

Architect (see also Designer)
Architects design buildings. They are expected to understand the importance of user requirements and may have specialist skills, eg. historic buildings, refurbishment or particular building types. In traditional contracting the architect often leads the design team, although bigger projects also use project managers who work directly for the client.

Area measures
Several area measurements are used in building. The Royal Institute of Chartered Surveyors has a set of accepted definitions, of which the most common are: gross internal area (GIA), the area enclosed by the inner surface of the exterior walls; net internal area (NIA) is GIA less internal structure, vertical circulation (stairs and lifts), plant, WCs; net useable area (NUA) is equivalent to the area that can actively be used and is NIA less horizontal circulation routes.

Articles of agreement
Details of a contract and the agreement it sets out.

Arts consultant
Independent expert with experience and knowledge of the arts industry. Employed early in project planning to provide conceptual and technical advice to inform the building design.

Best value
The value that is represented by considering all aspects of quality and lifetime costs as opposed to price of construction alone. The term is also applied to a specific government program that recognises the achievements of local authorities.

Bill of quantities
List of the costs of a project based on a ‘standard method of measurement’ where the amount of labour and materials needed are calculated using architects’ drawings and specifications. It is usually a contract document. If planned works are approved for amendment they are re-measured to calculate the change in cost.
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1. Vision
2. Feasibility study / business case
3. Prepare project definition plan / formal design brief
4. Procurement

design
5. Team
6. Develop design
7. Technical design
8. Construction
9. Handover

construct
10. Occupation

use

Brief – see Design brief
Buildability
How far a design has taken into account the ease of construction, the best and cheapest way to build the finished design.

Building envelope
External walls, windows and roof that form the building ‘skin’ to keep out the weather.

Building regulations
Statutory requirements to which buildings must conform, aimed primarily at safety and public protection.

Building surveyor
Surveyor with training in building construction and law, and sometimes costing, often used as the design team leader where alterations to an existing building are needed rather than new design work.

Business plan
The business or corporate plan examines and articulates the underlying purpose of an organisation – its mission, aims and objectives, its activities and the basis for a change in the level and nature of these activities in order to provide detailed current and projected financial statements.

Capital grant
Grant towards purchasing – including constructing – a building, as opposed to a revenue grant that will be spent on the costs of owning and running it, which may include rent, rates and maintenance as well as staff costs.

Certificate and interim/Certificate of Completion
Formal document issued by the contract administrator to say that a particular stage of a project has been reached. Usually the basis for payment. The final certificate confirms that the builder has done all that was demanded in the contract.

Circulation
Passages, corridors, stairs and lobbies that allow people to move from place to place in a building. A maximum distance for protected exit routes is required for fire escape purposes. The minimum width of circulation routes is dependent on the number of people using the building.

Client
Person or group that ‘owns’ the building. The client initiates the project, employs the design and construction teams and finds the resources to make it a reality. The client is sometimes referred to as the ‘employer’, ‘champion’ or ‘manager’. The executive client is the name sometimes given to the most senior person in the client organisation. The lead client is the name of the senior person on the client project team.
Client design advisor
Independent expert with knowledge of construction and understanding of the business needs and objectives of the client and users. Employed very early in the project to give impartial advice on the best way to proceed.

Client representative
Agent employed by the client to act on their behalf with limited powers – sometimes also acts as project manager.

Competitive interview
Process to select a member of the team, particularly the designer, on the basis of performance at interview, track record, credentials and proposed approach, rather than on a specific design or stated solution for the project.

Construction costs
Costs of the construction only, not including items such as land acquisition and legal costs, financing costs, professional fees etc. Professional fees can be 40 per cent or more of the hard ‘bricks and mortar’ construction costs.

Contingency
Provision of time or money to address risks which will occur in some form because of uncertainties at the start of a construction project. The size of the contingency should be related to the degree of uncertainty and can reduce as the project proceeds and uncertainty is reduced.

Contract administrator
Also called the ‘supervising officer’. The person, usually an architect, surveyor, or engineer, named in the contract with the builder who will give instructions to the builder and manage the contract for the client.

Cost consultant
Consultant, usually employed by the client, to estimate, monitor and help control project costs.

Critical path
Shortest sequence of essential activities to complete the project sets the critical path. A delay in any activity ‘on the critical path’ will delay the overall timetable. Delay in other activities has less impact. Typical activities on the critical path prior to start of construction are raising funds, receiving planning approval, preparation of production drawings and information.

