Creating excellent buildings
A guide for clients

Expert advice for people commissioning and managing building projects, including clients from the public, private and voluntary sectors as well as their design and construction teams.

www.cabe.org.uk/buildings
Introduction

The process of creating buildings is one of the most complex, challenging and fulfilling activities that an individual or organisation can undertake. Whether refurbishment or new build, the client role is a crucial success factor in the quality of the end result.

When a building project goes well it is an exhilarating and enjoyable adventure. Yet many – even experienced – clients find it a nightmare.

This guide to creating excellent buildings is designed to help clients complete their projects successfully.

Foreword from Richard Simmons
Times change and the new rules are hard to predict, but good design must continue to shine through regardless, says CABE chief executive Richard Simmons.

About this guide
This online guide is drawn from knowledge of many experienced clients about how to deliver a quality built result. It explains the sometimes complex world of construction, and shows you what you need to do to get the best from all the people – advisors, designers contractors and subcontractors – you will need to employ.

List of tasks
This guide is structured around the following tasks. Not every building project requires every task and you don't need to do the tasks in the order shown below.
Foreword from Richard Simmons

Times change and the new rules are hard to predict, but good design must continue to shine through regardless, says CABE chief executive Richard Simmons.

As this guide is published at the end of 2010 (with no further editorial changes possible on this archived website), the future of the public procurement of buildings was hard to predict. The construction industry is going through tough times. Public expenditure is being squeezed. There is an increasing emphasis on local action in preference to state action; on the private sector and civic society providing services once the province of the public sector.

Value for money and cost reduction are very much centre stage. Risk reduction is at the heart of much of the new thinking about procurement. There is no monopoly on the emphasis on these factors in national and local government. They have never been more vital for everyone.

To reduce risk we may see more use of standard building types and standard components, making pricing more predictable. We may see frameworks based on schedules of rates or fixed prices. We may see clients insuring against variations. There may be new ways of partnering, or revivals of risk-mitigating processes like design and build.

Value – for money, for customers, for taxpayers, for shareholders, for the public – is why good design is more important than ever in these hard times. Good design, and good design processes add value, cut costs and drive efficiency.

In any and all new processes, and the ones in current use, a well prepared brief, based on sound research about the site and its neighbourhood, good data on buildings in use, and clarity about where value will be added and where money doesn’t need to be spent, will save costs and improve performance. A good design team, as part of a good project team will find ways to create beauty out of even the most basic components. A creative, intelligent client will spot waste and ensure that investment goes where it will add most value.

Within this guide lie many sound principles which cut across procurement methods. They are relevant in all times and all systems. Others may be more specific to particular processes. All of them illustrate a way of thinking based on securing quality whatever the brief and whatever the budget. Used creatively they will help you to get the best out of your project, your team and your budget.

Richard Simmons
Chief executive of CABE
About this guide

This online guide is drawn from knowledge of many experienced clients about how to deliver a quality built result. It explains the sometimes complex world of construction, and shows you what you need to do to get the best from all the people – advisors, designers contractors and subcontractors – you will need to employ.

The guide has been written for the ‘client’, the person or group that ‘owns’ the project. Our aim is to help see that the process and final results deliver excellent projects, so that clients, users and stakeholders can profit from the value that good design quality can bring. You may be working in complex circumstances, or delivering under pressure; this guide helps you to improve efficiency and highlight issues in design and construction processes so you can minimise risks.

Changes are always taking place in the way buildings are made. But some principles always ring true. This guide represents the learning from CABE’s advice on projects over more than 10 years. It explains how clients from the public, private and voluntary sectors, with their design and construction teams can:

- set up the right processes and procedures for a project
- choose the best people with whom to work
- identify the right procurement route
- manage the budget to achieve a quality solution
- achieve excellence in design
- avoid pitfalls
- find sources of information and support.

We take a task-based approach to the guide, taking users through the design process from prepare, to design, to construct and finally use. We also set out the critical information about what you need to know before you start, including the principles of being a good client, procurement routes, stakeholder engagement and sustainability. Throughout the guide, examples from many sectors illustrate how to deliver through your project, along with case studies from CABEs online library.

Each task in the guide features a completion checklist, so you can assess whether you have done all you need to before moving on to the next task.
List of tasks

This guide is structured around the following tasks. Not every building project requires every task and you don't need to do the tasks in the order shown below.

The fundamentals

- Principles of being a good client
- The role of the client in building projects
- Time, quality and cost
- Good design
- Procurement
- Stakeholder engagement
- Sustainability
- Inclusive design

Prepare

- Testing the need for a project
- Developing a vision statement
- Building the in-house team
- Doing a feasibility study
- Planning your budget
- Assessing life cycle costs
- Appraising sites
- Managing risk
- Preparing the business case
- Defining the outline brief
- Developing the detailed brief
- Selecting the project delivery team

Design

- Understanding your role in the design stage
- Meeting statutory requirements
- Monitoring design quality
- Integrating fixtures, fittings and equipment

Construct

- Understanding the construction stage
- Dealing with change during construction
- Understanding the handover process

Use

- Preparing for use
- Fine tuning and making good
- Evaluating and improving
The fundamentals

The client plays a key role in a building project. All the way through the process, you will need to understand the ins and outs of the procurement process, to know how to get good design quality, be able to consult stakeholders effectively and integrate sustainability and inclusive design in your project.

**Principles of being a good client**
Successful building projects are underpinned by strong, organised client teams. What does it take to be a good client - and what are the downsides of not following those principles?

**The role of the client in building projects**
As a client, you'll work with experts to deliver your building project. Although you may not have their subject expertise, your overriding role as the client is just as important.

**Time, quality and cost**
Getting a project right is a balancing act. Time, cost and quality tend to pull in different directions, and all have different risks, but a successful project needs to strike the right balance between all three.

**Good design**
What is good design? It's a simple question that's hard to answer. It doesn't refer just to whether a building looks attractive. It also means being fit for purpose and built to last.

**Procurement**
Procurement for building projects is about buying in services, usually for design, development or construction, facilities management or a combination of these.

**Stakeholder engagement**
The input of others - though sometimes time-consuming and complex to incorporate – is integral to the success of your project. It needs to happen throughout the project’s development.

**Sustainability**
Sustainable design creates places that use resources efficiently and are flexible enough to change over time. When planning your project, you should consider its social, environmental and economic impact.

**Inclusive design**
Inclusive design creates places that are designed, built, and managed with everyone in mind - which we can all use with equal ease and dignity, and give us a sense of belonging.

**Glossary**
A glossary of terms used in this guide to creating excellent buildings.
Principles of being a good client

Successful building projects are underpinned by strong, organised client teams. What does it take to be a good client - and what are the downsides of not following those principles?

For building projects, the skills you will need as a client fall into three categories:

- **strong leadership**
- **good organisation**
- **sound advice and informed decision-making.**

Here we set out the principles that a good client should follow for each of these categories – and we explain the pitfalls of not following them.

While being a good client does not guarantee a successful project, an absence of leadership, lack of clarity, and poor decision-making processes make a successful project less likely.

### Strong leadership

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<th>Principle</th>
<th>Pitfall</th>
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<td>1. Own a clear, ambitious vision…</td>
<td>…or the full potential won’t be realised. The aims and objectives of the project will keep moving, and your project will be driven by targets rather than outcomes.</td>
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<td>Translate your vision into a clear and simple brief, which your partners support, and continually test your project against it.</td>
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<td>2. Be clear about long-term goals…</td>
<td>…or only short-term gains will be delivered. These will damage your reputation and require more to be spent in the long term on fixes, such as ongoing management or energy consumption.</td>
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<td>Harness the full potential of your project by focusing on agreed long-term outcomes.</td>
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<td>3. Know who to involve and when…</td>
<td>…or you risk not securing support. Your plans may not meet the needs of the community and project partners, which makes it more difficult to secure support.</td>
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<td>Talk to different people to build and maintain support for high aspirations. Understand the strengths, weaknesses, knowledge gaps, needs and concerns of your client team, project partners and the local community.</td>
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<td>4. Learn from other projects…</td>
<td>…or you run the risk of repeating others’ mistakes. You may set your aspirations too low for your project, and miss opportunities to improve the environment and build your reputation.</td>
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<td>Visit other places to understand how they succeeded. Aim to deliver a project that others will want to visit and learn from in the future.</td>
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</table>
### Good organisation

5. Understand and respond to the project context…
Ensure that your project team understands the full political, economic, social, technological, legal and environmental context.

…otherwise your project will miss opportunities to enhance existing places. Without an understanding of the opportunities beyond your site or area, your project could fail to maximise the benefits that could otherwise improve its surroundings, and be wasteful.

6. Focus on the priorities…
Recognise which parts of a project are critical at each stage. Plan enough time within your client team to ensure successful delivery of those priorities.

…or you risk wasting effort.
Spreading yourself too thinly or drifting from the vision will mean the project team will not work to its strengths, and you will not be flexible enough to change with circumstances.

7. Stand up for quality throughout…
Maintain a focus on quality through all stages, all outputs and the activities of all partners.

…or you risk making an unwise investment.
Increasing pressure to move a project from one stage to the next, or responding to a range of competing priorities, can mean that compromise on quality creeps in.

8. Balance time, cost, quality and risk…
Manage the budget and programme to achieve the desired quality, without letting any one aspect dominate the process. Manage risk as part of the process rather than allowing risk aversion to take over.

…or you may over-run and over-spend.
When tough decisions have to be made to get a project back on track, quality often suffers.

### Sound advice and informed decision-making

9. Use procurement to achieve quality…
Establish relationships between your chosen delivery partners, your client team and your project team. Put in place decision-making structures that support individual roles and responsibilities in relation to your project.

…or process can become an obstacle.
Practical and legal problems can result if procurement is not handled properly. Significant additional costs can be incurred, and detract from quality.

10. Be informed…
Invest in your client team to ensure it has the knowledge, abilities, capacity and the right advice to deliver a quality outcome.

…or hidden agendas can hinder progress.
Neglecting, mismanaging or failing to build on in-house expertise can lead to conflict, and is a missed opportunity to build a strong resource for the future.

11. Build a strong project team…
Augment the capacity of your core team with additional skills and expertise from partners who support your aspirations for quality, and can cope with the demands of the project.

…or your project vision may not be shared.
Over-reliance on external consultants – or managing them poorly – can be wasteful, and can lead to partners that do not share your vision, or do not have the necessary skills.
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<th>12. Sign-off key stages...</th>
<th>...or you risk wasting resources.</th>
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<td>Make decisions and monitor progress at pre-determined stages.</td>
<td>Reputational damage can come about through overspend or over-optimism about completion.</td>
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The role of the client in building projects

As a client, you’ll work with experts to deliver your building project. Although you may not have their subject expertise, your overriding role as the client is just as important.

If your project is an orchestra, then you are the conductor. Delivering your project will involve working with people with diverse skills, and it will be up to you to keep them all on track. In turn they will expect certain things of you - so you and your organisation should be aware of the roles and responsibilities of being a client.

In finding greater efficiencies and value for money in how our buildings are built and operated, more than ever the client is crucial in making sure the core requirements for the building are communicated to the various parties involved; you may not have control of the whole answer, but you should make sure that the right questions are asked.

Clients are, more often than not, a client body rather than an individual. It will be a body with staff, users, financial and legal advisors, funders and board members. Getting everything in place as an organisation, including getting decisions vested in individuals within the client team, is essential before you face the complexities and cost of a construction project.

The prepare phase is critical because major changes can be made to the project without incurring large costs.

Before you continue, make sure that you read the following information about the role of the client in building projects:

- **Tasks that the client will need to perform**
  The tasks that a client need to perform during a building project are explained in detail in this guide.

- **The client’s role throughout the process**
  A description of the changing roles of the client throughout the whole building process.
Commonly used processes applied to the four stages of a building project - prepare, design, construct and use

<table>
<thead>
<tr>
<th>CABE guide stages</th>
<th>RIBA plan of works</th>
<th>OGC Gateways</th>
<th>PFI procurement stages (note: many variants possible)</th>
<th>Competitive dialogue variation</th>
<th>National Audit Office Framework</th>
</tr>
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<tbody>
<tr>
<td>PREPARE</td>
<td></td>
<td>Business strategy</td>
<td>Preparation</td>
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<td>Strategic analysis</td>
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<td>A Appraisal</td>
<td></td>
<td>Establish business need</td>
<td>1. Outline business case (OBC)</td>
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<td></td>
<td>Strategic assessment</td>
<td>2. Feasibility</td>
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<td>1. Business justification</td>
<td>3. Reference scheme</td>
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<td>2. Procurement strategy</td>
<td>4. Authority decision to proceed</td>
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<td>3. Investment decision</td>
<td>5. OJEU advert</td>
<td></td>
<td>Tendering / Partnership working</td>
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<td>6. Expressions of Interest from bidders</td>
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<td>7. Pre-qualification (PQQ)</td>
<td>Selection of participants to take through dialogue</td>
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<td>8. Long listed bidders invited to submit proposals</td>
<td>Invitation to participate in dialogue</td>
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<td>9. Bidders short-listed</td>
<td>Competitive dialogue phase - design</td>
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<td></td>
<td>Final tender process</td>
<td>Final tender process</td>
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<td>Contract completion</td>
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<td>Decision point 1 - Outline design</td>
<td>Invitations to negotiate documents issued (ITN)</td>
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<td></td>
<td>Decision point 2 - Detailed design</td>
<td>Tender evaluation</td>
<td></td>
<td>Post tender discussions</td>
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<td>Negotiation, Preferred Bidder appointed</td>
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<td>4. Readiness for service</td>
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The client's role throughout the process

A description of the changing roles of the client throughout the whole building process.

Before you start

As the client, you should take on the following roles at the beginning of your project:

- articulate the vision to communicate to different team members
- define overall aims and objectives of the project – this is likely to need specialist assistance
- set up the selection process for any external independent client advisor(s), and help in their selection
- co-ordinate the in-house and client advisor input to the assessment of need and options, business case and budget
- present information to the board (or chief executive)
- lead in preparation or commissioning of feasibility studies and brief
- set up structures for managing the in-house and project teams
- identify all users and stakeholders, and ensure they are involved and consulted
- ensure decision-makers understand their responsibilities and have enough time, resources and information
- confirm the project is needed and then commit to build
- plan to fit out the building and decide if a different team will be needed for this
- start planning for occupation, especially if organisational change is anticipated.

Build an in-house team

The scale of your project will influence how many people are involved from the client side, but generally you should:

- review the existing skills available in the client organisation
- decide whether a project manager is needed
- plan the time needed for internal staff to play their roles adequately
- select client advisor(s) for design and other functions
- choose a design champion with suitable authority.

Remember all these roles may not be full-time, but will require allotted time. Problems occur when people resent these responsibilities being placed on top of their existing workload.
Do a feasibility study and prepare a business case

Your project will be abstract until you have worked out the financial envelope you are working within. To do this, you will need to:

- commission a feasibility study
- prepare the business case and seek funding
- prepare a budget and cost plan.

Develop and test the outline brief

Developing an outline brief will help you define what you want to achieve, and how you can do it. To do this, you will need to:

- gather information, and become an informed client
- prepare an initial brief linked to the vision
- communicate with and consult stakeholders
- decide quality and performance levels
- consider long-term flexibility and risks, and do sensitivity analyses
- create a project management structure
- consult the full range of users, without over-elaborate procedures.

Work within the constraints of the project’s location

Sometimes, the site for your project will be a given. But often, even if you already know what you want to do, you still need to decide where you're going to do it - or where you are not going to do it, if you are consolidating.

Remember the old estate agent's mantra: ‘location, location, location’. This works on many levels - sustainability, social and financial. It's essential you get this right, so take time to:

- consider the suitability of the location
- check whether staff and users will be happy to go there
- consider how the location affects the business case
- consider how the project will affect the locality
- review the size, form and capacity of the site
- review the sustainability and energy usage aspects of the site
- review the access, security and urban context
- consider flows of people, materials and traffic during construction and after occupation starts
- consider the approvals required and whether planning permission or other approvals present any difficulties.

Select the procurement route, contracts and delivery team

How you deliver your project can make a huge difference to its outcome. You will need to carefully decide on the method you will use to find the delivery team, and then put it into practice. This means you will need to:

- decide the general procurement route, and consider specific procurement options
• decide whether urban design, open space or other specialist advice is needed
• select the team(s) with the help of external professional advice if necessary
• engage a planning supervisor at the appropriate stage (to conform with CDM Regulations)
• plan the involvement of any artist(s).

Participate in the design stage

You won't actually be designing your project, but during the design phase you should work with the design team to:

• co-ordinate, communicate and foster teamwork
• ensure any changes in circumstance are evaluated and taken into account
• arbitrate in disagreements on client side
• sign off a complete brief and specification that fully meets your needs
• approve any changes in scope and seek higher approval if appropriate
• ensure compliance with all relevant legislation
• sign off a final set of drawings, agreed and accepted by all members of the team.

Stay involved during construction

As work gets underway on site, you should keep in touch with design team, contractor and monitor the project's progress. In doing this you should:

• arrange payments, and ensure that funds are in place for each stage
• defend design quality – as time and budget are used up this may come under pressure
• finish preparing for occupation – ensure people have been appointed to manage building and systems.

Prepare for occupation

It's your job to support users as they move into the finished project, and to set up ongoing monitoring. This means you will:

• accept the building at handover, if it complies with drawings and specifications
• take over all documentation - be sure digital versions can be read
• settle the financial aspects of the project
• prepare and manage the launch or other welcome for staff and users
• make sure building management knowledge has been passed to the right people
• use the building positively to help improve function for the organisation and users
• do post-project and post-occupancy evaluations, and absorb the results, taking action if needed
• monitor and fine tune how the completed building operates to meet low-energy and other targets.
Time, quality and cost

Getting a project right is a balancing act. Time, cost and quality tend to pull in different directions, and all have different risks, but a successful project needs to strike the right balance between all three.

On building projects in particular, the three factors mean:

- the **quality** of the building for immediate functional needs, and use throughout its life
- the **time** needed for the building to be designed, built, fitted out and ready for occupation
- the **cost** of the construction, materials and all related expenses including cost in use

Achieving the right balance of quality, time and cost for your project is key to the success of your project. The balance between these three factors will vary according to the particular requirements of your project, and their impact on each other will be just as unique to your project’s circumstances.

As the **project client**, you will need to keep in mind an idea of the various scenarios that could arise if either time, quality or cost were to be prioritised over the other two. Should the need arise, these **scenarios** would then be explored further – and with others in your **project team** if appropriate - in order to arrive at informed decisions based on reasoned weighing of the relative **risk** involved.

For instance, you may have to ask yourself whether you have to complete the project by a particular deadline - or is it more worthwhile in the case of your project to adopt a longer programme in order to save on costs or improve on quality? Remember that missed deadlines can sometimes add to contractor costs, and may mean you have to compromise on the cost of materials, which will in turn affect quality.

Good project and delivery teams will support you in any balancing of time, quality and cost or risk assessment you may have to make. A good design team should be able to work within a reasonable, set **budget**: the discipline of limited budget can actually stimulate creativity and innovation. And sound financial management often goes hand in hand with delivering a high-quality project to deadline.

In assessing the cost of a project, you should consider the costs over the entire life of the building rather than just the design and construction costs. This is known as ‘**whole-life**’ costing. A successful building project will attempt to meet the needs of a building over its entire lifetime. In financial calculations, a lifetime is between 30 and 60 years.
The value of a building over its lifetime will outweigh the initial capital outlay and facilities management costs (ratio about 0.1:1:1.5:15).

The costs of running and managing buildings over their whole life are much higher than the initial capital cost. The diagram above illustrates the ratio of design costs to construction costs to facilities management costs to the value over the building's lifetime, which is about 0.1:1:1.5:15. So a business plan that allows for extra spending on design and construction to achieve high quality can pay for itself many times over during the life of the building, for instance through lower energy consumption, or the reduced need for repairs. A high-quality design will maximise the sustainability of your project and reduce carbon emissions and environmental impact as well as long-term costs.

Balancing the investment in a project over its life against the benefits it will bring is referred to as the whole-life value.

Selecting the contractors for your project based purely on lowest cost rarely provides the best value. Guidance from HM Treasury on public building procurement makes this clear.

The value over a project lifetime dwarfs the cost of design, construction and management.
Good design

What is good design? It’s a simple question that’s hard to answer. It doesn’t refer just to whether a building looks attractive. It also means being fit for purpose and built to last.

Unlike money, good design isn’t directly quantifiable. However, it is possible to identify good design. It is about being fit for purpose, well built and pleasing to the eye. A well-designed building therefore combines:

- functionality - does it work?
- firmness - will it last?
- delight - does it look good?

This approach was first adopted by the Roman architect Vitruvius and still applies today. It is the basis for approaching impartial analysis of building design, such as design review, and industry tools that attempt to measure good design, such as the design quality indicator.

Other factors contribute to modern judgements about whether or not a building is well designed.

Sustainability and good design increasingly go hand in hand. The resources required to produce a building - labour, finance and materials – are coming under ever more scrutiny as global environmental resources diminish and the impact of carbon emissions grows. By their permanent nature, buildings can set in stone wasteful activities within that building, such as unnecessary energy consumption.

The success of a building can also be judged on how ‘inclusive’ it is. That means that it should be able to be enjoyed by all the people it was built for, so thinking from the outset about who is likely to use it, and their needs, is integral to any design process.

More about good design

- **Recognising good design**
  You can recognise the features of good design and understand what makes a good building design.

- **Design quality as requirement**
  Good design is required by government policy, which has a direct effect on how your building will fare in the planning process.

- **Three tactics to get good design**
  You will need to get advice on good design, monitor design quality and ask questions about your building’s design throughout the process.
Recognising good design

You can recognise the features of good design and understand what makes a good building design.

What is good building design?

- a building that is fit for purpose and built to last
- a building that is in the right place and that responds to its surroundings
- a building that everyone can use with equal ease and dignity
- a building that responds to environmental imperatives and minimises its carbon footprint
- a design that creates spaces and places around buildings that people will enjoy and be proud of
- buildings that generate a sense of belonging.

What other features make good design?

A good building has certain other qualities. It will be:

- visually well organised – shown by things like symmetry or asymmetry, proportion and balance
- clearly organised for the user - for both the site and the building
- suitably prominent – sometimes buildings should be prominent, sometimes discreet
- straightforward – the design should not disguise the real way it is built
- well matched – the structure and detail of a building should fit together as part of a clear approach to style and the building function
- flexible and adaptable – a building able, within reason, to cope with changes in the needs of the user and potential technological developments
- clear what its function and role is – by its relation to public space, and features that can be seen from outside
- well integrated in its structure – these aspects should be part of the overall design from the earliest opportunity
- careful with how light and sun fall on the building - and with views from it and of it
- use well chosen materials and robust detailing – considering how well finishes wear and last and whether the materials used help towards a sustainable approach.

What does good design mean at a larger scale?

Good design also needs to be carried through to a larger scale, for example for a whole estate of facilities. At the larger scale, it means:

- ensuring connections are good – for example pedestrian, between natural environments
- making efficient use of existing infrastructure and other assets
- promoting cohesion and a sense of belonging.
Why insist on design quality?

The case for good design is now widely accepted. Making places that are of good quality is a sound financial and social investment.

Good design depends on how the client defines and delivers a project, as well how they select a skilled design team. As the client you need to develop your own clear expectations and aims for the project, and test them against the design throughout the process.

Good design should enhance the neighbourhood, lift the spirits and symbolise the best in our society. As a project develops, design decisions are made from strategy to detail. Design quality can be pursued on several levels:

- **the broad issues** – a project’s relationship to surrounding streets and buildings, local culture and global concerns such as sustainability
- **the personal scale** – a good design can help support people to perform their job or use the building effectively and positively
- **the detail** – such as the quality of daylight and ventilation in a room, or detailed finishes.

As well as this range of considerations of materials and spaces in your project, you need to develop an understanding of how projects can use resources most efficiently. Life-cycle costing can help to make judgements about how you invest in quality. You should make sure that you don’t under-invest but also that you don’t over-invest in your project.

Aim to achieve excellence in construction

Your aspirations for design quality need to be carried through to the detail design stage, and into construction. Your design team should be able to advise on how your quality expectations will be defined in the detailed specification for the building. They will also advise on establishing standards for construction, and monitoring its quality.
Design quality as requirement

Good design is required by government policy, which has a direct effect on how your building will fare in the planning process.

Good design is required by policy

Good design is recognised in government planning policy as integral to improving the quality of the places in which we live and work.

If your project is publicly funded, you should seek best value when developing it. The principles of best value are set out by the Office of Government Commerce, in particular its Achieving Excellence in Construction initiative. Through this initiative, public sector organisations commit to maximise, the efficiency, effectiveness and value for money of their procurement.

Good design and the planning process

Delivering a good quality place is vital for local authorities, and is part of the policy framework that councils work within.

Since the publication of By Design in 2000, the requirement for good design has been integrated in national planning policy. For example, planning policy statement 1 (PPS1) says that “good design should contribute positively to making better places for people” and “high-quality and inclusive design should be the aim of all involved in the development process”.

CABE’s publication, Design at a glance, draws together the most important design-related statements found in national policy and guidance.

Local planning policy provides the local framework for national policy. Documents at this level (core strategies, site-specific masterplans, and area action plans) may also include specific design policies.

A design and access statement should be provided with most types of planning application. These documents explain the design thinking behind a project and help planning officers to test the quality and clarity of this thinking. Accessibility is considered integral to design and not a separate issue.
Three tactics to get good design

You will need to get advice on good design, monitor design quality and ask questions about your building’s design throughout the process.

Get advice on good design

As you wouldn’t sign an important contract without getting a lawyer to read it over first, similarly advice on design quality is vital. Architects, client design advisors and experienced clients can advise you on your project as consultants, staff, or through professional bodies.

Design review allows you to benefit from independent opinion on your project while it is developing. Design review services operate at different levels, depending on the significance of your project.

Don’t leave design review until the last moment – feedback works best when it is early enough in the project to make significant changes.

Monitor design quality

Design doesn’t have to be purely subjective. A wide range of tools, such as the design quality indicator, have been developed to help you to monitor the quality of your project.

Ask questions about your building’s design

Throughout the development of your project, you should test whether your design is answering your needs. Questions you may want to ask your partners could be:

- will the building meet the functional requirements of the brief?
- will the building’s users – of all kinds – be satisfied with the design?
- is the design likely to enhance the efficiency of operations to be contained in the building?
- can a visitor find the entrance and then find their way around the building? Is orientation clear enough not to need signs or maps?
- do the plans, sections, elevations and details of a building visibly related to each other and to underlying design ideas?
- is the building equally easy to use for everyone?
- does the design demonstrate that thinking about the requirements of building structure and construction has been an integral part of the design process?
- are environmental services integrated into the design?
- is there evidence that the different design disciplines are working as a team?
- will the building be easy to adapt or extend when the requirements of the building’s users change?
- is the building adaptable so that it could be reorganised for other uses in future?
- does the design take into account the costs of running and maintenance?
- what will the project look like in different conditions - in sun and rain, at night, over the seasons?
- will it age gracefully?
- can you imagine the building becoming a cherished part of its setting?
Procurement

Procurement for building projects is about buying in services, usually for design, development or construction, facilities management or a combination of these.

Procurement involves securing and managing the means of delivering a project. The decisions you make on procurement are critical as they affect large sums of money, and can be a key determinant of design quality. Procurement, or even the use of a standard building type may be a given in your project, but even in this case, by knowing how to use procurement well to fit the building for its purpose and location, you will be able to leverage in design quality.

This section introduces procurement, explains the role of clients in procurement decisions and goes through the main procurement routes:

- Traditional relationships
- Managed forms of construction
- Design and build
- Design, build, finance and operate.

It also explains contracts, how to do effective selection and OJEU regulations.

Finally, we explain how to plan your own procurement process.
How procurement works

Procurement for building projects is about buying in services, usually for design, development or construction, facilities management or a combination of these.

Procurement involves securing and managing the means of delivering a project. It is critical as it affects large sums of money, and is a key determinant of design quality. Procurement needs to be managed throughout a building project, often in parallel with working on design development.

How procurement is decided and managed can make or break a project, as it affects every aspect of the project. You should take advice from someone with experience of having delivered projects, who is able to take a balanced view of your needs in relation to quality, time, cost and risk.

Why is building procurement different?

Procuring building projects is different from procuring a courier company or cleaning services.

Buildings are typically high-cost, long-lived and unique. They are built to address specific, currently understood needs, but will usually need to be adapted for future changing needs.

Procurement processes tend to emphasise the legal and financial aspects - you should ensure that your selection criteria for building procurement emphasises design quality.

Procurement needs to be managed throughout a building project, often in parallel with working on design development.

Public bodies have a duty under the Equality Act 2010 to promote equality through procurement.

What could I be procuring?

Consortia

- partnering arrangements – including with consultants
- finance, design, construct, operate, maintain – or variations of this.

Advisors

- early strategic advice – focused on briefing, design, costs
- project manager
- real estate advice
- lawyers
- client design advisor.

Designers
- design teams
- landscape architects
- engineers
- other specialists.

**Contractors**

- construct only
- construction management
- design and build
- specialist subcontractors – design only or design and supply.

For construction, procurement typically covers:

- **Services.** Building the in house team and choose the project delivery team will give you an idea of the range of the services and works you will need to procure.
- **Construction.** The procurement route you choose will determine many aspects of your relationship with the design and construction teams. For example it will define whether you procure a design team and then a contractor, or procure both in one consortium.

In many situations, services and works are delivered under one contract or within a framework agreement.

**Procurement is required to deliver your vision and objectives**

Delivering a project is a major undertaking - the step from agreeing to carry out a project to deciding how to implement it is pivotal. The decisions made at this point will affect all aspects of the project. Good decisions will not guarantee successful outcomes but bad decisions will make them extremely unlikely.

Clients typically might represent an owner, a funder, users or a combination of these. Whatever the case, you need to consider the needs of:

- those who will operate and manage the project over the long term
- the public
- other stakeholders.

However, ultimate responsibility cannot be totally delegated. It is your project and you need to make sure that your vision and objectives are delivered. The project is not just a building - it is a successful functioning facility. At their best, the design and construction industries can deliver excellent buildings, but it is important that you get what you want, not what they want to give you.

**Achieving best value for money**

Most public bodies or public funding agencies require services and works to be procured by a competitive process. The objective of the competition is to achieve the ‘best value’ or ‘value for money’ option.

This is set out in HM Treasury’s Green Book, and is best practice for public sector investment. This outlines that the correct option is one that gives the best fit to the
client’s requirements at the most advantageous price, while balancing between quality and cost.

For the process to be successful:

- evaluation needs to be based on careful consideration of established selection criteria and their relative weighting
- you need a well-briefed evaluation panel that shares a common vision and understanding.

**Understanding the regulations**

Anybody who is procuring services for the construction of buildings needs to be aware of the Official Journal of the European Union (OJEU) regulations, which requires certain tenders to be advertised and open to all. These regulations are to ensure fair and transparent procurement and set out a precise process and timescale that needs to be followed.

Within rules and guidelines, much can be arranged to encourage design quality, with design competitions, and effective selection criteria

**Procurement of larger-scale projects**

For masterplans and other large-scale projects, procurement entails different challenges. This includes the need to make a distinction between procuring services directly, and entering into a development partnership where the other party procures the services.

If delivery is to be over the longer term, your procurement strategy should emphasise flexibility, risk reduction and response to market change, as well as the need to meet quality objectives.

Even more so than with buildings, masterplanning procurement is often managed as a separate process, operating in parallel with design and development activities. Those processes are mutually reinforcing and sit within the broader spatial planning and vision for a place.

With this complexity, a procurement strategy will need to help manage those parallel work streams and focus on the points where they come together – when partners and other services are sought.
Procurement and clients

Procurement is an immensely complex area. You don’t need to grasp all the detail, but need the principles to achieve a good outcome, and recognise the particular challenges and characteristics of your project.

You should take advice from someone with experience of having delivered projects, who is able to take a balanced view of your needs in relation to quality, time, cost and risk.

How to make procurement work for you

1. **Match the size and complexity of your project**
   When choosing procurement, the size and complexity of your project is important.

2. **Plan for risks**
   Usually it is better to deal with risks rather than pass them on.

3. **Find out the rules you need to follow**
   Depending on the complexity of your project and the value of works or services that you wish to procure, you will need to follow certain rules.

Expert hints and tips for procurement

We asked people who have been involved in the procurement of hundreds of projects what they thought clients should know about this complex area.

- Align your priorities and requirements
- Clarify the client team and decision-making structures
- Match procurement to your required outcomes
- Understand when your attention is crucial
- Secure the best teams for your project
- Consider selection criteria and weighting carefully
- Understand what you are selecting
- Other pointers
How to make procurement work for you

You will need to match your procurement choice to your project, plan for risks and find out which rules you need to follow.

Match the size and complexity of your project

When choosing procurement, the size and complexity of your project is important. The size of your project will affect the procurement route that you take. Building projects can be categorised by size and complexity:

- ‘small’ means less than £1 million
- ‘large’ means £10-£20 million
- ‘simple’ means technically straightforward
- ‘complex’ means technically complicated.

Renovation or refurbishment projects are generally more complex than their new-build equivalents, particularly when users remain in occupation.

Plan for risks

Usually it is better to deal with risks rather than pass them on. For example, if you have ownership complications on part of your site, see if you can parcel up projects into smaller parts so that you can deal with issues one at a time.

Find out the rules you need to follow

Depending on the complexity of your project and the value of works or services that you wish to procure, you will need to follow certain rules.

Procurement processes are usually subject to a variety of controls, including:

- internal standing orders
- external audit
- review by funding partners
- for publicly funded projects, regulations, and statutory processes like the European Union procurement directives or OJEU.
Expert hints and tips for procurement

We asked people who have been involved in the procurement of hundreds of projects what they thought clients should know about this complex area. Here we present some of their expert advice.

Align your priorities and requirements

Procurement processes can consume all your energy. While you are overwhelmed by ‘doing it’, your purpose can sometimes be forgotten unless you state it throughout.

- Are the different interests in procurement within your organisation’s functions (legal, financial, operational) all consistent with each other?
- All projects have spatial implications - such as the site and land ownership issues. Procurement needs to align with this.

Clarify the client team and decision-making structures

- Understand the skills that you need in procurement, and your own strengths and weaknesses at dealing with these.
- Develop a clear decision-making structure (as fundamental decisions will happen quickly and options close down).

Match procurement to your required outcomes

You need to understand the priorities and the differing outcomes required by a multi-headed client - funder, owner, user, partner - and how these play out through procurement.

Understand when your attention is crucial

You may be in a situation where you cannot influence the procurement route, but there are still many ways in which the client can influence the quality of the result.

- The design team is the single most important influence on the quality of the project. Do your utmost to influence their selection, and take the responsibility seriously.
- You need to spend most effort when not much is going on with the project – for example at the outset.
- Sign-off and decision-making is crucial.
- Understand the difference between types of brief – some may ask for specifics, others for outcomes.

You also need to understand your move from being a customer – with a choice of suppliers – to being a partner in a development project. Avoid it being a move from a ‘bride with a dowry’ to an ‘unhappy’ marriage.

Secure the best teams for your project

Be pro-active in the early stages, and recognise that there is a wide range of ability out there. The selection process and criteria you use are vital.
Consider selection criteria and weighting carefully

Some of the selection criteria may help you assess the standard of previous work and the relative ability of teams, while others may reflect the qualities you particularly need to see for this project. You need to check that some of the selection criteria reflect your specific priorities.

