

Risk identification and management

Compared with many other industries, the construction projects are likely to be subject to more risks due to the unique features of activities, such as long duration, complicated processes, changeable environment, financial intensity and dynamic organisational features. Hence, effective risk identification and management is paramount for success of any construction project. Along with identification of risks, care should be taken to identify the most appropriate owner of the risk. Transferring all risks over to the contractor in most circumstances is unlikely to generate the best value solution and does very little to foster a collaborative environment. The risk identification and management process should have the best interest of the project as its core objective and it is the responsibility of the project manager to ensure conformance to this objective.

Environmental management and controls

Environmental statements

Environmental concerns will increasingly affect our projects. This is especially the case with the pressure to develop brownfield sites and reuse old sites (e.g. the guidance as set out in NPPF (2012)). The cost of addressing contaminants or other environmental issues can add significant costs and increase the duration of project. Planning authorities are also more likely to instruct environment studies and restraints as part of the planning process, all of which must be incorporated into the project during the construction stage. It is the project manager that has overall responsibility to ensure compliance with these aims, objectives and constraints. The project manager will need to:

- understand and act on the environmental impact assessment
- ensure proper environmental advice is available
- ensure that the contractor is complying with the environmental statement
- seek and ensure action by the contractor of any remedial actions should they be necessary to comply with environmental considerations
- Contractor's environmental management systems
- The contractor must establish his own environmental management systems (EMS), but it is for the project manager to ensure that it is being managed properly and is progressing
- sufficiently to achieve all EMS objectives. Therefore, the project manager should:
- receive details of the contractor's EMS and the environmental plan (EP) specific to the project
- ensure that the contractor has set up all necessary procedures and structure
- to manage the EMS and implement the objectives of the EP
- check that the contractor's environment management plan matches the aims and objectives of the environmental statement
- Agree with the contractor any further aims, specific targets or initiatives that will maximise sustainability of the project and minimise the detrimental impact of the construction process
- proactively monitor the progress of the contractor to maintain his proposals and objectives

Stakeholder management

Traditionally, the main participants in a construction project coalition are the client, the designers and the contractor with the project manager leading the coalition. The interactions and inter-relationships between these participants largely determine the overall performance of a construction project and have the crucial responsibility for delivering a project to successful completion. However, looking upstream and downstream in the construction project lifecycle, there are multiple attributes that contribute to the success of a project, and these are influenced by a variety of decisions made by various individuals, bodies and organisations. These internal and external participants are recognised as stakeholders who are actively involved in the project or whose interests may be positively or negatively affected as a result of project execution.

The feasibility stage discussed the process to identify the relevant stakeholders as appropriate in the project context and outlined the tools that can be used to undertake stakeholders mapping and management. Internal stakeholders are people who have legal contact with the client and those clustered around the client on the demand side (employees, customers, end users and financiers) and on the supply side (architect, engineers, contractors, trade contractors and material suppliers). The external stakeholders comprised private and public sector representatives. The private entities can potentially be from the local residents, landowners, environmentalists and local pressure groups, whereas the public entities can be from regulatory agencies, and local and national government. It is the responsibility of the project manager to ensure that an appropriate stakeholder mapping is undertaken, with the relevant processes necessary for management of each and every stakeholder depending on their position on the power/interest matrix, perhaps utilising a RACI (Report, Advise, Consult, Inform) or similar model.

Quality management

It is the project manager's role to set up and implement an appropriate process to manage project quality. From the quality policy defined in the project brief, the development of a quality strategy should lead to a quality plan setting out the parameters for the designers and for the appointment of contractors. Quality control then becomes the responsibility of the contractor, subcontractors and suppliers operating within the agreed quality plan. The plan itself should establish the type and extent of independent quality auditing (particularly for off-site production of components) and the timing of inspections and procedures for 'signing off' completed work.

It is the responsibility of the design team and other relevant consultants to specify the goods, materials and services to be incorporated in the project, using the relevant British Standards, codes of practice and 'Board of Agrément' criteria or other appropriate standards.

The achievement of these standards rests with the appointed main contractor. When interviewing contractors at the pre-tender stage, the project manager will seek confirmation that each company has a positive and proactive policy towards the control of quality, a policy which will be reflected in all of its operations off or on the site.