Design brief
Document describing the ‘problem’ for which a design provides the ‘answer’. It is the ‘demand’ which the ‘supply’ team – advisors, designers and building contractors – must satisfy. It should be written to allow more than one answer to be suggested. It should describe the organisation’s aspirations, priorities, culture, the values they wish the project to support, the financial and partnering constraints and the deadlines.
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| Design champion | Person appointed to provide leadership, generate enthusiasm and commitment to design quality and safeguard design quality on behalf of the client. Ideally a senior manager or board member. |
| Defects liability period | Period after construction, usually 12 months, during which faults that appear in a building as a result of construction processes (e.g. cracking of plaster as it dries out) are the responsibility of the contractor to remedy. |
| Designer (See also Architect) | May have one of many design roles – engineering, landscape, etc. The term is often used to describe the person who designs the building overall. |
| Design team | The team responsible for designing the building. Covers a range of professionals including architects, landscape architects, engineers and property and cost specialists. |
| Development | Context of this word is all-important. In the construction environment the term ‘development’ has several meanings: the process of moving a project from feasibility to design; or the actual process of building; or the extent or type of building on a site, as expressed in ‘over-development’. In the charitable and supported sectors, development often means fundraising. |

### Glossary

**D&B**
Design and build method of construction. The contractor is responsible partly or entirely for design development, its quality and delivery.

**Design champion**
Person appointed to provide leadership, generate enthusiasm and commitment to design quality and safeguard design quality on behalf of the client. Ideally a senior manager or board member.

**Defects liability period**
Period after construction, usually 12 months, during which faults that appear in a building as a result of construction processes (e.g. cracking of plaster as it dries out) are the responsibility of the contractor to remedy.

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**Domestic subcontractor**
Subcontractor employed directly by the main contractor. The contract administrator has the right to approve these in standard forms of contract.

**Economic impact**
This refers to the effect of a project on the local economy. This is taken into account in the funding of capital projects in the arts. Specialist input should be sought for a business case that needs to predict the economic impact (in the context of cost benefit analysis).

**Embodied energy**
Energy used during the entire life cycle of a product including for its manufacture, transportation and disposal.

**Employer**
Term used in standard forms of contract, to refer to the client.

**Employers’ requirements**
Client’s brief – often an outline brief.

**Enabling works**
Building works that are necessary to allow a project to start, but which are not part of the project itself, for example, constructing a site entrance.
Energy efficiency  
Refers to the amount of fuel required for a building to heat, cool, light and run it, compared with standard comparators.

Engineer  
See Services engineer, Structural engineer.

Facilitation, facilitator  
May be used early in a project to help an organisation to articulate its own perspective and its internal channels of communication, and become familiar with the role it will need to take on for the project. It is sometimes preferable to use this approach before seeking a client advisor or other advice from construction professionals.

Facilities manager/management  
Person who will manage the operation of the finished building. The activity, also known as FM, is facilities management.

Fast track  
Describes a project using techniques to speed up the work to meet tight time requirements. Frequently achieved by overlapping design and construction, or prefabricating large components off site. Involves higher risks than under a more measured/sequenced approach.

Feasibility study  
Reviews objectively whether a set of proposals is likely to fulfil the organisation’s objectives. It is not a fundraising document but is developed in support of the business case which seeks funding approval. It is needed early in the process (ie. at business case stage).

Final account  
Agreed contract sum for the facility once built, adjusted to take account of all approved changes and any re-measured work that was not priced in the original tender documents.

Fit-for-purpose  
Appropriate and of a necessary standard or quality for its intended use.

Fitting out  
Last part of a construction project when the fittings and furniture, such as carpets, seating, lighting and rigging, are installed. The cost of supply and installation should be estimated at the same time as the construction cost and that part of the budget needs to be protected from erosion.

Funders  
Bodies that provide finance for capital expenditure. Many publicly funded projects have more than one funder or funding body. Funders are likely to impose conditions on a project and are important stakeholders.
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## Good design

Means paying attention to the full lifetime costs of a building, including operating and maintenance costs, user productivity, environmental impacts and the economic impact of a building on the organisation and the broader community.

## Handover

Formal moment at which responsibility for the completed building is passed from the contractor to the client. A full check is needed to ensure that everything promised under the contract has been fulfilled. Insurance and management responsibilities are transferred to the client at this point.