- Understand weighting, and how the component parts of a consortium need to be assessed as a whole.
- Ask clever questions. Beware of closing down your choice by stating specific experience is required. For example, when selecting a design team, it is best to stipulate experience of designing 'similar complexity to a law court', not 'have designed a law court'.
- Do you know the level below which design, construction or management standards unacceptable?
- Leave room for the bidder to demonstrate a creative approach.

Understand what you are selecting

- Consider long-term issues in services – for example facilities management – that you might be signing up to, not just the immediate project. You might be picking a relationship, not a product.
- Understand weighting and how it works – there can be unforeseen consequences when adding up scores with multiple, and sometimes conflicting, agendas.
- Take references and researching track record seriously – have a phone call with previous clients, or visit completed projects.

Other pointers

A perfect procurement process doesn’t guarantee a great result.

- The complexity of procurement processes can take over – don’t let the tail wag the dog.
- Lack of client continuity during the process makes carrying through the vision for the project much more risky.
- Legal and financial complexities can mean that negotiations on these agendas disproportionately influence the whole deal.
- The complexity of procurement processes tends to work against small and medium-sized companies, yet they can be the most suitable for the job.
- When you are procuring a long-term relationship with multiple projects, beware that the quality displayed when the bid is in competition might not be maintained on later projects. Safeguards against this are possible if thought about in advance.
Planning procurement

A project's success is largely determined by decisions made in the early stages. A well-considered procurement plan does not guarantee success, but makes it more likely.

Once you have made the decision to proceed, you need to have an understanding of the context you are in, in order to choose the right procurement route.

Planning at this stage also allows the opportunity to build in tactics to deliver your objectives from the outset.

Formally, procurement begins with an identification of needs, progresses through appraisal of options and the decision to enter into an agreement or contract, and continues through the life of the goods or services acquired.

In construction, the procurement process therefore spans a much longer period than the construction or consultancy work itself. For larger development programmes, timescales are longer still.

The main procurement process runs from the ‘decision to proceed’ to the handover of the project. The main elements of procurement are typically:

- setting up a procurement plan
- preparing project documentation
- pre-qualifying potential providers
- initial selection procedures, including announcements, invitations and evaluations
- final selection of service and works providers
- placing contracts.

How do I plan procurement?

1. Be clear about your position

Be clear about who or what you are procuring. There are great differences between whether you are procuring a consultant to undertake a feasibility study, or a complex delivery partner over many years.

Be clear about your project’s objectives. You should use these objectives when planning your choice of procurement route. There should be an agreed vision for the project outcome. A viable business plan should have been approved, and, in some circumstances, funding should be in place.

2. Review past experience

Although doing something successfully once does not mean that it will necessarily be the right thing to do the next time, it is useful experience and can be helpful in choosing the right way to proceed.
You should think not only about the type of project that was undertaken but its context:

- Have market conditions changed?
- Are the old suppliers still around and available?
- Are there new suppliers?
- Have circumstances changed in your organisation?
- Can you still do now what you did then?

If things are still broadly similar, you should think seriously before you change the way you do things.

Review any lessons learned from your post-completion evaluation, if applicable.

Talk to other clients and look at case studies for similar projects to your own. Explore the kinds of relationships the client teams had with the design team and contractor and how it worked for them. Find out how they developed their own team, and how their organisation sustained the project for its duration.

3. Review existing procurement regulations and arrangements

Most organisations have established regulations or standing orders that set down in some detail how products, works and services should be procured. All organisations are subject to legal requirements.

Some organisations also operate frameworks, where a number of suppliers are procured together and sit on a panel, to be drawn down easily for individual projects.

It cannot be emphasised enough that construction projects are different from more straightforward procurement exercises, such as the supply of vehicles or equipment. Where regulations are followed, these should be specific to construction projects.

Because pre-packaged solutions are available does not mean that they are the most appropriate solutions for your project.

Legal issues or other requirements

You may need to comply with regulations set out by your funders or other key stakeholders.

Projects with 50 per cent or more public funding and above a set cost threshold must follow precisely the European Union (EU) procedures and timetable. This can be a lengthy process.

Rules or regulations should be referred to and complied with wherever appropriate. Equally you should identify if any are not appropriate, and may need to be reviewed. For example, rules about the turnover or level of indemnity insurance needed for companies to qualify should be appropriate to the size of project.
4. Get advice

Procurement is very complex, and a minefield of technical detail. There will be legal, financial and technical issues, and internal monitors, rules and standing orders.

Public bodies will often have in-house experts and advisors on these issues. They can be invaluable but, again, they should not dictate the procurement method for your project. It is as important to take advice on what not to do as what you should do.

5. Make a procurement plan

At this point you can make a plan based on the various procurement routes and models available.

The options available may differ, depending on if you are working on a masterplanning or building project.

Think especially carefully if you are procuring parties to only do a certain stage of the project. You will need to give careful thought to:

- how the different parties are appointed
- how they will be able to interact
- how they will successfully communicate information from one stage to the next - particularly if certain consultants are not retained throughout.

Write a procurement plan which sets out the basic information about the project. This should cover:

- who the client is
- who will represent them as project lead
- how and when procurement routes for services, works and supplies will be chosen
- how and by whom procurement processes will be managed
- how and when the project delivery team will be appointed
- a provisional timetable or programme, including key stages and dates in the process
- the agreed route through the planning system
- how and when reviews and monitoring will be carried out
- the funding mechanisms and their timing
- how and by whom the completed project will be managed.

Having done this groundwork, selecting the right procurement route for your project is more likely.
Procurement routes

Procurement is constantly evolving. There are many ways in which arrangements are made between clients, and how designers and building contractors can be organised.

Here we illustrate four procurement routes that are frequently used. They vary in how the share of responsibilities, risks and rewards in different ways. New routes are added often. Frameworks, that speed up the selection process, are increasingly used in some sectors. In future we may see some government departments insist on the use of standard building types or standard components.

There are some time honoured principles that are useful in all circumstances. All clients should understand how the procurement options they are working with vary in:

- how participants are selected
- their relationship to the client or end user
- the participants' and client's responsibilities
- the type and extent of risks the participants choose to accept
- how much overlap there is between design and construction
- who signs the contracts
- who manages the final building
- the ownership of the project.

The four procurement routes

- **traditional relationships**
  designer-led projects in which design and construction teams are procured separately, one after the other, and managed independently
- **managed forms of construction**
  the design is procured separately from construction, the management of which is contracted for a separate fee
- **design and build (D&B), including prime contracting**
  the contractor is responsible for design and construction
- **design, build, finance and operate (DBFO)**
  a single organisation's contracted to undertake all aspects of the project, including operating it for a period.

Choosing a procurement route

The Office of Government Commerce recommends that clients use integrated processes. An integrated process means that design and construction expertise are brought together early on in the development of the project, contributing to the briefing, design and decision-making process - particularly with regard to how easily the design can be translated into the constructed building.

Other routes may be used if they can be shown to offer better value for money. Traditional routes have the benefit of simplicity, but you should try to maximise integration of the design and construction phases. This can be done by setting out a two-stage approach, which allows contractor/specialist input to design.

Many public sector departments and agencies have framework arrangements with a
suppliers of construction works and services that may influence your choice. Funding sources may also influence your procurement route.

**Competitive dialogue**

Competitive dialogue is used in the award of complex contracts where there is a need for post-tender but pre-contract discussions with some or all bidders. It is useful when a client wants to explore the best solution to suit their needs throughout the procurement process. This may be because:

- the project cannot be fully defined in advance
- issues such as risk allocation need to be decided before proceeding
- the project structure and finance need to be discussed with providers.

Competitive dialogue takes place with selected suppliers to identify and define solutions to the client’s requirements. It can be conducted in stages to successively reduce the number of solutions or bidders. There are detailed rules on how these discussions should be conducted – seek advice from procurement specialists if you are considering competitive dialogue.

Competitive dialogue can apply to both design and build (D&B) and the design, build, finance and operate (DBFO) procurement routes.
Traditional relationships

These are designer-led projects, in which design and construction teams are procured separately, one after the other, and managed independently. A worked-out design is the basis for construction cost.

There are separate contracts for the client with the design team, the main works contractor, and sometimes sub-contractors and suppliers.

The architect is usually the lead consultant.

How is the project managed?

Separate project management for the entire design and construction process may be needed for larger or more complex jobs, to ensure that nothing is missed. If the client does not have the skills internally, they will need an independent project manager.

How are time, cost, quality and risk balanced?

The client can control the level of interaction with the designer and the contractor. A client may prefer this type of involvement for prestige and/or owner-occupied projects, though the decision should be made on a case-by-case basis.

For very small projects traditional relationships are more suitable than other routes, as the process is essentially simpler. However, the sequential process usually results in the overall timeframe being longer.

Advantages

- cost certainty can be achieved before starting on site, unless redesign is needed to make the project buildable
- a two-stage route can mean the early involvement of a contractor, which may be helpful for technically complex projects.

Disadvantages

- the client carries more risk from the construction period than in the design and build routes
- changes are possible but are likely to entail extra time or cost.

Variations

The approach can be single- or two-stage. The latter can help speed up the process, and involves:

- **Stage 1** - the contractor is procured before design is complete on the basis of partial information.
- **Stage 2** - the contract price is fixed when final design information is available.
Managed forms

In this procurement route, the design is procured separately from construction, the management of which is contracted for a separate fee. One version is illustrated but there are many variants.

The client has contracts with the management contractor only, or separately with the designer, construction manager and works contractor.

How is the project managed?

The management of the contracting project is given to a contractor for a fee. This contractor may subsequently employ the works/trades contractors – a management contract - or only manage them, while they are employed directly by the client. The design process is managed independently.

How are time, cost, quality and risk balanced?

The client has a contract with the design team and therefore considerable control over the design.

The process does not allow cost certainty before construction, as the design is developed in parallel with the construction. Target prices can be set and a guaranteed maximum price can sometimes be provided some way through the process. Early involvement of a contractor as manager is helpful for projects that are large or involve complex construction, as the contractor's knowledge of the process of building is included at the outset, avoiding possible problems later.

The client has contracts separately with various participants and carries more construction risk than in design and build. The client signs contracts with the specialists who build the project, and usually cannot recover losses directly from the construction manager.

Variations

Fee contracting
A form of cost-plus contracting, where the cost is calculated, and a margin is then added.

Management contracting
This overlaps the design and construction stages, and allows early elements of the construction process to begin before design has been completed. A management contractor is engaged to manage the overall contract.

Construction management
This is another approach where contracts for individual elements of the project are let before the design of later work packages or elements have been completed. The client appoints a construction manager to manage the overall contract in return for a management fee - as with management contracting. However, the contracts with trade contractors are placed directly with the client.
**Design and build**

In this route, the builder is responsible for both design and construction. In prime contracting a relationship is developed between the contractor and the entire supply chain.

The client has one contract with the design and build (D&B) team, or with a ‘prime’ contractor who could be a builder or a design specialist. There may initially be a separate design contract.

**How is the project managed?**

The contracting team does the project management. There is an opportunity to integrate design and construction ideas from an early stage. The client does not have to choose the project manager, though they may appoint one of their own.

**How are time, cost, quality and risk balanced?**

The contractor undertakes to complete the design and construct the project. A client may employ a design team at the early stages to prepare its requirements and throughout the project in order to advise on the contractor's design. Selecting an integrated supply team is beneficial.

There may be little direct control over design and changes as the project progresses. Cost and time certainty is normally established before design and build contracts are signed, but this depends on there being no subsequent changes by the client.

The immediate risks of the cost and timing of construction are passed to the design and build contractor. The client needs to be sure that changes are not likely to be needed, as they may be very expensive or impossible.

**Variations**

In normal design and build, the building contractor is responsible for both design and construction. However, there is an option called ‘novation’. This is where the client’s previously developed design is taken on by a contractor. This allows the retention of control of the important elements of design and specification.

The design team can then transfer their contractual obligations to the contractor, and complete the designs on behalf of the contractor.

Other variations include:

- prime contracting
- design, build and maintain
- two-stage design and build
- detailed design and build, also known as develop and construct
- package deals or turnkey projects.

www.cabe.org.uk/buildings
Design, build, finance and operate (DBFO)

In this route, a single organisation is contracted to undertake all aspects of the project, including operating it for a period - typically, 25 or 30 years.

After this, it may revert to the client, depending on the contractual arrangement for the specific project. Instead of spending capital, the client payments are made from the revenue budget.

The client has one contract with a ‘special purpose vehicle’. In individual sectors these have different names, for example in the health sector, a LIFTco (local investment finance trust), and in schools, a LEP (local education partnership).

How is the project managed?

High levels of project management expertise are needed from experienced specialists to run the special purpose vehicle. Provision for changes that may be needed in the future must be stated in the contract.

How are time, cost, quality and risk balanced?

The desired balance between time, cost and quality can be set in the requirements, which are for service outputs and not the building product. The client must define the quality needed and how it will be judged, before the team is selected. It is essential that the required level of design quality is made clear to the bidders. The finished building will be managed by the DBFO team, so their initial input will consider thoroughly the requirements for this.

The risk of construction uncertainties is transferred to the special purpose vehicle, and the financial burden is spread over time, reducing the immediate risk. The risk for the special purpose vehicle may be great, which will be reflected in what the client has to pay.

Variations

DBFO is the generic term for the private finance initiative (PFI) in which a private firm designs, pays for, and is responsible for the day-to-day running of a project. When companies enter into a PFI agreement, they agree to build large-scale capital projects, such as hospitals and schools, and lease them back to the public sector over a period of 30 years or more.

Other variations include build, own, operate, transfer (BOOT). This is an arrangement in which a developer designs and builds a completed project or facility at little or no cost to government or a joint venture partner. It owns and operates it as a business for a specified period – then transfers it to the government or partner. It is commonly used for infrastructure projects.
Contracts

The relationships between the client and members of external teams are defined in legal contracts. It is vitally important that these contracts are simple, clear and unambiguous.

Contracts set out the terms of reference for relationships between the client and members of external teams - and the amount to be paid for agreed services and/or construction.

Which contract best suits my project?

You will need to select the form of contract or contracts best suited to realising your project, with the help of your advisors or professional team.

Wherever possible, you should use a standard contract rather than one tailored to particular projects. The only changes should be striking out clauses that are designed for specific either/or situations. Where specially adapted or bespoke contracts are unavoidable, you should obtain legal advice from a specialist lawyer.

What kind of relationships should contracts promote?

To support an integrated process, contracts should:

- enable team working
- motivate all parties to work together with a common aim
- have the flexibility to deal with the inevitable changes that arise from the uncertainties inherent in building projects.

More about contracts

- The role of the contract
  Contracts define a financial relationship, and they should set a framework for fair dealing between parties.
- Types of contract
  Descriptions of the main types of contract that you will encounter during a building project.
- Agreeing on a contract
  You will need to choose an appropriate contract, take advice on the contract, scrutinise the contract, understand your obligations and finally sign the contract.
The role of the contract

Contracts define a financial relationship, and they should set a framework for fair dealing between parties.

The contracts should deal with all key issues – **time, cost and quality** – and determine the distribution of **risk**. Who carries what risk - and to what level - is always a tricky area for a client to understand. Seeking to pass on all of the risks is unlikely to achieve value for money.

**Contracts should**

**Clarify roles and duties**

- identify all roles and the interface between them, including that of the project manager or lead designer responsible for co-ordinating the contract
- require all parties to co-ordinate effectively with the rest of the team
- identify the documentation on which the contract is based, including all targets - such as energy consumption/CO2 emissions
- set out clear lists of duties and deliverables
- be compatible with other contracts you will be entering into - preferably part of a suite leaving no loopholes for misunderstanding.

**Describe what happens with changes, or if things go wrong**

- define payment conditions, times and amounts at suitable milestones, and define when payments become overdue and any interest charges
- define time limits for any process or stage, and procedures to follow if there are overruns
- require parties to seek to consider properly the implication of changes, and define how to agree how to handle changes
- provide for the speedy and effective resolution of disputes
- provide a procedure in the event of the insolvency of one of the parties.

**Outline what happens at completion of the work**

- define when any sum is to be withheld and when it will be released
- describe the defect period process
- define the post-construction information to be supplied by the contractor - such as a full set of 'as built' plans, manuals for the building's services and instructions for all systems and maintenance including landscaping needs.
Types of contract

The form of contract should be suited to your form of procurement, and what you are procuring. There are many types, which can be considered with the help of experienced advice. Current forms of contract are set out in Which Contract?

In terms of the contract for the main works, your professional advisors will have a working knowledge of contracts in effect at any time. Clearly if you are undertaking procurement through routes such as competitive dialogue, the process of agreeing the contract is different.

- The New Engineering Contract (NEC) has developed a version that emphasises good working between the two parties.
- The Office of Government Commerce (OGC) GC/Works (Government Contract Works) suite is designed for collaborative work where there are teams.
- The Joint Contracts Tribunal (JCT Ltd) publishes a wide range of forms designed for different procurement routes, including a partnering charter. Some of these are suitable for local authority and private finance initiative projects.
- Project Partnering Contract 2000 (PPC 2000) from the Association of Chartered Architects has been written to integrate the design, supply and construction processes, from inception to completion.

Design, build, finance and operate (DBFO) projects

In this procurement route, the client’s contract is with a special purpose vehicle (SPV), the provider of the entire process (DBFO).

The Office of Government Commerce (OGC) has standardised contracts for private finance initiative (PFI) procurement by government departments. The SPV makes its own contract arrangements with the construction team. The design work is carried to an advanced stage by two or three preferred bidders, and the financial bid is based on the designs prepared by the bidding teams. Therefore, when a preferred bidder is appointed, the contracts between the SPV and the design and construction team members are already in place.

The appointment of consultants

The above paragraphs refer to contracts for the construction process. Of course you will also need contracts for services, although some might be integrated in the principal contract.

If appointed separately, consultants will also need a contract to govern the terms of their work. Different professional bodies have their own forms, and some such as the RIBA’s Standard Agreement for the Appointment of a Consultant can be used for a number of related consultancy services.

There are processes like novation that allow a client to determine the consultant team within a larger contractor. Take advice on how this operates contractually.
Contracts for work in stages

In terms of your contracts with consultants at the early stage of the project - such as feasibility - it is important to be clear about how far the appointment extends. A contract for a feasibility study does not imply a subsequent appointment. It is unwise to accept an offer to produce a feasibility study for no fee, as the architect/designer may then assume you will give them a further commission.

However, case study research has shown that continuity between the team that does the feasibility study and the subsequent project can be very helpful, and reduce wasting resources and time. European procurement rules allow you to advertise:

- for single appointments
- for a team for the initial study
- with the intention that the successful team will take the project to completion, if it proceeds.

Some of the people involved, such as artists, may not be specifically mentioned in a standard suite of contracts. When commissioning artists and others who will work alongside the project team, clear and equitable contracts that link to the main contracts should also be used.
Agreeing on a contract

You will need to choose an appropriate contract, take advice on the contract, scrutinise the contract, understand your obligations and finally sign the contract.

Choose an appropriate contract

Different procurement routes involve appointing designers, contractors and subcontractors at different points in the project process. Contracts should be specific to a particular procurement route, although you may need to choose specific clauses to make them fit your procurement situation.

There is a benefit in using a suite of contracts, dovetailed with others so that each set interlocks, leaving no gaps. The set of contracts should fully define everyone’s responsibilities and their relationships to each other in a back-to-back way, and every task should be the responsibility of one of the parties involved.

Take advice on the contract – but not just from lawyers

You should select your contract with the help of an experienced advisor. Depending on the scale of the project, and whether non-standard requirements are anticipated, this advice could be given by an experienced consultant - usually a project manager or quantity surveyor or a specialist lawyer. In the construction industry, mistakes made with contracts can cause huge implications for time, quality and cost.

Check whether your selected contractors and design team members are familiar with your preferred form, and have used it successfully.

In some cases, your relationship with the designers is part of a larger ‘package’. For example, in design, build, finance and operate when a preferred bidder is appointed, the contracts between the special purpose vehicle and the design and construction team members are already in place.

The contract will:

- define the roles of the parties
- identify the information on which the contract is based
- define the cost, time and payment conditions.
- set out how to deal with different eventualities - for example how to accommodate change and resolve disputes.

When looking at which contract to select, the starting point for your discussion should be to examine which can best handle each individual risk and to what level. The contract should balance risk, responsibility and reward. Capping risks can often avoid contractors overestimating the potential cost at tender stage.

Understand the client’s obligations

For all contracts, make sure you are familiar with and understand the terms you are signing. The client will have obligations to fulfil during the contract period, such as meeting agreed payment schedules and agreeing new information in a timely manner. You need to be prepared to meet these obligations.
Sign the contract

Signing the contract is a good opportunity to bring team members together and set out the ethos of the project. It’s also good to run through roles and the communication procedures. This is also when a set of contract documents is agreed - these will be the basis against which any changes are assessed.
Effective selection

Whatever method of procurement you are using, your selection process needs to be carefully managed so it is fair and ensures good quality is paramount.

Your process of selection should be an efficient, structured process. It should be fully planned for and resourced through your procurement plan - you will need to prepare concise information appropriate to the different stages in the process.

Competitive selection may be used when choosing advisors, designers, contractors or consortia. Designers may be selected early on to help shape your vision, conduct feasibility studies and prepare a formal brief. They can be a separate appointment from those doing later design development, detailed design and specification.

More about effective selection

- **Key principles for effective selection**
  Guidance for proceeding before and throughout the selection process.
- **Selection process explained**
  Find out about the different stages, how criteria work, who should be on the panel and how to get value for money while maintaining quality.
- **How to make effective selection**
  You will need to have the right skills, follow good practice, agree the criteria, separate cost and quality and appoint a panel.
The selection process: an overview

THE SELECTION PROCESS STAGES

Preparation

- Develop brief
- Define selection criteria and methods of scoring, based on project objectives
- Develop selection methodology and programme
- Set up selection panel
- Check with EU regulations, impact on criteria and timetable
- Agree method of team selection: A, B or C

Prepare for stage one: define selection criteria, weighting, method of scoring

Stage one: Pre-qualification

Advertise for (OJEU) expressions of interest

- Long list of teams
- Pre-qualification
- Evaluation
- Short list of teams

Shortlisted teams proceed to stage two

Prepare for stage two: define selection criteria, weighting, method of scoring

Stage two: Team selection

Go through one of three routes chosen before stage one

A. Competitive interview
   - Client briefing and site visit

   Submission:
   - Design methods
   - First thoughts

B. Sketch (outline) proposals
   - Client briefing and site visit

   Submission:
   - Design ideas
   - Response to brief

C. Design competition
   - Client briefing and site visit

   Submission:
   - Outline designs

Evaluation

- Interviews

Appoint team
Key principles for effective selection

Guidance for proceeding before and throughout the selection process.

In preparation, you need to ensure that:

- there is a genuine intention to proceed
- the information required to be eligible to be considered is not too onerous
- candidates are treated equally and fairly
- every candidate has adequate time to participate
- all candidates are told all the necessary procedures
- all candidates have the same, and the most up to date information
- all candidates are told the criteria and weighting for qualification.

During the process you should ensure that:

- information from candidates is treated in confidence
- new information, queries or clarifications are shared with all candidates at the same time
- the process is transparent and well run
- the process is open to scrutiny
- unsolicited tenders are not considered
- the reasons for the final choice are recorded and auditable
- unsuccessful candidates are given feedback.
Selection process explained

Find out about the different stages, how criteria work, who should be on the panel and how to get value for money while maintaining quality.

What are the stages of selection?

There are several stages for making selection, but broadly, the minimum you will need to do is:

- send out a call for expressions of interest
- undertake pre-qualification of those who have expressed interest.

From these submissions you can:

- shortlist for a second, more detailed stage
- undertake the selection
- evaluate the submissions.

Each of these stages requires preparation.

What kind of selection criteria can be used?

Typical pre-qualification information should cover the following areas, at an appropriate level of detail:

**Suitability**

- nature and quality of the organisation’s previous work, size and type of completed projects
- size of firm - with respect to the scale of the project, big is not necessarily good
- relationship to the other likely team members
- commitment to design quality – for example design philosophy, learning from feedback, use of design quality indicators (DQIs)
- commitment to and evidence of contributions to sustainability
- availability during the project period.

**Assurance**

- financial stability - based on financial checks
- number and qualification of professionals – CVs - range of skills, evidence of continuous learning
- evidence of indemnity and other required insurances
- quality assurance procedures
- health and safety record and procedures.

Who should be on the selection panel?

Early on, consider the make up of your selection panel. Make sure you have the skills to assess design on the panel.
Your selection panel should include representation from:

- the client organisation
- the end user/s
- stakeholders with vested interests in the project
- expert advisors – for example the project manager, client design advisor.

The panel should consist of no less than three and no more than 12 members. The selection process itself can be based on interview, evaluation of submissions, or both.

**Weighting and achieving best value (value for money)**

Most public bodies or public funding agencies require services and works to be procured by a competitive process. The objective of the competition is to achieve the ‘best value’ or ‘value for money’ option. This is the option that represents the best fit to the client’s requirements at the most advantageous price, whilst striking a balance between quality and cost.

**Maintaining quality**

The emphasis on quality should be set as high as possible. Often, when there are many considerations for selection - financial, competency and so on - a ‘two envelope’ system can be developed. Candidates place their cost bids in a separate envelope, allowing selection first based on quality and then on price.

Throughout, you need to remember that the fee paid for design is a tiny part of the whole-life cost of the project.
How to make effective selection

You will need to have the right skills, follow good practice, agree the criteria, separate cost and quality and appoint a panel.

Ensure your team has the right skills to make a selection

You wouldn't sign an important contract without having a lawyer look it over.

If you are assessing a bid’s potential to produce design quality, you need to make sure you can recognise it.

Depending on your project, and your experience and in-house resources you may need:

- a client advisor
- a project manager
- a design champion.

For large projects, you may require all three, at different stages of the project.

Follow good practice in making a selection

Good practice in all parts of the process includes:

- providing all relevant information clearly, succinctly and consistently
- clearly defining the details and purpose of any exercise to enable the comparison of submissions
- avoiding abortive work both by the candidates and the client team
- devising requirements which help generate useful analysis and ideas
- asking for evidence of stated policies, practice or achievements
- seeking reassurance that individuals or specific teams used by a firm in the competitive process will be retained for the commission – and that you will be consulted and ideally have a say when changes are unavoidable.

Agree selection criteria

The starting point is a clear brief that sets out your vision and objectives, and spatial requirements.

You can establish criteria and descriptors for the selection process in a number of ways, such as the Delphi method, but the principle is to:

- agree priorities
- check back against your initial requirements and the brief
- agree weighting between various priorities.

The process of getting input from a wider range of stakeholders may highlight areas of little consensus, which is important to know.

Your selection criteria should be qualitative criteria that reflect the approach, skill and experience required for the commission.
Consider assessing cost separately from quality

Ideally, you should assess the quality of the prospective tenders separately from cost. This is more complex with joint ventures, but the principle is worth remembering.

Various techniques can be used, including the ‘two-envelope’ approach, where candidates place their cost bids in a separate envelope. You should examine the bid prices of the preferred teams and balance the cost and quality through a pre-determined ratio which should be appropriate to your project. You could, for example, make a final decision based on 60 per cent of their assessed quality score and 40 per cent of their financial score.

Ensure the authority of the selection panel

Your jury need to have the authority to make a final decision based on the selection criteria. They probably need to be able to make a decision on the day of the interviews.
OJEU regulations

Most publicly funded projects need to comply with both European Union (EU) and UK procurement rules, to ensure competition for contracts is fair and transparent.

Before you continue, make sure that you read the following information about OJEU:

- **EU procurement processes**
  Find out what EU procurement rules apply, how they affect your project and why you need to consider this from the very beginning.

- **Four EU procurement routes**
  You should select the EU procurement route that suits your project best, as each of the four routes has implications for how your project runs.

- **OJEU notices**
  OJEU notices are a way to let all those competing in EU markets know about the products, services and works you are procuring.

How do I deal with OJEU regulations?

1. **Integrate EU process into your planning**
   At the beginning of your project as part of the process of procurement planning, you need to identify which of the contracts you plan to award will be subject to EU rules.

2. **Select an EU procurement route**
   Choose from one of the four defined routes (open, restricted, negotiated and competitive dialogue). Set out the steps you need to take and adjust your programme accordingly. Identify which notices need to be served when.

3. **Prepare documentation**
   To ensure you or your project manager don’t make any mistakes, you need to prepare your documentation carefully.

4. **Set award criteria**
   The award criteria in the OJEU notice will state the basis for deciding the award of the contract.

5. **Get your project is noticed**
   An OJEU notice follows a standard format and provides key project information in a concise way.

6. **Hold an accountable selection process**
   As it needs to be publicly accountable, your selection process must be fair and transparent - and decisions must be made according to your defined award criteria.
EU procurement

Find out what EU procurement rules apply, how they affect your project and why you need to consider this from the very beginning.

When do EU procurement rules apply?

The EU procurement rules apply to the expenditure of public funds, and the agencies charged with spending these funds.

The EU sets thresholds, above which the award of contracts should follow the EU procurement rules. Under the rules, different agencies are grouped into different categories - to which different thresholds apply. The current thresholds are published by the Office of Government Commerce (OGC).

The EU rules apply to all contracts for products, services and works. This means they may apply to the selection of a design team and contractor, or integrated team, as well as framework agreements. If the sums involved are above the threshold then notice of each contract opportunity should be published online in OJEU - the Official Journal of the European Union - and set procedures followed.

How would EU procurement rules affect my project?

Under EU rules the tendering process should follow one of four procurement procedures, each with set timescales. The timescales are longer than might typically be allowed, and should be set out in your project programme at the beginning of the project.

Compliance is not a barrier to achieving quality, but does mean that certain timescales and procedures need to be followed.

Why do I need to consider this early on?

There are pitfalls to not exploring whether you need to comply with EU rules early on. An example of this could see a client establishing a relationship with a supplier, but anticipating that they will need to advertise the remaining stages of work through OJEU and ask the supplier to compete again - wasting time and money for both the client and the supplier, and risking the end of the relationship.

Not anticipating the need to follow EU rules early on could also lead to not enough time to prepare properly for the process - getting the right detailed documentation together, for example - leading to a poor response.

As with all procurement procedures, the process is not an end in itself but should serve the client's vision and quality objectives.
Four procurement routes

You should select the EU procurement route that suits your project best, as each of the four routes has implications for how your project runs.

Types of EU procurement route

Open

An offer is made in direct response to a contract notice. Open procurement is rarely used. It can result in a large number of responses that place an administrative burden on the authority. It is not popular with suppliers as it carries high risk of outlay for no return.

Restricted

This is a two-stage process. First a candidate indicates interest in making an offer against a contract notice. The authority then selects a shortlist of candidates based on the advertised criteria, and invites them to submit offers. The authority may use a pre-qualification questionnaire (PQQ) as a method of determining its shortlist. The authority can decide the number of candidates it will shortlist, above a minimum of five. This process takes longer than the open procedure, but in certain cases where there is urgency to the appointment, the procedure can be ‘accelerated’.

Negotiated

This procedure is only available in very selective circumstances. The authority chooses a number of service providers and negotiates with them.

Competitive dialogue

This route is used for complex projects, which are unsuitable for the open or restricted procedures. This may be because the authority is not able to define the technical solution to their particular requirements, or are not able to objectively specify the legal and/or financial constitution of the project. Selection of a shortlist to enter competitive dialogue may be based on a pre-qualification questionnaire or other selection criteria. For further guidance see the: OGC guidance on the competitive dialogue procedure.
OJEU notices

OJEU notices are a way to let all those competing in EU markets know about the products, services and works you are procuring.

This is so that they can compete and track the commission if they have made a submission. Contract notices need to be published online before, during and after the tender process. These are published and tracked at eNotices.

Notices call for requests from providers to participate in procurement. These refer to the four procurement routes described above. It is also possible to have a 'design contest notice', which is not classed as a contract notice, but has the same purpose.

Generally you need to plan and prepare carefully to procure through OJEU, taking care that the information published in notices matches your requirements and vice versa. You will need be clear about, and keep sight of, your main aims as the process isn't an end in itself - only a vehicle to arrive at your preferred outcome.

Types of OJEU notice

Prior information notice (PIN)

Provides information about a planned future notice, to create market awareness. It also enables the procurement procedure to be shortened in time. Local authorities and other clients with large programmes may typically place a PIN once a year, usually at the beginning of their financial year. This summarises all intended projects within the next 12 months.

Contract notice

Refers to contracts for supply, services or works, which are to be let through the open, negotiated, restricted or competitive dialogue procedures. It may be used by one or more awarding authority (if stated in the notice) and may cover framework agreements, single contracts and contracts divisible into lots.

Award notice

Provides public notification of the award of a contract previously advertised through the OJEU. It contains general award information, not commercially sensitive details. The notice must be placed within 48 days of the award of the contract.

Design contest/results of design contest

Refers to contests for design submissions for particular projects and provides details of the submission requirements and the criteria for selection. The results of the design contest must be published within two months of the jury’s decision.
How to deal with OJEU regulations

You will need to integrate EU process into your planning, select the best route, prepare documentation, set award criteria, ensure your project is noticed and hold an accountable selection process.

1. Integrate EU process into your planning

At the beginning of your project as part of the process of procurement planning, you need to identify which of the contracts you plan to award will be subject to EU rules.

Take professional legal and project management advice on this, and on how to build the set timescales into your programme. Be clear about your vision and aims, your selection criteria and your aspirations for quality, as these will inform how you manage the process.

2. Select an EU procurement route

Choose from one of the four defined routes (open, restricted, negotiated and competitive dialogue). Set out the steps you need to take and adjust your programme accordingly. Identify which notices need to be served when.

You need to make sure that the route is suited the contracts you want to award. You need to work out if you want to appoint a single contractor - responsible for their own team - or award a series of related contracts. You also need to indicate if you prefer who should be lead consultant or contractor.

For example, a local authority has a major project, and knows it will need a number of different types of consultants to contribute. Rather than issue individual notices for each one, it can issue one notice divided into lots. The authority can decide whether competitors can only apply for one lot or apply for more or all of them. One reason to do this is if you think you might get a better design team by choosing the architects, engineers and project managers separately, rather than through a ‘one-stop shop’ organisation.

You should take specialist advice early on to make sure you choose the right route as it can be difficult to undo if you don’t get the right contractual arrangements. See also Understand the importance of contracts.

3. Prepare documentation

To ensure you or your project manager don’t make any mistakes, you need to prepare your documentation carefully. Make sure you prepare what is to be recorded on the eNotices website in advance, and that your documentation and eNotices details are cross-referenced.

The standard public procurement forms are available in PDF form, so you can review these and prepare the content before you upload information online.

OJEU notices provide key project information in a concise way. The notice is divided into sections, which cover general information, a description of the contract, the type of procedure, the award or selection criteria and other administrative details.
The contract notice will include a CPV code - common procurement vocabulary - that identifies the types of works or services required. The codes are available online.

You should prepare your supporting documents before you publish the contract notice. Be clear about the kinds of contract you wish to award and make sure the information given is consistent with what is expressed in the brief or tender documents.

4. Set award criteria

The award criteria in the OJEU notice will state the basis for deciding the award of the contract. These criteria are your selection criteria and must enable you to make a choice according to your priorities.

The award criteria cannot be varied during the procurement process. The OJEU notice may simply state the broad approach – for example ‘most economically advantageous tender’ and refer to the brief or specifications as providing the weightings criteria. Alternatively it may give details of the actual criteria – for example experience 20 per cent, resources 20 per cent, and so on.

Your criteria should include objective quality standards, so that you can select a candidate based on quality. It is critical to ensure your design excellence aspirations are formalised.

