Project Initiation and Contracts Handbook

Scottish Government
Riaghaltas na h-Alba
gov.scot

Contents

Project Initiation and Business Cases Handbook

Chapter 1

The Client and the Project Environment

Contents:

Section	Subject

Overview

1.1.   Project initiation is a key stage of any project and the success of outputs and outcomes flowing from project delivery will be determined by what happens during it. The client, that is the organisation which buys the goods, services or works, is responsible for all stages of the project including the initiation stage.. The client must take an overview of the whole project and, whilst attention to detail in specific phases is important, their eye must follow all the way through to the strategic benefits sought from construction of the asset. The client will be assisted throughout by appropriately qualified persons including where required externally appointed consultants, this is particularly important where the client is not experienced in the planning or delivery of construction projects.

The Built Environment Asset Whole Lifecycle

2.1.   Built assets are always built to deliver an outcome and their lifecycle broadly follows the stages described below:

- **Planning** – identify the need for an asset, assess the options and plan the delivery. This is critical and enough resource and intellectual effort must be applied to fully identify the impact the asset is intended to have.

- **Development** – develop the design, procure the work and carry out pre-construction activity.

- **Construction Phase** – complete the detailed design, construct and commission the asset.

- **Operation** – use and maintain the asset.

- **Decommissioning** – conversion to other purpose, mothballing or deconstruction.

2.2.   The client must be closely involved in all stages of the lifecycle of the asset and ensure each stage is not treated in isolation of the others and, as noted above, a focus is maintained on how the operation of the asset is intended to benefit the business.

What are the Client Responsibilities?

3.1.   A successful project relies on mutual integrity, cooperation, communication, fairness, objectivity, courtesy and professionalism. The Client is the pivotal figure in the project and is in a position to lead by example through the right approach to the project and a commitment to team working and Value for Money (VFM), so must therefore:

- allow sufficient time (before and during construction) to fully plan the project and get all elements of the construction and delivery sequence right;

- develop the business case and benefits realisation plan;

- clearly and fully define the needs and expectations in the brief, since late changes of mind can prove expensive in terms of timescale, cost and quality;

- ensure that the appropriate team is appointed (either collectively or individually) to provide advice and to represent the Client's interests — they must be suitably resourced, qualified, experienced and able to work together as a team;

- analyse the risks attached to the project, quantify them, ensure they are managed and make appropriate financial and time provision for them;

- define the parameters of time, cost and quality before the construction phase commences;

- ensure appropriate measures are in place to assure the delivery of quality output and project processes. (Quality is defined in paragraph 3 of Chapter Three of the Construction Phase Handbook of the Client Guide)

- take account of project cost over its whole life and not on the basis of initial (construction and professional fee) costs;

- ensure that the necessary financial and other resources are available when required;

- meet all statutory obligations, including health and safety and EC legislation requirements;

- regularly monitor the entire development process throughout all of its stages, including responding to recommendations of assurance reviews carried out at key approval points in the process and carrying out post project evaluations of the process and end product on completion; and

- display the leadership and management skills of a best practice Client.

3.2   In order to assist the client in understanding their capability and capacity to deliver construction projects the Construction Capability Assessment Tool (see CPN 1/2022) has been developed. This is designed to be used periodically by those regularly delivering construction projects and for others to be used prior to project initiation. It will help clients of all maturities ensure that the appropriate resources and expertise are in place to secure the success of a project.

What Comprises the Construction Procurement Process?

4.1.   **Generic Procurement Processes,** such as those used in the procurement of goods and services, do not directly translate to construction procurement situations, but are broadly comparable. In construction procurement, once the decision to proceed with

the project has been made, the client will then embark on the procurement process. The following paragraphs provide a general description of these.

4.2. **Setting up the project**. This includes:

- Appraisal of all of the options available to the Client (including 'do nothing' or 'do minimum') and identification of those which will best serve the business aim.