## Heating, ventilating, air conditioning (HVAC)

Services designed and installed by specialists. Air conditioning is a system to control the temperature, cleanliness and humidity of the air delivered within a building. If no air conditioning is needed, mechanical ‘air handling’ or natural ventilation through openable windows will be used.

## Integrated process

Collaborative techniques to unite the client, designers and builders with the aim of increasing efficiency and harmonising processes. Joint decision between separate groups about the integration of IT systems or software is an example. In construction projects this refers to a variety of design and build approaches where design benefits from early input by the contractor.

## Latent defects

Building defects that appear after practical completion of the building are covered by limitation acts. The client may be able to prove the design or construction team is responsible and must remedy the defects at their expense.

## Liquidated and ascertained damages (L&AD)

Realistic estimate of the losses that the client believes will ensue as a result of delay in completing the project. They are usually described in the contract as a sum of money per week. Damages cannot be claimed from the contractor if the delay is caused by something outside the contractor’s control.

## Lump sum contract

Contract for a sum that includes all costs, which can be calculated only on a finalised and fully detailed design and specification.

## M&E – mechanical and electrical services

Includes lighting, air conditioning, humidity control, plumbing and drainage. It is often used to distinguish it from structural engineering.

## Nominated subcontractor

Specialist subcontractor chosen by the client, who must be used by the contractor.
Novation
Transfer of contractual rights and obligations from one team to another. Commonly refers to the transfer of a design team and their work from the client to a design and build organisation. Novation is intended to preserve designs approved by the client by committing the builder to an accepted design.

Options appraisal/analysis
Process whereby different ways to meet a specific set of organisational aims are analysed and ranked in order of preference. Methods for weighting different factors according to their importance are usually needed. It should not be used to justify post hoc decisions, but to bring out all the priorities that may be expressed by different parties. It is often at this stage that it is realised that a building project may not be the best way to achieve the stated objectives.

Organisational capacity
Shorthand way of describing the ability of an organisation to plan and complete a capital project. Areas of capacity that may be very stretched are strategic management, financial control and executive leadership and personnel skills.

Outturn costs
Total cost, or projected cost, of a project – including land acquisition, construction cost, fitting out, professional fees, contingencies, disruption costs, financing costs and inflation. This is the total sum the budget must cover.

Practical completion
Certificate is generally issued by the architect, certifying satisfactory completion of the construction. It normally allows the contractor to invoice the client for all but a small portion of the contract sum. The outstanding portion is called the retention.

Private Finance Initiative (PFI)
Describes a particular procurement route in which a private sector supplier takes over, constructs and manages a building for use by the public sector. A typical operating period is 20 to 30 years. The contractor needs to be brought into the process at a very early stage.

Planning permission
Permission that must be obtained from the local authority before a design can be built. Features that are controlled are the uses to be accommodated, the site coverage and bulk, site access, design features that relate to neighbouring properties and conformity with existing local plans. If permission is not granted, an appeal may be heard by a public inquiry and determined by a planning inspector.

Post-project evaluation
Assessment at the end of a project about how well it has gone, and what could be improved. It can be done soon after handover to review the handling of the project, and at a later stage, sometime called ‘post-occupancy evaluation’ to see how well the building does in fact fulfil the aims and objectives of the client.
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### Prelims, preliminaries

Preliminary clauses in a cost document or a tender that set out general conditions that apply to the whole project and that may have implied costs associated with them. They could cover, for example, standards to be used, or the times when site access is possible.

#### Pre-qualification

Sometimes called qualification. The process by which a contractor or design team is deemed competent to be placed on a shortlist for possible selection for a project. The conditions for suitability should include assessment of competence as indicated by track record, size, staff qualifications and financial record.

#### Prime contractor

Design and build contractor with a supply chain of reliable suppliers of quality products. The key suppliers in the supply chain can be integrated into the design process. The prime contractor coordinates and manages all activities throughout the design and construction period.

#### Professional indemnity (PI) insurance

Insurance that professionals must have to cover them against alleged negligent behaviour that causes defects to the building, delays in the program, or injury.

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### Procurement

Name for the method by which the building contract and related services are acquired.

### Project cost management

Includes resource planning to work out what resources of people, equipment, materials and time will be needed and when, cost estimating and cost control to ensure that changes do not invalidate the cost plan.

### Project integration management

Process whereby alternative objectives or methods are traded off against each other with a view to getting the optimum result. It may follow from option appraisal.

### Project champion/sponsor

Individual charged with representing the client, carrying out client responsibilities, communication within the client body and between the client and other players, to ensure that the client’s needs are communicated and met. This person is the repository of people’s faith in the project.