Commissioning strategy

Typically commissioning information, guidance and resources are linked with three broad principles:

- determine project performance requirements
- plan the commissioning process
- document compliance and acceptance

It is important to note that all three principles are applied over the lifespan of a capital design and construction project, and that it takes a multidisciplinary effort involving clients, design professionals, construction managers and commissioning providers to achieve optimal results from the commissioning process.

It is important to start the commissioning process early and to bring the commissioning agent or entity on board during or before schematic design. This early involvement is critical for the timely and useful development of the Owner's Project Requirements (OPR), the subsequent design team Basis of Design (BOD) and the beginning of the Operations & Maintenance (O&M) Systems Manual. If these tasks are left until later in the process and 'reverse engineered' to match the design, their usefulness as catalysts for dialogue and quality tracking tools would be compromised.

Appointing the commissioning agent immediately after the designers allows the commissioning agent to become familiar with existing programming documents and when the Services Manual is started at this early stage, the inclusion of O&M requirements is ensured. The inclusion of O&M in the early stage project programming is the key to the long-term persistence of the energy efficiency and equipment longevity strategies built into the design.

Selection and appointment of project team consultants

The project manager in consultation with the client will decide on and implement a selection procedure for members of the project team, together with contractors and other consultants. These may then be appointed on behalf of the client. The extent of contractors and consultants will be determined, to some extent, by the procurement route selected. In connection with the project team, two common arrangements for appointment are:

- separate appointment of independent service providers
- single appointment of a team of service providers or a lead organisation for the provision of all services

It is important that the members of the project team should be as compatible as possible, both in temperament and in working methods if the project is to have the greatest likelihood of success. Therefore, selection should be based on balancing quality, compatibility, schedule and price. The project team, consultants and contractors (who may or may not also be suppliers within the supply chain) may be appointed through a process of short-listing and structured interviews or through a competitive tendering procedure. This may be through European Union (EU) procurement procedures, which may be mandatory for publicly funded projects depending on the size of the project.

The project manager needs to be fully informed on all issues related to the procurement process and advise the client accordingly.

The client should be consulted on the formulation of shortlists and should be invited to attend any interviews. The process is set out in Figure 3.5

Activity	Considerations
Selection and appointment of project manager	May be appointed at inception/feasibility stage
Agree criteria for team selection	Type of expertise and scope Budget fee Contractual procurement strategy
Define in detail each function	Extent of services required Coordinate with other professional agreements
Define roles and duties	Scope of work Roles and duties
Agree terms and conditions of engagement	Clients of standard conditions of engagement Programme, professional indemnity (PI) insurance, warranties
Selection of those invited to bid	Utilise relevant databases Agree list of consultants Decide selection criteria Format proposal required Agree content and fee
Carry out the selection process	Agree interview team Agree selection criteria Arrange interviews Utilise scoring system
Negotiate conditions of appointment	Provide client with analysis and selection recommendations Negotiate final conditions
Advise on final appointment	Issue letter of appointment Issue letters of rejection
Oversee formalities relating to PI insurance, warranties and building	Legal department to formalise Finance department for fees Legal documents issued

Figure 3.5 Appointment of project team consultants

For the 'short-list' method, the project manager should formulate the short lists, convene and chair the interviews, record and assess the results and present a report and recommendation to the client for final decision.

Most professional firms are members of organisations that publish standard terms of appointment and codes of conduct. It is usual to appoint the project team members on the standard terms which are designed to provide a proper balance of risk and responsibility between the parties. Standard terms are capable of amendment by agreement (but any amendment should be considered very carefully before changes are made to avoid inconsistencies and conflicting terms). The project manager should advise against terms which impose uninsurable risks or unquantifiable costs on the consultants or are in conflict with their professional responsibilities or codes of conduct.

The project manager will issue to the appointed project team with the project handbook, the outline project brief and the master schedule together with the budget or cost plan. It is advisable that these elements are referred to in as much detail as is available at the time of the project team's appointment.

Collaborative arrangements

Collaborative and partnering arrangement is a set of actions by project team by which risks can be distributed and conflict can be minimised. The intention is to provide 'win-win' outcomes for everyone involved. It is put into practice by having regular partnering workshops of all the key members of the project team to establish and foster cooperative ways of working aimed at improving performance. In broad terms, partnering teams agree mutual objectives that take account of the interests of all the parties; establish cooperative methods of decision-making including procedures for resolving problems quickly; and identify actions to achieve specific improvements to normal performance. The workshops take place throughout the project usually under the guidance of an independent partnering facilitator.