- Completing the Construction Capability Assessment Tool (see CPN 1/2022).

- Nomination of members of the client body to fulfil the specific Client roles.

- Determination of the method of funding.

- Obtaining external professional advice and support if this is not available in-house. This may involve the appointment of a client adviser who will give guidance on the preparation of the economic appraisal and options to meet the client's needs including the possibility of a non-build option (i.e., business re-organisation rather than a new or upgraded facility). It may be appropriate to appoint more than one client adviser, for example one to advise on construction another to advise on benefits realisation etc.

- Confirmation of the business case by setting out those essential components which will subsequently form part of the strategic brief (for example, initial budget, outline programme, benefits and risks) and by establishing time, cost and quality benchmarks against which the project can be monitored as it proceeds.

- Development of the Client's brief into a full project brief including consultation with end users.

- Identification of the most appropriate strategy to procure and construct the building.

- Appointment of the project manager, who will be responsible for taking the project forward to its conclusion. The role of the client adviser may change following this appointment; and

- Review of the procurement route on appointment of the project manager. This may be required due to changes in the Client's requirements or on the advice of the project manager.

4.3. **Defining the project**. This includes:

- Formal agreement of the strategic brief, including functions to be provided, cost parameters, quality of design and phasing of programme if required;

- Establishment of project control and management procedures, including arrangements to meet the requirements of funders in the case of jointly-funded projects;

- Preparation of a project execution plan by the Project Manager, and agreement of key aspects of that plan and timetable; roles, responsibilities and delegated authority; and

- Ensuring that risk management are employed and that robust capital and whole life cost control procedures are in place.

4.4.   **Assembling the team.** This includes:

- Drawing up a list of suitable consultants both in terms of technical and project specific expertise, and using data and sources as appropriate (such as framework agreements) to check the market capacity;

- Selecting and appointing the project team as per the guidance contained in Handbook 2*,* the *Construction Procurement Handbook,* and;

- Drawing up contracts between the client and design team defining the scope of service and obligations. Where possible, standard un-amended contract forms, issued by recognised bodies, should be used. Bespoke or amended forms may be required in certain circumstances; however, it will be necessary to ensure that they are both legally and technically sound. Provision should be made in the contracts for design team members to participate in assurance reviews throughout the whole life cycle of the project and requirements noted to contribute to the compilation of lessons learned reports.

4.5.   **Design**. The following refers to a traditional form of procurement (i.e., completion of design by specialists prior to tendering) and may need to be adapted for other forms of procurement. See Chapter 3 of the Construction Procurement Handbook. This includes:

- Clarification of issues within the design brief;

- Development of the concept design to detailed design by the design team in collaboration with the project sponsor and client body;

- Ensuring that the statutory consents and legal, financial, insurance and health and safety matters have been resolved and site access is available prior to commencing construction;

- Choice of the most appropriate procurement route**;**

- Establishment of change control procedures to regulate project cost;

- Taking account of the Scottish Government's Policy Statement on Architecture and Place, Creating Places;

- Consideration of sustainability issues (the materials chosen for the scheme and the overall impact of the building);

- Taking the health and safety implications of construction and operation into consideration; and

- Full consideration of life cycle and whole life costs.

4.6.   **The Procurement Reform (Scotland) Act 2014 and The Public Contracts (Scotland) Regulations 2015**. These are the two key pieces of legislation which impact on procurement in Scotland.   Further information and guidance on the tendering process and the legislation can be found in Handbook 2*,* the *Construction Procurement Handbook.*

4.7.   **Quality**. The client must create a quality culture within the project. In recent times there have been a number of prominent cases where the quality of construction outputs has not been delivered in full. The nature of quality must be clear and understood by the client and delivery team, including consultants and contractors. It has two elements to it. Firstly, it is about defining a specification which meets the functional requirements of the use and users of the built asset and, secondly, it is about delivery, in all respects, of that specification through its design, procurement and construction. Quality is an essential part of any construction project and it is for the client to ensure that quality is built into outputs from the very start of the project and quality management systems are maintained throughout to assure its delivery. Therefore, in this guide, when we talk of *quality* we are talking about the objectively defined and measured delivery of a specification rather than the subjective assessment of an opinion.