You might also not want to exclude submissions from small local businesses. To do this, part of the evaluation should be against experience or resources that reflect your priorities, or about the tenderer’s particular approach to our project.

5. Get your project is noticed

An OJEU notice follows a standard format and provides key project information in a concise way. Prospective candidates are likely to scan titles of new notices online at TED - Tenders Electronic Daily - where hundreds are published everyday.

You need to make clear the title and the services required straightaway. The OJEU notice can also be advertised on your website or in trade journals and publications.

6. Hold an accountable selection process

As it needs to be publicly accountable, your selection process must be fair and transparent - and decisions must be made according to your defined award criteria. You should carefully record the selection process.

Plan who will need to be engaged to prepare the shortlist and select the final tender. Identify what design and technical input is will needed. See effective selection for more about this.

After an award has been made an award notice must be published. When dealing with a shortlist of candidates it is also courteous to let people know the decision individually. Unsuccessful tenderers are entitled to feedback under EU rules. They also have a right to challenge a decision if they believe you have not complied with procurement rules.
Stakeholder engagement

The input of others - though sometimes time-consuming and complex to incorporate – is integral to the success of your project. It needs to happen throughout the project’s development.

Getting stakeholders involved in your project is important - it is rare that a project can exist in isolation. Effective communication with stakeholders can help create positive, rather than antagonistic, reactions and can provide new insights. To achieve this you or your team should contact appropriate individuals and groups, understand, and take account of their views – positive and negative.

Before you continue, make sure that you read the following information about stakeholder engagement:

- Who are stakeholders?
- What is the point of consulting?
- What is the best consultation method?
- When should I consult stakeholders?
- Should I consult staff?

Tips for stakeholder engagement

1. **Identify your stakeholders**
   Think about who needs to participate and who needs to be consulted - these are two different things.

2. **Approach stakeholders positively**
   Nowadays, you are obliged to consult certain stakeholders.

3. **Ensure your consultation is effective**
   Your should engage people’s attention and focus their interest. It’s worth recording and considering all views, especially opposing ones.

4. **Keep a record**
   Projects can take place over a long period, and the individuals you consult may well change.
More about stakeholder engagement

Find out more about who stakeholders are, why you should consult them, who and when you should consult and what methods are available.

Who are stakeholders?

A stakeholder is anyone who could be interested in your project. This may include:

- users – staff, patients, students or local residents
- local authorities and statutory bodies and organisations from which approvals are needed
- other organisations delivering related services - for example transport to your site
- the public, who may visit, see the result of your project as part of their daily lives over many decades and, when public funds are committed, have a direct financial connection with it
- clients, designers and contractors in adjacent projects, or ones of which your project is a part.

Stakeholders may also refer to those who have a more formal stake, or are actual partners, in your project:

- funding or lending organisations whose needs will be reflected in the aims of the project - demanding a return on capital or expecting a level of service to be provided to the public
- national stakeholders such as government and representative bodies.

What is the point of consulting?

With some stakeholders, you will be obliged to consult them, while with others it is simply a good idea to consult. In all cases, the process can help:

- increase people’s understanding of the implications for them
- increase understanding of planned organisational changes
- help draw on the imagination of others
- manage the expectations of different groups
- encourage people to buy in to the project
- make people more realistic about what to expect
- create a more satisfied community at the end of the project.

What is the best consultation method?

Presenting construction projects to different stakeholders may require different methods. Construction drawings, for instance, may work for a fully informed architectural/professional audience, but may not suit less trained eyes, while roadshows can offer people who are less familiar with the project a good overview of your plans. You should assess the level of professional expertise and familiarity with the project when considering the appropriate consultation method.

Effective methods include:
- face-to-face consultation
- meetings
- focus groups
- walkabouts or roadshows
- questionnaires
- newsletters
- exhibitions and open days
- posters
- internet and intranet sites
- the media, especially local newspapers, television and radio stations.

**When should I consult stakeholders?**

Consultation is needed not only at the beginning of your project – such as when you are developing the brief for your project – it should be ongoing. See the sections relating to the stages of the process – prepare, design, construct, use - for more details.

**Should I consult staff?**

Staff need to be informed about the project's progress and will appreciate regular updates. Disruption caused by a move and any shift in the organisation’s direction implied in the project always creates anxiety, and people may focus this anxiety on the building project. Regular communication using newsletters, online forums or a website can help to address staff concerns.

Visits to the building site are also helpful, but should be arranged only once the building is well advanced and can be easily understood.

To promote good communications, you should:

- arrange site visits for staff – with the contractor’s permission
- arrange site visits for the local community
- listen to comments from staff, donors, sponsors, neighbours and the press
- let staff and other user groups know how the project is progressing
- communicate significant changes to the relevant people
- send out press releases to local newspapers/radio/TV stations and magazines
- use social media platforms such as Facebook, Twitter and LinkedIn to spread the word
- stage events, for example a ‘topping out’ ceremony when the structure reaches its highest point, with press coverage.
Tips for stakeholder engagement

You will need to identify your stakeholders, approach them positively, ensure your consultation is effective and keep a record.

1. Identify your stakeholders

Think about who needs to participate and who needs to be consulted - these are two different things.

There are many stakeholders that may be interested in your project. You may need to prioritise your efforts with some groups that you identify as crucial to the project’s success.

Early identification of the partners and stakeholders in your project will help ensure you can incorporate their needs and ensure a successful outcome. Consultation will help reveal what their views are, and enable them to develop their understanding of the project.

2. Approach stakeholders positively

Nowadays, you are obliged to consult certain stakeholders.

This can make such consultations seem like a mere tick-box exercise, but it’s worth adopting a collaborative attitude from the start. You have much to gain in talking to stakeholders and enhancing their buy-in to the project. Remember, a building project that fails to consult its users is more likely to end up poorly used.

3. Ensure your consultation is effective

Your should engage people’s attention and focus their interest. It’s worth recording and considering all views, especially opposing ones.

For design quality, there are many tools to monitor quality that are tailored to consultation scenarios.

Understand that the quality of the answer comes from the quality of the question, especially with the public or users.

If approached without thought, consultation can cause a lot of confusion and end in unachievable expectations.

Especially when dealing with the public, avoid being imprecise, and presenting unrealistic choices.

For example, if you ask an open question like ‘how would you like your library to be?’ you will get answers that are wide-ranging and difficult to interpret.

But if you ask ‘if you had to chose between having three small libraries close to your home open two days a week, or one further from your home but open seven days a week’ you will get an answer that is framed by the realities you might be facing.
People understand the principle of allocation of scarce resources – we do it every day with our household budgeting.

4. Keep a record

Projects can take place over a long period, and the individuals you consult may well change. It is wise to keep a track of your various consultations so that subsequent discussions don’t return to square one.
Sustainability

Sustainable design creates places that use resources efficiently and are flexible enough to change over time. When planning your project, you should consider its social, environmental and economic impact.

When thinking about sustainability, you need to think about much more than its energy efficiency. Good design for a building means being adaptable, using resources efficiently and delivering value over its lifetime. When it is poorly designed, on the other hand, it can increase carbon emissions unnecessarily, be uneconomic to run, and need future investment to adapt to change in its purpose.

As the client, you must consider environmental factors in making decisions about your project, from site selection and procurement to detailed interior design and ongoing use.

You should set sustainability objectives and track them as your project develops.

Ways to start thinking about sustainability

1. Think about money differently
2. Focus on more than energy use
3. Adopt common sense strategies
4. Know how you actually use buildings
5. Benchmark energy performance
6. Assume things will change
7. Change behaviour
8. Know the carbon emission standards
9. Think about where you site your building
10. Understand what can make a building sustainable

Sustainable Places

CABEs resource on planning, designing and managing sustainable places provides advice on how to tackle climate change, as well as many best practice examples.
The first steps to a low carbon future.

An energy reduction action plan.

1. ENGAGE users in energy consumption to reduce carbon/energy, save money, and enhance service efficiency.
2. REDUCE energy demand through good passive design, energy conscious behaviour, and responsible use.
3. DRIVE OUT waste with efficient equipment by using simple & effective controls, reducing ICT heat & power, and low energy equipment.
4. DECARBONISE energy supplies with low carbon fuels/biomass, on-site/near-site renewable energy sources, and recovering useful heat.
5. NEUTRALISE energy supplies with off-site renewable energy, other green electricity supplies, and distribution of surplus heat and energy through a neighbourhood network.

www.cabe.org.uk/buildings
Defining a sustainable place

A sustainable community

The eight characteristics of a sustainable community (as defined by the Egan Review in 2004) are:

1. Governance - well-run communities with effective and inclusive participation, representation and leadership.
2. Transport and connectivity - well-connected communities with good transport services and communications linking people to jobs, health and other services.
3. Services - public, private and community and voluntary services that are accessible to all.
4. Environmental - providing places for people to live in an environmentally friendly way.
5. Equity - fair for everyone in our diverse world, and for both today's and tomorrow's communities.
6. Economy - a thriving and vibrant local economy.
7. Housing and the built environment - high-quality buildings.
8. Social and culture - active, inclusive and safe with a strong local culture and other shared community activities.

Ten principles of one planet living

Another definition of sustainability is the 10 principles of ‘one planet living’, developed by sustainable developer Bioregional. These set a framework to establish a high quality of life within a fair share of the earth's resources.

1. Zero carbon - making buildings more energy-efficient and delivering all energy with renewable technologies.
2. Zero waste - reducing waste, reusing where possible, and ultimately sending zero waste to landfill.
3. Sustainable transport - encouraging low carbon modes of transport to reduce emissions, reducing the need to travel.
4. Sustainable materials - using sustainable products that have a low embodied energy.
5. Local and sustainable food - choosing low impact, local, seasonal and organic diets and reducing food waste.
6. Sustainable water - using water more efficiently in buildings and in the products we buy; tackling local flooding and watercourse pollution.
7. Natural habitats and wildlife - protecting and expanding old habitats and creating new space for wildlife.
8. Culture and heritage - reviving local identity and wisdom, and support for, and participation in, the arts.
9. Equity, fair trade and local economy - inclusive, empowering workplaces with equitable pay, and support for local communities and fair trade.
10. Health and happiness - encouraging active, sociable, meaningful lives to promote good health and well-being.
Think about money differently

To be sustainable means thinking differently about financial value.

You should think about costs differently. The costs of not investing sustainably, for instance, is as important an issue as the cost of the initial investment. These costs will include ongoing energy bills.

You should take into account the costs of the project over its whole lifetime. Clients need to calculate costs over the long term because:

- requirements and legislation are only going to get more demanding
- if energy costs rise, buildings will become very expensive to run.
Focus on more than energy use

Often energy use is the focus when thinking about buildings. This is because the construction industry and buildings make up a large portion of our carbon footprint. Much needs to be done to improve energy efficiency, it is true. But this is only one aspect of building sustainably – the energy embodied in the building and its construction is considerable.

You should understand what measures can have the biggest impact on carbon emissions. You should:

- understand energy use in the building type
- use the form and fabric of the building to minimise energy demand
- focus on insulation and minimising draughts, using natural rather than mechanical ventilation wherever possible
- use high-efficiency building services with low carbon fuels
- manage energy within the building
- use renewable energy systems.

*from the RIBA’s Climate Change Toolkit.*
Adopt common sense strategies

It may seem complex to understand what sustainability means to your project. You may find it useful to adopt some overriding common sense strategies.

A study, for the Schools Zero Carbon Task Force, provided a useful summary of how to reduce carbon emissions. In order of priority, it came up with the following strategies:

- halve the demand
- double the efficiency
- halve the carbon in the supply of energy.

The study suggested that adopting these measures could reduce emissions to one eighth of current standards. So these may be good principles to consider adopting on your building project.

Long life, loose fit, low energy

We have been adept at producing bespoke solutions to the needs of today, which repeatedly have proved to be not applicable to our changing needs. Demolishing buildings after 30 years is unsustainable on many levels.

A good strategy is to make buildings ‘long life, loose fit, low energy’:

- Building for a long life means you maximise the embedded energy in making the building
- Loose fit means making spaces as adaptable as possible - could a school building be easily converted to housing?
- Low energy use means building in measures that allow this – that have natural ventilation and are day lit.

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Know how your building is used

To ensure your building is run as efficiently as possible, it is important to know about its actual use. This includes:

- monitoring how often spaces are actually occupied
- knowing when energy is being used in the building

You need to know how your building is used before you spend money on capital investment. Cutting down on lighting and ICT consumption, for example, can have a drastic effect on your building’s carbon performance, skewing the calculation of the building’s overall carbon footprint. A super-efficient building can become super-inefficient by overprovision of ICT and lighting.

You also will need to pre-empt future changes. The need for large computer rooms only a decade ago, for example, is no longer there in many building types due to changes in technology.

Ongoing assessment and improvement of the energy performance of public buildings is now a legal requirement. When a new building is first occupied, an energy performance certificate must be prepared. Public buildings are required to display energy certificates. These are typically required for buildings with a total useful floor area of over 1,000 square metres, and which are occupied by a public authority or institution providing a public service.

You should take into account the difference between the **designed performance** of a building and the **actual performance**. Your IT needs might have led to you having servers running all day every day when they do not really need to.

**How does this apply to existing buildings?**

The performance of existing buildings can be improved by upgrading the standard of insulation, improving air tightness, and by installing more efficient, responsive and well-controlled energy systems.

This is important, as building efficient new buildings will not itself have enough impact on reducing energy demand and carbon emissions. By the year 2050 the buildings that exist today will account for over 70 per cent of the total building stock.
Benchmark energy performance

The best way to know what you are consuming - or will consume - is to establish a point of comparison. You should find examples of how a project such as yours would typically perform, and what would be good practice.

You should understand the environmental impact of different energy sources. Typically your environmental engineer would help you to compile and assess this information.

For an illustration of typical and good practice energy performance benchmarks for different types of buildings, see RIBA’s Climate Change Toolkit, 02 Carbon Literacy Briefing.

Other systems such as the Soft landings framework aim to help you assess your project’s energy performance in the three years after its completion.
Assume things will change

One of the challenges of building sustainably is predicting how your project may be used in the future. You should try to ensure that your project will work in changing circumstances.

Changing circumstances might mean:

- changing demographics, for example an ageing population – how will this affect how the building is used?
- variations in room temperatures, both required and expected, by different users
- changing climate and comfort
- IT use may be very different in 15 years’ time.

Regulations and requirements are constantly changing, and the definitions of sustainability and zero carbon are under discussion. Delivering low-energy buildings is still in its infancy, so there is a good amount of experiment and research required – and therefore risks.
Change behaviour before changing buildings

Changing the behaviour of a building’s users can be the least resource-intensive way of meeting sustainability targets. Staff management and behaviour are the first things existing organisations looking to make big reductions in energy use should consider. To do this, you need to know how your buildings are used.

Building solutions are almost the last area to tackle to reduce carbon emissions. If you are lucky enough to be embarking on a new project, you really can change everyday behaviour in users and staff.

- Can the building’s design bring about sustainable behaviour in users?
- How do users actually recycle, use water and energy, get to and from the building?

These all affect your building’s sustainability.
Know the carbon emission standards

In many situations, standards will be already be set and you will need to work to them to reduce carbon emissions. But you will also need to set your own targets for reducing emissions. Your targets should be tailored to your project, to cover issues such as:

- transport and access
- use and disposal of energy, water and waste
- construction
- performance in use
- impact on or improvement of ecology.

The Building Research Establishment Environmental Assessment Method (BREEAM) is a voluntary scheme that aims to quantify and reduce the environmental impact of buildings by rewarding those that perform well.

The BREEAM Standard is a good way to cover a range of environmental issues, and is required in many public buildings. Projects are awarded credits for a range of criteria, including:

- energy
- the use of materials in construction
- water
- the generation of waste in construction and use
- the building's management processes
- the health and well-being of occupants
- pollution
- the impact on transport, land and ecology.
Think about where you site your building

If you are changing buildings, understanding the choice of site, and how the building sits on that site is very important for long-term sustainability. A project won’t be sustainable if it is not in the right place. You should think about its:

- connectivity
- context
- orientation.

A building’s context means thinking about issues like:

- Where is the public transport nearby?
- What are your staff commuting patterns?
- Are there opportunities - even in the future - to link up to local energy production?

Beyond the context, there are attributes a building has, through its very existence. These are often called passive design principles - things that are built in to your project, like natural ventilation and daylight, and the shape, form, materials and orientation of the building. Passive design can account for as much as three-quarters of carbon emission reductions from the building, depending on site location and user behaviour. To get the most benefit from passive design, your building should be designed so that the people using it can operate it simply.

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Understand what can make a building sustainable

Context

- Consider your project within any wider estate you may be part of – energy savings can be achieved only above a certain scale.
- Ensuring the financing of the project in the long term is crucial.
- Are there opportunities - now or potential - to knit your project into a wider sustainable infrastructure?
- Optimise local resources and natural context, including public realm – for example trees provide shade, therefore minimising the need for additional cooling.

Construction

- Minimise the use of non-renewable materials and plan for re-use and recycling.
- Find opportunities for sourcing locally and building local capacity - materials, labour, and technology.

Use

- The simplicity of controls and services is vital to minimise waste, water and energy use.
- Ensuring a project is fit for purpose means monitoring and evaluating use.
- Will those managing the building be able to effectively service the building in accordance with its intended design?
Inclusive design

Inclusive design creates places that are designed, built, and managed with everyone in mind - which we can all use with equal ease and dignity, and give us a sense of belonging.

This is important because design affects:

- how we access and use a place
- how we feel about a place
- whether it serves our purpose or not.

Inclusive design is about the physical as well as the psychological aspects of a place. A building that is easy to get to and move around is just as critical as a building which feels homely, welcoming or just good to be in.

Inclusive design puts people at the centre of the process because we know best what works for us. And people means everyone – women and men, younger and older, from different backgrounds, ages and cultures, black and white, disabled and non-disabled, lesbian, gay and straight. In other words, reflecting the natural diversity of users. Consultation is important - involve users and other potential customers throughout, so you can understand all their needs.

Traditionally accessible design has tended to focus on mobility and sight impairment. But disability diversity means thinking wider – about sensory and physical impairment, learning disability, mental health and neuro-diversity.

Before you continue, make sure that you read the following information about inclusive design:

- Why is inclusion important?
- How does inclusive design work in practice?

Ways to start thinking about inclusive design

1. **Have an inclusive mindset**
   Good design is inclusive design so creating an inclusive place is the client’s responsibility.

2. **Design and manage for inclusion**
   There are guidelines, both regulatory and advisory, about access to buildings.

3. **Be aware of statutory requirements**
   The Disability Discrimination Act 1995 frames legislation in this area.
More about inclusive design

Find out why inclusion is important and how inclusive design works in practice.

Why is inclusion important?

Inclusion is important because we are designing and building for a society which is naturally diverse. Good design can promote health and wellbeing, safety in public spaces and ameliorate the impact of poverty and deprivation. It can also contribute to strengthening communities by encouraging voluntary mixing and mingling within neighbourhoods and between groups.

How does inclusive design work in practice?

If you are providing services, you have a statutory duty not to discriminate against any group. There are seven 'protected' grounds in law: age, disability, gender, race, religion and belief, sexual orientation, and gender reassignment.

The client is responsible to ensure inclusion issues are on the agenda from the outset of the design process, and remain integral throughout. It should be part of your outline brief, and your vision. Your team should look for innovative, individual solutions, to suit real people in all their variability.

In buildings, you should consider inclusion in two ways:

- physical impact - the location and design of places has a profound effect on how we benefit from them
- psychological impact - the management, use and general ambiance of places has a significant effect on whether we feel at home.

This means thinking about:

- access: getting into and around places and using them with ease and dignity
- treatment: treated with respect and consideration - welcomed, guided, and looked after by the people, the space and the systems
- function: facilities that provide us with what we need, and that work for each of us according to need.

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Thinking about inclusive design

You will need to have an inclusive mindset, design and manage for inclusion and be aware of the statutory requirements.

Have an inclusive mindset

Good design is inclusive design so creating an inclusive place is the client’s responsibility.

Thinking inclusively needs to be on your agenda from the outset of the design process, and it should remain integral throughout. It should be part of your outline brief, and your vision. Your team should look for innovative, individual solutions, to suit real people in all their variability.

Consultation is important - involve users and other potential customers throughout, so you can understand all their needs.

Design and manage for inclusion

There are guidelines, both regulatory and advisory, about access to buildings.

Straightforward accessibility and ease of usage will include how you get to a building, as well as the environment when you are inside.

Here is a useful checklist for inclusive design:

- **location and topography** - for example, a library at the top of a steep hill is not a good idea
- **transport and getting there** - for example, an out-of-town hospital with expensive parking is not a good idea
- **orientation and legibility** - for example, ambiguous signs around a busy interchange are not a good idea for people to find their way
- **flow and movement** - for example, bottlenecks in corridors are not a good idea
- **movement around and between levels** - for example, hard-to-find stairs are not a good idea
- **facilities such as toilets and washing or refreshments** - for example, places without seating are not a good idea
- **lighting and visibility, acoustics and noise** - for example, meeting rooms without natural light and humming air-conditioning are not a good idea
- **safety, security and wellbeing** - for example, dark routes between entrances and car parks are not a good idea
- **external features** - for example, a porch open to the wind and rain is not a good idea.

Apart from referring to technical guidance, projects may also use an access consultant and involve an access group to help advise on the design.

The management of a building also has implications for inclusion, for example:
- Facilities that take comfort into account - for example, a changing places toilet in a new shopping mall.
- Programming and events which reflect my interests and are priced within my means - for example, a choice of foods from different places and at different prices.
- Seeing people like me around - for example, a wide diversity of staff.
- Discreet and respectful security - for example, a welcoming and helpful reception whoever I am and whatever I look like.

**Be aware of statutory requirements**

The Disability Discrimination Act 1995 frames legislation in this area.

If you are a provider of services, regardless of whether users pay to use your services, this legislation applies to you.

When you apply for [planning permission](#), you will need to provide a design and access statement. This statement should include a record and explanation of the decisions you and your team took during the design process - including a description of how the design was influenced by inclusive processes.

For projects using public money, either directly or vicariously, you are required to carry out an equality impact assessment. This checks that a project does not have an adverse impact on any equality group.

The public duties under the Equality Act 2010 require publicly funded bodies to:

- promote equality between women and men, and people of different ages, ethnicities, sexualities and religions/faiths
- promote good relations between different groups
- eliminate discrimination
- encourage the involvement of disabled people in public life
- when required, treated disabled people more favourably

In practice, this means involving different users in the planning and design, and management and use, of places – particularly women, people from black and ethnic minority groups, and people with a range of different impairments. This will ensure it can be used with equal ease and dignity by all.

It also means:

- ensuring it does not, by default, exclude any group either in its physical and technical design, or its atmosphere and ambiance
- checking it does not segregate communities or contribute to unequal provision of services.

In terms of disability, the Equality Act makes it unlawful if you are a provider of services to discriminate against a disabled person by:

- making it impossible or unreasonably difficult for a disabled person to make use of any such service
- providing a different standard of service to a disabled person, or a different manner in which you provides it to them
- providing services to a disabled person on different terms.
Where a **physical feature of a place** makes it impossible or unreasonably difficult for a disabled person to use a service, it is your duty to take reasonable steps to:

- remove the feature
- alter it so the problem is removed
- provide a reasonable means of avoiding the feature, or
- provide a reasonable alternative method of making the service available to disabled people.

Relevant legislation for building design and layout includes:

- 2001 BS8300: Design of buildings and their approaches to meet the needs of disabled people
- 2004 Approved Document Part M revised as: Access to and use of buildings ‘for people’
- 2005 Disability Discrimination Act: detailed amendments
- The Equality Act 2010
Glossary

A glossary of terms used in this guide to creating excellent buildings.

Adjacency: In terms of building layout, this describes what needs to be next to what. So in a house, a critical adjacency is between the kitchen and the dining room.

Ancillary spaces: Spaces that serve main spaces – corridors, store rooms, plant rooms and so on.

Area action plan: Document which provides the planning framework for specific areas where significant change or conservation is needed.

Area schedule: see schedules of areas

Award criteria/selection criteria: The standard or test by which submissions are compared and judged in a selection process.

Benchmark: A standard of performance against which similar projects can be measured – for example a doctors’ surgery with exemplary levels of patient satisfaction with the environment they get treated in.

BREEAM (Building Research Establishment Environmental Assessment Method): A measurement for rating the sustainability of non-domestic buildings. There are variations depending on the building type.

Brief: The needs of the client, set out in a document.

Buildability: The ease and efficiency of construction.

Building envelope: The structure and elements that enclose the internal space - the walls, floor and roof construction.

Building users' guide: Complements the operation and maintenance manual, and explains to users, maintenance contractors and others how the building works.

Business plan: The case for how a project is viable.

Capital budget: The money spent on one-off investment costs.

Capital costs: Costs incurred on the purchase of land, buildings, construction and equipment to be used in the production of goods or the delivery of services.

CDM regulations: The Construction (Design Management) Regulations 2007 help to improve heath and safety, and manage risks on site.

Change management: The structured approach to making individuals, teams and organisations make a transition from a current state to a desired future state.

Change management team: A team whose role is to help the organisation to adapt its processes and behaviours, in this context, to transfer to new premises.
Changing places toilet: WC facilities in public places that are suitable to the widest range of disabilities; this derives from a campaign by the changing places consortium.

Clerk of works: On-site representative of the client, who ensures that what is constructed meets the level of workmanship specified by the design team.

Client design advisor: A person who independently advises the client on issues of design and quality, and is not delivering the project on behalf of the client.

Client lead: The individual who is the main contact for the project delivery team and responsible for representing the client.

Client team: The in-house team responsible for delivering the project for the client, and liaising with project partners.

Code for Sustainable Homes: The national standard for the sustainable design and construction of new homes in England. It measures sustainability against nine categories, rating the 'whole home'. The code uses a one to six-star rating, setting minimum standards for energy and water use at each level.

Competitive dialogue: A procurement process used for complex contracts involving competitive tendering, in which the contracting authority opens a ‘dialogue’ or discussion with bidders.

Construction manager: A person, or company, that manages the construction.

Consultant team: The group of professionals you need to produce a project – architects, structural engineers, quantity surveyors and potentially many other specialists.

Contingency: An amount of money kept aside for unforeseen costs.

Contract administrator: The person who ensures the activities and roles are carried out as per the contract. In smaller projects this is can be the architect or the quantity surveyor.

Contractor: The industry term for a builder. There can be a main contractor, and sub-contractors, and specialist sub-contractors, depending on your procurement route. See also works contractor

Core strategy: Sets out the key elements of the planning framework for the area. It should include a spatial vision and strategic objectives for the area.

Cost consultant: Someone who can advise on the real costs of things. In the construction industry, this person is called a quantity surveyor.

Decant: The process of moving out of existing facilities. Decants can sometimes be phased.

Defects liability period: A period, usually 12 months, set in the building contract, during which the contractor must put right any failures that have come to light.

www.cabe.org.uk/buildings
**Delivery partners**: The team of private sector partners and consultants delivering the project on behalf of the client.

**Delphi method**: A systematic method of stakeholder consultation which aims to reach a consensus answer.

**Design and access statement**: A document submitted with a planning application explaining what you intend to build in terms of scale, appearance, layout and landscaping, and how it will be used and accessed by all groups of people.

**Design, build, finance and operate (DBFO)**: Projects where the contractor is responsible for all four activities.

**Design champion**: A person at senior level in an organisation who promotes the benefits of good design, and supports and challenges colleagues to maintain design quality in their activities.

**Design development**: The iterative process of agreeing how the project will be laid out and put together, getting more and more detailed as time goes on.

**Design review**: Service giving expert advice on the design quality of projects, which has been provided by CABE at a national level, and by others at regional and local level.

**Design team**: The group of consultants that develop the design. This isn’t just the architect, it includes cost consultant, structural engineers, services engineers and potentially many types of specialists - landscape, sustainability and so on.

**Detailed brief**: The document that gives all the detail for the client’s needs – down to the requirements in each room.

**Detailed design**: The documents that describe the design in detail – materials, services, structure and all the various products that they are made of.

**Display energy certificates**: Required for public buildings over 1,000 square metres that are occupied by a public authority or institution providing a public service.

**Disability Discrimination Act 1995**: This act makes it unlawful to discriminate against anyone on the basis of disability.

**Employer**: The term used in standard building contracts to mean client.

**Employer’s representative**: The person employed to look after the client’s interests in the design process and on site.

**Employers’ requirements**: What the brief is called in some procurement routes.

**Energy performance certificate**: Required for buildings when first occupied or when sold.

**Environmental engineer**: The consultant who specialises in systems that control the internal environment of a building, such as ventilation. Can also be referred to as a mechanical engineer, and the specialism as ‘mechanical and electrical’, or ‘M&E’.
Equality impact assessment: A tool for identifying the potential impact of a policy, service or functions on the public, and on your staff.

Fine-tuning: The process of making sure a building is operating at its design optimum - like fine-tuning a car.

Fit out: The fixtures and fittings that aren’t part of the building structure.

Framework agreement: An agreement with a number of suppliers for a fixed period during which one or more contracts may be awarded. The terms – in particular how price is calculated – are set out in the agreement.

Integrated team: Various project team members - including contractors, key suppliers and facilities managers - work together as appropriate to the nature and scale of the project.

Lead client: The person who is the main point of contact, and represents the client.

Lead consultant: The team of consultants in construction projects often have a lead consultant in charge of co-ordinating the other consultants. This is often the architect.

Lead contractor: The main builder. Many projects have sub-contractors who are responsible for only one aspect of the building - roofing, foundations and so on.

Local development framework (LDF): A collection of local development documents produced by the local planning authority, which form the planning strategy for the area. The documents control development, determine planning applications, and can set detailed planning requirements.

Management contractor: The person or company that manages the procurement arrangement known as management contracting.

Massing: The volume and shape of the building, in ‘blocks’, rather than what it looks like.

Net present value: The value of a project across its lifetime, at agreed discount rates for future income and taking into account the various risks you can identify for the project.

Novation: A term used in contract law describing the act of replacing a party to an agreement with a new party. A novation is valid only with the consent of all parties to the original agreement. An example would be when an architectural team developing the outline design is ‘passed’ from the client’s to the contractor’s responsibility.

OJEU (Official Journal of the European Union): A daily journal advertising the service requirements for public procurement.

Operation and maintenance (O&M) manual: Describes all the services operating, and maintenance requirements relating to the services and systems supplied, installed and commissioned in the building.

Options appraisal: An appraisal of the alternatives (including doing nothing) to ensure that the right strategy is being adopted.
Outline brief: The document that describes the ‘problem’ that the design needs to ‘answer’ – the client’s goals and requirements.

Output specification: A type of brief where the client’s requirements are stated, and the contractor is free to interpret how to achieve this requirement.

Passive design principles: Things that are in-built to your project – for example natural ventilation and daylight, and the shape, form, materials and orientation of the building.

Private finance initiative (PFI): A procurement process in which private sector consortia submit bids to provide and manage public buildings, usually on a 25-year contract.

Procurement: The acquisition of appropriate goods and/or services. There are various routes to procure.

Project programme: The ‘timetable’ for when things happen in the project. Essential for all types of project, and usually drawn up by the project manager.

Project team/project delivery team: The group of consultants and contractors delivering the project for the client. In some situations these are integrated, in others they are separate.

Project vision: A simple statement of objectives for the particular project.

Public-private partnership (PPP): A partnership between a public sector organisation - for example a local authority - and the private sector - for example a construction company to deliver a project (and sometimes manage it later as well).

Public realm: The spaces used freely on a day-to-day basis by the general public, such as streets, parks, squares, verges and public infrastructure.

Public service agreements: Set targets for the performance of government departments and local authorities for a three-year period.

Quantity surveyor: A professional cost consultant who monitors, and advises on, costs.

Revenue funding: The income you will receive from your activities, whether in the form of grants, donations or earnings.

Risk register: A list of risks.

Room data sheets: Detailed information on each space in the building – its function and what needs to be provided in it, from sockets to paint colour.

Schedules of areas: A list of each space required in the building, its size and use.

Sensitivity analysis: Identifies how assumptions made in your business case could vary should things change.
Sign-off: Agreeing a particular aspect is finalised and defined, and won’t be revisited. This process can be referred to as gateways and milestones within a project’s funding. Changes made after design has been signed off are likely to result in extra time and cost.

‘Snagging’ list: A report on any defective or outstanding items.

Spatial context: The physical constraints and opportunities the project is located in.

Special purpose vehicle: A company set up especially to design, build, finance and operate buildings. Often a formally structured company that is a partnership between public and private organisations.

Stakeholder: People and groups who are affected by, or have a financial or practical interest in, the outcome of your project.

Statement of need (or statement of requirements): Often a formal statement that must be signed off by a board or senior member of the organisation before the project process can start.

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Tender: A proposal, with costs, to carry out a piece of work.

Turnkey project: A project that is provided ready for immediate occupation.

Value engineering: The process of improving the ‘value’ of the project, in relation to function. Design quality often needs to be defined as a value in this process, or else it can be sidelined as not a basic function.

Variation: In a construction context, a variation is a change to the project from what a contractor was obliged to deliver as part of the contracted documents. These changes could be for a number of reasons – unforeseen site conditions, the change in client brief.

Vision statement: A simple statement of main objectives. Required for early consensus to start the feasibility and budget checks and as a constant reference point throughout the project.

Whole-life (or lifetime or lifecycle) costs: The costs over the 30-60 year lifetime of the building or project. This includes running and maintenance costs and the costs for people working there.

Works contractor: Another term for the principal ‘builder’.

Zero-carbon: A term applied to a building’s use, with zero net energy consumption, and zero carbon emissions annually. There are many issues about definition, primarily around whether on-site or off-site measures can be taken into account.
Prepare

The prepare stage is when clients have the most control and influence over their building projects, so is the focus of this guide. As you develop your initial vision into a detailed brief, you will need to build your team, check feasibility, plan your budget, assess life cycle costs and develop the business case.

- **Prepare well** by speaking to other partners about available land and buildings, do the surveys do the initial costs, base decisions on measurable data about your building type, not hunches of what might work.
- **Know what you want** by setting out requirements not desires, ensuring the building will help improve efficiency of service, Deal with complexities in advance, so if the building is to be capable of providing multiple services with multiple partners have this fully agreed.
- **Know what you want the private sector to do** for publically funded buildings, this could be a range of activities, from designing, building, managing the building, or all of these.

By doing the above you are likely to significantly de-risk the project before it goes to market through procurement.

**Testing the need for a project**
Before you commit to the time and expense involved in a construction project, you should ensure that it is the right option for you.

**Developing a vision statement**
A clear and agreed vision statement will ensure that everyone involved in your building project understands its goals.

**Building the in-house team**
The in-house team brings together all the skills and experience you will need to deliver a successful project.

**Doing a feasibility study**
A feasibility study tests the time, funding, organisational and technical aspects of your project, and enables you to decide whether or not to go ahead.

**Planning your budget**
Your budget is a crucial component of your business case. Setting an unrealistic budget can mean your project fails, is ill fitting or inefficient. You need to ensure you manage your costs carefully.

**Assessing life cycle costs**
Life cycle costing is an economic evaluation method that measures the cost of a building over its whole life. It answers the question “if I build this building, what future costs will I be letting myself in for?”

**Understanding the physical surroundings**
Every project takes place within a unique physical context, and its location and orientation is the single most important aspect.
**Managing risk**
You need to identify the likely risks that might happen to your project, assess their potential impact, and take actions to proactively minimise and mitigate them.

**Preparing the business case**
The business case should express the main purpose of your project, the reasons for it, the revenue sources, and how it will be funded.