There is considerable evidence to show that partnering can bring significant net benefits in the form of reduced costs, improved quality and shortened timetables. However, these benefits involve additional costs in ensuring the selected project team members are willing to work cooperatively and the expense of running partnering workshops. The additional costs arise during the early stages of projects while the benefits, which depend on partnering being successful, accrue during the later stages. The likely costs and benefits of partnering should be considered by all clients.

It is very likely to provide benefits for clients with phased projects or who undertake programs of similar projects, but it has been shown to provide benefits on a one-off project. Partnering of the supply chains that produce key elements should also be considered on all except the smallest and simplest projects.

Framework arrangements

Rather than uniquely tender goods or services on individual projects, some large clients prefer to establish framework agreements with preferred suppliers. Frameworks can be described as agreements to provide both goods and services on predefined and specified terms and conditions with a selected number of suppliers (e.g. consultants, designers and contractors). Frameworks range from a mechanism to assemble a limited number of prequalified suppliers who will then be asked to bid for projects to arrangements where specific teams of suppliers are guaranteed a regular workload in return for continuous improvement in delivery of their product. There are a wide variety of framework procurement contracts available for use.

Private public partnership/private finance initiative (PPP/PFI)

A PPP project is any alliance between public bodies, local authorities or central government, and private companies to deliver a project. A PFI is one type of PPP. A PFI is a more specific and formal long-term partnership, covering both the capital asset and the services that form a project. Typically, under a PFI regime, the public sector sets a level of service and the private sector operator provides the services in return for a charge, so the public sector body is able to finance the project over the term of a contract, often 25 or 30 years. Funding, in the form of PFI credits, may be available from central government to support the capital element. Though there is a significant variance on a large number of factors, many PFI/PPP projects have the following features in common:

- long project life, usually at least five years, sometimes many more

- a substantial initial capital spend which is recovered over the project' life
- financed with high levels of borrowed capital
- income and risk-sharing determined by a long-term contract

Other forms of PPP projects may include arrangements such as DBFO (design built finance operate), DBO (design built operate), Concessions, JV (joint ventures), outsourcing and similar.

Procurement strategy

In the context of this Code of Practice, procurement should be considered to be the process of identification, selection and commissioning of the contributions required for the construction phase of the project. The alternative methods of procurement referred to reflect the different organisational and contractual arrangements which can be made to ensure that the appropriate contributions are properly commissioned and that the interests of the client are safeguarded.

The various procurement options available reflect fundamental differences in the allocation of risk and responsibility to match the characteristics of different projects; therefore selection of the procurement option must be given strategic consideration. The project manager should advise on the relative benefits and disadvantages of each option, related to the particular circumstances of the project, for the benefit of the client. The final choice of procurement method should be made on the basis of the characteristics of the project, the client and his requirements. The selection of method should be made when consideration is being given to the appointment of design and other specialist consultants because each option can have a different impact on the terms of appointment of the members of the project team.

The various procurement methods which may be pursued can be broadly classified under four headings:

- traditional
- design and build
- management contracting
- construction management

Each method has its own variations. No method is best in all circumstances. They bring different degrees of certainty and risk towards construction and development.

It is important to note that works contract selection will be influenced by the procurement method chosen and must be harmonious with the procurement strategy.

Traditional

The contractor builds a client-designed scope of work within a time period for a lump sum. The client remains responsible for the design and the performance of his consultants under the building contract. The client appoints a design team, including a quantity surveyor responsible for financial and contractual advice. A building contractor is appointed, usually after a tender process, and typically based on one of the standard forms of contract, to carry out the construction. The tender process can be based on complete design information or partial design information plus provisional guidance if an early construction start is required.

Some traditional contracts also allow for design responsibility for certain elements of the works to be passed to the main contractor, sometimes referred to as contractor's design portions (CDPs). This is particularly relevant where there are specialist elements of the works that need to be designed and installed by a specialist subcontractor as part of the main contractor's works.