4.8.   **Construction**. This includes:

- Management of the project during the contract period to control costs and avoid disputes. This necessitates the clear definition of responsibilities and sound leadership to drive the team.

- Regular monitoring and reporting, to analyse all aspects of the project as construction progresses including contractor payment performance and quality assurance;

- The use of early intervention techniques as conflict avoidance procedures can resolve differences of opinion before they escalate into full blown disputes

- Ensuring an appropriate three line assurance process is in place, see paragraph 1.3 of Chapter 13 of this handbook; and

- Taking corrective action (if required) including following assurance reviews, carried out at key stages of the project (whether in-house or by independent scrutiny).

4.9.   **Completion.** This includes:

- Oversight of testing and commissioning procedures;

- Coordination of the reporting and remedying of defects;

- Receipt of the health and safety file from the principal designer or principle contractor whichever applies; and

- The agreement of final accounts in line with contractual requirements.

- Receipt of Operation and Maintenance (O&M) manuals.

4.10. **Post project evaluation and post occupancy evaluation**. This includes:

- Completion of a formal post project evaluation in order to review the project performance, its delivery of objectives and VFM, and to identify lessons to be learned from the procurement process. These lessons should be used to influence the approach to the procurement of future schemes; and

- Completion of a post occupancy evaluation (possibly by an independent consultant) which focuses on whether the building is meeting user needs and identifies lessons to be learned. This review should be carried out within twelve to eighteen months of occupation and repeated to provide ongoing monitoring of the facility.

Summary

5.1.   The client is essential to the project and must be visible, take ownership and provide leadership throughout the whole construction project and beyond into the asset's use and decommissioning.

Project Initiation and Business Cases Handbook

Chapter 2

Project Governance

Contents:

Overview

1.1.   Governance provides the over-arching structure and strategy that provides accountability and direction for a project, programme or organisation. Robust and appropriate governance influences behaviours and cultures and is essential to the successful delivery of any project. It comprises authorising, directing, empowering and overseeing management. The governance of portfolios, programmes and projects should be an integrated part of the organisation's overall governance and all projects and programmes should have an appropriately resourced governance structure. The Scottish Public Finance Manual provides general guidance on procuring, managing and monitoring the delivery of major investment projects.

Guidance

2.1.   Section 4.1 of the Infrastructure Projects Authority Project Delivery Functional Standard provides a helpful overview of the Governance Framework which may be followed. Note that the Standard is applicable guidance in England only and whilst we view it as good practice, the conventions set out on page two of the standard are advisory only in application to Scotland. Reference to HM Treasury spending team for inclusion on the Government Major Project Portfolio (GMPP) does not apply in Scotland.