**Defining the outline brief**
Getting the brief for your project right is one of your main tasks as a client. It will be an essential guide for your delivery team throughout your project. Here we explain why a good brief matters and how to produce one.

**Developing the detailed brief**
The detailed brief is the document setting out the final version of the client's needs and expectations.

**Understanding the project delivery team**
Your project delivery team will reflect the skills you need to help you deliver a high quality project.
Testing the need for a project

Before you commit to the time and expense involved in a construction project, you should ensure that it is the right option for you.

You need to consider some fundamental questions about how your existing facilities work already before embarking on a construction project. This will help to clarify what sort of improvements you need and whether a construction project is an appropriate solution.

If the right solution for you is to construct a new building, understanding the context will be critical to its ultimate success. For example, will this building be part of an overall existing estates strategy? What is the big picture of the provision of services and needs that your project is aimed at? Will local authority planning policies affect the viability of your project? The needs of your organisation must not be the only factor: often projects need to be delivering a combination of services from a number of organisations.

Next, you will need to define the aims of the building project and consider how to structure and manage it. Currently, the Office of Government Commerce describes this as ‘Stage 0’ (the investment decision). Public projects should follow processes set out in HM Treasury’s Green Book - Appraisal and evaluation in central government. This contains useful information about how to structure and carry out appraisals and evaluate options. The Office of Government Commerce (OGC) also publishes guidance for early stages of projects.

How do I test the need for a project?

You will need to confirm a project is the right option, understand the scope and facts, prepare a statement of need and carry out an options appraisal.

1. Confirm that a construction project is the right option

Answer the following questions:

- What are the problems with the current premises or situation?
- What would happen if there was no project?
- What imaginative alternatives are there to a building project?
- What is the justification for a building project?
- Could changes to the building or place be avoided by modifying your organisation’s activities?
- Will some other action serve the same purpose and give equally good results?
You may need to undertake some research to establish the facts for the various options.

Remember that retreating from a building project is cheap at this early stage, but it gets increasingly expensive the further into the process you go.

2. Understand the scope and facts of your project

Make sure you know what you are aiming for, and cut your cloth to fit. Avoid setting up a process that is more complex than it needs to be.

Be clear about any facts. For example, the London 2012 Olympics is a project where the completion date is non-negotiable, which means that all other aspects of the project are subservient to this unalterable timetable.

3. Prepare a statement of need

The board or appropriate senior members of your organisation should agree an initial formal document or ‘statement of need’. This is the basis of the project, and should be a rigorous examination of what the best course of action will be.

4. Carry out an options appraisal

An options appraisal should look at several ways of achieving your organisation’s goals.

First, consider a wide range of options, to set parameters for a suitable solution.

Narrow these down to keep the process manageable; always keep the ‘do minimum’ or ‘do nothing’ option on a shortlist for detailed review.

Evaluate your shortlist of options. Consider the costs and benefits using net present value (NPV) and take account of possible risks with appropriate discounts.

You should also consider costs and benefits that can’t be quantified financially.
Developing a vision statement

A clear and agreed vision statement will ensure that everyone involved in your building project understands its goals.

Every building project should be underpinned with a statement of your vision as the client. The vision statement sets out your clear objectives for the project from the start. Getting the vision right is your responsibility as the client.

The statement will set out the overarching aims of what you are trying to achieve before you get down to the technical details of the individual project. You may agree it before there is any real concept of a physical project.

It will include what you want to achieve with the building. But it may set out more than this, for instance how you aim to deliver services. Take a school, for example. Your vision might not just be about what you want from the new building, but about a new approach to education in your area.

In some building procurement and funding routes, the vision statement may also be known as the ‘statement of requirements’ or the ‘statement of need’.

Before you continue, make sure that you read the following information about developing a vision statement:

- What’s good about a vision statement
- From vision statement to the outline and detailed briefs

How do I develop a vision statement?

1. **Learn from the work of others**
   Identify projects that are similar to what you would like to achieve and find out how they were developed.

2. **Draft your vision statement**
   Draw on what you know so far to write a vision that will inform the rest of the project.

3. **Create SMART objectives**
   Your objectives should be specific, measurable, attainable, relevant and time-bound – SMART.

4. **Agree your vision statement**
   The statement must be owned by your whole organisation before sharing it with the wider world.
More about developing a vision statement

Find out what's good about a vision statement and how it relates to the outline brief and the detailed brief.

What's good about a vision statement

You can use your vision statement to assess whether your objectives are being delivered as the building design takes shape. It gives everyone a central reference that will measure how well the project meets your aims.

You can also use the statement to communicate your intention to deliver a high-quality design. This is a valuable statement of your commitment from the start that sends a clear message to all involved.

Without a vision statement, a building project can easily become unfocused and wasteful.

From vision statement to the outline and detailed briefs

Your vision statement is the outline ‘question’ that the project needs to ‘answer’. As the project goes on the question gets more specific and is set out in an outline brief and a detailed brief:

- **outline brief**: this is more detailed than the vision statement and sets out the client objectives, but not how to meet them – advice from someone with design knowledge is important even at the early stages of developing a brief
- **detailed brief**: this is introduced at the design stage as a reference document for the whole project team.

The vision statement underpins both the outline brief and the detailed brief.
How to develop a vision statement

You will need to learn from the work of others, draft your statement, create SMART objectives and agree your vision.

1. Learn from the work of others

If you need to know how best to set out your vision statement, talk with other clients, designers, project managers, contractors and users from similar projects. You can learn from their experiences by asking them about:

- their initial hopes and fears
- how successful the outcome was and why
- what does not work, particularly from the users’ point of view
- their experience of procurement routes and teams
- how easy their buildings are to manage and maintain
- what they would do differently
- how design and construction teams worked on the project
- the cost per square metre, space per person/user, of comparable buildings.

A vision statement isn’t an off-the-shelf product. It needs to be specific to your project. To help build your own vision statement look at:

- vision statements from other projects
- similar recent buildings and sites
- CABE’s online case studies of completed projects and good processes
- interesting projects you come across during business trips or on holiday
- the location you intend/hope to build in and any plans for its future.

2. Draft your vision statement

Your vision statement should set out:

- your values: for example, ‘we believe in making access to our services as straightforward as possible’
- your objectives: for example, ‘the aim of our refurbishment is to halve the carbon emissions of the building, while improving staff retention through improving the quality of the facility’
- your strategy: for example, ‘to phase the work over three summers to allow the fundraising to be carried out, while remaining operational’
- your context: for example, if the project was a library, ‘the project aims to deliver improvement in young people’s attendance in libraries as required by government policy’.

You can use these headings to form the structure of your vision statement. You may also want to consider adding information to illustrate your vision, such as ‘a day in the life’ of your building, or ‘what the service will look like in 2030’.

Keep your statement succinct, brief, clear and simple. Set out what you need to say, but keep it brief enough to be understood easily by readers.

3. Create SMART objectives
Avoid using generalities that could be said about any project. You can achieve this by making sure that your vision statement contains objectives that are ‘SMART’:

- Specific: your objectives should specify exactly what you want to achieve
- Measurable: you should be able to measure whether or not your project is meeting the objectives
- Achievable: you should set objectives that are achievable and attainable
- Realistic: you should be able to realistically achieve the objectives with the resources and time available
- Timetabled: you should set out by when you want to achieve the set objectives.

Having SMART objectives will help you to evaluate the progress and performance of the project.

4. Agree your vision statement

Your vision statement should be agreed at the highest level within your organisation.

Soon, you are likely to need to rally organisations or key stakeholders (such as a key local residents group or funders) around your vision, so it is vital that everyone in your organisation has agreed the vision before you communicate your vision to wider stakeholders.

Allow sufficient time at the board meeting, or equivalent, so that the vision is formally agreed and signed off in the records of your organisation.

Develop a strategy to communicate the vision to all who will have dealings with the project within your organisation, and spell out the benefits of a shared vision.

Try to ensure buy-in to the statement from as many people as possible, both inside and outside your organisation. But remember that the statement is owned by you. It sets out what you want as the client.
Building the in-house team

The in-house team brings together all the skills and experience you will need to deliver a successful project.

One of the strengths of a client is recognising the range of skills you need, and making sure you are resourcing your project correctly.

Hard-pressed clients are often too busy with their ‘day jobs’ and underestimate the level of commitment required for this, especially at the beginning of a project. Selecting the right in-house team will give you a clear management structure for your project.

What kind of skills do I need?

This all depends on the scale and complexity of your project. Team members may be experienced professionals recruited externally or existing staff recruited internally who can receive extra training. In some projects a single individual may carry out several roles.

Your team will vary in size depending on the complexity and scale of your project. You will need numerous skills and, even for the smallest projects, a number of different people will need to be involved. Key roles are:

1. design champion
2. lead client
3. project manager
4. other team members such as a facilities manager and board members
5. other specialist advice.

How do I build the in-house team?

1. Identify the roles you require
   Who does what will be influenced by the size of your project.
2. Include in-house specialists
   Make use of the existing skills of people within your organisation where possible.
3. Develop a client management structure
   Decide who will manage the project and how they will work together.
4. Keep your team productive
   Adopt best practices to encourage your project team to work well together.
More about building the in-house team

Find out more about the roles of design champion, lead client, project manager, and other team members such as facilities manager and board members.

Design champion – board level support

Experience has shown the value of appointing someone who acts to safeguard design quality on your behalf. The design champion will stay in close touch with your project from start to finish, and be able to relate what is being proposed to the original vision and aspirations for high quality design. They don’t need to be an expert on design issues, just clear about why they are important.

A design champion’s role is to:

1. articulate the vision and the desire for high quality design
2. formulate client aims for quality of design, and ensure these are clearly stated within the outline brief
3. help to define, check and evaluate quality throughout the process
4. if necessary, insist on changes to maintain quality
5. sign-off initial business case and feasibility study if there is no lead client
6. choose a lead client for day-to-day management, if needed.

For some projects the chief executive, owner, a board member or equivalent may take on the role, or combine it with other project activities. In others, the lead client may appoint someone else. Whoever you appoint will need to be in direct communication with the lead client, although on some projects they may be the same person.

The design champion’s support at the highest level is especially important when the going gets tough. They need to:

- identify where the client lead needs support
- make sure the project vision reflects the organisation’s needs
- make sure the project actually delivers on that vision.

It is important to identify your design champion early in the project. This will give them the chance to stay in close contact with the project throughout its life, and to help develop the original vision. Once the idea of design quality is fully accepted by the project delivery team the design champion’s role will be less time-consuming, although always significant.

A ‘champion’, with a good grasp of the core design quality required, is invaluable. It has to be someone able to stick to the agenda, as it is quite easy to lose sight of the core needs.

Experienced client

Lead client – representing the client

The lead client is the main person representing your organisation – the client. They represent the client, and communicate with the rest of the organisation.
The lead client’s role is to:

- act as ‘client’ throughout the project, representing the whole organisation
- develop an agreed management structure
- set priorities to meet the vision
- **sign off stages** as the project progresses
- **ask searching questions** of all those involved in supplying and interpreting information to make sure it is clear and relevant
- **accept risks** that may be implied by options considered or adopted
- communicate with the change management team about implications of the new building.

They will need access to the design champion and the appropriate power to carry out the role.

How much time they need will depend on the nature of the project. For example, for a small but complicated £2 million project, a lead client may need to devote 50 per cent of their time to it, especially at the early stages. However, a larger project – say £15 million – would be likely to need a full-time lead client.

The lead client needs to be assertive, a good communicator and skilled at creating positive team interaction. They should be politically astute, highly motivated and a shrewd decision-maker who can make people believe that your project should, and will, happen. The lead client should be aware of the needs of all stakeholders and have a direct and open relationship with the interest groups in your organisation.

The lead client needs to be appointed early on, since their key job is to act as client throughout the project.

**Project manager – managing the process**

There is a role to manage your project proactively – if it is large or complex, this will be a job in itself. While the lead consultant may take on this role, large projects will often employ an experienced project manager. They will make fundamental judgements about time, quality and cost.

There are two types of project manager and you may need either or both depending on your project.

The first is the employer’s representative, who is employed to look after your interests in relation to the technical aspects of the project. They will brief and manage other professionals and have general powers to act on your behalf. This person may come from inside your organisation and be taught the necessary skills, or be recruited specifically for your project.

The second is a contract project manager who acts as a contract administrator. They are named in the contract between the client and the contractor and chosen as part of the external team. This role requires experience of construction projects.

**Other team members**

**Facilities manager – managing the completed building**
The facilities manager manages the building when it is complete and arranges contracts and management of services such as security, cleaning and deliveries. This role is becoming more important as the need for buildings to reduce carbon emissions over the building lifetime increases.

While it is not always possible to hire the person who will actually manage the finished building, the expertise of a hands-on building manager can be useful at a very early stage. Having your existing facilities manager, or an external expert, involved at the briefing and design stage is a simple action that can make a great difference later when the building will be used.

Facilities management is a key part of private finance initiative (PFI) or design, build, finance and operate (DBFO) projects because the operation of the building over a long time, say 25 years, is an integral part of the contract to design and build the project.

**Board members – sources of expertise and influence**

Bringing board members into the discussion early on will help gain their backing, and lets you see any specialist knowledge or helpful contacts they may have.

In small or voluntary sector organisations, board members may have more experience of construction projects than the lead client. However, if your board members do not have suitable experience, consider co-opting someone who does onto the in-house team. They can give advice on financial matters and add credibility to the project in the eyes of potential sponsors. Other people with influence, such as local councillors or MPs, may also lend their support.

**Other specialist advice**

Your project team may require a whole series of specialists, both internal and external. See Understanding the role of consultants and specialist advisors for more on external advice.

**Client design advisor (CDA)**

A CDA is an independent architect or other construction industry professional who has the specialist skills and experience to help client organisations to commission and build high quality projects.

According to RIBA, CDAs:

- provide strategic advice
- help clients to achieve their objectives
- meet clients’ expectations on performance and design quality.
How to build the in-house team

You will need to identify the roles you require, include in-house specialists, develop a client management structure and keep your team productive.

1. Identify the roles you require

Your project circumstances will dictate the number of team members that is suitable. Some jobs – such as the lead client – require a considerable time commitment, while some can be done on top of another job. Depending on the nature of your project the roles could be carried out by a full-time professional or by an existing member of staff with a watching brief.

As a rough guide:

- less than £500,000: the client acts as lead client, design champion and project manager – use an independent client advisor
- £1 million to £5 million: the client team probably needs a lead client and a separate design champion – use an independent client advisor
- more than £5 million: the client team probably needs a lead client, project manager and design champion – use an independent client advisor.

2. Include in-house specialists

The type of specialist members of the in-house team you can access will obviously depend on the nature of your business. Possibilities include:

- finance experts: business case and budget preparation
- a lawyer: to review all contractual documents before they are signed – particularly if they are non-standard – and for specialised legal requirements
- human resources: for consultation processes, recruitment and staff contracts when the project is complete
- information technology: to consider the impact of realistic IT developments
- special user representatives: a user team, for example an access user group, or individuals such as a wheelchair user, a visually impaired person, a senior clinician or teacher to provide input to briefing, design checking and post-project evaluation
- a commissioning officer: understands the systems and rules for operating current or similar premises and will focus on the operational aspects of the new project.

3. Develop a client management structure

As your team grows you will need a clear reporting structure to ensure effective decision-making. In many cases a steering group or building committee will oversee the project in an advisory capacity, without being involved on a day-to-day basis. This is likely to include:

- lead client
- the design champion
- stakeholder representatives
- special internal project teams, including user representatives.
Once you have identified the client team roles and who will fill them you need to consider how they will work together. Your client management structure should:

- allow for other roles to develop as the project progresses
- set out objectives for each role drawn from the project vision
- define the facts needed at each stage before decisions can be made
- make clear who decides the brief, the budget, and how to allocate costs and time
- state thresholds for delegating decisions
- provide for record-keeping and make records of decisions
- set project milestones and agree the key sign-off stages
- have a process for testing and evaluating decisions
- specify a process for resolving conflicts
- plan ‘fit-out’ processes such as installing furniture, equipment and special finishes
- plan for occupation and management of the building
- plan for the process of feedback and fine-tuning a building once it has been handed over.

4. Keep your team productive

Your in-house project team will include many different people with different skills and experience. To get them to work well together you will need to:

- encourage and enthuse team members
- help keep the project on track by managing the budget and monitoring time and quality
- hold only essential meetings that are efficiently chaired
- agree procedures for programming, cost reporting and change control with the design team
- be generous with praise
- criticise constructively and in private
- celebrate milestones passed and team successes
- keep people informed about any emerging difficulties
- tell staff about progress at key moments
- keep the ‘big picture’ in view and ensure all details match the vision.
Doing a feasibility study

A feasibility study tests the time, funding, organisational and technical aspects of your project, and enables you to decide whether or not to go ahead.

Before your project even gets onto the drawing board, you need to ask: is this really viable?

A feasibility study tests reality against a project's aspirations and vision. It is crucial to do a feasibility study as early as possible to confirm whether to carry on or not. A study may also be requested as part of the funding process.

This is not just about a simple ‘yes’ or ‘no’ for your project. The study may also reveal that some major aspects of the project, such as the preferred location or the speed with which it can be completed, should change.

How do I do a feasibility study?

1. Ask the right questions

The questions a feasibility study should raise and answer include:

Top-level issues

- Is the need real? Is it best met by a building project, a refurbishment, an extension or a new build? Or by changing existing work patterns and doing nothing?
- Will the budget cover the type of building you want?
- What alternative scenarios are being considered/should you consider?
- What is the order of priority of the various elements and spaces? What is ‘mission critical’?

Risks and constraints

- Will increasing the budget improve the opportunity or reduce risk?
- Will funding be available and at the right time?
- Is the organisation capable of managing the project as it is developed?
- Is the organisation capable of managing the finished project?
- Are there funds and skills to manage the finished facility?
- Can time constraints be met?
- Are there any legal problems?

Site-specific issues

- Is your chosen site/building suitable for the proposed function and business case?
Are there any potential site problems, such as poor ground conditions, inadequate utilities, access or lack of expansion space?

Is planning permission likely to be granted?

What impact will your project have on the locality?

2. Consider getting expert help

You will usually need technical support to do a feasibility study. Outside specialists such as architects, chartered surveyors, estate agents, valuers and planners can help you with this. Architects often take charge of feasibility studies because of their experience of turning project briefs into building designs.

It is important to be clear about how far a contract with a consultant extends at this stage. A contract for a feasibility study should not imply a subsequent appointment. It is unwise to accept an offer to produce a feasibility study for no fee, as the consultant may assume you will give them a further commission.

However, case studies have shown that continuity between the feasibility study team and the subsequent project can be very helpful and reduce the waste of resources and time. European procurement rules allow you to advertise for single appointments for a team for the initial study, or with the intention that the successful team will take your project to completion, if it proceeds.

3. Compile your feasibility study

A feasibility study sets out the project’s scope and should test and refine the outline brief. It usually is made up of drawings, diagrams and text.

When drafting the study, make sure that it defines the areas of detailed work that are needed to take the project forward.

It also needs to cover the following aspects:

- technical – relating to the building or site possibilities, constraints and likely permissions required
- financial – including initial fundraising, realism of future revenue streams and long-term cost implications
- organisational – the ability of the organisation to do the project and any extra skills needed
- programme – the length of time needed, and any phasing issues.

4. Decide whether the project is feasible

A feasibility study is an advisory document. You need to present its findings to your project board/steering group and senior appointments so that they can make a decision about whether or not to proceed. You may need to go back and adjust your feasibility study.

You may wish to have some of your external advisors present to discuss some of the more complex or controversial aspects that the feasibility study raises.
Planning your budget

Your budget is a crucial component of your business case. Setting an unrealistic budget can mean your project fails, is ill fitting or inefficient. You need to ensure you manage your costs carefully.

Building is expensive. The sums of money involved are often of a different order of magnitude from those that people are used to dealing with in the day-to-day running of an organisation. Clients are often surprised by how little money is left for construction once they deduct VAT - where applicable - consultants’ fees, fees for planning and building control applications and allowances for inflation from the overall project budget.

By managing costs carefully you can make sure you don’t burden your organisation with excessive costs ‘in use’, that is, management, maintenance and – perhaps eventually – disposal costs.

The financial constraints may change during a project – make sure you and your project team keep on top of the finances at all stages of design development.

Once you have understood your financial constraints, your business needs, your capital and revenue costs, and your life cycle costs, then you know your project is viable and you can proceed to plan your budget.

How do I plan my budget?

You will need to set an outline budget, use cost benchmarks to establish initial costings, take account of variables and understand the implications of capital costs.

1. Set an outline budget

You should establish an outline project budget early on to provide a baseline to use throughout your project’s development.

You will need the input of expert quantity surveyors or cost consultants early on to set out an outline budget. However, as the client you should develop an understanding of the general way costs are laid out, so you can understand the consequences of changes in assumptions and requirements.

The outline budget is important in determining what it is possible to achieve. It should describe all the project costs, not just construction. This includes:

- land acquisition
- capital cost of construction
- the cost of fitting-out, including IT and specialist equipment

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- professional fees
- costs involved in identified risks
- financing
- inflation
- VAT where applicable
- disruption or down-time during a move
- costs to undertake change management of users
- decommissioning of old facilities or equipment
- the cost of evaluation.

Some successful clients have asked their cost consultants to reorder their industry-standard cost plans - which break things into elements like 'roofing' or 'landscaping' - into 'shopping lists' of identifiable items relating directly to the vision - like 'natural ventilation'. Prioritising the shopping list calmly near the beginning of the exercise will give you a very sound basis for managing the almost inevitable editing of overall project costs.

As a client it is important that you understand the budget and are satisfied that the way that costs are allocated reflects your priorities. Your procurement route will have a large effect on this.

2. Use cost benchmarks to help establish initial costings

By drawing together information from across the construction industry, cost benchmarks establish typical costs per square metre. These are updated each year to reflect changes in costs. Cost benchmarks are useful early on to determine the likely cost of the project you are planning.

Quantity surveyors or cost consultants will draw on cost benchmarks when setting the outline budget. As your project progresses they will build up a more detailed picture of the costs.

3. Take account of variables

Site conditions and many other variables mean that the costs are specific to your project. Advice from a cost consultant or quantity surveyor can help check whether you are making suitable cost assumptions including appropriate allowance for the costs of design and the construction management required to achieve the desired quality.

You need to identify the possible risks and set sensible sums against them as the project proceeds. You should give careful consideration to establishing 'contingency sums' - the unspecified sums held in reserve to absorb unanticipated design and construction issues and events.

4. Understand the implications of capital costs

After the quantity surveyor has estimated the capital costs your organisation needs to consider the implications of these. Ask the following questions:

- Will the project be phased to allow some of your accommodation to be in use throughout?
• Will you need to restructure and reduce your staff as activities reduce/cease during building/rebuilding?
• What will the organisation look like when it finally moves into the completed project?
• Will the new accommodation demand more input, more expertise, more people, more money and more time?

Understanding the implications of the new project on your future running costs will also inform your business plan.

Typical cost per m² of different building types. Source: Spon's Architects' And Builders' Price Book 2010, Davis Langdon Consultancy ed.
Assessing life cycle costs

Life cycle costing is an economic evaluation method that measures the cost of a building over its whole life. It answers the question “if I build this building, what future costs will I be letting myself in for?”

Building costs are only a fraction of the total project cost. Over the 25-year life of a building, you can spend as much again on running costs and maintenance as you did to construct the building in the first place.

Life cycle costing is a projection of all the costs that result from commissioning a building which will be your responsibility - for as long as you are responsible for it. Because of the assumptions that need to be made to model your building’s life cycle it is difficult to be exact. Even so, considering both construction costs and cost in use will help you take a long-term view of investment, and a more robust business case.

Why look at the whole life cycle of a building?

Identifying life cycle costs can help to promote good design by demonstrating that upfront investment can lead to savings in what the building costs to run over its lifetime.

Life cycle costing can be used:

- as part of a business plan to work out if you can afford to build
- to work out if you can afford to run the building once completed
- as an options appraisal to decide on the most economically advantageous solutions over the building’s life
- as part of an environmental or sustainability assessment
- to control the design development within capital and running cost budgets
- to provide a set of instructions for those managing the building after occupation.

Before you continue, make sure that you read the following information about assessing life cycle costs:

- Long-term partnership models
- Sustainability and life cycle costs
How do I assess the life cycle costs?

1. **Include life cycle costing in cost planning**
   Life cycle costing is not an add-on, but a fundamental tool to help make decisions about your project.

2. **Decide how long you need your building to last**
   This important decision will influence your life cycle costings.

3. **Develop a brief for life cycle costing of your project**
   Use expert advice to prepare a robust brief that will help you get the best information possible.

4. **Get up-to-date information on how buildings perform in use**
   Consider factors such as energy performance in your overall assessment of life cycle costs.

5. **Make judgements about investment**
   Use your life cycle costing to decide what is an efficient investment in your project.
More about assessing life cycle costs

Find out more about long-term partnership models and sustainability in relation to life cycle costing.

Life cycle costing and long-term partnership models

Some buildings are procured under contracts such as the private finance initiative (PFI) where the constructor will also manage and maintain the building. The contractor appointed may agree to take on the management of the building for many years after completing the design and construction.

Under these conditions the responsibility for management and maintenance is handed over before construction starts. It is vital that you clearly set out the decisions that you have taken which led to the final decision to build, along with what is expected and needed from a properly managed building once it is occupied.

These decisions and expectations must be clearly communicated to bidding contractors so they can bid fairly for this role, and their future performance can be measured.

Life cycle costing and sustainability

To maximise the value of the resources invested in construction and reduce the environmental impact of buildings you need to understand how to invest wisely in construction.

Developing a model of the money invested and the carbon emitted over time can help you make judgements - for example in the selection of materials or services. Buildings embody energy in their construction, in use over their lifetime, and when disposed of.

Making sustainability a core objective will help you meet national sustainability targets, which require resources to be used more and more sustainably, and for carbon emissions to be reduced. Designing sustainably will influence the specification of:

- the building construction
- the installations that govern the sourcing and use of energy and water and manage waste
- the specification and sourcing of materials.

The RIBA’s climate change toolkit recommends that you should “press for a [life cycle costing] perspective in all design decision-making, using common sense, experience, and whole-life assessment as appropriate.”

Some key points from its advice:

- select design alternatives that generate large, certain or early reductions in CO2 emissions over those that generate weaker, uncertain or distant benefits
- don’t rely on detailed predictions or fine distinctions - life cycle costing assessment is imprecise, so only big differences are credible
aim for robust design strategies that work well for a diversity of future scenarios, especially in situations of high uncertainty.

There is also advice relating to refurbishment:

- for elements where there are no opportunities for future upgrading, prioritise initial investment in building to a high specification to minimise CO2 emissions
- for elements where there are opportunities for future upgrading, consider deferring initial investment and upgrading to higher specifications later
- before investing resources in a CO2 emissions-saving strategy, stand back and check that there isn’t a completely different way of investing the resources to generate greater CO2 emissions savings.

The difference between embodied carbon in your building and the carbon a building consumes day-by-day is a complicating factor, but increasingly this does also need to be taken into account. For example, a kilogramme of aluminum, due to its fabrication process, has an embodied energy cost almost 70 times more than a kilogramme of bricks.
How to assess life cycle costs

You will need to include life cycle costing in cost planning, decide how long you need your building to last, develop a brief, understand how buildings perform in use and make judgements about investment.

1. Include life cycle costing in cost planning

Life cycle costing should be integral to cost planning for your project. It should begin during the preparation stage of the project, and be revised as the design progresses in detail.

You can use life cycle costs to generate a cash flow prediction over a given time. It can inform the choices you and your design team make at a strategic stage, or when selecting different building elements.

2. Decide how long you need your building to last

A key decision you need to make is the period that the life cycle costing exercise will cover. This is usually determined by the building type and use.

In some retail projects, for example, the period could be short to reflect changing markets and the need for constant renewal. However, in some housing projects the period could be in excess of 50 years.

3. Develop a brief for life cycle costing of your project

A life cycle costing should be undertaken by someone with specialist expertise. They should begin by compiling a brief, setting out:

- the purpose of the exercise
- the scope of costs to be included
- the time period for the analysis
- the level of detail required
- the parameters for the study.

The brief should also identify benchmarks or comparators. The life cycle costs will bring the capital costs, maintenance cost, operation costs, occupation costs and end-of-life costs together.

You need to be clear what you want from your life cycle costing exercise – this will help to define its scope and level of detail. For example, life cycle costing can:

- help inform decisions to do with the strategic make-up of the project
- help judge the value of investment
- help inform the commitment to sustainability
- inform decisions about forms of construction and the specification of materials, services and equipment.

The cost categories for a proper life cycle cost exercise are:

- construction costs (including fees)
• maintenance costs – maintenance, refurbishment, repair, minor or major replacement
• operation costs – cleaning, utilities costs, fuel, administration and property management, service staff
• occupation costs – furniture, reception, security, telephone and IT, catering, stationery, staff parking, internal moves
• end-of-life costs – disposal, demolition, reinstatement for contractual purposes.

An international standard has been developed to give a common approach to life cycle costing and provide a robust basis for life cycle cost planning, benchmarking and analysis. In the UK this is published by the British Standards Institution – for further guidance about methodology see the Standardized Method of Life Cycle Costing (SMLCC).

4. Get up-to-date information on how buildings perform in use

To predict how the building will be serviced and managed in future, you need to draw on the knowledge of those in your own or similar organisations with experience of the day-to-day running of buildings. This can help to model how the proposed building would perform in use, and to predict the resources needed to run and maintain it.

Some new systems - for example biomass boilers or wireless communications networks - may need different maintenance and operating regimes, and you need to understand these.

Buildings can be resource-efficient and easy to maintain - or not - depending on how they are built, serviced and managed. Life cycle costing can be used to balance investment in built fabric and equipment in relation to maintenance and operation costs.

5. Make judgements about investment

There are two sides to an investment decision: capital investment in the short term and benefits derived over a longer period. It is important to get the balance right and avoid underinvestment or overinvestment.

You should aim for efficient investment. You can use the life cycle costing to test whether your planned investment is efficient and sustainable.
Understanding the physical surroundings

Every project takes place within a unique physical context, and its location and orientation is the single most important aspect.

You may have a site or building in mind for your project right from the start. You may be in a position where there is no choice. This should not, in itself, be the reason for a project to take place. Proposed solutions must be driven by your needs rather than by the characteristics of an available site or building.

Taking the time to evaluate several site options – including the possible adaptation of existing buildings, as well as sites for new build – will save time and money in the long run, and ensure a better result.

If you have already selected/purchased your site, now is the time to examine service delivery on the site, test the feasibility for your requirements, and opportunities for co-locating different uses.

Dealing with physical constraints and opportunities is crucial to the success of a project – thinking only from the ‘inside out’ is often where a project ultimately fails.

Where your project is and how it relates to its surroundings means you have to methodically assess the options available, dealing with all the physical constraints and opportunities in turn. Thinking only from the ‘inside out’ is often where a project ultimately fails.

You may be redeveloping an existing site or building. You may have in mind a new site for development, or perhaps you have a choice of sites. In many cases there will be no choice of site at all. Having a site or building in mind for development should not, in itself, be the reason for a project to take place. Proposed solutions must be driven by your needs rather than by the characteristics of an available site or building.

Taking the time to evaluate your options – including the possible adaptation of existing buildings, as well as sites for new build if the opportunity is there – will save time and money in the long run, and ensure a better result.

If you have already selected/purchased your site, now is the time to examine service delivery on the site, test the feasibility for your requirements, and opportunities for co-locating different uses.

Consider this example of a potential site for a school. The site is available, but is it suitable for a school? An appraisal of the site – looking at what architects refer to as the ‘context’ – reveals that:

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- pupils would need to cross a main road twice a day
- there is uncertainty about how students who will live in the new housing nearby (that hasn’t been built yet) will get to the site
- classrooms may overheat because the only available orientation is into strong direct sunlight.

While this new information adds layers of complexity to the decision-making process, it will help the client team to make a more robust and long-lasting decision.

When you are able to consider specific sites, see below for how to go about assessing them.

**How do I appraise sites?**

You will need to identify potential sites, appraise them, consider colocations, contact local planning officers and decide how much space you need.

1. **Identify possible sites or buildings**

There are several ways to find sites or buildings:

- get advice from property consultants/estate agents or your in-house property service’s skills depending on the scale of the project and the geographical area of search
- use an independent advisor such as an architect
- make informal contact with local or partner organisations delivering similar services
- contact the local authority and other public landowners
- walk around the streets in your desired area.

2. **Appraise the potential of sites or buildings**

You will have confirmed whether or not starting a project is viable through your outline business case. You need to match this against the various site options. Compare the costs, benefits and risks of each option on a common financial basis.

You also need to check each site against issues of practicality and suitability, including:

- the local context
- the site or building shape
- slope and orientation
- other features, such as local transport options, that will contribute to the suitability of the final design.

When looking at each site or building, you and your advisors should consider how suitable each one is by asking:

- Will staff and users be happy to go there?
- How will they get there – what are the local transport and pedestrian routes?
- Will the location alter the business case?
- Is the size, form and capacity right?

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• Will it limit design options – through size, shape or types of neighbours?
• What are the opportunities and constraints in terms of planning permission?
• Will access and security be efficient?
• Can it handle flows of people, materials and traffic during construction and after occupation?
• Are there constraints in the location such as opening hours, existing covenants and so on?
• How will the project affect the locality?
• Will the project relate positively to its surroundings and benefit other uses?

If your project is part of a wider development bear in mind that a large development is likely to be completed in phases. Discussions with the developer, local authorities and local property agents will help gauge likely timescales.

Your project may be in the middle of a construction site for many years, which would affect access, transport and security. Before signing an agreement with the developer, find out what conditions you can expect for the rest of the site so that you can plan any adjustments that may be necessary.

3. Consider opportunities for co-location

Many facilities – for example, a health centre and a library – can benefit from being located near to each other (‘co-locating’). This can encourage the sustainability of each service by combining footfall, and be a more efficient investment. This benefits users as well as reducing costs – for example, meeting rooms can easily be shared between these two uses. However, more time spent agreeing with other organisations will be required in the early stages.

4. Contact local planning officers to test what is possible

Possible planning permission or constraints related to approvals such as listed building consent need to be investigated early. As soon as information is available about a site or building and the extent of the project, you should discuss your plans with the local planning officers to test:

• principles of development
• land use
• massing – the volume and shape of the building.

If the building or site is unsuitable and prevents a good design solution to the brief, then a different location is needed. It is unwise to commit to a site or building before this evaluation has taken place.

5. Determine how much space you need

If you decide that you need a new space, the next step is to establish how much, and of what sort. This needs to be done in tandem with site selection. Floor area, cost and quality are inextricably linked, particularly at the early stages of a project when building costs tend to be estimated at square-metre rates.

Remember that ancillary spaces – circulation spaces, plant and machinery rooms and so on – can be to 30 per cent of the overall floor area of a building.
Managing risk

You need to identify the likely risks that might happen to your project, assess their potential impact, and take actions to proactively minimise and mitigate them.

All construction projects contain either physical risk – both in construction and eventual use of the building – or time-related and financial risks inherent in the construction process. To maintain commitment to a quality result, the client should work to make sure the design is not seen as a risk in itself. The risks relating to time and money often take precedence of the quality of the project.

Systematic risk management can help you to:

- deal with unforeseen circumstances
- minimise the damage caused by problems you identify
- identify and prioritise objectives
- identify and prioritise constraints
- inform decisions
- enable more efficient cost management
- improve accountability.