Design and build

The client appoints a building contractor, typically on a standard form of contract to carry out at least some of the design and to complete construction within a time period for a lump sum. The contractor is responsible for the design elements and construction as defined in formal documentation known as the client's requirements, which usually impose the same design responsibility as would be imposed on a designing consultant, that of 'due skill and care'; it does not normally require the contractor to warrant 'fitness for purpose'. The appointment may be made after a tendering process incorporating variations on the method or through negotiation. The client may appoint consultants to prepare the client's requirements, which may involve varying degrees of design and after-contract to oversee matters on his behalf. Difficulties can arise in distinguishing changes in the client's requirements (for which the client is liable) from design development (for which the contractor is liable).

If the design-and-build contractor is appointed after completion of a part of the design, the appointments of the design team may be formally passed on (contractually novated) to the design-and-build contractor. The purpose of the novation is to secure continuity and consistency of quality through to the production information stage when working under the direction of the contractor. However, in practice, research has shown the potential for conflicts and poor quality often remains.

Prime contracting is an extension of the design-and-build concept. The prime contractor will be expected to have a well-established relationship with a supply chain of reliable suppliers. The prime contractor coordinates and project manages throughout the design and construction period to provide a facility which is fit for the specified purpose, and meets its predicted through-life costs. The prime contractor is paid all actual costs plus profit incurred in respect of measured work and design fees; it is only at risk in respect of its staff and preliminaries.

Management contracting

The client appoints a design team with responsibilities, as in the traditional method, and augmented by a management contractor whose expertise and advice is available throughout the design development and procurement processes. Specialist works subcontractors, who are contracted to the management contractor on terms approved by the contract administrator, carry out the construction. The appointments of the management contractor and the trade subcontractors are usually made on standard contract forms. The management contractor is reimbursed all his costs and paid a percentage on project costs in the form of a guaranteed profit or fee.

Construction management

Construction management requires that the specialist works contractors are contracted to the client directly, involving the construction manager as a member of the project team acting as an agent and not a principal, to

concentrate on the organisation and management of the construction operations. The project team, including the construction manager, is responsible for all financial administration associated with the works. The construction manager is paid an agreed fee to cover the costs of staff and overheads. This is generally considered to be the least adversarial form of contract and is often invoked when design needs to run in parallel with construction. This method is at its best with a hands-on responsive client who can make decisions quickly.

Hybrid procurement approaches

Due to the varied nature of project requirements and constraints, it is often not practical to adhere to the forms of procurements as identified above which results in clients opting for more of a 'mix and match' route which results in utilising a hybrid procurement option.

The choice of the hybrid ways, as highlighted later, will depend on:

- client requirements
- client experience
- development and availability of project information
- delivery time scales

Two-stage tender

This is a variation of the traditional (design –bid –build) approach where the contractor's tenders are based on a partially developed consultant's design (stage 1 tender). The contractor then assists with the final development of the design and tender documents, against which tenders for the construction works are prepared (stage 2 tender). Whoever put forward the first stage tender has the opportunity to tender or negotiate the second (construction) stage. This approach increases the risks of an increase in overall price and a less certain completion date but contractor involvement is likely to increase the likelihood that both these criteria are realistically established.

Develop and construct

This is a variant to the design-and-build approach, where the client has the design prepared to concept or scheme design stage and the contractor takes on 'nishing off' the design and construction. The contractor may re-employ (through novation) the original designers to complete the design.

Package deal

This is a variant to the design-and-build approach, where the contractor provides an off-the-shelf building. The building type is often modular so that its size can be adjusted. Typical examples are farm, factory, warehouse, office buildings and school class rooms.

There are also a number of other possible combinations of hybrid procurement options as well.

Innovative form of procurement Based on the findings of the Government Construction Task Group Report (2012),⁶ the Government Construction Strategy set out a clear commitment to trialing new models of procurement that include principles of early supplier engagement, transparency of cost, integrated team working and collaborative working. A draft guidance for these models had been published in early 2014 which aimed to set out three key

procurement routes:

Two Stage Open Book

Using Two Stage Open Book a client invites prospective integrated teams to bid for a project based on their ability to deliver an outline brief and cost benchmark. Following the first stage competition, the appointed team works alongside the client to build up a proposal, the construction contract being awarded at the second stage. This differs from Cost Led Procurement in reducing industry bidding costs, enabling faster mobilisation and in providing the opportunity for clients to work earlier with a single integrated team.

Cost Led Procurement

Applying the Cost Led Procurement process, a client can use their knowledge of costs to set a challenging cost ceiling and output specification against which the supply chain can bring experience and innovation to bear in a Competitive framework environment. On frameworks with a series of similar capital projects, CLP provides the opportunity to continually improve on the unit costs of the programme working collaboratively with the supply chain.