2.2.   Further Guidance is also available through the Scottish Government Good Governance Guide.

Governance Structure

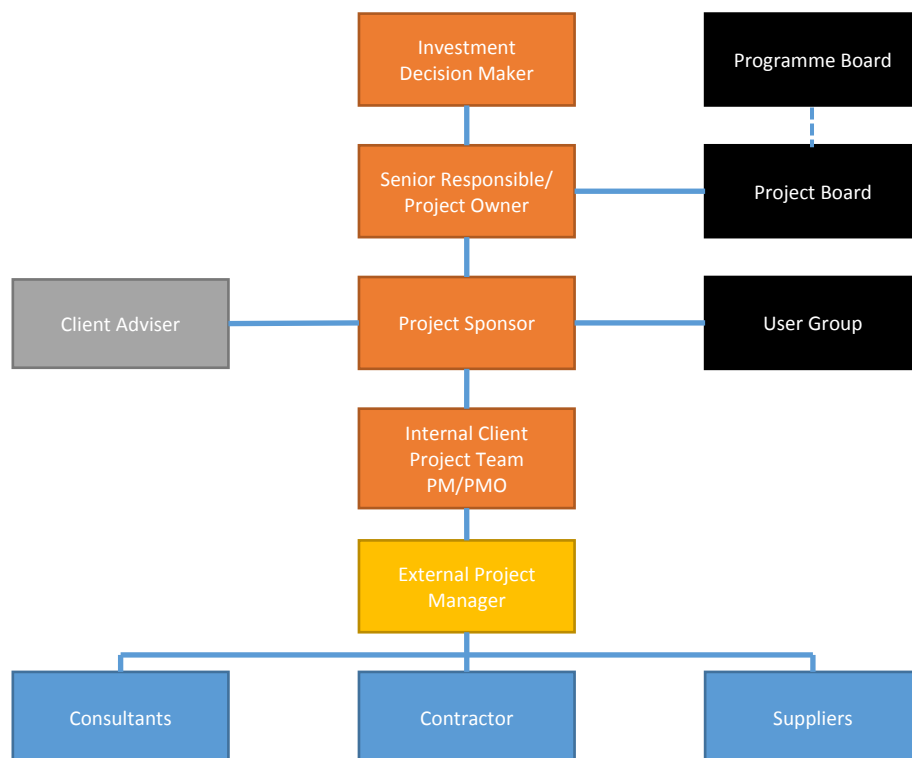3.1.   A possible project governance structure is shown below:

Figure 1: A possible governance structure

3.2.   This structure is not absolute and should be adapted accordingly to ensure an appropriate and proportionate structure which is most relevant for the project.

Documentation

4.1.   Proportionate to the scale and complexity of the project, an appropriate documentation suite should be developed. This documentation will determine the rules for delivery of the project and outcomes and will assist in providing and maintaining direction for the project. This suite may include the following:

- Business Case and Options Appraisal.

- Project Execution Plan.

- Risk Management Plan and Register.

- Programme and Project Board remits.

- Change Control Plan.

- Comms plan.

- Project Programme.

Summary

5.1.   A robust and efficient governance system is essential to support decision making and communications to any project, it ensures that timely decisions can be made and lines of responsibility are clear.

Project Initiation and Business Cases Handbook

Chapter 3

Client Team Roles and Responsibilities

Contents:

Overview

1.1.   Project initiation is a critical time in the project lifecycle and in order to afford the project every chance of success it, and the whole project cycle, must be appropriately resourced by the client. The key resources are human; these will vary dependent on the size, complexity and subject of the project as well as on the stage the project is at. This chapter discusses and provides guidance on the roles and responsibilities of the client.

Guidance

2.1.   All major works projects should have an investment decision maker, project owner and project sponsor. The following paragraphs explain their roles and responsibilities and those of the project manager and client adviser. There will be other roles in addition to these and which will be dependent on the specific nature of the project. Careful consideration of what those specific skills are will be necessary in order to deliver the client side of the project. Completion of the Construction Capability Assessment Tool (See CPN 1/2022) will help you understand if gaps exist in your capability and capacity and therefore where additional resource might be required to undertake a project.

2.2.   Some projects involve more than one source of funding, in which case each funder, preferably in consultation, must ensure that there are clear written arrangements for the management of the project including:

- how the contribution of each funder is to be calculated;

- the monitoring information to be given to funders;

- what approvals are required from individual funders at particular stages;

- change control procedures;

- the arrangements for the apportionment of costs in the event of the project being curtailed, abandoned or increasing in cost;

- the arrangements in the event of any of the funders failing to meet its obligations;

- the ownership of the assets and arrangements for repayment of grant in the event of the asset not being used for the purpose intended or having been disposed of; and

- a procedure for the resolution of disputes.