An astutely structured design process can help minimise risks (or ‘de-risk’) a project. The key is to anticipate what the problems might be. For example:

- if you are using any bespoke construction methods or materials, such as cladding, factor in for these to be tested before they are put into use
- if you are introducing innovative ways of working, provide the resources for staff to be trained and get used to new methods before the use stage
- do your best to structure your project delivery team so that tensions don’t arise.

You have legal obligations under the Construction Design and Management (CDM) Regulations 2007 deal with identifying and managing physical risks. These impose duties on the client, the design team and the contractor.

You will also have to identify and manage other risks. Understanding the level of risk will help ensure that you make realistic decisions. You need to provide a suitable contingency fund at the beginning of your project to cater for any costs arising from these risks.

Risks during a building project fall into two main categories:

- project risks
- design and construction risks.
How do I manage risk?

1. **Do a thorough risk assessment**
   Risk assessment is a process of asking ‘what if?’ questions.

2. **Compile and use your risk register**
   Put together a register of the possible risks, and assess their potential impact and how these could be mitigated.

3. **Think carefully about how construction risks are allocated**
   You decide early on whether you are going to bear all the identified risks, or whether some allocation of risk to contractors or other players is desirable.

4. **Manage risks throughout the project**
   Do what you can to proactively minimise the risks.
More on managing risk

Find out about the general risks of projects as well as the design and construction risks.

Project risks

Particularly for public sector projects, preparatory work should be carried out to de-risk before going to market. This is to provide certainty and reduce unknowns to private sector providers so that they can price their proposals realistically, and may include:

- Testing ground and building conditions, often through a feasibility study
- Conversations with the local planning authority, with a view to gaining outline planning permission
- Securing political buy-in from the community and elected members.

While the design is being developed, the client may be too overcommitted with day-to-day conflicting responsibilities to adequately study the design while it is being developed, and to spot unsatisfactory elements early enough.

Friction may develop between the team and client or within the team because of non-performance, mistakes, changed instructions or fundamental strategic disagreements. The design champion and the client lead will need to exhibit real leadership skills to resolve these frictions.

The emerging project may be too ambitious or too costly. Successive reiterations may not reduce cost adequately. Robust value engineering – or value management, its broader and more optimistic relative – may be required at some stage in most projects.

There may be confusion over objectives between the client and design team, particularly how to prioritise them. For example, the design team may put a lot of effort into making big open spaces in a building, but there may not be much value in this for the client, and the cost would be better spent elsewhere.

Projects involving complex funding or shared-uses may find that the objectives of the funding or partner organisations are not fully compatible with each other. They may not be capable of resolving them in a suitable timeframe. A firm understanding of all the funds, roles and responsibilities of the various players at the outset is an essential component of risk reduction.

Design and construction risks

The Construction Industry Board has catalogued likely pitfalls to be aware of.

Accurate surveys of the chosen site and/or building with levels, existing services and drainage lines are indispensable beyond the earliest conceptual stage. To avoid abortive work and delays you should make sure you establish the following as soon as possible:

- land ownership

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- rights over the property: these can be rights of access, rights of light, and the other rights called wayleaves
- other non-negotiable givens about your site, such as neighbouring uses.

Risks also lurk below ground. These include:

- condition of the soil
- hidden voids and sewers
- services such as electric cables, fibre-optic cables, gas mains and water mains.

Foundation and sub-structure proposals are speculative until soil investigations are undertaken. Structural engineers also collect historical information about former development on or adjacent to the site as contamination may be an issue.

Other risk factors to be aware of include the following:

- Asbestos: an asbestos survey is essential for existing buildings. Legislation and insurance requirements pretty much demand the keeping of an asbestos register.
- New materials and new technologies: these may still be in development. Check working, installed examples.
- Planning policies: particularly when they are in the process of review or revision, these need to be recognised and interpreted. Early discussions with the local authority may avoid abortive work and delays.
- Technical performance (or lack of it): this can make a building unfit for purpose, for example, a concert hall with a bad acoustic. Experts may well have a significant contribution to make. These include:
  - acousticians
  - technical systems consultants
  - energy specialists
  - fire engineers
  - traffic engineers
  - landscape architects
  - ecologists.

You can insure against some risks such as a fire on site or a contractor going into liquidation during the construction period. Most standard building contracts set out how this is done.
How to manage risk

You will need to do a risk assessment, compile your risk register and then allocate and manage risks.

1. Do a thorough risk assessment

Risk assessment is a process of asking ‘what if?’ questions. You need to assess both the risk and the consequences of what will happen in terms of design, timetable and cost if that risk becomes a reality. The client and all members of the project delivery team should be involved.

This process depends on good communication and discussion. But, ultimately, someone within the project or client team will need to take ownership of the risk so that it can be properly managed.

2. Compile and use your risk register

Risk assessment methods are formal processes for using common sense and creative thinking to visualise possible problems, and to work out ways to reduce the likelihood of them happening.

One way to do this is through these five steps:

1. identify the hazards
2. decide who might be harmed and how
3. evaluate the risks and decide on precautions
4. record your findings and implement them
5. review your assessment and update if necessary.

You can formally identify and assess the risks by the severity of their consequences. This is often done on a scale of one to five.

Calculate an overall score for each risk, devise mitigation actions and quantify the consequent reduction in risk. Contingency sums from your project budget can then be set aside proportionally against the catalogue of risks.

The contingency should be 5 to 10 per cent of the overall budget where possible to allow for maximum flexibility later. As the likelihood or possibility of each risk recedes or subsides completely this contingency can be diminished or absorbed back into your main budget.

In the design stage of the project, and later, either the quantity surveyor or project manager will be responsible for the risk register and revisit it with you and the full team as required.

3. Think carefully about how construction risks are allocated

You decide early on whether you are going to bear all the identified risks, or whether some allocation of risk to contractors or other players is desirable.
Procurement routes such as the private finance initiative (PFI) and other routes have been developed to spread the risk of construction and also running costs.

You should make a detailed appraisal of the available procurement routes and seek advice from your design team. However, you need to remember that risk passed on invariably comes with a cost – you will need to strike a balance.

4. Manage risks throughout the project

You can minimise risks by:

- putting time and energy into appointing advisors
- obtaining and considering objective advice
- defining the brief thoroughly
- accepting realistic targets
- keeping abreast of progress reports
- avoiding changes and keeping to ‘signed-off’ decisions
- applying best value assessment that balances quality and cost.
Preparing the business case

The business case should express the main purpose of your project, the reasons for it, the revenue sources, and how it will be funded.

The business case is about the whole project’s viability, not just the building process. It should include:

- capital costs
- revenue costs
- sources of funds
- the ‘business’ benefits expected from the project
- comparison with benefits from using funds in a different way
- the viability of proposals in the prevailing economic climate.

The business case should also identify success factors and risks in the form of a risk assessment.

For building projects, a business case needs to address the transition from capital outlay to revenue funding, and plan for how this is bridged.

For example, if your project was a café fit out:

- the outlay would be the decoration and the purchase of tables and chairs and the lease of the coffee machine
- the revenue might be the number of cups of coffee you will sell, and the contract you have already agreed to deliver two private parties a month.

Your business case might identify a need for a 12-month bridging loan to cover the outlay costs until the revenue is sufficient.

Ultimately, a key feature of a successful project is that this financial forecasting is done and that your revenue projections are realistic. In the case above, what happens if the private party contract is cancelled?

You need to develop and monitor the business case and project budget in tandem throughout the life of your project, it forms the basis of the brief. All parties - client, designer and contractors - need to recognise how important this is.
How do I prepare the business case?

You will need to select a preferred option, identify special circumstances, consider a sensitivity analysis and update the business case as you progress.

1. Select a preferred option

Only develop your business case after you have explored a series of project options and selected a preferred option.

The business case needs to consider the costs and benefits associated with this preferred option. It should include capital and revenue costs including how the project will be funded at different times.

2. Identify special circumstances, variables and risks

Cost consultants will be able to advise on any special situations that may apply. For example, charities may not need to pay VAT, even for refurbishment. Your advisors will also be able to contribute to the understanding of the costs associated with any risks identified in the risk assessment exercises.

You may need to make provision for technical risks, such as unexpected soil conditions or exceptional bad weather. There may also be business risks, such as major changes in the client’s circumstances that require a change in strategy.

3. Carry out a sensitivity analysis

As part of preparing your business case you should commission a sensitivity analysis. This identifies how the assumptions in the business case could vary, and assesses the degree to which these assumptions could expose the project to financial problems.

You should assess the impact of changes to key assumptions for targets and funding patterns - if some assumptions seem over-optimistic modify your capital budget.

4. Update the business case as you progress

The business case will evolve with your project and take into account the implications of the completed project as they become clearer. It may also have to be adapted to take into account changes in the project context such as competitors locating nearby, a change of business direction and so on.
Defining the outline brief

Getting the brief for your project right is one of your main tasks as a client. It will be an essential guide for your delivery team throughout your project. Here we explain why a good brief matters and how to produce one.

A good outline brief acts as a map to help your project delivery team reach its destination. It states what you want to achieve from your project and how you want to go about it. It is about setting out your needs for the project, rather than setting out specific built solutions.

The brief has a role to play at all stages of your project. It helps communication between all parties: sharing information about the goals of your project helps build the trusting relationships essential for the success of any building project. It also forms the foundation for the design.

The brief is one of the areas for which the client can never give away responsibility – although you may need help compiling it. You will also want to ensure buy-in to the brief, so you should consult stakeholders on its contents.

A good brief is an evolving document, becoming more complex and detailed as your project develops. It will be further expanded in a detailed brief, as the project requirements develop, then develop further into a project specification.

The contents of your brief will vary depending on which procurement route your project takes.

Before you continue, make sure that you read the following information about developing an outline brief:

- Use of the brief as “employers’ requirements”
How do I develop an outline brief?

1. **Check the brief relates to your vision statement**
   An outline brief is more detailed than your vision statement. It lays out the necessary requirements to achieve the aims behind your project, as stated in your vision.

2. **Include all the relevant information**
   Your brief should include organisational context, the place, the building’s fabric, performance, finance and programme.

3. **Consult users**
   You should talk to your stakeholders as extensively as possible about your brief, with users. This will help you to get the result you want that works best for the building’s users.

4. **Draft your outline brief**
   Decide who should write the brief. It could be written by someone in your organisation or by an expert employed for the purpose.
Check the brief relates to your vision statement

An outline brief is more detailed than your vision statement. It lays out the necessary requirements to achieve the aims behind your project, as stated in your vision.

You should make sure that your brief is aligned to your vision statement by trying to answer questions about the project, such as:

- How will the project contribute to the local environment?
- What image will it project to users, neighbours and other stakeholders?
- Will it reflect the wider vision for the organisation and its work?
- Is long-term flexibility needed?
- What is the timescale for delivery?
- Will it meet, or exceed, sustainability targets?
- What special accessibility will be needed?
- Is the project going to be usable by as many people as possible?
- What are the target user groups, their habits and expectations?
- What special requirements does the intended use have?
- Are your expectations/hopes realistic? Can you exceed them and those of the funders?

You will normally draw up your outline brief once you have adopted your vision statement, though sometimes producing the brief is a catalyst for producing a crisp, memorable vision statement that clearly differentiates the intention behind the project, and frequently the two develop together. Whatever the process, the two should, of course, be aligned in what they say.
Include all the relevant information

Your brief should include organisational context, the place, the building’s fabric, performance, finance and programme.

Organisational context

- the organisation’s overall vision and the project’s role in meeting that
- the organisation’s structure and decision-making processes
- the project’s contexts: physical, historical, economic, ecological, social and political, with discussion of any potential conflicts
- the project parameters covering quality, time and cost (including assumptions about how long the building should last) and setting priorities
- any partners likely to be involved
- key aims and objectives for the project to act as measures for its success or failure.

The place, and the building’s fabric

- the urban design and town planning context, including the building’s role within its setting, its contribution to urban spaces and/or landscape, and any listed building issues,
- an outline of the spaces needed, both internal and external, which may be expressed in terms of their expected functions – why spaces are needed and how will they be used
- which spaces will need to be secure
- whether out-of-hours access is needed
- the number of people, staff, customers, etc, for whom the building is intended, and what their demographic is
- user requirements, including accessibility
- how much staff/public car parking will be needed, and what public transport options there are
- technical information such as surveys of existing buildings
- any existing buildings which could provide inspiration

Performance

- performance requirements, such as measurable sustainability targets as part of key sign-off items
- a requirement for a life-cycle analysis relating to short and long-term business plans
- a strategy for future growth and further development, including likely new technologies
- whether any legislation needs to be considered other than that related to construction.

Finance and programme

- the project budget, and how it will be funded
- a timetable giving target deadlines for key sign-off and completion dates.
Your outline briefing may be used to inform consultants bidding for work, so it should include what is expected, by when, from whom and describe the selection process and criteria. Initially there may be little or no information for some aspects of your project. You should add these details as they become available.
Consult users

Writing a brief usually takes several rounds of consultation and review, each leading to a more detailed understanding of the project's aims and users' needs. This process is often described as 'iterative'. This will help you to get the result you want that works best for the building’s users.

Consulting users and the public is the best way to ensure their views and experiences are included in the final product. However, you will need to strike a balance between consulting a full range of users and avoiding over-elaborate procedures, or overly raising expectations.

This can be done by creating a team of user representatives, who can

- consider the particular needs of their user groups
- look at the way the design meets their needs
- act as an information channel to and from their own working groups.

Members of this team can continue to represent their groups throughout the project, keeping the numbers consulted to a minimum.

Remember that a balance needs to be struck between specific requests and the long-term project - many of the people involved in a project at briefing stage often are not around when the project is completed.

Develop an outline brief from the simplest statement of requirements by describing a typical day or week in the life of your proposed project, considering it from the point of view of different users.
Draft the outline brief

Decide who should write the brief. It could be written by someone in your organisation or by an expert employed for the purpose, often architects are used for this purpose.

You could make different members of your team responsible for specific parts of the brief to ensure the various business needs are met. For large projects, you may need a project manager’s expertise.

In any instance, you will need to make an objective assessment of the technical skills necessary for the brief development. Be it matters of architectural, urban design, planning or quantity surveying expertise, if you do not have these in-house and your brief is addressing such areas, you should consider the appointment of those qualified and experienced enough to help you draft the document.

Set enough time aside to collecting the information you need for your brief, as it can be time-consuming. Be thorough and do not rush.

In structuring the brief, divide the aims in the outline brief into those that the client ‘must have’ and ones that are ‘desirable but not essential’. This distinction will help guide the project team and reach decisions where compromises are needed. Set points in the brief at which decisions are signed off and cannot be changed, though you should build in flexibility to respond to changes in circumstances.

In drafting the brief try to use clear wording, actual rather than approximate numbers, and state specific aims unambiguously.

Look at precedents and talk to other people involved in similar projects.
Developing the detailed brief

The detailed brief is the document setting out the final version of the client’s needs and expectations.

It develops the vision statement and the outline brief and is used later as the basis for the building evaluation.

The detailed brief should not fix the form of the design, but should set a clear framework for the work of the design team. This will allow the team to translate the detailed brief into a solution that meets your needs and aspirations.

How do I develop the detailed brief?

1. **Build on your outline brief**
   Look back at your vision statement and your outline brief to see what information needs more detail.

2. **Compile the necessary information and draft the detailed brief**
   Include information about the condition of the site, relevant drawings and describe the performance standards you will adhere to.

3. **Review your detailed brief**
   Ensure that your brief has clear aims, identifies sustainability targets and considers future flexibility and changing needs.
Build on your outline brief

The detailed brief is by definition more complex than the outline. Look back at both your vision statement and your outline brief to see what information needs to be given more detail.

When compiling the information you need, talk to specialists in your organisation, consult stakeholders, a client design advisor, a specialist in brief writing, and members of the design team. Check the demands of statutory guidance or other requirements.

To get an idea of the task involved in moving from outline to detailed brief, learn from others. Look for background at:

- briefs for similar types of project
- case studies of existing projects and spaces
- research into the use of comparable spaces.

The brief should clearly state your aims for the project and set limits for cost, and explain your organisation’s current and planned activities.
Compile the necessary information and draft the detailed brief

Compiling the detailed brief is an intricate process that should draw on information from various sources.

Your detailed brief should include information about the condition of the site, relevant drawings and describe the performance standards you will adhere to.

You should collect detailed data before finalising your brief, for instance to establish the sizes and types of space you need, and include data from any technical studies carried out, such as access audits.

The detailed brief should:

- articulate your vision within functional requirements
- develop information from the outline brief, for example the space types and quantities required - this is often described on room data sheets
- tie into your feasibility study
- set out measurable performance standards and their sign-off points
- define details as they become available - for example for large artworks, so that locations and access are provided for in the design
- provide relevant drawings and documents in appendices.

Meeting regulations, planning and guidance

Your detailed brief will need to explain how your project will meet regulations and guidance.

Each building type has related guidance, on top of building regulations related to that specific type - for example, the dimension of a squash court, or the surface treatment in a children’s centre. Your building may be the subject of multiple guidance – for example, if your project is a health building, you will need to read the Department of Health’s health building notes, building regulations, and other guidance.

Building regulations are statutory, but other guidance may be advisory only. In some instances, you may have to weigh up guidance against building regulations.

You should also check with your local authority that your project complies with its various planning documents:

- the area action plan
- the local development framework
- the core strategy.

See meeting standards and non-statutory requirements for more detail. Any input from authorities, such as planning authorities, should be included in your detailed brief.

Your detailed brief should also consider and include information on:

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- space standards and performance requirements
- research gathered from public consultation
- patterns of use and opinions from the building's likely users.

The detailed brief should also consider and include information on:

The urban context for your project

- the image and role of the building in the neighbourhood
- views of and from the building
- scale in relation to neighbours and the location
- the contribution to the townscape and pattern of streets/open spaces.

Inside the building

- the activities be accommodated, and likely changes to needs
- ease of movement to get into, and move around inside, the building
- the need of different groups or activities to be adjacent to each other
- space requirements for different activities
- typical numbers of people using or visiting at various times of day
- access and security requirements
- sustainability performance and whole-life costs
- operational issues
- handover and hand-holding arrangements during the first year while systems settle down
- inclusion of any art works, planting and so on, with installation and maintenance.

Outside the building

- access – pedestrian, cycle, vehicle, goods – and parking
- signage, lighting and outdoor furniture
- specific constraints for outdoor functional areas, parking, delivery
- relationships to building entrances, ground-floor activity and with other spaces
- physical and visual connections
- safety and security
- provision for public art or artists’ involvement (including installation and maintenance)
- landscape, planting, outdoor maintenance and management
- the life of surface finishes and materials
- servicing and services

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Review your detailed brief

Ensure that your brief has clear aims, identifies sustainability targets and considers future flexibility and changing needs.

When the first draft is complete it is important to review it before issuing it. Circulate it to stakeholders for consultation before finalising.

Does the brief:

- explain your organisation and its current and planned activities?
- clearly state your aims for the project and set limits for cost and time?
- clearly state your expectations for design quality?
- clearly identify sustainability targets in an auditable way?
- require the design team to devise a method for including the input of artists or other specialists?
- ask the design team to exploit opportunities for links to adjacent public space and the wider context?
- consider future flexibility and changing needs?
Understanding the project delivery team

Your project delivery team will reflect the skills you need to help you deliver a high quality project.

Once you have an agreed vision statement you need to start preparing to assemble the group of people who will deliver it – your project delivery team. This is usually an external team that includes:

- a design team who designs the project
- project manager/s who run the project
- contractors and subcontractors who build the project
- specialist consultants and advisors who help with the project.

In smaller projects, one person may carry out many roles. In more complex projects, many more people will be required. Increasingly these different roles are grouped together, to encourage both ease for the client, and better communication between, for example, the design and the construction. You should ensure that the size of the project delivery team suits the scale of your project.

Decisions about when to appoint different members of your project delivery team will depend on your specific project circumstances. Traditionally, the delivery team was appointed in stages. However, increasingly, all team members are being appointed at the same time. For example, if you are following the Design, Build, Finance and Operate procurement model, you might agree on the contractor before you have even developed a design.. Similarly, the detail of your chosen procurement route will govern whether each member of the project delivery team will be employed for the duration of the project.

See effective selection for much more information on this.
How do I select the project delivery team?

You will need to consider the skills you need and then focus on the advisors you may require.

1. Selecting your design team

In many situations, you will select the design team as part of the same process as selecting the construction team. On other sorts of project, you may select the design team initially and then incorporate it into the wider team when construction specialists are appointed. Read more in our sections on procurement for detail on this.

It is rarely a good idea to employ a firm merely because a friend manages them, they are local, or you have used them before. A competitive selection process allows you to review a range of available services and select the one best suited to your project and organisation. Remember too that selection is governed by law on fairness and transparency. Read more in our sections on effective selection.

Generally, it’s a good idea to use a structured selection process to choose a designer or team rather than a building design, as arriving at an appropriate design needs time and mutual acquaintance. Make sure you look at a wide range of design expertise before making a choice, and that you visit buildings designed by the people you are considering.

When selecting your design team, consider the following:

- If you are using a traditional procurement route, the designer may bring construction knowledge in addition to design skills. They may become leader of the project team as well as the link between the client and the contractor.
- In some non-traditional procurement routes, the contractor may choose the designer. A client can sometimes ‘novate’ a designer and a design, requiring these to be used by the contractor. In the interests of a partnering approach the contractor may select a group of design professionals who have already formed a good working relationship.
- Some procurement routes do not allow you to directly choose the building designer. In these cases it’s a good idea to retain an independent designer in your in-house team to help check that the detailed design stays firmly linked to the original concepts.
- Once you have chosen the architect or main contractor, they may help choose other design team members, such as engineers, landscape and interior designers and cost consultants.
- Don’t ask prospective designers for large amounts of unpaid work as part of the selection process.
- If you choose a young, possibly less-experienced practice, try teaming them with an experienced contractor in an integrated team.
- Where open spaces are part of a building project, you must include landscape design skills in the design team from the start.

2. Selecting your contractor

Contractors can range from one-man operations to multinational consortia. Whatever the scale, the calibre of the contractor and their working relationship with the rest of the project delivery team is crucial for the long-term quality of your project.
When selecting your contractor, consider the following:

- Your tenders should be based on a detailed set of requirements. This will allow all bidders to know exactly what they must deliver. This will reduce the likelihood of failing to meet the project needs as a result of cost constraints.
- You should consider the experience of the construction team with your type of project. Before selection, plan visits to see examples of their work and seek references from past clients.
- Best long-term value, not lowest price, should be the priority at all stages of selection.

3. Selecting any advisors you may need

The choice of advisor needs careful consideration, and the selection process may be similar to that for the design team. Your advisors and the in-house team need to work well together, so look out for any areas of overlap regarding working style and approach.

When selecting your advisors, consider the following:

- Budget appropriately for the advice you will need. The range of advisors can be large, depending on the complexity of your project; make sure your project costings take this into account.
- Appoint key advisors early in the project. Depending on the scale of the project and the skills and knowledge of the client lead, the client will often appoint one or more advisors to help with technical aspects early in the process.
- Smaller-scale projects may only need one advisor.
- Advisors should have experience of similar design projects and will often be construction professionals such as architects, surveyors, project managers or engineers.
- Some independent advisors specialise in particular building or procurement processes. Professional institutes can help suggest people to consider and give guidance as to what qualifications to expect from the different professionals.
- Rather than choosing the lowest tender, it is essential to select all team members on the basis of appropriate quality. The choice of advisor should not be made lightly and the selection process should be fair and transparent.
- Good ‘chemistry’ between the advisor and your in-house team is important. The advisor’s skills need to be complementary to existing skills within the project delivery team, and appropriate for the stage(s) of the project with which they are involved.
- Advisors should be impartial, and have no vested interest in your project.
Understand how the project delivery team and your client team input together into the brief and the design.
Design team

Your design team is crucial to the long-term success of your project. They directly influence what your building’s users will experience for many years to come.

Understand the relationship of the design team to the project delivery team.

Your design team is there to interpret your brief and to find a solution to the problem you pose. To do this they rely on their skill and the clarity of your brief.

Many experienced clients say the choice of the design team is the single most important factor in achieving a high quality project. Choosing the right architect or designer will lead to a good working partnership with a skilled design team who are able to understand your objectives.

A design team for a project may have many components:

- architects
- landscape architects or landscape designers
- structural engineers
- services engineers.

Usually there is a lead consultant whose role is to ensure co-ordination. This is often the architect. Depending on the nature of your project, you may need other specialist team members such as artists. Public art — street furniture, sculpture, lighting or an artist-designed public square — can connect a project physically with its environment in unique ways.

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Promote good relationships between design team members

It is important that everyone in the design team forms an effective team. Previous experience of working together may be helpful.

Understand what skills your design team requires

The exact role of your design team will depend on the nature of your project. Design teams are not only about architectural products – if your project has a complex history of difficult relations with your neighbours, a design team which has the ability to build consensus while developing the design will create much wider benefits.

Landscape architects and designers

The design of all buildings relates to their surroundings, including adjacent buildings, streets and open spaces. As a client, you have a responsibility to the wider public to make a positive contribution to the public domain, and the project will benefit overall if these are considered from the start.

Designing open space is every bit as challenging as building design, and it requires skill and specialist knowledge. When open space is included as part of a building project, the budget, commitment to, and timing for, the design of the open space must run in parallel with the design of the building. Leaving the landscape design to the end of the design process will result in too little budget and attention from a team who may be preoccupied with numerous other issues

Landscape architecture has three core specialisms, any or all of which may be needed:

- design – creating spaces, what they should look like, how they function and how they will develop over time
- management – long-term care and stewardship
- science – involving expertise in areas such as botany, ecology and soil technology.

Read more about selecting your design team.

[www.cabe.org.uk/buildings](http://www.cabe.org.uk/buildings)
Project manager

You will need a skilled project manager to deliver your project on site. Their exact role depends on the nature of your project, but it’s important that you understand their activities and your relationship to them.

It is possible you may need more than one project manager, as there are three broad types (see below). On smaller projects, the lead consultant will often act as the project manager. In larger and more complex projects, if you have complicated timetabling, or if you are having to juggle the needs of many stakeholders, you should employ an experienced project manager of a high calibre. If your in-house management team has limited experience you may need to appoint an external project manager early on in the process.

If your project manager is appointed during design stages, or if there is a change of post, it is crucial that the new project manager familiarises themselves with the previous history of the project.

Generally, the project manager’s role is to:

- define the organisational structure and communications plan for the project, including a timetable or programme
- make sure people keep to the timetable
- clarify the work scope, responsibilities and relationships
- ensure appropriate information is available
- transmit information between the client and the rest of the project team
- ensure smooth decision-making
- monitor progress of all aspects of the project
- act as a single point of contact co-ordinating all the threads of the project
- make and update project arrangements, for example, in a project procedure manual
- consult with stakeholders
- collate information for the detailed brief
- control and assign budgets
- manage and control any changes that might happen in the project
- monitor resource availability, performance quality and document/data transfer
- check external team members’ details such as indemnity insurance
- arrange for proper documentation and completion of the project.

Types of project manager

There are three types of project manager:

- project manager for the design and construction process
- project manager for the contract
- project manager for the client.

When the right type of project manager(s) has been agreed, it is vital that you understand their key responsibilities. By its nature, project management often tends to focus on timely completion – and you need to ensure that cost and quality are also balanced.
Project manager for the design and construction process

This project manager looks after the client’s interests in relation to the technical aspects of the project. Their job is to brief and manage other professionals and to be the employer’s representative with general powers to act on behalf of the client.

This person may come from inside your organisation and be taught the necessary skills, or be recruited specifically for the project. This type of project manager has no authority under the building contract and cannot issue instructions to the contractor.

Project manager for the contract

Many projects require a project manager to act as a contract administrator. They are named in the contract between the client and the contractor and chosen as part of the external team. This role requires experience of construction projects.

The contract administrator has sole right to issue instructions and certificates.

Project manager for the client

This is an ‘in-house’ project manager who is solely the employer’s representative. This appointment may be useful when you have a complex number of internal stakeholders or a complicated plan for phasing the stages of construction.

This person has no authority under the building contract and cannot issue instructions to the contractor.
Contractors and subcontractors

Contractor is the industry term for a builder.

Your relationship to the construction team will vary depending on the nature of your project and especially your chosen procurement route.

Contracts usually are between a lead contractor, who will employ a whole series of sub-contractors to carry out particular types of work. The sub-contractor's relationship is with the main contractor. The project manager’s relationship may only be with the main contractor, or with sub-contractors too. So it’s possible your contract may mean you don’t have a direct relationship with the people actually building your project on site.

Read more about selecting your contractor.

www.cabe.org.uk/buildings
Consultants and advisors

The degree to which you will require specialist advisors will depend on the type of project you have, and its complexity.

Advisors should have experience of similar projects and will often be construction professionals such as architects, surveyors, project managers or engineers. Some independent advisors specialise in particular building or procurement processes. Professional institutes such as the RIBA can help suggest people to consider and give guidance as to what qualifications to expect from the different professionals.

On large projects, technical advice is needed from early in the process. In some situations when the client advisor effectively takes on the role of project manager for the first stage of the project, especially if they are appointed at an early stage.

There are many aspects of your project on which you may need expert independent advice, most commonly one or a combination of the following:

- site selection and assessment
- building selection and assessment
- finance and costs
- market assessment
- urban design and planning
- specialist surveyors – for example acoustic, geotechnical, agricultural, highways, traffic, rights of light
- accessibility
- archaeologists
- specialist subcontractors – for example soil and ground issues, mechanical systems, communications
- environmental impact
- environmental management - water, waste, energy
- archaeology
- consultation
- stakeholder management
- aspects relating to the historic environment
- procurement route and contract choice
- brief writing
- facilities management.

Some of these skills may already be in your design team – but you may need advice before you have appointed a design team.

Some specialists are obligatory, for example if local authority permission requires expert surveys.

You may use many different advisors throughout the life of a project. The project delivery team can grow – a large building project can have a very large cast of players – and shrink again, so make sure your project costings take this into account.

Client design advisor

In the early stages of the project you may need additional design input from an architect for key reviews of preliminary ideas and during competitive selection of the design teams. If you have several advisors, at least one should have design skills.
An independent client design advisor can be an architect you employ for this purpose. Their role is to:

- help you make decisions in the early stages of the project
- contribute design understanding and knowledge
- review user needs seriously and help prepare the outline brief
- judge the quality of ideas and suggestions
- suggest and evaluate possible project delivery team members, such as the architect.

**Construction design and management co-ordinator**

This role was introduced under the Construction Design and Management Regulations 2007, and was previously called a planning supervisor. You have a legal responsibility to appoint a CDM co-ordinator at the very beginning of your project.

The CDM regulations ensure that health and safety for the construction and use of the building are considered throughout design and construction.

Your CDM co-ordinator may be an architect, engineer, a project manager or a building surveyor. Their job is to:

- check that the design does not involve hazards in construction or use
- compile a health and safety file that is handed over to the contractor once construction starts
- hand over a working logbook for the building to the client once the project has finished.

Your client advisor or lead contractor should inform you of your obligation to appoint a CDM co-ordinator and help to see that the appointment is made.

However, until you have appointed a CDM co-ordinator in writing, you as the client will be deemed to be carrying out the role. Appointing an agent to assume your legal responsibilities under the regulations is no longer an option, but you can still get assistance from your professional consultants.
Design

The role of the client changes during the design stage and it is important to understand how these changes affect what you do. You will need to check that the project meets statutory requirements, ensure timely decisions are made, and that you are monitoring design quality throughout.

Understanding the design stage
The client is responsible for decision-making throughout the design stage. Only agree design proposals that you fully understand, including their costs.; by the time the design stage is complete, the cost of construction and running the building is set.

Meeting standards and statutory requirements
Your project may be at risk if you fail to meet the relevant national, local and site-specific statutory obligations before beginning detailed design work.

Monitoring design quality
Design quality is no longer regarded as too subjective to measure. You can be quite specific about the quality of design you expect to see.

Integrating fixtures, fittings and equipment
Some of the technical components of buildings are so integral to the building design that they can make or break the overall finished result, even though they may not at first seem to have anything to do with the look or feel of the building.
Understanding the design stage

The client is responsible for decision-making throughout the design stage. Only agree design proposals that you fully understand, including their costs.; by the time the design stage is complete, the cost of construction and running the building is set.

As the client you are responsible for ‘signing off’ outline proposals. This means agreeing that a particular aspect is finalised and defined, and that it won’t be revisited.

As a guide outline design proposals might include:

- design drawings
- a schedule of accommodation
- the outline description of what the building is made of and how it is serviced.

You should only accept design proposals that you understand and that have been costed fully. You can reject or modify design proposals and should only accept ones that have been fully explained and understood. Although relatively little money has been spent by the time the design stage is complete, the decisions you make in this stage will fix the costs of construction and running the building for many years to come. It is hard to change designs once they have been agreed because any changes made after this are likely to result in extra time and cost.

During this stage the project team will also expect you to carry out other client tasks required under the contract, for example, payment scheduling and site access issues. Your advisors should clarify what these are.

What happens at this stage?

The design team develops and tests the project, starting with diagrams and sketches, and moving through sketch designs to more complete designs of the entire building.

This detailed brief is followed by the detailed design of all the component parts and how they are joined together. This is described in drawings and the specifications.

The design team should include cost specialists who continue to develop a cost plan and programme in tandem with the design proposals. These should be explicit about whether costs include, for example, landscaping, design fees, VAT and other costs.

An iterative process

The design process is iterative and roughly repeats the following stages:

- pose the problem
- offer a solution
- clarify the problem
- develop a more suitable solution.

For this process to be effective the design team and client need a common language and a shared understanding about quality aspirations and possibilities. The design
should be accompanied by written descriptions of the specification, the purpose of
the building, how it may be used and how it could be adapted over time.

For example, decisions on building fabric – the amount of glazing, its orientation and
shading, the amount of insulation and finishes – can have drastic effects on how
much a building will cost to run. They also form the basic parameters that the
environmental engineer will use to size the systems that control the internal
environment of the building. These factors need to be considered alongside
aesthetics and functionality.

As the design develops it may influence your ideas about how the building could be
used. Discuss these with the design team because they may influence what the
designers are able to create.

At all stages your design champion must continue to support the best possible design
solutions, making quality checks against the vision and outline brief.

**How do I fully understand the design?**

Simple three-dimensional models are helpful even at very early stages, and will act
as a ‘reality check’ as the drawings pass through increasingly detailed stages. They
can be used to check the urban design impact - the effect of the building in its
context.

During the early design stages there should also be constant reference back to your
vision and outline brief, and the feasibility, cost and business plans. It is vital to
consider the lifecycle costs of the design at this stage. The client has generally only
spent the money for consultants’ fees when sign-off happens – a relatively small
sum. Yet even at outline stage, the design commits future expenditure not only on
construction but on the eventual costs-in-use.

The format outline design proposals take could vary depending on your project. As a
guide they could include:

- design drawings
- a schedule of accommodation
- the outline description of what the building is made of and how it is serviced.

Once these outline design proposals have been signed off, little can be changed
without incurring cost, time penalties or both. Time spent ensuring that correct and
complete information is in place before outline designs are proposed will help avoid
changes at a later stage.
Meeting standards and statutory requirements

Your project may be at risk if you fail to meet the relevant national, local and site-specific statutory obligations before beginning detailed design work.

You need approvals to move your project from the drawing board to reality. The range of regulations and constraints that a design proposal needs to satisfy is increasingly daunting. Obtaining some of these is straightforward, but others take a long time.

Your design team should be aware of the approvals you require and apply for them at the right time. Avoid proceeding with the design ‘at risk’, that is, not being sure of whether what you are designing is possible. If permissions are withheld it may mean your project is not viable.