Integrated Project Insurance

The Integrated Project Insurance (IPI) model offers Clients the opportunity to create a holistic and integrated project team (an 'Alliance Board') to eliminate the "blame/claim" culture. The innovative "integrated project insurance" package limits the risk for the individual members of the team, fosters joint ownership of the project, and thereby reduces the likelihood of overrunning in terms of cost and time.

Characteristics of procurement options

The significance of the features listed in the table above may be outlined as follows:

- Having widely dispersed responsibilities for different activities may provide the project manager with greater control, for example, in the selection of preferred consultants. It may, however, make it difficult to pinpoint responsibility.
- It is acceptable practice to limit the numbers of tenders invited from contractors based on value and design development criteria. Where tendering involves significant design development, the cost will discourage contractors unless invitations are restricted. Such restrictions may not produce the most competitive price available unless careful pre-tender assessments are made.
- Although the establishment of a certain financial outcome at an early stage in the development programme will minimise client risks, it could well be at a price This is because of the risks which the tenderers will have to assume. A balance has to be achieved that depends on all the circumstances.
- The client's requirements document associated with design and build procurement is a definitive statement. It must be produced early and it becomes the basis for all subsequent activities. Other procurement options enable progressive development of the client's brief, which may be helpful where

there is uncertainty or greater complexity.

- Independent assistance with the development of a design brief, which is integral to procurement options, may be advantageous where there is uncertainty or greater complexity, similar to item 4.
- Mobilisation of construction using traditional procurement is relatively slow because much of the design development must be completed before appointment of the contractor, whereas all other methods enable progressive design and construction.
- Little flexibility to accommodate variations exists within the design and build method. The other methods make reasonable provision for flexibility through the issuing of variations or additional works contracts.
- Standard documentation, with which the industry is familiar, allows agreements to be entered readily. Although it enables incorporation of particular requirements, the drafting of unique documents often involves much negotiation and expense.
- Where there are significant uncertainties or where limited finance is available, the opportunity to develop and appraise proposals may be advantageous. There may even be an opportunity to carry out construction on a progressive basis, step by step.
- All procurement methods should seek to provide facilities for client cost monitoring, although the possible detail will vary.
- Contractors' input to design could produce more cost-effective solutions provided contractors' interests are accommodated correctly. By using design and build, the contractor clearly has a vested interest in providing such input.
- The schedule of preparation of production information is often critical to, and should be determined by, the construction schedule.
- Procurement methods have different abilities to select preferred trade or works contractors that actually execute the works; no influence in selection is possible using design and build, and only limited influence is possible using the traditional method.
- Design and build procurement makes no provision for the monitoring of construction quality – any monitoring required by the client must be independently commissioned. In other forms of

procurement members of the design team – or the management contractor or the construction manager – may have monitoring responsibilities. But in all cases, except the last, only limited control of quality is available.

- Design and build standard forms usually make no provision for the provision of a working schedule. Accordingly, it is essential to effective project control that the necessary amendments are made to the standard form to facilitate the control of time to enable the project manager to properly execute his responsibilities in that regard.
- Since construction works involve substantial financial transactions, there is considerable financial benefit to the main contractor in achieving payments as promptly as possible while delaying payments due as long as possible. This may have a significant detrimental effect on the attitudes and performance of the specialist subcontractors, and hence on the quality of their workmanship, thus exacerbating the limited quality control characteristics of procurement methods. Where payments to specialist contractors are under direct control of the client/construction manager, this can be turned to advantage.
- Management procurement methods provide for remuneration of the management contractor or construction manager on the basis of a fee, not necessarily related to performance. Equitable performance measurement is often difficult. In design and build procurement, there is a strong incentive for good management; in traditional procurement, there is also an incentive for the contractor.
- Construction quality, speed and cost can all be improved through good teamwork.

Procurement methods which recognise the varying responsibilities of those managing construction operations and which preclude exploitation of any party are most likely to avoid confrontation.