2.3.   In some client organisations and for some projects, the roles of investment decision maker and project owner, or project owner and project sponsor, may be combined. If this should happen:

- the allocation of the three roles should be made clear;

- the three roles must not be combined and allocated to one person; and

- the person taking on a dual role must have at least the authority and status required of the higher function.

2.4.   The following chart sets out a possible governance structure with each of these roles and their relationships.
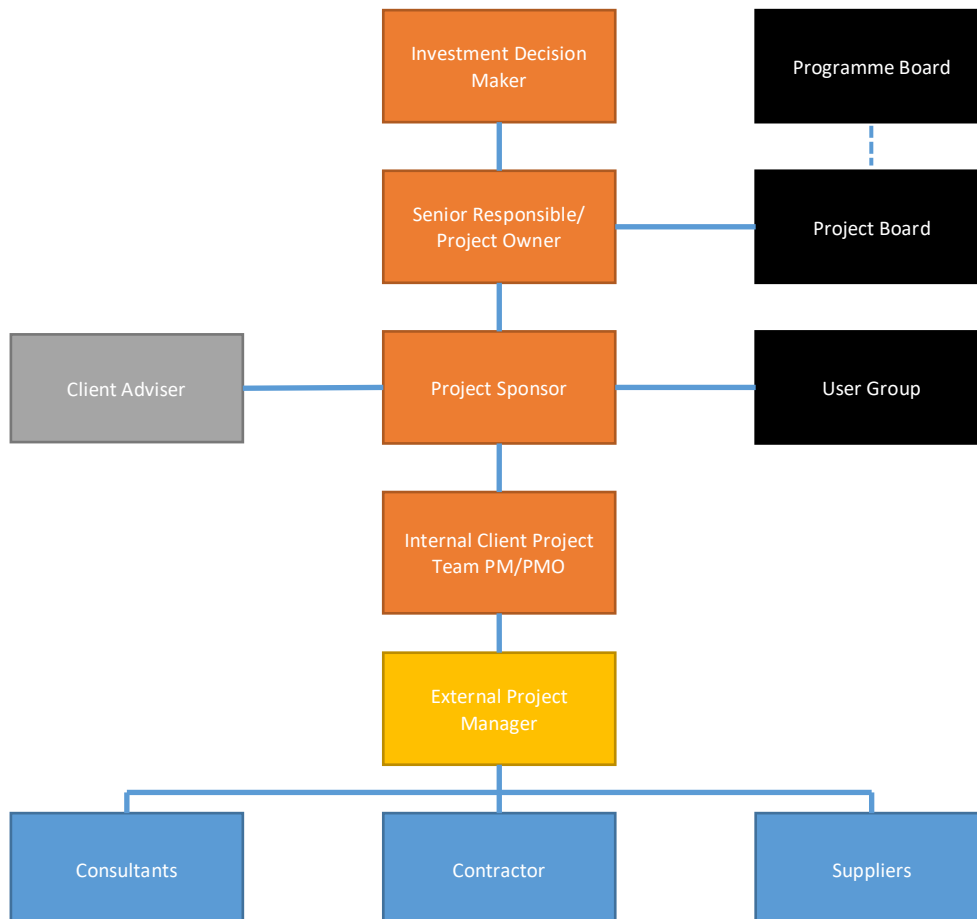
Figure 1: A possible governance structure

Specific Roles

3.1.   The following sections will consider each of the specific roles of Investment Decision Maker, Project Owner, Project Sponsor, Project Manager and The Client Adviser.

Investment Decision Maker

4.1.   **What do they do?** This is the person/committee in the client organisation that decides whether or not the proposed investment in a project should be made, then maintains the visible and sustained senior management commitment to its delivery. The role may be at ministerial, board or senior official level, depending on the size and complexity of the project. Key responsibilities are to give approval, where appropriate, for key project stages e.g. business case approval, major changes to risk profiles, investments proposals, assurance gates etc. Any risks or proposed changes to the project which

may vary the original approval should be referred to the investment decision maker, seeking guidance or re-approval as appropriate.