How do I meet statutory requirements?

1. **Test your proposals against planning authority rules and policies**
   Be aware of the relevant planning issues before starting design work. You can start this by simply checking the local planning documents, which set out the long-term plan for your locality.

2. **Decide what other statutory criteria your proposal needs to fulfil**
   There are many other types of permissions that you will need as your building proposal progresses. The lists below are not comprehensive but indicate the range of relevant permissions. Some of these will be carried out as part of the planning process.
Test your proposals against rules and policies

Be aware of the relevant planning issues before starting design work. You can start this by simply checking the local planning documents, which set out the long-term plan for your locality.

There may also be other planning requirements specific to your local authority; make sure you understand these so that they are taken into account in the design, and applied for in good time.

Organise a time to discuss your early proposals with the local authority’s planning department. Find out what types of use or buildings are acceptable on the site, and then move to more detailed discussions about design. Some local authorities will charge for this service. The earlier you do this the sooner you’ll find out whether there is any likelihood of difficulties that may involve special requirements or lead to planning permission being delayed or refused.

Be aware that permissions for complex or controversial projects can take much longer than the minimum eight weeks: nine to twelve months may be needed in some cases.

The following is a checklist of some of the planning considerations that may be relevant to your proposal. This list is not exhaustive. Many will be covered by your local planning authority; some may involve other parties:

- planning laws
- listed building consent
- local acts
- building regulations
- CDM (construction, design and management) regulations
- environmental performance, such as meeting the Code for Sustainable Homes or BREEAM (Building Research Establishment Environmental Assessment Method) requirements
- party wall agreements
- tree preservation
- contract law
- health and safety
- adjoining owners, covenants, rights to light
- archaeology
- utilities
- highways
- water regulations.
Decide what statutory criteria you need to meet

There are many other types of permissions that you will need as your building proposal progresses. The lists below are not comprehensive but indicate the range of relevant permissions. Some of these will be carried out as part of the planning process.

Issues to consider relating specifically to employers and building owners include:

- health and safety
- light levels
- Disability Discrimination Act (DDA)
- property law
- operational facilities management
- insurance.

Issues to consider for all projects that will be used by the public include:

- fire safety
- fire escape
- hygiene
- licences.
Monitoring design quality

Design quality is no longer regarded as too subjective to measure. You can be quite specific about the quality of design you expect to see.

Setting out ways to measure design quality is an important part of making sure that your project fulfils or exceeds your expectations.

Before you continue, make sure that you read about:

- why you should insist on design quality
- when you should monitor design quality
- tools used to monitor design quality

How do I monitor design quality?

1. **Decide on your priorities**
   To do this at a building scale, you need to understand how design quality has an impact across the broad issues, the personal scale and the detail, in order to understand how to invest wisely.

2. **Benchmark your project**
   You need to compare your project to what others have achieved in similar circumstances so you can put design decisions in context.

3. **Identify the right design assessment tools**
   Identify early on which design assessment tools you wish to use.

4. **Don’t approach monitoring as a tick-box exercise**
   Avoid the risk of seeing design assessment tools as hoops to jump through.

5. **Plan how you will monitor/assess design at different stages**
   Many of the available tools are useful at various stages of a project. They are intended to be checked back on as the project progresses.

6. **Consider an external evaluation of your design**
   As well as internal assessment, you could consider an external evaluation of your design to get some impartial feedback.

7. **Commit resources to evaluate quality**
   Evaluating the building in use to see how it performs against your brief can be useful for your organisation and other clients.
More about monitoring design quality

There are a wide range of assessment tools available to help achieve design quality. Some are tailored to certain issues, such as sustainability, or building types such as healthcare or schools.

Tools used to measure design quality

They are designed to be used at various stages of a project to help you assess aspects of design quality as your project progresses.

Many of the standard design assessment tools will require you to employ an expert assessor to lead the assessment. For example, the design quality indicator (DQI, see below) functions through a combination of structured workshops and online tools. You should factor in a fee for using tools online and for facilitators for the workshops.

Here are some of the more common tools that you may wish to use.

Design quality indicator (DQI)

DQI is a tool for assessing the whole project. It is designed to be used in consultation processes, and is based on three aspects of design quality: impact, build quality and functionality:

- impact: assessed in relation to character and innovation, form and materials, internal environment, and urban and social integration
- build quality: assessed in relation to construction, performance, engineering systems and their robustness
- functionality: assessed in relation to whether it is fit for its use, accessibility and space.
Measurement tools such as the Design Quality Indicator (DQI) allow various design quality components to be measured together.

Clients, designers and stakeholders rate aspects of a project on a simple six-point scale by completing a short questionnaire. The process can help communicate and share values, clarify design strengths and weaknesses and identify opportunities for improvement. The tool is designed to be used to help explore design intentions and to assess the design quality of a project as it progresses from the brief through design to construction and use.

Variants include:

- Design quality indicator for schools (DQIfS)
- housing quality indicators (HQI)
- AEDET for healthcare buildings
- DEEP for defence projects.
Building Research Establishment Environmental Assessment Method (BREEAM)

BREEAM is an established method for assessing sustainability. The BREEAM tool evaluates designs in relation to their environmentally responsible features. It looks at:

- fuel economy
- waste and pollution
- environmental diversity
- transport.

BREEAM has also been adapted for different building types such as healthcare, justice buildings and other sectors.

Access audit

An access audit can be used at the design stage to review drawings. It establishes whether accessibility for people with a disability – hearing, sight, intellectual or physical – has been suitably considered and suitably resolved.

Building for Life

Building for Life is aimed at housing and neighbourhoods, and is a manageable set of searching questions that can point towards whether a project is of good quality.

When do you monitor design quality?

You need to monitor quality throughout your project, developing and testing the design approach:

- at inception to inform the strategic approach
- during brief development to define and set out quality standards, and inform the content of the brief
- during design development to evaluate how well a design performs, and inform refinement
- before applying for planning consent, to fine-tune and take stock before further detail is embarked upon
- before detailed design, to inform your detailed brief
- in use to inform fine-tuning or successive phases or projects.

Often tools dovetail with each other. For example BREEAM, the assessment tool for sustainability, should be used from the beginning of a project. Most assessment tools can be used at briefing stage. You can use assessment processes to develop discussions with your design team early on, and go on to involve different users to inform detailed development.

It is important to get the timing right – assessments of design should take place while adjustments can still be made, for example at the design and detailed design stages. The timetable for assessment should be agreed with your design team and integrated in their programme. See also sign-off key stages.
How to monitor design quality

You will need to decide on your priorities, benchmark your project, identify the right design assessment tools, plan your monitoring and consider getting an external evaluation of your design.

1. Decide on your priorities

To do this at a building scale, you need to understand how design quality has an impact across the broad issues, the personal scale and the detail, in order to understand how to invest wisely. After all, good design does not mean big budget.

2. Benchmark your project

You need to compare your project to what others have achieved in similar circumstances so you can put design decisions in context. You and your team need to develop a shared understanding of the range of qualities you expect to see. CABE’s best practice case study library is a good place to start, but you should also talk to other clients and visit projects that are similar in scale to yours.

3. Identify the right design assessment tools

Identify early on which design assessment tools you wish to use.

Often tools dovetail with each other. For example, BREEAM, the assessment tool for sustainability, should be used from the beginning of a project. Most other assessment tools can be used at briefing stage. You can use assessment processes to develop discussions with your design team early on, and go on to involve different users to inform detailed development.

Avoid seeing design assessment tools as hoops to jump through. They work best when used early on and the solutions to a project are still open.

4. Don’t approach monitoring as a tick-box exercise

Avoid the risk of seeing design assessment tools as hoops to jump through. They work best when used early on, when the solutions to a project are still open. Although they can seem complex, approach them as a catalyst for discussion rather than like passing a driving theory test. Developing a design is a creative process.

5. Plan how you will monitor/assess design at different stages

Many of the available tools are useful at various stages of a project. They are intended to be checked back on as the project progresses.

Agree the timetable for assessment with your design team and integrate it into their programme.

6. Consider an external evaluation of your design

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As well as internal assessment, you could consider an external evaluation of your design to get some impartial feedback.

For example, you could arrange for your design to be reviewed by an expert multi-disciplinary design review panel. At design review a project is presented by the client, design team and local authority to an expert multi-disciplinary panel. The panel discusses the project with those present and then provides constructive comments in writing. Undertaking this kind of review is most productive before you submit your design for planning approval.

7. Commit resources to evaluate quality

Evaluating the building in use to see how it performs against your brief can be useful for your organisation and other clients. Many buildings don’t get used in the way they were intended, which can be very wasteful of resources.

See preparing for use and evaluating and improving for an exploration of the role of assessment at this stage.
Integrating fixtures, fittings and equipment

Some of the technical components of buildings are so integral to the building design that they can make or break the overall finished result, even though they may not at first seem to have anything to do with the look or feel of the building.

For example, the spatial requirements for trunking and service conduits are must be integrated early on. If not, the resulting confusion to your programme and to the construction process could have an undesired effect and spoil your finished design.

Issues related to fixtures, fittings and equipment, and information and communications technology (ICT) may not be part of the detailed brief. But they must not be overlooked as they have implications for cost, space, servicing, safety and acoustics.

Fixtures, fittings and equipment come in three categories:

1. contractor supply and fix
2. client supply (or find and buy) and contractor fix
3. client supply and fix.

Including fixtures, fittings and equipment in the contract will incur fees and contractor’s mark-up, and may deny you the ability to write off costs against tax. However, if you organise the supply or fix yourself, there are potential risks of you delaying completion, as decisions on fixtures, fittings and equipment will invariably influence the completion of the project.

These risks can, to an extent, be mitigated by the way a project is structured, but you need advice at an early stage on the procurement and implications on the timetable.

Remember that completion of construction and the installation of specialist equipment may not all take place at the same time. Fit-out generally cannot start until construction is complete. Even in a building tailored to the organisation, the fit-out – buying and laying out furniture, equipment, accessories, art and plants – is a separate stage.

Planning for information technology

Planning for ICT is vital if the project’s cost, programme and appearance are to be maintained. It is common for the contractor to provide the separate cable routes in line with a consultant’s design. However, unless the ICT installation contract has been fully agreed, there is a risk that the installers will wish to vary the type of cables and their routes to suit the equipment you have specified.

This can impact on the overall design, at worst, with cable routes being visible and not hidden within the walls. Remedial work will take more time, and this could impact on your programme as well.
How do I integrate fixtures, fittings and equipment?

1. Understand how your procurement route deals with fixtures, fittings and equipment
2. Understand at what stages you will need to sign-off fixtures, fittings and equipment
3. Start selecting your equipment early, so any technical requirements are integrated into the design
4. State unusual requirements early in the design process, so they can be budgeted for and taken into account during design to avoid creating impractical conditions. For example, where large equipment needs to be installed, a suitable opening needs to be given for it to be integrated into the design.
5. Appoint people with detailed knowledge of how the building will be used to act as 'champions' for the various functions or user groups during fit-out stage
6. Make an external team responsible for collecting, checking and passing on this information during fit-out stage. Existing staff may be an obvious choice, but they may not have time.
Construct

The client's role changes again during the construction stage, when the contractor has responsibility for your building site. You will need to think forward to the building in operation, be flexible enough to deal with changes during construction and understand how to manage the handover process when construction is complete.

**Understanding the construction stage**
When work starts on site, you still have an important role to play. Communication is vital - don't be tempted to sit back and let the contractor get on with it.

**Dealing with change during construction**
Change of some sort is sure to happen during the production of the building. You will need to steer your project through this process.

**Understanding the handover process**
As your project nears completion, you need to spot any snags, and make sure it is ready for use before occupation.
Understanding the construction stage

When work starts on site, you still have an important role to play. Communication is vital - don't be tempted to sit back and let the contractor get on with it.

The construction phase is governed by the contract agreed between you and the contractor – the company building or managing the construction of your project.

The contract sets out who will make decisions and issue instructions on site to the contractor. The decision-making role and authority to issue instructions varies, according to the procurement route.

The construction stage begins when the project activity starts to site. The design phase may overlap with construction to a greater or lesser extent depending on your procurement route, and the type of role played by your contractor.

By this stage you must be sure that the project satisfies all the stated criteria in the best way, and meets all necessary standards and requirements, because change is costly or even impossible once work starts on site.

Before you continue, make sure that you read the following information about understanding the construction stage:

- Be prepared for detail
- Different phases of construction
- The site belongs to the contractor
- Communication is vital

How do I understand the construction stage?

1. **Prepare for use**
   At an appropriate point during the construction period, you will need to plan how and when to train, and if necessary recruit staff to operate the project once it is complete.

2. **Minimise disruption and provide optimum working conditions**
   Planning the construction process on site is the responsibility of the contractor.

3. **Understand your role during construction**
   During construction the main responsibility for the progress of the project lies with the contractor.

4. **Work with your team to deliver the project**
   You need to check the translation of the drawings and specifications into the finished building, and set up a procedure for notifying and sorting out defects.

5. **Keep in touch with the site**
   Site visits are an important way for you to keep in touch with the progress of the project.
More about the construction stage

Find out more about the level of detail to expect, the different phases of construction, protocol about using the site and how to communicate effectively.

Be prepared for detail

Considerable detail is essential for tracking progress and the payments that are due in the construction phase. The main contractor usually prepares this process in consultation with the client and the design team. Generally a project progresses to completion as fast as possible, since the construction stage is when there is most financial exposure for all parties.

You must have a clear understanding of where your responsibilities end, and those of your contractor begin. Equally, you must understand the construction programme, and all the documents - the contract, drawings, specifications and so on - which relate to it.

Different phases of construction

There may be several construction phases. Enabling works may be needed before the start, and could include:

- preliminary demolition
- construction of new vehicle access
- decant and temporary accommodation.

Phased projects usually come about because of site limitations, neighbouring projects, cash flow issues or approvals issues.

If phases seem necessary, you should discuss them with your project advisors and contractor. You need to decide early on, so that they are built into the contract and cost implications are agreed.

The site belongs to the contractor

Remember, once the contractor has taken possession of the site, you must ask permission to enter and view progress, which may feel strange. But do ask - having a good understanding of how the project is progressing is essential. It is important because as client, you will act as a channel for all communication between the contractor, the public, your staff and other stakeholders.

Communication is vital

As with every stage of your project, you must act as a channel for communication between the various stakeholders, including those who are not party to any of the contracts. Not least of these is the local community.
How to understand the construction stage

You will need to prepare for use, minimise disruption, provide optimum working conditions and work with your team to keep in touch with the site.

1. Prepare for use

At an appropriate point during the construction period, you will need to plan how and when to train, and if necessary recruit staff to operate the project once it is complete.

You must also organise fit-out and signage, and plan for all the works required to transform the project into an operational and habitable building.

2. Minimise disruption and provide optimum working conditions

Planning the construction process on site is the responsibility of the contractor. However, there are still things you need to consider, especially if your project involves construction on, or adjacent to, an existing site:

- the impact of noise, dust, traffic and other disturbance on your organisation or neighbours - it may be necessary to plan some works for evenings, weekends or slack periods
- the effect of any enabling works that may be needed – for example changing entrances or site access, or building walls/internal partitions to separate new works from an existing facility
- the implications of planting seasons, and how this relates to the rest of the construction programme
- whether members of the design, project management or construction teams will need space on your premises
- whether any of your facilities - catering, WCs and so on - will be available to contractors
- the effect of any periods of loss of water or power.

You should maintain the site in the best possible way, respecting the people working on the site and providing the optimum conditions for excellent health and safety performance. You should minimise disruption to the neighbourhood and local community.

3. Understand your role during construction

During construction the main responsibility for the progress of the project lies with the contractor.

Your role should be limited to:

- agreed regular progress meetings with the design team/contractor
- site visits
- making sure the project delivery team is carrying out its services adequately

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- ensuring funds are available to make payments on the agreed timetable, and making payments when they are due in accordance with Office of Government Commerce guidance for fair payment
- co-ordinating PR with the outside world
- understanding forecasts of progress on site in terms of the project objectives
- controlling communication and direction from your organisation to the design and construction teams, in order to avoid confusing and conflicting messages
- avoiding changes and understanding the likely effect of any that become essential
- stimulating positive and constructive relationships
- preparing to take over the building at practical completion.

4. Work with your team to deliver the project

You need to check the translation of the drawings and specifications into the finished building, and set up a procedure for notifying and sorting out defects.

Unexpected problems that occur during construction must not result in cutting corners to reduce cost, as this can reduce quality.

You may need other people at this stage to help with this, depending on the procurement route used:

- in construction management contracts you will have a construction manager and a contract administrator who may be the architect, quantity surveyor or project manager
- in some forms of procurement/contract, a site representative or employer’s agent - for example a clerk of works, site architect, project manager or other specialist - can keep a watch on your interests.

5. Keep in touch with the site

Site visits are an important way for you to keep in touch with the progress of the project.

You may even spot important details that have been missed by others or which should have been seen at earlier stages.

You should:

- request clarification of any unclear information or communications
- set up and maintain a clear filing system for information about the project – such as contracts, correspondence and so on. This may be extensive, depending on the project management and procurement route
- encourage your project delivery team - arrange events to mark the successful achievement of important stages
- keep lists of key items that need to be checked and signed off as built.
Dealing with change during construction

Change of some sort is sure to happen during the production of the building. You will need to steer your project through this process.

You shouldn’t assume that agreeing the brief is the end of your input. Don’t be tempted to sit back and leave things to the contractor – you need to ensure your building is completed to the standard you expect, and without busting your budget.

At this stage however you should already have ensured that as far as possible, any potential changes and their implications have already been anticipated (and if possible dealt with) in advance of starting on site.

Change is a constant

There are various issues [link to what the client needs to do during the design phase] the client needs to be on top of, both at the design phase, and during construction. You need to be able to adapt your programme or expectations if necessary, but maintain the design quality you've worked so hard to put at the heart of your project.

By this point, all sorts of changes might be happening – the requirements for your funding might have changed, or the site next door becomes available. Of course, it's better to avoid the need for changes, if you can.

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How do I deal with changes during construction?

You will need to keep on good terms with the contractor, manage project finances, supply information quickly, adapt if necessary and be aware that some changes are no one's fault.

1. Keep on good terms with the contractor

Once your contractor has been appointed and starts making arrangements to start construction, funds start to be spent fast. You are likely to have a contractual obligation to provide payments on a regular basis, and must sort out cash flow before construction starts.

Disputes over payments easily arise. You can avoid this if there is trust between all parties, and a clear understanding of quality goals and what is required to achieve them. Disputes over money could cause irrevocable damage to your project.

2. Maintain a tight rein on project finances

Costs can quickly escalate, so make sure you ally your requirements for changes to their implication on cost

3. Supply information quickly to the contractor

Try to ensure that decisions need to complete construction information are fast enough to fuel the contractor's progress. 'Late information' is often one of very few mechanisms for receiving additional payments through the contract, and it has been known for the flow of information to be misrepresented.

4. Adapt if necessary

It may be wiser to accept adaptations, rather than pursue why they are happening. For example you may need to accept a smaller office because the boiler room needs to be larger, to accommodate the change in boiler models available, rather than pursue why this has happened.

5. Be aware that some changes are no one’s fault

Some changes are simply the risks of undertaking a project. Your original risk assessment should take into account all the risks you may encounter. But building projects do occasionally come across the unforeseen - such as the stunning archeological site that causes six months’ delay.
Understanding the handover process

As your project nears completion, you need to spot any snags, and make sure it is ready for use before occupation.

The last stage of the building process, just before the building transfers to you, is a critical one. Who is responsible for the building depends on your procurement route. But in all cases, this is when you have the best information about the finished building, how to maintain it and what transformations may be possible over time. You need to prepare for use and get ready to fine tune your completed project.

Before you continue, make sure that you read the following information about understanding the handover process:

- How will I know when the building is ready for handover?
- What documentation should I receive at handover?
- What needs to be in place at handover?

How to I understand the handover process?

1. **Monitor and record problems**
   There is usually a period after the handover in which work that is incomplete or defective can be rectified.

2. **Finalise your plans for use**
   At this stage in the project, you should arrange for your contractor to give you a full briefing on the building’s systems.

3. **Prepare for the handover**
   What occupation or handover entails depends on your procurement route. You should check the project against the brief, the design and the contract before it is handed over to you.

4. **Be aware of possible future problems**
   Although the building systems for heating and ventilation are commissioned before handover, they are likely to need fine-tuning once in use, and it may take months before they work as intended.

5. **Complete the handover**
   When the contract is complete, the contract administrator will issue a certificate of practical completion, and the building will be handed over to you.
More about the handover process

Find out when the building is ready for handover, what documentation you should receive and what should be in place at that point.

How will I know when the building is ready for handover?

Be on site. As the building nears completion, frequent site walkabouts are a useful way of collecting information about issues that you need to understand before taking on the building. Of course you'll hope everything is perfect, but there are likely to be some things that need adjustment after occupation, as well as modifications arising from changes in your needs over time.

The contract administrator will decide exactly when the project is complete and can be 'beneficially occupied' by your organisation. Inevitably, there will be work that needs finishing, but not of the magnitude to prevent you occupying the building.

This is a critical moment, because it releases the contractor from any obligation to pay you damages for any further delay, such as additional rent or cancelled events. Work remaining at this point goes on a snagging list, and experience shows that finishing all items can be a frustrating process.

In most contracts, it is the contractor's responsibility to carry out the quality control necessary to ensure every last detail is completed to the standards set out in the contract. During the construction, particularly in the latter stages, your consultants may prepare ‘snagging’ lists, of issues remaining to be resolved. These are mainly for your benefit, to keep you informed of the situation on site. In some projects they are also issued to the contractor, but this does not affect the contractor’s responsibility for making thorough and regular checks.

What documentation should I receive at handover?

Depending on your procurement route, a log book, and operating and maintenance (O&M) manuals will be prepared by your project team. The log book contains:

- a summary of the facility and purpose of the building services
- the zoning arrangements
- the location and features of the relevant plant and equipment
- a schedule of the building's energy supply meters and sub-meters including their location, fuel type, and how to read them
- a description of the energy-consuming services, and instructions on how to achieve the specified performance - including the actions required daily, monthly, seasonally and annually
- information on how to achieve the specified performance of the facility from the individual metered energy readings and compare it with published good practice bench marks.

Operating and maintenance manuals will be useful for facilities management staff, and need to include:

- makes and model numbers of all significant items of plant and equipment, together with manufacturers’ contact details
• manufacturers' instructions for all significant items of plant and equipment, with clear indications of the equipment actually installed, and all maintenance and servicing schedules and requirements
• schematic diagrams of the building services
• commissioning records, including demonstration of compliance with specified energy efficiency standards.

The contractor will be required to hand over the health and safety file and all 'as built' plans, manuals and instructions as agreed in the contract. As well as having a record set, you should check that they are 'readable' if in computerised format. You also need to set up systems to ensure that this information is available in a handy, manageable form for everyday use, and train staff in its use.

What needs to be in place at handover?

How the building is managed and handed over will vary depending on your procurement route. But before handover you should ensure the following are in place:

• procedures for reporting defects and giving contractors access to remedy them
• operation and maintenance of all systems
• timing and frequency of landscape and open space maintenance
• insurance for building, equipment, contents and artworks in public spaces
• transfer of meters to the new owner after final reading
• obtaining certificates of compliance with regulations
• obtaining guarantees and warranties
• taking over loose equipment including keys
• obtaining construction record information
• health and safety files
• security and any policing of open space as required.
How to understand the handover process

You will need to monitor and record problems, finalise your plans for use, prepare for the handover, be aware of possible future problems and complete the handover.

1. Monitor and record problems

There is usually a period after the handover in which work that is incomplete or defective can be rectified. Not all defects will be immediately obvious, so you will need to note any problems as they arise. That way you can keep your contractor informed of any defects, which can be corrected at agreed intervals during the defects period.

2. Finalise your plans for use

At this stage in the project, you should arrange for your contractor to give you a full briefing on the building's systems. As you plan the 'move in' you can dispose of items that will not be needed – furniture that will not be used, for example. You should also receive 'as-built' plans, specifications, supplier lists and equipment instructions.

The person or team that will manage the building will need to finalise the management plans and anything else they need to make the building fully operational.

If outside organisations are going to provide on-site services, such as catering, running a shop, managing reception and security, or cleaning, you should show prospective service providers the site and give them copies of the construction drawings as soon as you can.

3. Prepare for the handover

What occupation or handover entails depends on your procurement route. You should check the project against the brief, the design and the contract before it is handed over to you. If there are any problems, it will take time to solve them.

If your procurement route means the operation of the building is not part of the contract, after the handover the contractor is no longer responsible for costs you incur due to any delays, and has no right of access to the building except to make good defects. This is also the point at which you become responsible for insurance, security and maintenance.

4. Be aware of possible future problems

Although the building systems for heating and ventilation are commissioned before handover, they are likely to need fine-tuning once in use, and it may take months before they work as intended. Low-energy designs often need extensive fine-tuning, and you should take this into account from the start.
5. Complete the handover

When the contract is complete, the contract administrator will issue a certificate of practical completion, and the building will be handed over to you. This is when the project becomes your responsibility (except in contracts which include the operation of the building). There may still be very minor details unfinished at the agreed completion date, but you must resist the temptation to take on the building too soon.

The handover date is set at the outset of the construction work and any reasons to change it are discussed and agreed in writing.

Once handover is completed, take time to consider feedback and learning from the project – if you continue holding team meetings to deal with problems or devise improvements you may benefit this and future projects.
Use

The moment when the building has been handed over isn't the end of the client's job. A car is only as good as its driver. Similarly, you'll need to prepare the building for use, see to the fine tuning and making good, then evaluate and improve your building throughout its life.

Preparing for use
How your building performs is reliant on how well you use it. Starting your preparations early will help you get the most out of your building.

Fine tuning and making good
At handover, your building is like a newly launched ship that has not yet had sea trials. Many systems need to be tested and fine tuned.

Evaluating and improving
Gathering information about how well your project works once it is occupied will give you an invaluable resource for future projects.
Preparing for use

How your building performs is reliant on how well you use it. Starting your preparations early will help you get the most out of your building.

Although the process of delivering your project might at times dominate, remember the goal is to use it well once it’s finished.

A building project becomes a true success when it starts to be used. Whatever the project - a large new building or a small-scale refurbishment - preparations for using it must start well before construction finishes, and the process must be co-ordinated.

Even a modest refurbishment project will change the way people use the services your project provides. A new building can have much more opportunity to disrupt or improve delivery of a service.

Preparation is important. If staff change is needed, your human resources team should organise induction sessions as required, combined with training for using the completed project.

Staff will need information about all aspects of the building after completion of the project. This could include:

- new working rules
- whether new delivery arrangements are needed for existing suppliers
- how people with disabilities will use all the facilities
- even where to buy lunch!

Security systems are likely to have been modernised, and catering or public areas may have been totally changed. The way visitors should be treated and how they can be made at home in the new or refurbished building can be planned.
How do I prepare for use?

You will need to appoint a team to prepare your building, consider producing a move-in guide and think about holding a launch event.

1. Appoint a team to prepare to use your building

You will need a team responsible for gathering and understanding the required information. Make individuals responsible for each particular aspect – including staffing, working arrangements, access and security.

2. Consider producing a move-in guide

For large projects it is useful to produce a move-in guide, which can then be updated and used for future recruits. If a staff user group was set up to help define the brief, it can gradually be transformed into a staff move-in group, and help decide what information the guide should cover.

3. Consider a launch event

Depending on the scale of your project, you may want to hold a launch event for it. A successful launch can help shape the reputation of the new or upgraded facility and can be valuable as a way of boosting staff morale. It announces to the public that the building is open for business, and to funders and other stakeholders that the project is complete.

It’s not a good idea to hold a public launch too soon after handover. There may be construction defects to put right and new equipment to understand before a launch can be held. Any such defects form a snagging list – see Understand the handover process for more information on this topic.

If you are planning a big launch event, publicity material can explain the intentions and design behind the new facility to staff and visitors. Large projects may need staff or volunteers to show users round for several months after opening.

There may be also be scope for different opening events such as:

- private previews of the building, particularly for project funders
- a test launch to trial the staff routines
- events for the project delivery and construction team
- staff and stakeholder previews
- press launches
- hosting a special competition for relevant activities to attract publicity
- an opening ceremony by a public figure.
Fine tuning and making good

At handover, your building is like a newly launched ship that has not yet had sea trials. Many systems need to be tested and fine tuned.

Before you continue, make sure that you read the following information about fine-tuning and making good:

- Fine-tuning
- Making good
- Building user’s guide

How do I fine-tune and make good?

1. **Begin planning the running of the building well in advance**
   You will need to begin commissioning activities and training well in advance of handover.

2. **Ensure a thorough operation and maintenance manual is developed**
   At handover you will usually receive an operation and maintenance manual detailing what is required for the building, landscape and all systems.

3. **Guard against misuse**
   Many problems occur not because of defects, but because occupiers/users don’t sufficiently understand technical systems.

4. **Gather users’ views**
   After the initial period of familiarisation, you should ask users to report on how well the facility works, and suggest any immediate improvements.

5. **Arrange dates for formal inspection or review**
   A period of a year after occupation is usually set for reporting final defects. These defects will usually be made good by the contractor under the construction contract.

6. **Make arrangements for defects to be made good**
   Fine-tuning and making good defects may involve disruption to activities in the buildings because of moving furniture, wet paint, temporary loss of power or water supply.

7. **Understand the long term - the next 30 years**
   Respect for a good building will help retain its quality over time, and ensure that people still use the facility so that it continues to meet the goals of your organisation.
More about fine tuning and making good

Fine-tuning

Over a year, your building will be used in many different ways and in a wide variety of environmental conditions. In this time your building will need to flex and be tuned to meet the full range of demands upon it.

You will need a step-by-step approach to testing and fine-tuning the systems (such as lighting, heating) that enable the smooth running of the building. These systems will have been tested in the course of installation, often independently of each other, but not tried in normal use. As equipment starts to be used, the systems need balancing until they work as planned.

As well as fine-tuning systems you will need to identify defects and arrange for these to be made good. Making good means remedying defects that are not a part of normal wear and tear, but are due to a defect in the construction.

Why is this important to get right?

It is important to get fine-tuning right as this sets how effectively the building will be used. You need to make sure:

- users are well informed about how the building should work
- appropriate training is in place for users and managers to guard against misuse
- users and managers understand energy efficiency measures
- the building is operated safely.

Any building will require a degree of fine-tuning. How much will depend on the complexity of the building and its systems. A small, simple building with domestic-scale systems will be up and running almost immediately. However, a complex building with innovative systems may take at least a year to complete commissioning and reach normal operations.

It is only once the building has been occupied for all four seasons that complex heating and ventilating systems, for example, are fully tested. People running a building also need time to get used to the systems.

See evaluating and improving for more information about monitoring your building’s occupation in use.

Making good

This usually refers to a contractor’s obligations to complete the main contract, and put right any defects. The building contract often sets a period, usually 12 months, during which the contractor must put right any failures that come to light. This is called the Defects Liability Period (DLP).

It may be appropriate to offer incentives or penalties in the contract so that the contractors deal with these final issues speedily. For example, you may withhold a proportion of the total contract value for the DLP. This sum, referred to as 'retention',
may be around 2.5 per cent. You should seek advice about this from your project manager or quantity surveyor.

The snagging list that sets out what needs to be made good is only related to work in the contract – changes to your project that the contractor is not contracted to do are extra work, not making good.

**Building user’s guide**

A building users guide explains to users, maintenance contractors and others how your building works. It is usually commissioned from the design team as part of their scope of works, and can be a useful document at this stage.

- It defines what facilities managers need to do operate the building efficiently and fine tune.
- It describes what maintenance contractors are expected to do to keep systems reliable and efficient.
- It identifies what occupants need to understand to work within the building’s design performance.
- It makes sure future fit out or refurbishment contractors can understand the systems so that these are not compromised.

The building users’ guide should give specific guidance about the energy-saving devices integrated into the building. It also complements the operation and maintenance manual.
How to fine tune and make good

You will need to know how to run the building, develop an operations and maintenance manual, guard against misuse, gather users' views, arrange inspections and reviews, spot defects and understand issues in the long term to retain quality over time.

1. Begin planning the running of the building well in advance

You will need to begin commissioning activities and training well in advance of handover. For example, you may need to organise a demonstration to the building operators of the building management systems so that these are understood and can be fine tuned.

2. Ensure a thorough operation and maintenance manual is developed

At handover you will usually receive an operation and maintenance manual detailing what is required for the building, landscape and all systems. The manual:

- describes all the services operating and maintenance requirements relating to the services and systems supplied, installed and commissioned in the building
- defines how the building should be used and managed and what further testing and commissioning is needed.

You should make sure that the facilities manager or person responsible for engineering services takes a lead in explaining to users the function of the system, and organises adequate information and training.

3. Guard against misuse

Many problems occur not because of defects, but because occupiers/users don't sufficiently understand technical systems. Operational policies can be explained in the building users guide, so people understand how their new building is intended to operate.

For example, users may have personal control of local temperature and light levels or, increasingly, this may be managed centrally, responding automatically to internal and external temperature and light level changes.

Ambitious sustainability targets mean that it is more important than ever that those users understand how their new building is intended to work. Often design and engineering concepts embedded in highly performing sustainable buildings follow leading-edge thinking, and their management may not follow familiar patterns. For example, energy management and conservation depends on the correct use of installed hardware and software.

To help with the process of learning to operate the building, it is good to keep in contact with the design and technical teams to begin with so that they can continue to hand over their knowledge. In the first four to six weeks of use it may be helpful to
arrange site meetings or reviews with the design and technical team. In this way you can confirm correct operating procedures and iron out any early problems.

The soft landings framework recommends that for complex projects a design team member could maintain a presence on site over this time. After the initial period of fine-tuning, site reviews could be held every four to six months.

4. Gather users’ views

After the initial period of familiarisation, you should ask users to report on how well the facility works, and suggest any immediate improvements. You could ask the same group of users who helped give input to the project as it was being conceived and designed.

- The group should meet from time to time - say fortnightly at first, then monthly when any initial problems have been resolved.
- Task one person to do a full building ‘walkabout’ regularly, say weekly, to report any problems and see that action is taken to resolve them.

You should also give members of the public who use the facility an opportunity to report any issues, positive or negative. A comments box at reception is one way of gathering their views. This will allow you to address small issues before they grow and become an irritation. More fundamental problems should be passed to the team that worked on the project.

5. Arrange dates for formal inspection or review

A period of a year after occupation is usually set for reporting final defects. These defects will usually be made good by the contractor under the construction contract. Typically a formal inspection is completed at the end of the 12-month period, any remaining defects agreed, and arrangements made for the contractor to return and make these good.

6. Make arrangements for defects to be made good

Fine-tuning and making good defects may involve disruption to activities in the buildings because of moving furniture, wet paint, temporary loss of power or water supply. You should agree dates of works with the contractors and notify the building users who will be affected.

7. Understand the long term - the next 30 years

Respect for a good building will help retain its quality over time, and ensure that people still use the facility so that it continues to meet the goals of your organisation.

You and your delivery team will have taken great trouble during the entire project, coordinating and checking, deciding and choosing. Now, at the end of the project, equal care is needed to:

- see that the right people are in place to care for the building
- ensure that management responds to new needs
- make sure that project success continues through the life of the building.
Evaluating and improving

Gathering information about how well your project works once it is occupied will give you an invaluable resource for future projects.

Post-occupancy evaluation – that is, evaluation after users have moved into the building – is increasingly becoming a requirement for newly completed or refurbished public buildings, and may be stipulated as part of your funding agreement.