Selection of the procurement method

From the foregoing, it can be seen that the most important characteristics of each method will best suit particular types of project. For example, design and build procurement would be an obvious choice where a client has limited interest in involvement with the design or construction process; and when there are clearly defined, straightforward requirements, including a need for early determination of cost. It is necessary to consider all the characteristics of the project and to compare them with the characteristics of the various procurement methods available. The most important characteristics should be identified initially, after which secondary and peripheral issues should be considered, and the details determined for any necessary adaptation of the basic procurement methods available. For example, although design and build procurement may appear well suited to the project characteristics, it will probably be appropriate for the client to appoint an architect or planning consultant to

progress the project through planning approval. The documentation produced would then be incorporated in the client's requirements on which design and build tenders would be sought.

Care must be taken in adapting any particular procurement method to compensate for perceived shortcomings, to avoid compromising the basic principles and essential characteristics. Thus, for example, although the engagement of design assistance for preparation of the client's requirements will inevitably dilute the single-point Responsibility attribute of design and build procurement, the effects of this dilution should be mitigated by careful definition of responsibilities and terms of engagement.

Similar care must be exercised when procuring specialist components or services incorporating design elements within a traditional project procurement method. Selection of a procurement method is thus an essential element in the development of the policies to be adopted for implementation of all projects. In view of the fundamental differences in philosophy between the four basic procurement methods, the method should be determined at the earliest possible stage so that timely decisions can be made on the engagement of appropriate project resources. The development process can be optimised only by giving consideration at the earliest stage to the issues on which the appropriate procurement method should be determined.

Procuring the supply chain

When selecting the key members of the supply chain, not only should the key contractors be appointed as soon as is feasible, depending on the procurement route selected, but key suppliers, especially those who may have a design element within their requirement, should likewise be appointed at an early stage of the project. This should enable the following to be achieved:

- resolution of the buildability issues at design stage
- choice of the most efficient materials to be used
- advice to the client as to costing (practical, rather than rates)
- coordination of the 'specialist designers' with the main design team
- understanding of the client's needs in all areas, which will assist in the construction process leading to the quality and required product for the client
- highlighting and incorporation of relevant health and safety issues which must be taken into account in the design including obligations under CDM regulations

Responsible sourcing

Responsible sourcing relates to the management of sustainability issues associated with materials in the construction supply chain, often from an ethical perspective.

During the procurement process, in addition to the obligations under CDM 2007 regulations, efforts must be made to ensure that the supply chain, at as many levels as practicable, can demonstrate through processes and procedures, a safe, sustainable and ethical sourcing philosophy.

Tender procedure

The master development schedule will indicate the time allowed for procurement and design, will show activities such as tender interviews, tendering and selection; scope, release dates, approval periods, cost checking and appropriate documentation, etc.

These activities may include the following (see also Figure 3.6):

- Checking that the various documents are produced at the appropriate times, including those for pre-main construction works (e.g. demolition, site clearance, access and hoarding) and ensuring that they contain any special terms required by the client and local statutory authorities for activities such as archaeology and environmental investigations. In conjunction with the relevant consultants, preparing lists of firms to be invited to tender for the elements of the work (pre-qualifying process). Obtaining confirmation that the listed firms will be prepared to submit their offers at specified dates, taking up references and/or interviewing prospective supply chain companies, including relevant consultants.
- Ensuring that all appropriate health and safety/CDM references are made in the documentation together with any relevant statutory authority references.
- Checking, in liaison with other project team members, that all contract documentation is coordinated, especially where aspects of design are involved and confirming that, where appropriate, warranties are secured.
- Receiving reports on supply chain procurement, together with method statements.
- Interviewing successful supply chain applicants, if necessary, to clarify any special conditions and to meet significant leading personnel.
- Arranging for formal acceptance of successful supply chain applicants as appropriate and issuing award letters.
- Selection should be based on balancing quality, schedule and price.
- Initiating action if price submissions are outside of the budget.
- Ensuring that the client understands the nature and terms of the construction, particularly those in relation to possession and payment terms, and that possession of the site can be given to the contractor on the date set out in the tender.
- Arranging for formal signing and exchange of contracts.

In view of the EU directives on procurement, negotiated tendering is also being undertaken as an option to secure best value for money.