4.2. **Who takes on the role?** It may be taken on by an individual or a committee. In practice, on a major project significantly affecting the client organisation's budget, reputation or operation, the task could well fall to an Accountable Officer. When the possible need for a project is raised, the investment decision maker should appoint a project owner.

4.3. **What happens if things change?** If an alteration in the scope or direction of a project is suggested, the investment decision maker must consider the impact on the client organisation in terms of time, cost, performance and risk. Should a decision then be made to change the scope or direction of a project, the brief and the project sponsor's terms of appointment must be amended to reflect the change. All changes must be transparent, properly reasoned, recorded and authorised. The earlier a change is implemented the less the impact on the project cost; as the project progresses change becomes more difficult and costly to implement. Changes during construction are likely to have a disproportionately large cost and time impact (see illustration, *Figure 2,* below). They should therefore be avoided as far as possible and where this is not possible, the consequences and benefits must be evaluated prior to the change being implemented.
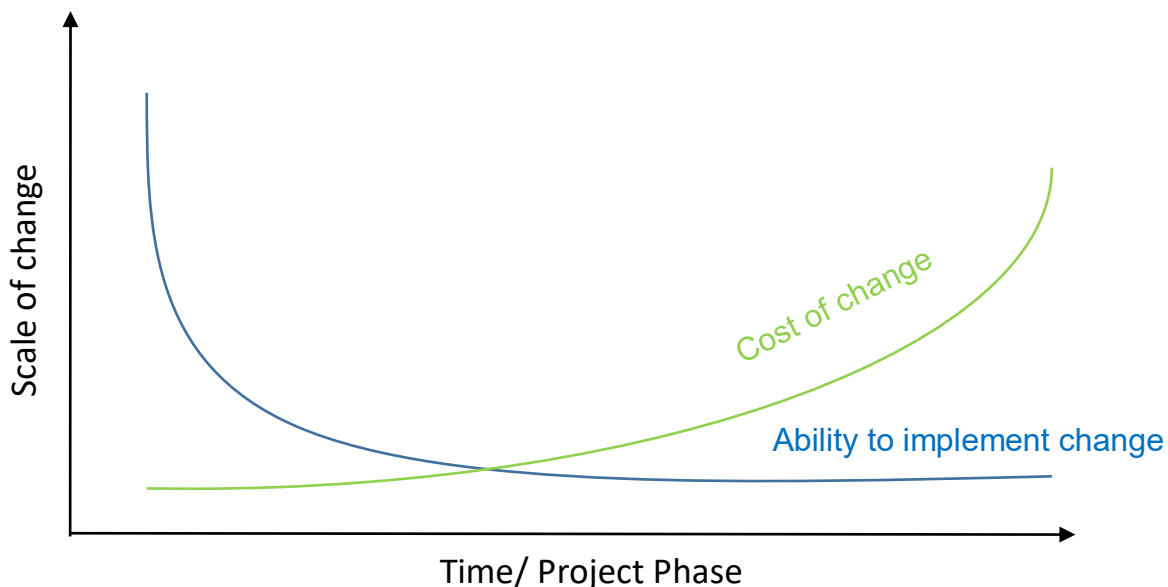
Figure 2: Change cost and time

Project Owner

5.1. **Who are they?** Also known as the Senior Responsible Owner, this is the named individual who should be appointed by, and is accountable to, the investment decision maker for the project and its budget. The project owner should be a senior officer in the business unit commissioning the project, with the status and authority to provide the necessary leadership. They must have clear accountability for delivering the project requirements in accordance with the approvals given.

5.2.   **What do they do?** The project owner's responsibilities are given at Annex A.