You should evaluate the processes you engage in as your project progresses. Benchmarking your project – showing how it will meet industry standards – is increasingly important in securing funding and ensuring efficiency in use.

Evaluating the outcome of a building project may have an immediate or long-term purpose. Early evaluation can help establish the degree to which your project's aims have been met. Further evaluation can inform improvements to a project over its life, or inform the design of successive projects.

For organisations that commission a series of projects, feedback about the process, the final product and its quality will be valuable for the next project.

You can use different methods and tools for evaluating your project.

Before you continue, make sure that you read the following information about evaluating and improving:

- Stages of evaluation
- Methods of evaluation

How do I evaluate and improve?

1. **Factor in evaluation at the beginning**
   Your plans for evaluation should be set out in the preparation stage of your project.

2. **Define what your evaluation will cover**
   When looking at post-occupancy, evaluation could focus on process, functional or technical performance, or all of these.

3. **Decide what level of detail you need**
   Post-occupancy evaluation could range from a quick review to a more in-depth analysis.

4. **Decide what method of evaluation is most appropriate**
   Different methods of evaluation have different emphases. Importantly, data gathered from past projects using the method will provide benchmarks against which you can assess the performance of your project.

5. **Involve the design and construction teams**
   Feedback processes that use the building’s designers and contractors are becoming better established and have been very valuable to many organisations.
6. **Plan how learning will be applied to other projects**
   You should make the feedback you have gathered available to other client teams in your organisation or to a wider audience.
More about evaluating and improving

Find out more about the stages of evaluation and methods of evaluation.

Stages of evaluation

There are different stages for carrying out evaluation:

- early evaluation (three to six months after occupation) can help to fine-tune a building and resolve early problems to do with patterns of occupation, use or the operation of systems
- further evaluation (12–18 months after occupation) is useful once the building has been operating for a year and has experienced a range of weather conditions. This is when there has been time to get a sense of how the building performs in use.
- formal post-occupancy evaluation (three years after occupation).

Any of these reviews could lead to changes in how the building is used.

Methods of evaluation

There are many established methods of looking at different aspects of building performance. Some are qualitative, some are quantitative, and some combine the two:

- De Montfort method: this includes a user forum and a walk through the building – it looks at the process and functional performance, typically over a day
- Design quality indicator (DQI) [link to task 65 – explanation]: this covers three categories (impact, build quality and functionality) – whether or not it was used earlier in the project to define design objectives, it can be used now to assess how well the building is performing
- key performance indicators (KPIs): these provide benchmarks for the success of a project – data on buildings is gathered annually by Constructing Excellence (see link below) and used to measure, compare and benchmark projects against similar ones. They record information for different building types, measuring a range of criteria from client satisfaction to the timeliness of completion.
- Building Use Studies (BUS) occupant survey: post-occupancy evaluation involves systematically gathering and evaluating opinion about buildings, using questionnaires and focus groups, from the perspective of the people who use them (see Usable Building’s feedback resource for more information)
- Design Quality Method (DQM): a post-occupancy evaluation method from the Building Research Establishment (BRE) used by UK auditing authorities and many funding bodies – it assesses buildings against the quality of the architecture, internal environment, user comfort, whole-life costs, detailed design and user satisfaction
- PROBE (Post-occupancy review of buildings and their engineering): this combines core technical and energy surveys, occupant surveys and air leakage pressure tests to evaluate building use and energy performance. It typically takes 20 person days per building (see Usable Building’s feedback resource for case studies)

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• energy performance assessment: this can be tailored to the age and design of the building and to your requirements. Using building analysis techniques, an evaluation may include desk-top study and benchmark analysis of utility bills, extended monitoring, thermal imaging study, air-tightness testing and an occupant comfort satisfaction survey.

It may be best to use an independent and expert assessor to carry out the evaluation/s you choose. They will be impartial and bring their expertise, for example of user engagement or energy performance.
How to evaluate and improve

You will need to factor evaluation in early, define the scope, decide on a level of detail, choose methods, involve your teams and plan how learning will be captured.

1. Factor in evaluation at the beginning

Your plans for evaluation should be set out in the preparation stage of your project. You can then ensure the design team focuses on what will be needed in the evaluation and gather data as your project progresses. It will also help you benchmark your project against other similar projects.

Your plans for fine-tuning and evaluation should then be built into the project programme. You should agree a specific approach at the outset, do it and record it. Be aware that the process of evaluation has costs attached so budget accordingly.

2. Define what your evaluation will cover

When looking at post-occupancy, evaluation could focus on process, functional or technical performance, or all of these. You can use an evaluation to test broadly whether your project’s aims have been met and how well it met the business case. Alternatively, your evaluation could look at specific aspects of the building, for example, its energy performance or user satisfaction.

The Office of Government Commerce (OGC) Client Guide to Appraisal and Evaluation of Construction Projects identifies the following aspects to cover:

**Soft attributes**

- ventilation: winter/summer
- temperature: winter/summer, and overall comfort
- lighting
- noise levels
- effects on productivity
- effects on health
- building design: image and suitability to needs
- overall satisfaction.

**Hard attributes**

- measured performance of delivery of function/service as benchmarked in the project brief
- energy consumption: water, gas, electricity
- CO2 emissions
- sustainability measures where predicted savings were agreed
- space efficiency.

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3. Decide what level of detail you need

Post-occupancy evaluation could range from a quick review to a more in-depth analysis.

An indicative review gives a quick snapshot of the project. It is a broad-brush approach, which combines a few interviews with a walk-through of the building. You might also circulate a short, simple questionnaire. The aim is to highlight major strengths and weaknesses; it provides useful information quickly, and can form the basis of a more in-depth study.

An investigative review is a more thorough investigation using more rigorous research techniques to produce more robust data. In this type of review representative samples of staff complete questionnaires. These are complemented by focus group reviews and interviews, to explore in more detail the problems identified by the questionnaire responses.

A diagnostic review is a very thorough analysis that links physical performance data to occupant responses. In this type of review the evaluators carry out analysis of the building’s environmental systems. Generally this includes:

- air-handling
- lighting
- energy use
- heating
- measuring ventilation rates
- temperature
- lighting levels
- energy use
- CO2 emissions
- acoustic performance.

4. Decide what method of evaluation is most appropriate

Different methods of evaluation have different emphases. Importantly, data gathered from past projects using the method will provide benchmarks against which you can assess the performance of your project.

Methods include:

- questionnaires
- focus groups
- monitoring room bookings or ticket sales in public venues
- observation of use patterns
- matching areas used for different activities to those planned at the briefing stage
- checking energy use against targets
- tracking the project successes and failures.

See ‘explanation’ above for a description of popular evaluation approaches.
5. Involve the design and construction teams

Feedback processes that use the building’s designers and contractors are becoming better established and have been very valuable to many organisations.

They may take the form of regular or one-off workshops that aim to identify:

- the best aspects of the project: both process and product
- things that did not work well: this is not to apportion blame but to correct problems where possible and avoid them in the future.

This type of process may take place at various stages of the project as well as at the end, and after the building has been in use for a period.

6. Plan how learning will be applied to other projects

At the beginning of your project you will have needed benchmarks to compare yourself against. You should make the feedback you have gathered available to other client teams in your organisation or to a wider audience. If you have an estate of facilities then the evaluation you have conducted will directly benefit this wider estate by informing future development.

Use case studies to disseminate the lessons learned from your project to designers and stakeholders.
Creating excellent buildings
All the examples
Examples of the fundamentals

This guide uses real life examples of clients involved in building projects to illustrate what to do, and what not to do, throughout your building project. You can find these examples in the tasks that they relate to, or browse the whole list below.
Circus Space, Hoxton

An example of being a good client.

Be sure of your initial requirements

Staying committed to the requirements of your project throughout will help to ensure an end product that is fit for purpose.

The Circus Space in Hoxton, east London, is one of the top circus training schools in Europe. When the client team at the space started looking at expanding the facility, it knew it had to establish a common understanding among the design team of the highly creative response needed for this unusual facility to be a success.

The client was clear that it wanted an architect which, as well as responding to the brief, would contribute innovative ideas and creative experience. The process that followed built strong working relationships that had a positive impact on design.

The client’s diverse range of physical activities naturally meant complex spatial requirements. So it nominated an experienced member of staff to prepare an outline brief, which was then developed by the architect. A client project co-ordinator was appointed to represent the range of interests within the organisation, without compromising on the strong continuity needed throughout the project’s lifecycle. As the design proposals emerged, the detailed design brief continued to evolve in parallel.

To gather ideas from other projects, members of the client team made joint visits with the architect to other circus schools abroad. The team was able to share experiences and discuss how these spaces worked and find out how users found specific design features. This informed its decisions on detailed issues such as floor finishes.

Ultimately, because the project team understood and responded to the unusual requirements of the project, it became far easier for everyone involved to identify the priorities on the scheme.

This project also appears as a CABE case study

www.cabe.org.uk/buildings
Jewish Community Secondary School

An example of being a good client.

Recognising knowledge gaps is key for first-time clients

Faced with the unfamiliar and complex situation of delivering a brand new educational institution, a parent led, voluntary-aided London school learned too late the value of objective decision-making and knowing who to involve at the right point.

For any project, clients must first establish within their vision the principles of the new service to be delivered, before then moving onto the service detail and how the new building will work. However in this case, the group of trustees who formed the client group were tempted into the design process itself, rather than making objective decisions around educational aspects, of the sort needed at pre-design preparation stage. As a result, the project architects had to take over some of the school’s educational delivery and management, a role that would normally fall to an impartial educationalist or experienced client.

A project of this kind also needs the client to focus on the priorities by balancing long-term goals with cost control. But because there was no objective leadership (through for example a head teacher or main project champion) to lay out a long-term strategy based on educational needs and future-proofing, the main determining factor became costs. Costs ended up being incurred in any case later on in the project, because necessary practicalities, such as the toilet design, were only fully worked out when a head teacher was appointed. But by this stage the building was already well under construction, and these necessary design changes came at a price.

On any project, decisions must be made efficiently and impartially. Client bodies need the facility to ask informed questions at the right time. Although it can be tempting to save on costs by not making any external appointments, recognising early on that there may be a knowledge gap that needs filling will most often bring cost savings and long-term benefits to the service you are delivering.

www.cabe.org.uk/buildings
Knowsley schools

An example of the role of the client.

Radical change requires a commitment to service improvement and staff training

Knowsley schools used to be among the lowest performing in the country. In 2001, a radical vision, established by an independent schools commission for the borough, set out a strategy for educational change. Dynamic client leadership was needed to introduce a new teaching method across the borough’s schools, and to capitalise on the opportunity of new buildings to support this.

The commitment by the client to a radical educational vision supported by hands-on staff training has seen marked improvements in pupil achievement in Knowsley. Rather than conventional classroom-based teaching, the vision upheld by the local authority client for seven new learning centres included:

- ‘year home bases’ for core subjects, rather than conventional single classrooms
- an emphasis on project rather than subject-based learning, taking place in smaller ancillary spaces leading off year home bases
- use of virtual learning environments, through extensive ICT use.

With these kinds of multi-functional, flexible teaching spaces, throwing staff into new premises and expecting things to change was not an option. The client had to insist on effective tools and training methods to manage staff carefully through the change.

Wherever staff training took place, life-size replica environments were set up. A week in a completed school was allocated for all staff to familiarise themselves with the new teaching environment. To keep the knowledge in-house and avoiding the use of external consultants, existing trained staff in turn trained their colleagues,

Personalised continuous professional development plans were prepared for each of around 1,300 teachers affected, and ‘education change partners’ were allocated to each school to provide ongoing support in the new teaching environments.

References
The Independent, February 2010: Dramatic improvement: How a rebuilt school in Knowsley has transformed behaviour

www.cabe.org.uk/buildings
London Olympics

An example of **how time, quality and cost matters**.

**The effect of a non-negotiable deadline**

Different projects have different priorities. Sometimes this is very clear - with the London Olympics, scheduling is paramount. The stadia, accommodation and infrastructure have to be finished by a non-negotiable deadline - the opening ceremony on 27 July 2012.

This doesn’t mean other considerations aren’t equally as important. Quality has been high on the agenda, and the legacy plans have been a key desired outcome. Great stress has been placed on minimising the environmental impact of the huge construction programme. And costs will be the focus of ever-increasing media and political attention in the run-up to the games.

In 2007, MPs on the Public Accounts Committee questioned whether the costs of the Olympics were seriously underestimated and warned of the problems associated with having to finish by a fixed date. Contractors could demand higher costs or reduced standards to save time, they said.

In order to keep costs from increasing, the number of units in the athletes’ village has been reduced. Designs have also been changed so that instead of a kitchen in each flat, there will be an extra bedroom, to accommodate six, rather than four people per unit. Athletes will eat in a canteen, and kitchens will be installed in the dwellings after the games are over.

**References**

[Report from the Public Account Committee meeting examining whether or not costs for the Games had been under-estimated](www.cabe.org.uk/buildings).
Circle healthcare

An example of why good design is important.

**Good design in the business model can cure some ills**

As places where people come at their most vulnerable and distressed, healthcare buildings can have the biggest impact on how we feel: their design can affect people’s recovery and rates of re-admission.

Drawing on its past experience of the effect of good design on patients, healthcare provider Circle has recognised that the quality of a building should support the service that’s being offered, and is reflecting this in its business model.

The company goes beyond simply introducing new ways of working within new premises, and looks more closely at how building design can facilitate improved services. It is delivering a series of carefully thought-out healthcare buildings which strive to have less of the clinical feel and more of the boutique hotel. In short, they actually make people feel better. And good design need not necessarily cost more; its most recent hospital cost £50 million, compared to £110 million for a similar-sized private hospital next door.

The fitness for purpose of a building has to be key to its smooth operation. This may seem obvious, but it does not always happen. Managing partner Ali Parsa notes that too often, buildings do not reflect changes in the service that they are supposed to be delivering. “Twenty years ago, 80 per cent of surgery was in-patient. Now it is only 20 per cent. The vast majority of our hospitals are not fit for purpose. They have too many bedrooms, and not enough recovery areas.”

User feedback is positive. One patient, treated in the most recently completed of Circle’s buildings, said “I felt like a special guest.” An orthopaedic surgeon in the new hospital notes that improving the patient environment can make patients more relaxed even to the point where they require less anaesthetic.

Before moving on to its next scheme, Circle is putting on hold several other projects for which they have planning permission, while it learns lessons from the first.

**References**

*Interview in Building magazine with Circle’s manager partner, Ali Parsa*
Kentish Town health centre

An example of the client's role in procurement.

**Being an active client throughout the process pays off**

The James Wigg GP Practice, led by Dr Roy Macgregor, was struggling to find a procurement route that would deliver the improvements they wanted to see to their facilities. They had explored the private finance initiative (PFI), third-party development and refurbishment as options.

Finally, in anticipation of the LIFT - Local Improvement Finance Trust - programme, Dr Macgregor was able to secure a grant to carry out a design competition. A detailed brief was prepared using the expertise of a respected health architect and an invited competition took place. A winning team was selected from four shortlisted teams after an eight-week design and brief development process.

Unusually, the practice then went in to the LIFT process, and asked contractors to take on this architect-led team. This was supported by the planning authority, which made the continuity of the architect’s role part of the requirements of the planning consent through section 106 (a way of delivering or addressing matters that are necessary to make a development acceptable in planning terms).

Crucial to the success of this project was that the client was aware that good intentions at the beginning may well not be realised if the design team is changed - and the attention to the vision developed early on is reduced. Even when design teams are procured as part of the contractor's team, clients have to make sure design standards are given the right emphasis.

In 2009, Dr Macgregor was named RIBA Client of the Year, and the completed project was shortlisted for the prestigious Stirling Prize for architecture.

**References**
- The James Wigg Practice website
- This project also appears as a CABE case study
Joseph Chamberlain Sixth Form College

An example of planning procurement.

Making an informed choice of procurement route

The client for Joseph Chamberlain Sixth Form College was keen to have delivered exactly what was in the brief by using the appropriate procurement route. After taking advice, the client opted for a two-stage design and build (D&B) procurement route, in a sector where the private finance initiative (PFI) was the norm. Importantly, design and build allowed the architects to be involved in selecting the contractor - and a frank discussion could be had with them before they were appointed. As a result, both parties had a clear understanding of how the relationship would work and exactly what was expected of them.

The client was keen to keep their architects in the loop, and made sure the contractual set-up reflected this. The architect was contractually required to provide uncensored reports to the client on the contractor’s work and quality of detailing. They were also required to attend all of the contractor-client meetings.

A strong working relationship developed between the architects and the contractor, and this collaborative approach was of great benefit to the project’s progress and overall output. While the building was on site, the architect was able to provide direct advice to the contractor, and could ensure that any value engineering exercises did not impact on design quality. As a result, the school was delivered exactly as drawn and detailed in the comprehensive set of tender packages.

Building Design's article on the Joseph Chamberlain College
Manchester Civil Justice Centre

An example of procurement routes.

Working with, rather than against, the procurement route

Selecting the right procurement route, and making the most of that route, will help you to deliver the objectives of your project.

When faced with amalgamating Manchester’s existing court facilities into one, the Ministry of Justice (MoJ) recognised the potential of a high-profile building located in a major economic centre. It knew it had to be rigorous about setting out expectations for high quality within the chosen procurement route.

To command the resources needed for the design quality that a project of this profile calls for, and to ensure its ongoing management and maintenance, the MoJ chose the private finance initiative (PFI) procurement route. The client tailored the PFI process and made the necessary interventions to allow the quality of the design to be the most important consideration.

Although the standard PFI route means choosing a developer team that already includes an in-house architect, in this case the client wanted direct control over the selection of the architect separately from the developer team. So it adopted one of the elements of a traditional procurement route - procuring the designer separately from the contractor, and ran a design competition to find the right design partner.

To avoid common concerns in PFI about the loss of quality in the finer details of the finished building, the client asked for sketches by the selected architects that illustrated clearly the detailed design elements. These were used during discussions to appoint the design contractor. This arrangement built a strong foundation for partnership on the procurement route between developer and architect, ensuring that everyone in the team knew exactly what they would be expected to deliver - and to what standard.

The challenging and innovative design of the finished building largely reflects the vision initiated by the Court Service for a prominent, exemplar project. The success of the finished £113 million building, which has won over 25 awards, has been attributed to the client team and its careful development planning during the early stages. As Jon Wallsgrove of the MoJ says: “Ask anyone in the street, especially cabbies, and they all know the ‘filing cabinet’ building. It is one of the landmarks of the city.”

References
Engaging Places.org: Architecture in focus: Manchester Civil Justice Centre
http://www.cabe.org.uk/resources/making-competitions-work
CABE’s case study on the Manchester Civil Justice Centre

www.cabe.org.uk/buildings
Fresh thinking can help improve processes

For a small doctors’ surgery in a rural Exmoor town, the GPs and the local planning authority wanted an interesting building of the highest quality for such a sensitive site, and the client had to think outside the box to make the process affordable.

Because the GP client, Dr David Berger, recognised the uncommon advantage of the architect Guy Greenfield also being a contractor – not a usual situation - the two could enter into a partnership and form a one-off development consortium. This allowed both for considerable savings by bypassing the appointment of a separate contractor, with an estimated saving of 10-15% of the overall project cost. The freed-up money was spent on delivering the building to the required high-quality finish.

Although not a solution possible for every project, the unusual partnership in this case guaranteed the right degree of control required over the construction process by the project architect. It ensured the high build quality needed for this innovative building to be a success. The surgery was designed on a fixed-fee basis, with individual elements of the construction process tendered separately.

The surgery was designed to both respond to its natural setting and to provide enhanced facilities for patients and staff, and the result is considered by many visitors to be more like an art gallery than a health building.

References
CABE Case study: Dulverton Surgery
University of East Anglia

An example of effective selection.

Attracting the best teams to bid

When appointing new consultant teams, the University of East Anglia’s estate team takes care to provide only relevant information and the appropriate level of detail in its tender documents. They are committed to doing justice to their campus masterplan, especially as it was designed by Denys Lasdun, architect of the Royal Festival Hall in London, and has recently been Grade II listed. All tender documentation they provide to any bidders must be formatted in a clear and accessible way, providing a succinct project summary, and listing the disciplines required from the chosen bidder. This approach makes it immediately evident to bidders whether the project is right for them.

The client expects all those tendering to demonstrate an understanding of what's important about the University. A comprehensive background section on the physical and academic context of the campus is provided as part of the tender documentation. This includes the prospectus and the Campus Wide Policy Guide, which sets out how contractors should behave on site. They also draw up a description of what a new space or building will be used for, rather than simply a detailed accommodation schedule, as they want to encourage innovative, design-led solutions.

In balancing the level of detail provided, this client is able to encourage innovative building solutions that respect their context. The Thomas Payne Study Centre by R H Partnership is the most recent addition to the university's academic estate and demonstrates the success of their thorough tender process.

References
http://www.uea.ac.uk/estates/Welcome
Arts Council England offices

An example of OJEU regulations.

Getting good quality through the OJEU process

When the offices of the Arts Council England were due for an upgrade, director of property Emma King used the basic OJEU process as a starting point, and creatively built on it to find the right designers.

King started off the selection process on a high note by including a short brief for the project within the OJEU notice itself, along with the standard information required. This ensured that the resulting 100-odd responses responded specifically to the requirements laid out in the briefing information.

Next, to the longlist of those practices who responded, a more detailed brief was provided, and again at shortlisting stage, another layer of detail was added for the architects to respond to. This included a short film commissioned by the client about the existing premises, an unusual but effective way of conveying needs to bidders.

In the final stage before interviews, the same filmmaker recorded the bidders talking about recently completed projects, which was shown to the jury before interviews. This, according to King, and the visits made by the delivery team to the architect’s studio, ‘made it possible to get a sense of the rapport between the client’s delivery team, the lead architect and the project architect, and we could see where our scheme might fit into the office set up.’

If you only use a standard OJEU notice, you are likely to receive much looser responses which can produce unknowns and therefore make selection far more arduous. Both the architects and the client team appreciated the bespoke approach for the Arts Council England offices, and the ability to ‘get to the nub’ of the project. In fact, this rigorously open approach actually led to one of the bidding teams bowing out at interview stage, saying they knew the project was not for them; the honesty was appreciated, and the winning team shown to be all the more suitable for the highly successful result.

References
Competitions work: making sure you get the right design team
Willowfield Humanities College

An example of stakeholder engagement.

Designers go back to the classroom to find out what pupils really want

When plans were being laid for Willowfield Humanities College in Waltham Forest to move to a new site, an engagement event ensured that all stakeholder groups were involved from the start.

The two-day event brought together stakeholders to explore ideas:

- pupils
- staff
- local councillors
- planning experts
- local residents
- architects
- members of the council’s schools team.

Guided by built environment professionals, over 100 year 8 pupils created their visions for the Willowfield project - and how it would work in the context of a wider regeneration plan for the area, which included housing, transport and leisure facilities. They then divided into 20 teams of six, and created models to illustrate their proposals, considering one of four specific briefs:

- neighbourhood space
- approach place
- reception place
- an inside school space.

The completed models were exhibited, with councillors, parents, carers and local community groups invited to give their responses.

The process not only highlighted the important role that the school could play in the regeneration of the wider area, but fostered strong, collaborative working between stakeholders. It also introduced the pupils and the staff to built environment issues and concepts, and gave the council the capacity to deliver creative engagement with schools more easily and quickly in the future.

References
Willowfield Humanities College's website
Sharrow Primary School

An example of stakeholder engagement.

Keeping stakeholders involved and informed

When Sharrow Primary School, in inner Sheffield, was being redeveloped, an innovative approach to consultation was adopted through necessity.

The project architect set up a blog called ‘Sharrow Construction Buddies’ with the help of ‘Brix and Mortar’, a pair of friendly bears. The bears kept everyone informed about how the project was progressing. But the teddies weren’t just fun - the initial idea came about as a way to boost morale at a partnering workshop where stakeholders needed to discuss significant budget cuts. Their success meant they evolved into the major tool for stakeholder engagement.

The blog was updated regularly during the design process and as the school was built. It had over 15,000 visitors and a film clip of the crane going up on You Tube was viewed 62,000 times. The blog was written for anyone over the age of five, and links were provided to more detailed sources of information. Parents used the site, as well as many relatives living outside the UK - over 80 per cent of the pupils speak English as an additional language. Members of the project team could also log on to keep up to date.

As a result of stakeholders’ enthusiasm being harnessed in this way, support for the project grew beyond all expectations.

References
Sharrow Construction Buddies Website
Great Bow Yard

An example of thinking about sustainability.

Build in sustainability from the start

With a site at the edge of a village in Somerset, Great Bow Yard, Langport, aimed to tap into a market for highly sustainable new build houses. The small project is a group of twelve homes alongside offices and workshops set around a courtyard, on the site of an old oil depot.

The aims of Ecos Trust, the charity whose development arm completed the project, was to demonstrate sustainable design and construction in practice. In this way they hoped to persuade planners, builders, developers and estate agents that there is a real demand from housebuyers.

The sustainability objectives for their Great Bow Yard project were to substantially reduce carbon emissions and water consumption, use recycled or sustainable construction materials, meet the highest standard for sustainability (at the time the Eco Homes rating "excellent"), and to make a positive contribution to the local economy.

To achieve this they installed state of the art domestic scale renewable energy sources and energy-saving technologies, insulated far above normal standards and built using sustainably sourced materials and avoiding toxic chemicals commonly found in new houses.

The ambition for the project paid off, and the properties sought after. As well as setting sustainability objectives at the outset the success of the result was evaluated against the current standards. In this way the Trust identified improvements that they would make to future projects.

References

Building for life case study

www.cabe.org.uk/buildings
Krishna Avanti school

An example of [thinking about sustainability](#).

An environmentally friendly ethos wins hearts and minds

The Krishna Avanti School was led by and built for local Hindu people. Although the project lead, local businessman Nitesh Gor, and the community had never been involved with a building before, environmental responsibility was up there in the overall client vision along with academic achievement, social cohesion and holistic health.

Community workshops, facilitated by architects, were used to establish the ethos; it was clear that local people wanted a school in sync with the natural environment, to ‘help students adopt conscientious lifestyles that help sustain our planet, particularly by setting a practical example, nurturing respect for all life, and maintaining a simple, clean and ecologically friendly environment.’

Behaviour promoted by the school made this commitment easier. The ethos is to nurture good human values, respect for all life, growing and preparing food, and a lifestyle of caring for the environment and the community. So for example, rather than looking for desired eco-friendly features, they started with the principle of designing ‘not to use a lot of heat’, and to use only natural pigments in paints and materials.

Respect for the environment abounds in the finished school, with:

- No artificial ventilation apart from bathrooms
- Intelligent building management systems that control room temperature
- Rainwater used for non-drinking water
- Ground source heat pumps, supplying seventy percent of the school’s heating
- Wooden cladding from sustainable sources, and grass roofs on all buildings
- A pond and wildlife garden.

In the finished functioning school, all school meals are vegetarian. This is in line with the Hindu faith, as well as vegetarian food taking up much less carbon in production. Taking the ethos of respect for the environment just one step further, meals are made up of the vegetables and fruit cultivated by staff and students in the school grounds.

The school now enjoys the highest environmental rating of any primary school in Britain.

References

[Krishna Avanti CABE Case study](#)
[www.krishna-avanti.org.uk](#)

[www.cabe.org.uk/buildings](#)
Funded in part by £2.4 million community donations Krishna Avanti is the first voluntary aided Hindu faith school in the UK. Funding for the school was led by a local Hindu businessman Nitesh Gor and the charity I-Foundation (www.i-foundation.org) who successfully raised money for the new school.
Green Lighthouse, Copenhagen

An example of thinking about sustainability.

**Setting high targets, and achieving them**

The stakes were high for the Green Lighthouse, which was built as a showpiece for the United Nations Climate Change Conference in December 2009. Yet the techniques deployed in the design are applicable to many projects.

The Green Lighthouse is Denmark’s first public CO2-neutral building. The 950m2 circular building houses a student centre for the University of Copenhagen. The project galvanised a partnership between government, local authority and industry to create an exemplary project.

The sun is the house’s main energy source; the intention of the cylindrical shape and adjustable façade louvers is to allow control of the light entering, as the sun moves around the building. In this way, the optimal retention and generation of energy is ensured.

A clear strategy to the twin extremes of heating and cooling is needed for any sustainable building.

Natural ventilation takes place through the upper part of the windows that open and close automatically in order to allow fresh air to enter; without need for an electrically powered system. Warm air rises through the centre atrium of the building and exits through the skylights. Skylights are also used during the warm season to cool down the house during the night.

Some aspects of the design serve different uses at different times of year. Thermo-active concrete floors at ground level, which functions as the building’s main “radiator” during winter. In the summer, excess energy is stored underground and used in periods with less exposure to sunlight.

Solid construction and heavy-duty insulation of walls and roof reduce heating demand.

High performance windows minimize the heat loss, whilst also ensuring that the sun heats up the house during the winter.

Although extensive on-site renewables are provided, the main energy-saving moves are in the efforts made to use as little energy as possible, using the right combination of materials to provide thermal mass, daylighting, and natural ventilation.

www.cabe.org.uk/buildings
Jagonari Women’s Education Resource Centre

An example of thinking about inclusive design.

The empowering effects of an inclusive consultation process

Sometimes if professionals carrying out consultation are regarded too much as authority figures by the groups being consulted, then the process can become too passive.

The design team’s consultative approach for the Jagonari Women’s Education Resource Centre in east London had to challenge the idea of the professional as authoritarian. The designers worked to actively equip the users with the tools to articulate what they really wanted.

With a client group of orthodox Muslim women from a relatively hard to reach community, Matrix architects had to tap into their sense of being unheard and the related mistrust of figures of authority by avoiding the image of the architect as ‘expert’.

The basis of all interactions became for the client’s views to be held above the architect’s, with consultative exercises including:

- The architects presenting their personal tastes, but then encouraging open discussion and interrogation. This ensured that the professional’s preferences were not assumed to be ‘right’, but rather that personal taste is an opinion that is open to debate.
- The clients bringing in photographs, postcards and sketches of buildings that they liked and explaining why they liked them.
- Going on site visits to existing public buildings to analyse and critique their features, size and arrangements.
- A ‘Brick Picnic’ being held on Hampstead Heath in which a brick type was democratically chosen by everybody in a context that the women felt comfortable: a sociable meal amongst women. This also proved to be a bonding experience for all involved.

It was this approach that allowed the project to meet its potential. Initially, the women’s centre was planned in an existing redundant school and the group had approached the all female practice for a small pre-fabricated women-only entrance. On the suggestion of the architects, and with their support in navigating complex applications processes, they managed to get funding for a brand new building that still actively serves the community today, over twenty years since its completion.

www.cabe.org.uk/buildings
Rather than just going for the expedient solution, the project is a testament to what can be achieved by going for the ‘ideal’ and then working towards the possible.

References

Archnet article on the Jagonari centre
Spa Fields, London

An example of thinking about inclusive design.

Making a city park into a safe place for everybody

Despite being in the city centre, the public park at Spa Fields in London was underused. Many people had stopped using the 200-year-old public space, feeling it was unsafe. When Islington Council was able to invest in the area, it therefore wanted to involve the local community to ensure it invested wisely.

The council began a consultation process, working with the Women's Design Service and with groups of young people from the area. This resulted in the re-routing and raising of a path which had previously run through a depression near to bushes. This increased visibility, making users feel safer. Because the new route goes through the younger people's play area, it makes the park feel like a space for everyone to use.

Other areas of Spa Fields were opened up to allow for better sightlines and improved visibility, and a new entrance encourages greater movement through the space. It now has:

- new areas for ball games
- drinking fountains
- lighting
- improved planting
- seating.

During construction work, 13 local young people were given work experience on the site. Three went on to get permanent jobs with the construction company, aiding the sense of local ownership. Engagement like this has also meant there has been little vandalism.

By involving as many people as possible in the design process, the council has made Spa Fields a friendly place which welcomes people from all sections of the community. This million-pound project was recognised at the London Planning Awards and has received a Green Flag award, the national scheme for rewarding the best green spaces in the country.

References
The women's design service is an organisation founded by women architects, planners and designers to help promote a built environment in which women’s aspirations are met
Parklife is the urban design team involved in the Spa Fields project
Aspire, Middlesex

An example of thinking about inclusive design.

Aspire's aptly named fitness centre

Aspire, the national charity for people with spinal injuries, embraced all aspects of inclusive design when it built Europe's first ever fitness centre designed for both disabled and non-disabled people. The centre in Stanmore, Middlesex, has a mixed membership. About a third of its users are disabled, compared with an average of 2-3 per cent at other sports centres across the UK.

The centre has a 25-metre swimming pool which is accessible for wheelchair users and is kept at 31 degrees, so it is warm enough to used by people of all ages. The gym is fitted with equipment designed for both disabled and non-disabled users to work out - for example with seats that swing out of the way for wheelchair users. It has a sports hall that can be used for wheelchair rugby and basketball, as well as badminton and five-a-side football. And fire exits from the centre have ramps leading down from the first floor, avoiding the need for refuge spaces.

The centre, which is also Aspire's national training centre for spinal injuries, has a dance studio which is home to the internationally acclaimed integrated dance company Candoco, featuring disabled and non-disabled dancers.

Alongside the physical aspects of accessibility, Aspire wanted to extend its all-embracing philosophy as far as possible. Rather than male, female and disabled toilets, for example, it has unisex toilets that are accessible to everyone. The building's design, alongside the centre's facilities, equipment and trained staff, is endorsed by the charity-led national inclusive fitness initiative.

References

Inclusion by design shows how certain design elements contribute to the quality of buildings and spaces with a strong influence on the quality of people's lives.

Aspire's website
Roundhouse, Camden

An example of thinking about inclusive design.

Physical and psychological accessibility in the round

At the Roundhouse in Camden, north London, accessibility means more than just step-free routes around the listed building. The former Victorian steam engine shed, which has been a music and performance venue since the 1960s, has been transformed to welcome as wide an audience as possible, without losing its identity.

Throughout the project’s lifecycle, architect John MacAslan and Partners worked with a team of people with a variety of disabilities. They aimed to make a place that was not just physically accessible, but psychologically accessible, too. This resulted in features such as:

- handrails on the stairs which don’t catch on clothes, and are easy to see against the walls
- a colour scheme which makes it easy to find your way in the round building - curved buildings can be disorienting
- unambiguous signage
- toilets which have space for wheelchairs, and taps and locks which are easy to use for people with impaired dexterity.

The glazed café wall in the new wing allows passers-by to see inside, increasing the sense of accessibility and invitingness. Rather than having doors, the café opens directly onto other spaces. It has a variety of tables, chairs and benches to make it easily useable for people in wheelchairs or with buggies.

As well as the main performance space, there are studios at the Roundhouse which are used by young people from the local community. By ensuring those with disabilities are included at the heart of the design, rather than as a 'bolt-on', the intention is that no one, no matter what their age or individual needs, need feel inhibited about coming to use the facilities.

References
- The Roundhouse’s website
- Architects John McAslan and Partners’ presentation of the project from their portfolio
Examples of the prepare stage

This guide uses real life examples of clients involved in building projects to illustrate what to do, and what not to do, throughout your building project. You can find these examples in the tasks that they relate to, or browse the whole list below.

www.cabe.org.uk/buildings
Evelina Children’s Hospital

An example of testing the need for a project.

An opportunity to do away with long, dark, scary corridors

In the early 1990s, the need for change for the Evelina Children’s Hospital at Guys’ and St Thomas’s NHS Trust was clear. Smooth communication, effectiveness and efficiency were all impeded by disjointed silos, and it was difficult for staff to create a consistent identity for the hospital.