Employer's requirement document

The purpose of the employer's requirements document is to set out precisely the requirements of the client to facilitate contractors to price the works accurately. While at the same time removing any risk of unforeseen costs

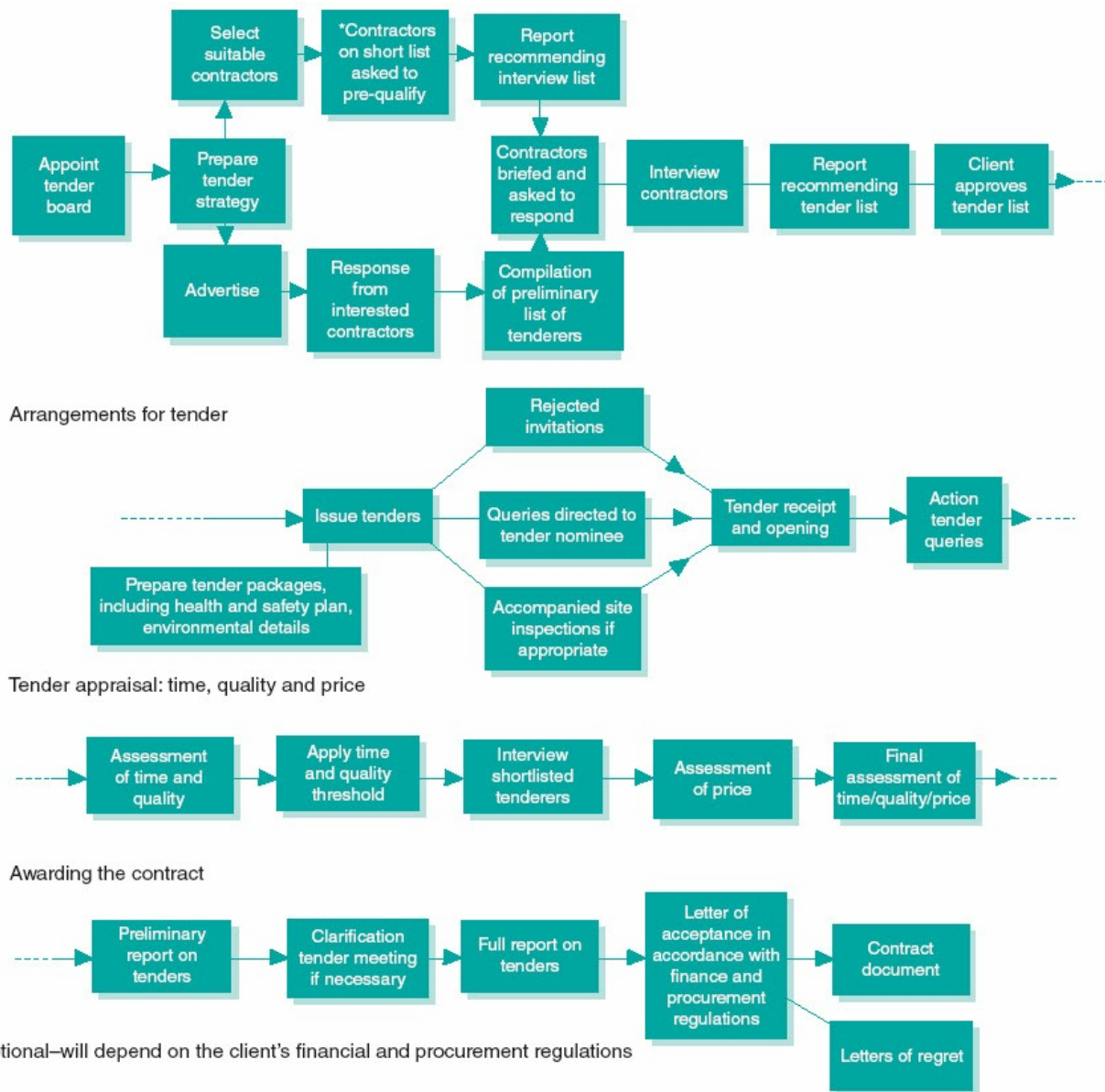


Figure 3.6 Tender Procedure

for elements of work that have not been accounted. The size of the project and the complexity of the business requirements will be the driving factor as to what the employer's requirements should contain.

This document is typically utilised in design-and-build form of procurement. The employer's requirements document is developed for individual projects, but would typically incorporate the following pre contract information. Once completed these documents would form the basis of the contract between the employer and the contractor.

Employer's requirements:

- project overview
- pre-acquisition or survey reports forming part of the building due diligence building appraisal report
- proposed form of building contract and completed appendices
- contract specific terms & conditions
- proposed tender and construction schedules
- detailed scope of works