5.3.   **Who do they work with?** They should be accessible to senior users and, in order to reinforce the commitment to the project, should also be visible to the senior management of the firms working on it. Such contact should provide an opportunity to promote the project and the benefits that it will bring, and should help to avoid any misunderstandings or potential disputes. These activities should not, however, cut across the daily management responsibilities of the project sponsor.

5.4.   The project owner may be assisted by a project board to ensure that other stakeholders are committed to the project, though this board should not have any powers which cut across the project owner's accountability and authority. Project boards should be advisory only, addressing strategic issues and major points of difficulty. If a major issue cannot be resolved with the project owner, board members should have recourse to the investment decision maker. The project owner must form part of a clear reporting line from senior management to the project sponsor. See Annex A to this chapter for further detail.

Project Sponsor

6.1.   **Who are they?** This named individual, responsible to the project owner, is also known as 'the client's representative'. Likely to be the person best placed to manage the client's duties, the project sponsor is a single focal point for the daily management of the client organisation's interest in a project.

6.2.   **What do they do?** The project sponsor is responsible for the day-to-day management of the project and delivery of its outputs and outcomes. A list of the tasks associated with the project sponsor is provided at Annex B.

6.3.   **Who does the project sponsor work with?** There may be occasions where the project is being delivered collaboratively by more than one body. In these circumstances it may be necessary for sponsorship to be shared between these organisations. In cases where the sponsorship role is shared, the respective roles should be defined and agreed at the outset to avoid any possibility of ambiguity, and the project sponsor within the project owner's organisation should ensure that an effective monitoring and reporting system is established.

6.4.   In some instances, it may be appropriate for the one of these bodies to carry out the full range of project sponsorship duties on behalf of both (all).

6.5.   Where the project sponsor is not a technical expert, and such expertise is not available in-house, they should involve a client adviser as soon as possible. This person should have substantial technical and professional expertise in the field of construction, and will act as a consultant providing advice on all construction matters, particularly those which must be carried out before the appointment of the project manager.

6.6.   The project sponsor has personal responsibility to the project owner for the entire project and should expect to stay until its completion. Maintaining continuity in this role is essential.

6.7. It may be appropriate for a project manager to be appointed to the internal project team, if this is not the case then the project sponsor will assume the duties and role of the project manager.

Project Manager

7.1. **Who are they?** This is the named individual responsible for the day-to-day *detailed* management of the project and who provides the interface between the project sponsor and the supply side of the project team. Good project management is crucial to the success of a project.

7.2. **Are they always required?** For most projects an external or in-house project manager should be appointed. However, it needn't be an automatic requirement and should take account of the individual and the circumstances. For example, with the appropriate support, the project could be managed by a suitably competent project sponsor providing they are construction professionals with abilities and experience appropriate to the project.

7.3. **Who decides which contractors/consultants to employ?** Where the role of project manager (or any other role in the management structure) is filled by personnel who are not part of the client organisation, decisions about which other contractors, consultants or service providers should be appointed must be taken by a more senior permanent employee in the client chain of command; this will usually be the project sponsor or project owner).

The Client Adviser

8.1. **Who are they?** An appropriately qualified client adviser should be involved as soon as possible after project inception to assist non-technical project sponsors. If a consultant is appointed to provide this role, it should not be combined with that of the project manager or any delivery role but should remain totally independent.

8.2. **What do they do?** The need for such specialist technical advice is very much demand led. A client adviser may be required by a project sponsor due to a number of inter-related factors including the stage, size, complexity and duration of the project; the experience of the project sponsor; and the extent to which a project runs smoothly. The client adviser, then, should be used on a call-off basis, allowing a varying degree of input during the project life cycle. The client adviser does not become responsible for delivering the project: this remains the responsibility of the project sponsor.

8.3. **When are they required?** With regard to project stage, for example, it is likely that input from a client adviser will be required at inception/feasibility, prior to the appointment of a project manager. They should then be retained to give further advice, as needed, during the later stages of the project. There is generally little correlation between the project size and duration, and the need to appoint a client adviser; more relevant is the complexity of issues faced and the experience of the project sponsor.