Evelina’s services for children were spread over various floors within a hospital tower block, their wards separated by up to three floors at a time.

There was the option of refurbishing adjacent floors within the tower building, thus bringing all the children’s services together, and simultaneously improving internal communication. But there were the complications and expense of decanting the existing wards whilst remaining operational, coupled with the knowledge that the refurbished accommodation would be outgrown within a matter of years rather than decades – and yet more service disruption would be necessary for that expansion to happen.

The best option for the long-term emerged: an entirely new facility with built-in flexibility for future expansion, with the added value of creating an entirely child-focussed environment (when consulted, one of the children’s most poignant request was for ‘no long, dark, scary corridors’). Next came the question of whether maternity services could be included, amounting to a ‘women’s and children’s hospital’ – but weighing against this option were the site constraints, and the calculation that running costs would not have justified capital costs. It was more efficient to refurbish a nearby building and house the women’s centre there.

One of the finished Evelina’s great assets is that decisions around accommodating new services are easier to make because the building is designed with expansion in mind; for example, the even distribution of service ducts and system capacity both ease ward expansion and the running of extra services into new wards. In addition, the finished building is light, bright and celebratory - far from the old ‘adult’s hospital with cartoons on the wall’.

Article from the Design Build Network on Evelina.

www.cabe.org.uk/buildings
Open, Norwich

An example of developing a vision statement.

Consulting young people about the vision reaps dividends

The input of local young people on a project steering group was integral to establishing a vision for the Open youth centre in Norwich.

Following a number of tragic alcohol-related deaths in Norwich, the need for an attractive place for young people to socialise was clear. There was also a higher-than-average teenage pregnancy rate in the town. While health services were available, awareness of them among young people was lacking.

A 40-strong youth forum asked young people across the city to help draw up a list of the facilities and services they wanted to see locally. These could be located together in the refurbished former bank building that had been identified for the project. The consultation would inform the development of an over-arching idea of what the centre could mean for young people and the community – the vision statement itself.

The resulting vision was for a safe, fun and stimulating place, interesting for young people as a place to socialise. It had to be cool but not patronising, and specifically it stipulated high-quality finishes inside. An important element was the bringing together of disparate health and advisory resources into one place.

Taking the vision statement forward, feedback from the forum informed decisions at various levels, from the selection of architects to the colour and style of seating. The finished building has an event space in the former banking hall, a nightclub, the tallest climbing wall in Norfolk, recording studios with support and training, a dance studio, café, media and gaming areas, and health and support services. The spaces have a fresh feel to them, with quirky modern touches alongside classical interiors.

The youth forum is still active today and informs the ongoing operation of the centre, helping to move the vision forward. Some forum members work in the building; three are full-time staff and another member holds the lease for the café and provides catering services to the building.

References
www.open247.org.uk
www.hudsonarchitects.co.uk

www.cabe.org.uk/buildings
Heart of Hounslow Health Centre

An example of developing a vision statement.

Gathering diverse services under one roof

The vision for the Heart of Hounslow Health Centre was clear from the very start. The aim was to bring preventative health and social services closer to the community, to reduce the need to travel to the acute hospital.

The new building, which opened in 2008, is one of the largest polyclinics in the UK at 9,000 square metres. It brings together multiple services and organisations.

A project board, which included stakeholders, ensured the vision was maintained throughout the project. The aim was to provide updated facilities for existing users, with a broad range of services including:

- four GP practices
- additional accommodation for a community and mental health facility
- a nursery
- social services facilities
- a wide range of community facilities.

This strong vision proved to be a great tool for consistency, enabling the Primary Care Trust (PCT) in particular to make informed decisions when under pressure. For example, at post-completion stage the local authority - which was not tied in by contract, unlike the GP practices and Mental Health Care Trust - withdrew from the project. The PCT was still able to realise its agreed goal for a polyclinic, because the other partners on the board had such a strong buy-in for the overall vision.

Contracts for a diagnostic centre and further outpatient services were subsequently secured, and enabled the project to remain fully viable.

References
NHS London article on the official opening of the Heart of Hounslow
This project also appears as a CABE case study
Stonebridge Housing Action Trust

An example of building the in-house team.

Making team work infectious

By laying down a clear model for communication and consultation, the Stonebridge Housing Action Trust (HAT) succeeded in retaining and attracting key staff when regenerating and rebuilding in phases a local authority estate in Brent, London. This was despite a difficult political climate, and with a community which was initially distrustful of the organisation.

Anne Byrne, who was involved in the project as director of development, remembers a clear protocol for communication during the project’s development was crucial, with formal monthly meetings for consultation teams. The teams were made up of residents who would be living in the phase being worked on, professionals to work with the residents, and the HAT board, which included members who were residents. Each team member was given a clear role, with distinct responsibilities. "Team members were encouraged to talk directly to one another to form ongoing relationships, rather than always going through the client; there was a desire to learn, to acknowledge mistakes, and to improve. And we shared successes - when something positive happened, everyone took credit."

This project’s success was in no small part down to the commitment and belief of those professionals and residents who bought into the HAT vision. And success bred success - there was an unusually high level of staff retention from the existing services to their re-provision in new premises. There were even requests from built environment professionals, who heard about the successes and started contacting the team asking if they could get involved.

References
The Stonebridge HAT website gives more detail on how this model of regeneration is working
Tower Hamlets Building Schools for the Future

An example of doing a feasibility study.

Testing the options strengthens your business case

When the Tower Hamlets Building Schools for the Future project needed reliable cost estimates at pre-outline business case (OBC) stage, detailed feasibility studies and options appraisals sharpened up their predictions for how the project would develop physically and financially, and smoothed communication with potential delivery partners.

It was vital that these estimates should be robust: if approved, they would provide the bid for funding included in the OBC and they needed to cover what was needed for the promised high-quality outcome.

The diagrams here, produced by the client design advisors Cube Design, show options appraisals for one of the sites. They look at alternative combinations of refurbishment, remodelling and new build. The many detailed issues for consideration included, for example:

- Analysis of the circulation routes within the school before and after improvements
- Possible phasing and decanting strategies for the site
- The suitability of proposed solutions for delivering the educational curriculum
- Potential for flexibility and future adaptability.

www.cabe.org.uk/buildings
These issues had to be discussed at length with the staff and governors of the schools, and considered alongside their project vision. Through this detailed process it emerged that the cost per square metre was considerably more than the baseline figures expected by the funding body. So, had all this detailed feasibility work not taken place to build up the business case, the project’s budget may have been too low, and compromises on quality may have had to be made later on.

Providing feasibility work to bidders at competitive dialogue stage, together with the options considered, also helps these potential delivery partners to understand the project more quickly and to avoid them wasting time looking at the same issues over again. It’s a valuable benchmark for testing options, and gives confidence to the client that an acceptable solution is available within a set budget.

References
CABE: Creating Excellent Secondary Schools: A guide for clients
Lighthouse Poole

An example of planning your budget.

**A funding pinch can lead to a creative re-appraisal**

When the redevelopment of Poole Arts Centre was cut from £15 million to £9 million, and the plans altered by about 50 per cent, it became clear that rapid and informed decision-making was needed to press on with bringing the facilities up to date.

The client had to devise a way of working out rationally what was worth compromising on, what was worth investing in, and what was a ‘nice to have’. On advice from the scheme’s quantity surveyor, the client devised a ‘polymatrix’ system to itemise and cost each element of the scheme, so that decisions about changes to the proposal could be made in the light of the reduced budget. The client team then concentrated its resources on areas that would best enhance the building for users and allow operational requirements to be streamlined. As a result, upgrading the interior largely took precedence over original proposals to extend or significantly alter the exterior envelope of the building.

Crucial to the success of this prioritisation process was that the client was realistic about what it could afford, and made sure that the budget was spent wisely without compromising on key design features, such as the specially commissioned artist-designed bar.

**References**

[www.shortandassociates.co.uk/page.asp?pi=32](http://www.shortandassociates.co.uk/page.asp?pi=32)
[www.lighthousepoole.co.uk](http://www.lighthousepoole.co.uk)
Springhill Cohousing

An example of planning your budget.

Recognising strengths during development leads to collaborative outcome

With a community-led projects, your design team needs to be especially good at teasing out what people actually need. This was clear for Springhill Cohousing in Stroud when it was selecting the design team.

The client body were keen to appoint a design team who hadn’t only produced a design they liked the look of. They needed designers who could take an active role in consulting and getting the best ideas out of new residents on community creation, and how housing design could reflect this.

After forming The Cohousing Company, the cohousers made two appointments: a design practice with extensive experience of user consultation in design, and also a sole practitioner who specialized in ‘green’ building design and construction of the kind they wanted for their project. So, based on their collective previous experience at working in similar situations, Architype and Pat Borer of the Centre for Alternative Technology joined forces with the Cohousing Company to draw up plans for the site.

The architects and cohousers used a series of design meetings to come up with an agreed layout, also deciding to purchase a row of garages adjacent that ensured fewer cars in the centre. This also provided some space for studio flats to be built above the car ports.

Some contractors had refused to work with the cohousers or quoted very high prices due to the unusual nature of the project and the difficulties of working with multiple client heads. Architype acknowledge that the development of Springhill was a challenging process; but a constructive balance was sought by both parties. The cohousers took account of the architects’ expert knowledge on key design decisions, and in turn the designers respected the cohousers ideas of a perfect home. This method now extends to day-to-day running of the community: different individuals lead on different areas of activity.

Max Comfort, one of the original cohousers and leaders of the project, stresses the need for cohousing projects of this kind to pick the professional team very carefully to ensure things run smoothly and additional expenses are minimised, particularly as the working arrangement is unlikely to be unfamiliar.

References
Springhill Cohousing
Springhill Cohousing case study
Homes and Communities Agency

An example of assessing life cycle costs.

A model for calculating life cycle costs

To help housing associations meet the Homes and Communities Agency’s requirements to provide robust life cycle cost assessments for its 2008-11 funding programme, a building insurer developed a life cycle costing model for housing.

Free for all to access, it has two levels - basic and complex. The basic (default) model provides a quick estimate of life cycle costs using minimal information from you about numbers of houses or flats, capital costs and dwelling area.

The more complex model involves all components and can be generated for different house types. You can then modify the model by selecting different components and editing capital costs and quantities.

Armed with such modelling tools, decisions about construction methods and building retention can be informed by figures rather than a hunch.

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Judging whole life costs

An example of assessing life cycle costs.

Swings and roundabouts or common sense?

Choices about the form and the mass of a building's design can have a huge affect on the costs, but how to make the judgment is far from simple.

For example, what would be cheaper over its life - a stocky four storey building, or a more slender eight storey office block, each with an equal volume of accommodation?

In 2006, Building magazine examined the process for assessing this difference. Using specialized software, the study considered how altering each element - for example the proportion of glazing in the facade - affects the capital costs, the energy costs, the repair and maintenance cost, and how this affected residual profit assessed against the project's expected lifespan.

Such a comparison is far from straightforward. The tall building increases the amount of space needed for circulation and services, leaving less useable space. On the other hand, there are advantages to building higher - a taller building will have a smaller roof area, and less need for deep-plan ventilation, as less of the floor area is remote from the building's external walls.

The result of the study clearly indicated that judging whether buildings are financially efficient is a careful art: while manipulating the size and shape of design might imply efficiency, and indeed net profit might rise, this is only achieved because the land cost is less. Nevertheless, the profit margin may hardly have changed, as the rate of return on capital could be less due to the unintended cost implications of changing the shape of the building.

So what does this mean? It’s interesting that with infrastructure projects such as pipelines or sea defences, lifespan is long, and so spare capacity is often built in. In fact, perhaps the case for ‘future proofing’ buildings should be a non-brainer, especially for projects paid for by the public. For example, this might mean designing the structural elements of new buildings so they can be extended upwards in the future would be an integral, rather than desirable, cost within a project.

References / sources
National Centre for Popular Music

An example of preparing the business case.

What happens when a strong vision lacks a strong business case

The £15 million National Centre for Popular Music opened in Sheffield in 1999. But by 2000 it had gone into administration, and then had to close its doors. How could this happen to an iconic building in a major British city that had secured £11 million of National Lottery funding?

Ultimately, the Centre failed to attract enough visitors and cash flow to ensure its viability. A major problem was reported with assumptions made in the business case that there would be 400,000 visitors per year. But the exhibition itself was not successful enough with audiences to bring in revenues in line with the projections made.

Even before the museum had opened, the high-tech displays, which blurred the distinction between different types of popular music, were criticised by industry experts. Driven by the museum’s creative director, the displays employed a non-conformist approach which, despite extolling local music heroes, confused audiences. The press described the exhibitions as ‘bafflingly vague’

With only 104,000 visitors in the first six months, it failed to attract the necessary audience numbers that the business case was based on.

Following a change in management, displays were altered and admission prices reduced. However, it was too late, and the museum could not recoup its losses. It subsequently closed, and the building has now reopened as a students’ union in a deal reportedly worth just under £2 million.

References
Telegraph article, 'Student group takes over pop museum', 21 February 2003
Guardian article, 'Museum of Pop loses its rescuer', 12 January 2000
Ministry of Justice

An example of **defining the outline brief**.

**Clear guidance from a commissioning body makes sure mistakes aren’t repeated**

Recognising the highly complex nature of court buildings, and that a poor design could result in a court case collapsing at a cost of millions, Her Majesty’s Courts Service asked the Ministry of Justice to prepare a national design guide to apply to their estate.

In the guide, detailed information is given on basic functional requirements and standards for this building type. These range from essential design components such as segregated circulation routes, through to the width and height of the judge’s bench. The design guide solves standard technical and operation problems for the architect, but without prescribing a specific design approach.

Providing this kind of guidance avoids the individual negotiation of basic functions - which can take a up a lot of time when the same discussions are repeated across many projects – and allows the opportunity to concentrate on the wider quality of the architecture.

In addition to the written guidance, teams of professionals are engaged by the commissioning clients of courts projects to:

- review the designs at different stages, both formally and informally
- check compliance with the design guide.

This helps avoid those costly errors that could impact on the operational requirements of the courts service.

**References**

*The Ministry of Justice’s Design Guide*
University of Southampton

An example of developing the detailed brief.

Thinking strategically before investing in building projects

When the University of Southampton embarked on an ambitious programme to upgrade and refurbish building stock across all six of its sites, it managed to look beyond individual territories and see space as a resource to be shared, thus briefing for a better quality environment without costing more.

At the beginning of £250 million development, each department fought tooth and nail for their own space allocation. Three separate 50 square metre break-out spaces for the library, computer services and language centre departments were identified in the initial detailed brief and accommodation schedule.

But following meetings with the client to examine the brief and explore how these spaces would be used, the architects suggested an alternative arrangement. A single shared space of 100 square metres was proposed for the detailed brief, doubling what each department had been allocated individually.

The three departments were happy with this new arrangement, which resulted in an overall saving of 50 square metres of floor space from the project budget. The resulting study booths are located off circulation areas, animating the corridor and providing daylight. These glazed aisles are an extremely successful addition to the project, and demonstrate the efficiency of providing flexible working areas and shared space. They have proved a successful addition to the teaching accommodation.
Coin Street

An example of appraising sites.

Residents’ action group brings a healthy balance

At London’s South Bank, residents successfully pulled together to make sure their locality served the community’s needs as well as being Europe’s largest centre for arts and media.

Despite the cultural benefits to the capital of the Festival of Britain in 1951 local people suffered in the aftermath due to the destruction of their local community and frustrations in losing control over their environment.

The architectural language of the new development was focused only towards the river bank and between the new cultural buildings, and away from the existing community. The area was bleak, with no riverside walk or green spaces. The demolishing of properties and a sudden lack of local facilities had caused dramatic population reduction. The area was deserted in the evenings after audiences had gone home. Remaining community facilities began to close and the local economy suffered.

The leftover land was attracting proposals from office developers that would have destroyed the remnants of the existing community, so in 1977 the local residents formed Coin Street Action Group to campaign for seven years for their own vision. They wanted to transform derelict sites into affordable housing that would attract young families into the area and transform it into a sustainable community. They also wanted residents’ facilities, and to incorporate open and green spaces.

A blueprint was drawn up that consisted of seven sites; five as housing co-ops and two for public facilities and open spaces for the residents and general public. This blueprint is still being followed today. So far, four out of the five housing co-ops and a neighbourhood centre have been built, and open spaces and parks have been established.

Today this is a thriving area of London, offering social housing amongst some of the capital’s well-loved cultural buildings.

References
Understand specialist consultants and advisers
Coin Street CABE case study
Coin Street Community Builders

www.cabe.org.uk/buildings
Hampshire County Council

An example of managing risk.

Being organised about managing risks

Hampshire County Council has a large property department, and much of their architectural work is carried out in-house to a very high standard.

Key to the way that the authority works is the resource invested in ‘de-risking’ a project before it goes to tender. This includes:

- undertaking site surveys
- reviewing existing infrastructure capacity
- comprehensive surveys of existing buildings that are to be refurbished or extended.

This process benefits the client and the whole team as they know what to expect, and the project brief can be set accordingly. The contractor also knows exactly what they are dealing with - there are fewer ‘unknowns’, and there is increased cost certainty. This improves efficiency by allowing for realistic timescales and costs for the completion of projects.

With this system, most major projects undertaken - over £1 million - are procured through a two-stage collaborative tender process. Contractors are engaged at stage one, to:

- turn their skills to project planning and buildability
- help identify potential problems
- procure sub-contract packages on a fully auditable basis ('open-book') at stages complementary to the detailed design work.

Hampshire County Council’s approach to de-risking procurement has led to much improved key performance indicator (KPI) outcomes. They share their experience as a lead authority on the Improvement and Efficiency South East (IESE) regional framework.

References

Improvement and Efficiency South East's website offers a range of procurement and project delivery arrangements to release cashable savings, and is open to all public authorities in the south east.
Evelina Children’s Hospital

An example of understanding the project delivery team.

Understand the role of your project delivery team

“The success or failure of a project generally depends on how much people enjoyed working with each other on it.” This maxim has informed the approach of Alastair Gourlay, the capital development manager for Guy’s and St Thomas’s NHS Foundation Trust and the client for south London’s Evelina Children’s Hospital.

Gourlay ran a design competition to find the architect for Evelina. He asked the shortlisted design teams to already specify the structural engineer, mechanical engineer, quantity surveyor and the construction design and management co-ordinator that they wanted to work with.

Once the competition winning designers were appointed, Gourlay took on the team members preferred by the designers. The whole project delivery team was appointed at the same time - apart from the contractors, who came later on.

Over the next 18 months of design development, and before the contractor was appointed by the client, a strong professional bond was formed between the team members. But when the contractor was appointed to start construction, the already established team members had already bonded, leaving the construction contractor facing communication problems.

Gourlay says he has learned from the experience. Today he always appoints contractors at the beginning of the design development stage along with the rest of the project delivery team. In this way, the familiarisation process and relationship building has already happened by the time the project starts on site. He has done this for his new East Wing and Cancer Centre projects - and it’s now normal practice for all design and build projects, and for most public-private procurement routes.

Do try to be a vigilant client: the delivery team can’t be expected to get on with the job all on their own. Strike a balance between close monitoring, and presuming a high level of expertise. Where construction could be deviating from agreed plans, Alastair Gourlay recommends making considered observations, then expecting the professionals involved to conclude how best to solve the problem at hand, rather than trying to do their jobs for them.

www.cabe.org.uk/buildings
Examples of the design stage

This guide uses real life examples of clients involved in building projects to illustrate what to do, and what not to do, throughout your building project. You can find these examples in the tasks that they relate to, or browse the whole list below.
University of Portsmouth

An example of understanding the design stage.

The value of monitoring quality/cost decisions at design stage

A seemingly small design compromise in the entrance hall of a students' union building led to loss of quality at a greater financial cost later down the line.

When the client for the University of Portsmouth’s student union building was faced with rising project costs, at the end of the design stage, a project manager was appointed as contract administrator and tasked with making savings.

A potential cost saving was identified with the hardwood cladding proposed for the entrance hall. When a value engineering process was done, the cladding specified in the original design, an American walnut, was considered too extravagant. It was replaced with cheaper softwood, which was to save £10,000.

But, during construction it emerged that the newly specified softwood was much lighter in colour than the rest of the finishes in this important space, which matched the original hardwood specification. The client was not happy with the mismatch for such an important space in the building. A dark stain had to be applied to the softwood to match the other finishes, which meant erecting scaffolding at a cost of £25,000. This attempt at value engineering in fact ended up costing an additional £15,000.

The £4.5 million finished building is highly elegant, and one which the students and the university estates department are proud of. But had the client team kept closer tabs on sign-off, and on the reasons behind design-related decisions with a full understanding of their implications, the loss in quality in one of the most important spaces - and at an extra cost - need not have happened.

References
University of Portsmouth: facts and figures
http://www.hawkinsbrown.co.uk/portfolio/others.php?id=6
Newton Abbot Community Hospital

An example of understanding the design stage.

Clear communication reaps rewards

It's one thing for an architect to present a client with a beautiful set of drawings for a project - and quite another for the end result to be as good as those early aspirations. So when Teignbridge Primary Care Trust in Devon worked with their appointed architect on the Newton Abbot Community Hospital project, everyone was determined it should fulfill its potential.

The project was delivered through the private finance initiative (PFI), with Cabe taking an active involvement through its enabling service. This included helping define the brief, and explaining to a range of stakeholders how design quality can be assessed.

Of the design development stage, the architect recalls: ‘we met the users during the bid process, prior to submission. It was really important to clarify our approach, and to understand what they wanted.’ The design team met regularly with the client and key users as ideas were fleshed out, showing them drawings, with different options for them to evaluate. ‘It comes down to communication, understanding their needs, and responsibilities’, says the architect. ‘People feel as if they’re involved, and they are. If they take less interest, they get a less interesting result.’

The resulting hospital is well received - an uplifting environment for patients, staff and visitors. A lot of this success is down to this vision being kept very close to the procurement process, due to a close relationship between the client and the delivery team.

References
CABE case study
Department of Health's Achieving Excellence Design Evaluation Toolkit (AEDET Evolution)
Architect Murphy Philipps' website
Myplace, Luton

An example of understanding the design stage.

Active client involvement in design has wider benefits

When commissioning a new youth centre in Luton, it was essential for the project’s success that a group of local young people sit on the panel for the client team. The chosen architects recognised that an intensive hands-on approach early on in the design process could really reap rewards.

So a client panel of young people was set up at the early stages. The members were invited by architects A-Studio into their offices for the summer months, where they made designing their new centre into a form of work experience. They built real and virtual 3-D models of the site to understand the space available and how the building would sit within its context. The youth clients participated fully in meetings with engineers and planning advisors, developing a strong understanding of the possibilities and limitations of the site, physically and legally.

A deep understanding of the design process was gained, and a sense of ownership of the design. Crucially, the brief was developed alongside a realistic understanding of the space available. In order to achieve all the spaces required, the design group decided to explore ways to push the boundaries of the existing site. Following consultation with the engineers, the team determined that a basement would be too expensive for the tight block and so decided to challenge the planning authority on existing height restrictions.

Involving a client panel in decisions in this way means they gain an innate understanding of the reasons and process behind a finished building. And allowing designers to help facilitate a shared design language for the client can be a real success factor for consistency in the finished building.
Lymington Community Hospital

An example of understanding the design stage.

Encouraging new ways of working can deliver fresh design approaches

When Lymington Community Hospital, a £30 million private finance initiative (PFI) project, was being developed, the health trust had a vision for a building that:

- encouraged new ways of delivering healthcare
- gave a physical and cultural environment that would encourage innovation
- improved staff recruitment and retention.

To stick to this fresh approach and avoid simply replicating existing facilities and care models, the client set a very open brief for the architect. Service models were to be questioned wherever it was thought they could be improved.

Based on previous experience, the designer held numerous workshops with staff, and it ended up challenging the original brief for a standard 36-bed ward. Instead, it proposed a new model with three wards, each with 12 beds. Sharing a room with fewer other patients would provide more dignity and comfort for those undergoing or recovering from medical treatment, and would hopefully speed up recovery rates.

Initially there were concerns about the implications of this new model - that a wider distribution of beds would require more surveillance by more nursing staff - and the client became concerned about a potential tripling of staffing resources. However the designer worked this out with a central hub bringing together all three wards for surveillance by nursing staff, whereas visitors and patients enter each ward separately.

These new working practices had to be popular among staff to succeed. So the workshops were held with all medical and administrative staff from very early on in the process, as the bid was being compiled. This hands-on approach encouraged everyone to be involved in the delivery of an improved healthcare service, and to make sure their premises supported them in their innovative vision.
School of Design Innovation

An example of meeting statutory requirements.

The pitfalls of planning to build on an unsuitable site

Plans for a School of Design Innovation on a site in Bath were abandoned after the project was beset by problems securing planning permission. The plans, instigated by the James Dyson Foundation, would have created a modern building within the remains of a listed Victorian crane factory. They were approved by Bath and North East Somerset Council in March 2008.

But the project stalled after the Environment Agency pointed out that the proposed development on the chosen site did not comply with statutory requirements – in this case, there was a risk of flooding. The scheme was called in for review by the Government Office for the South West and the Environment Agency, and they concluded that the project could not go ahead on that site.

The Environment Agency did not object to developing the site itself, but to the specific project, citing planning policy statement 25 (PPS25). This states what sort of development is appropriate on sites with various levels of flood risk. In this case, the agency stated that the site was not suitable for an educational building.

The foundation decided to cut its losses and find a new site rather than launch a costly appeal.
Jubilee Library, Brighton

An example of monitoring design quality.

**Good client-design team relations help monitor design quality throughout**

The success of the award-winning Jubilee Library in Brighton demonstrates that a good working relationship with clear communication throughout makes it possible to realise your vision.

At every stage of the private finance initiative (PFI) procurement of the library, the client ensured that design quality was maintained. What was critical in establishing a collaborative working relationship was the mutual understanding between the developer and client of what each wanted to get out of the process. The whole team recognised that this was an important building and wanted to deliver the best they possibly could.

A detailed brief was provided which included full output specifications (definitions of the services to be provided in output terms) and was referred to at regular intervals throughout the process. This helped the architect to prioritise elements of the design. Even before the contractor was appointed, full details could be provided of those elements that were critical to the success of the building, such as the lightweight wall cladding and the finish of the exposed concrete ‘trees’ that formed part of the internal structure. This approach was essential to achieving the correct thermal mass necessary for the sustainable servicing strategy - much of the project’s success in sustainability terms hinged on the architect and contractor working together to get them exactly right.

This commitment to design quality continued as the appointed contractor was happy for the client to liaise with the architect - a line of communication that many contemporary procurement routes minimise.

**References**
- Jubilee Library’s website
- The Guardian’s 2005 article on Brighton library
- Concrete Centre article on the Jubilee Library’s construction
Examples of the construct stage

This guide uses real life examples of clients involved in building projects to illustrate what to do, and what not to do, throughout your building project. You can find these examples in the tasks that they relate to, or browse the whole list below.
Brunel Academy, Bristol

An example of understanding the construction stage.

Keeping yourself informed during construction

When Bristol City Council started on the Brunel Academy project, it seconded Dick Hibdige to act as the BSF construction advisor on this and other school projects. Previously the lead client for the delivery of Bedminster Down School, Dick was a deputy head with over 30 years’ experience, and a keen personal interest in construction.

Liaising between the lead client, the school and the construction company, Mr Hibdige was able to answer detailed design problems as they occurred during construction on site - for example if it was acceptable whether the gas outlets were not where expected when they fitted out one of the laboratories, or a duct obscured a light fitting. He had been involved with the project from day one and his clear understanding of the functionality of the school evolved through meetings with staff, pupils and the client management team.

The strong relationship he developed with the contractors meant they would call him if something cropped up when he was not on site. His understanding of both the teaching profession and construction industry allowed him to make on-the-spot decisions during construction, and was essential to the success of the project. If necessary, he was able to consult an independent multi-disciplinary practice for specialist advice.

On completion of the academy, Mr Hibdige checked each individual space, even down to the blind pulls, to make sure the client was getting exactly what they had specified.
Joseph Chamberlain 6th Form College

An example of dealing with change during construction.

Packaging work correctly leads to limited defects at handover

Clients often aren’t able or willing to deal with the sometimes enormous amounts of technical drawings and specifications they need to sign off, often within short timescales. Consequently, crucial detail may be missed.

So in order to avoid costly last-minute changes during the implementation stage, the architects for the Joseph Chamberlain 6th Form College knew they had to ensure that the client understood exactly what it was getting before the project started on site.

For every element of the project, well beyond RIBA stage D, the architects drew up as much detail as they could, and this formed the basis of their individual tender packages. They then arranged a three-day session to run through the relevant material with the client, structuring the three days so that specific members of staff could be present for items relevant to them. A diverse range of information was covered, ranging from external brick finishes to the door handles.

Any technical details and necessary changes were then negotiated with the contractor before work began on site. As a result, only a few minor changes were necessary during construction.

References
‘Birmingham sixth form college judged this year’s best public building’
Heathrow Terminal 5

An example of understanding the handover process.

How not to open a new building

BAA promised a ‘calmer, smoother, simpler experience’ for passengers when it opened Terminal 5 at Heathrow in 2008. The result was anything but, with an inadequate change management plan resulting in the opening descending into chaos.

The potential for teething problems with baggage handling and lack of staff familiarity with new systems was well known from other airport openings around the world. Yet amid a wave of national and international publicity for the airport operator BAA and British Airways, the baggage and security systems were not working properly, with more than 23,000 bags requiring manual sorting before being returned to their owners. Catastrophically, 500 flights were cancelled.

One of the major causes of problems was identified as software filters installed during testing, which were accidentally left in place after the systems went live. Their job was to prevent specimen messages generated during testing being sent to live systems elsewhere in Heathrow. But once the Terminal 5 system went live, the filters meant Terminal 5 did not receive messages about bags transferring from other airlines. These bags were automatically sent for manual sorting.

By BA’s own admission, it had not left enough time for the thorough testing and familiarisation process necessary to ensure a smooth systems handover. Delays to construction had then impacted on the time originally planned for both system testing (including the ever-crucial IT systems) and staff training. A calculated risk had then been taken to compromise on preparation time leading to handover, rather than moving the handover date.

All this was compounded by poor communication protocols between British Airways and BAA. MPs concluded “chaotic scenes [at the opening] could, and should, have been avoided through better preparation and more effective joint working”.

Other aspects of the £4.3 billion project had gone smoothly, and despite some building delays it did open on time and on budget – but at the expense of hundreds of cancelled flights, 23,000 mislaid pieces of luggage, and a vast number of disgruntled customers.

References

Computer Weekly article: Terminal 5 problems should have been avoided, 3 November 2008
BBC news, Technical glitches hit T5 opening 27 March 2008

www.cabe.org.uk/buildings
Examples of the use stage

This guide uses real life examples of clients involved in building projects to illustrate what to do, and what not to do, throughout your building project. You can find these examples in the tasks that they relate to, or browse the whole list below.
Academic Instructional Center, Washington

An example of preparing for use.

Why you need an instruction manual for a building

In tandem with the building of the Academic Instructional Center at Washington University, a building user guide was prepared to help explain to users how the building should work.

Each element or function of the building was explained in the guide, including why it was there, how it worked, and how users would interact with it. This was particularly useful since the Center had to accommodate two separate university departments, yet still function as a whole.

The guide:

- made clear how the building’s natural ventilation system worked, and how to control it using fans, windows, trickle vents and radiators to modulate temperature and fresh air
- explained how sensors operated the lights and how lights could be switched off manually to save more energy
- described how toilet flushes should be used to save water
- covered security and multi-media facilities
- gave contact details for facilities management.

The guide helped users to get the most out of the building, and reduced problems occurring due to misuse. It also meant that sustainable patterns of use were embedded in the early stages of the building’s occupation.
Design, Build, Finance and Operate (DBFO) project

An example of fine tuning and making good.

A finished building is only as good as the contract that delivered it

Sometimes suppliers drag their feet in dealing with faults within finished buildings. Proper documentation and monitoring of agreed responsibilities as you go along can help avoid this.

One estates manager of a DBFO (design, build, finance and operate) project has seen persistent problems in his completed building, with problematic floor finishes, a faulty intruder alarm, and excessive overheating – none of which the contractor will proactively address post completion.

Those operating the building have no control over the outside lights which are on all night - but contractually the client has no control over their fitting or of any other fittings in the building. Staff control of their environment is limited: rather than being individually controlled, either a whole bank of computers has to be on, or none can be on at all – and the same goes for internal lights.

One of the watchpoints before handing over a building is the degree and nature of responsibility on the part of the contractor to monitor, fine tune, and correct defects post-completion, such as an obligation to replace like with like. The degree of control by the client body is also crucial. Appointing an expert contract manager to go over, query and correct this finer contractual detail in the run-up to and during the financial close phase is highly recommended.

Keeping a rigorous paper trail, including minutes from design conversations during project development, makes it easier if necessary to hold suppliers to task for non-delivery of agreed design elements.

Finally, be aware of changes in personnel. One day your highly efficient building manager may leave, to be replaced by someone less well informed. Make sure that whoever manages your building keeps a detailed log as they go along, which can then handed over to successors.
Sure Start post-occupancy evaluation

An example of evaluating and improving.

An end-of-term report for children’s centres

The Department for Education commissioned CABE to carry out an evaluation of Sure Start children’s centres in 2007, when about two-thirds of the planned 3,500 centres had been built. The aim was to compile a record of the programme, and understand the quality being delivered to see if lessons could be learned. The evaluation included factual information about the buildings and subjective assessments by built environment professionals and the families who used the centres.

While users said they were largely satisfied with the general functions of the new facilities, the built environment professionals’ view was that the design standards were not as high as they could be. The study found that the briefing did not draw sufficiently on the knowledge of staff, parents and the community, because the timescale for delivery was too short. The study also highlighted the tendency for poorer design in areas of the buildings not governed by standards.

The data gathered was used to compare how design was rated for different building types and different types of procurement. It was also used to compare the differences and similarities between users and built environment professionals. A series of recommendations for government and local authorities were made. These included improvements to funding regimes, as well as the scope of design and sustainability standards, and making design assessment integral to project development.

References
Sure Start children’s centres: A post-occupancy evaluation
Centre for Mathematical Sciences, Cambridge

An example of evaluating and improving.

Probing questions for building in use

The original brief for the Centre for Mathematical Sciences in Cambridge was to avoid mechanical ventilation in offices. When the building was complete, the client was keen to develop a post-occupancy evaluation to assess how well the building actually operated in practice.

The design strategy in the brief combined:

- solar shading
- thermal mass (where the thermal properties of the building’s mass are used to heating and cooling advantage)
- natural ventilation
- the facility for automatic night cooling.

Once the project was complete, the PROBE (Post-occupancy Review Of Buildings and their Engineering) method was used to assess these complex systems and how effective people found them. User satisfaction was measured by looking at:

- comfort
- winter and summer temperatures
- air quality during the summer and winter
- lighting
- noise.

It also looked at how users perceived their health was affected by being in the building, and how much control they felt they had over heating, cooling, ventilation, lighting and noise.

Compared to national benchmarks, there was a high level of satisfaction with the degree of comfort, and the building also performed well for perceived health effects. The evaluation showed that the advanced naturally ventilated system was working well. It highlighted the quality of natural light, ventilation and ceiling height as contributing to users’ highly positive perceptions of air quality. The accompanying technical evaluation also led to a series of recommendations about how such a system could be improved in future.

References / sources
PROBE (Post-occupancy Review Of Buildings and their Engineering), then click on ‘Probe’ and scroll down to number 23 for pdf.