### Project manager

Has day-to-day control of the building team. The client’s project manager has the responsibility of safeguarding the client’s interest at all times. The role involves coordination of a project to ensure that timely information is passed to the right people, and that the project is completed within budget, on time and to the right level of quality.
Project team, project delivery team
Entire team, including both design and construction, and any specialists who are working to design and deliver the project for the client.

Qualification
Process whereby a contractor or design team is deemed competent to be placed on a shortlist for possible selection for a project. The conditions for suitability should include assessment of competence as indicated by track record, size, staff qualifications, but not availability or price.

Quantity surveyor
Specialist in all aspects of the costs of construction, providing information on the likely cost of a project at every stage.

Retention
Percentage of the construction cost, usually around 2 to 5 per cent, that is retained for a period following handover. This obliges the contractor to rectify small construction defects that appear as the building is used.

Revenue cost
Covers the costs of using and running a building, including rent, rates, insurance, utilities, maintenance and staff costs. A grant is sometimes available to cover these costs.
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**Shell and core**
Description of a building completed only to the stage where the outer shell and the core (plant, and vertical circulation) are provided. This allows the client to subdivide the space and put in finishes to suit specific requirements. The ceiling and floor finishes, basic lighting and services may be included in some shell and core projects.

**Signing off**
Process of formally recording the client’s approval of briefing statements or design proposals.

**Snagging**
Construction projects always end with some defects that need to be checked and remedied. This process is called snagging. The program should always allow time for snagging before move-in. Some items, such as an air handling system, can only be fully tested after running through all seasons of the year.

**Specialist subcontractor**
Organisation employed to handle a specialised aspect of the building, such as ductwork or foundations, and which usually has a role in designing, supplying and fixing the elements in which it specialises.

**Specification**
Technical description used to set the standards of materials and type of construction.

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**Stakeholder**
People and groups who are affected by or have a financial or practical interest in, the outcome of a project. Their interests must be protected throughout the project.

**Structural engineer**
Engineer specialising in the design of building structures. Decisions about the type of structure are integral to the design and should be taken with the architect within approved parameters. The engineer is responsible for ensuring that the structure has the appropriate strength and flexibility.

**Suited locks**
System that allows a building owner/manager to issue keys to individuals with different levels of authority and access.

**Supply chain**
This is made up of all the parties responsible for delivering a specific product or service. There may be a number of specialised supply chains and the members of each should be accustomed to working together as a fully linked chain.

**Surveyor**
Measures and maps out various aspects of land and buildings, for example in relation to dimensions, costs and construction.
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Sustainable
Implies that the resource employed will not be used up. For example, timber from renewable forests is sustainable while that from slow growing tropical hardwoods is not.

Tender process
Process of inviting organisations to submit a proposal, with costs, to carry out a piece of work. It covers the preliminary invitation to tender, formal invitation to tender and the actual form of tender.

Value management/value engineering
Formalised approach to planning and managing a project through its whole life seeking to achieve best value for money. It often uses multidisciplinary workshops with a facilitator to discuss at appropriate moments whether better value solutions are possible within the constraints of the brief and the project.

Variation
Instruction from the contract administrator to the builder to change the works described in the contract. For Government projects major variations must always be sought from Treasury along with proposed solutions.

Vision statement
Simple statement of main objectives, needed for early consensus to be able to start the feasibility and budget checks and as a constant reference point throughout the project. The vision develops alongside a ‘statement of purpose/objectives’ and design quality should be part of it.

Way leave
Access to property granted by a landowner for payment, for example, to allow a contractor access to a building site.

Whole life costs/life cycle costs
Full cost of all the parts that go to make up a building, including initial capital costs, replacement costs and maintenance and repair costs.
Bibliography

This bibliography highlights key texts on which this guide has drawn and which may be of use during the course of a capital project. Some may well need to be revisited as the project progresses and it may be useful to use this list to develop a small library of resources for future reference.

**Australian references and links**


**General texts and resources**


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Access

Sustainable design
Audiences and visitors


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Front cover: Asia Pacific Triennial 5, Gallery 1.1, Gallery of Modern Art. Photo by John Gollings.
View of the State Theatre Centre of Western Australia from the Urban Orchard, Perth Cultural Centre.
Courtesy of DCA. Digital design of the State Theatre Centre of Western Australia. Courtesy of Kerry Hill Architects. Subiaco Arts Centre. Photo by Frances Andrijich.