8.4. **Can there be more than one client adviser on any project?** Occasionally advice is sought from more than one individual during the course of the same project. For example, a complicated contractual claim may require an experienced Quantity Surveyor for legal or financial advice or, additionally, advice from a planning specialist who is expert at compiling and interpreting critical path programmes. Client adviser

input is particularly valuable where an impartial assessment is required concerning the performance or professional liability of the project manager and design team members.

Further Guidance

9.1.   As part of the work on the implementation of the Review of Scottish Public Sector Procurement in Construction the *Scottish Futures Trust* produced a Baseline skillset guidance this provides an online tool to help procuring authorities to determine whether their internal team has the appropriate skills and experience to manage a construction project.

Summary

10.1.   Getting the right team with the right skills together at the right time is an essential part of achieving success in projects. The core team that owns and drives the project will have a key impact and careful attention must be paid to the detail of forming and maintaining it throughout the lifecycle of the project and indeed for the future management of the asset.

Annex A

Project Owner

1.   The main responsibilities of the Project Owner include the following:

- Oversee the preparation of the business case and budget for the project:

    o ensuring the proposals are realistic, meet the business needs and objectives, and that private sector options have been properly considered; and

    o submit them to the investment decision maker for approval. Account should be taken of any asset management plans and estate strategies which should be in place

- Establish an appropriate organisational structure and the necessary communication processes;

- Ensure that users and other stakeholders are involved in, and committed to, the project;

- Appoint a project sponsor and provide the terms of reference, adequate staff and financial resources, and any necessary support. This might include the appointment of a client adviser and ensuring that appropriate support is available;

- Ensure that a brief is developed which clearly reflects the project objectives and is agreed by the users;

- Establish a progress and reporting procedure, ensuring that any changes in circumstances, particularly the exposure to risk, affecting the project are evaluated and appropriate action taken. This includes reporting to Accountable Officers and the responsible Minister where there are serious concerns about the viability of a project;

- Act as mediator or arbiter on any disputes which occur on the client's side;

- Approve any changes to the scope of the project, ensuring those which impact on time, costs or objectives are assessed and reported to the investment decision maker as appropriate;

- Ensure that Gateway Reviews, in-project reviews and post project completion reports are carried out and shared with all stakeholders in the project. The outcome of Gateway Reviews of high risk or mission critical projects should be reported to Accountable Officers and, if the review identifies serious deficiencies, difficulties or budget concerns, to the responsible Minister by the Accountable Officer; and

- Maintain an official record of how Gateway Review recommendations have been implemented (or setting out reasons for not implementing any recommendation).

- The project owner should draw up the terms of appointment for the project sponsor, setting out the following:

    o the user needs to be addressed by the project;

    o the resources available to the project sponsor both internally and externally;

    o the authority transferred to the project sponsor; and

    o the project sponsor's responsibilities in relation to health and safety.

- The project owner should ensure that the terms of appointment are amended promptly in line with any decisions taken by the investment decision maker. The business case and investment proposals, normally prepared by the project sponsor, are then the project owner's responsibility to ensure that they are reviewed and that:

    o the recommended option meets the users' needs whilst providing best value for money(VFM);

    o all of the viable options have been properly evaluated; and

    o risks associated with each option are clearly identified together with their impact on the project in terms of time, cost and performance.

2.   The project owner should be committed to encouraging good team working practices within the client organisation and, wherever possible, within the other organisations involved with the project. In particular, the project owner should give clear, decisive support where the client organisation enters into partnering or team working arrangements with consultants and contractors during the life of the project. Such visible support could include commitment to any partnering agreement that may have been established and attendance at the inaugural partnering workshop.

3.   Along with senior personnel from the other parties involved, the project owner should attend project reviews at regular intervals, appropriate to the stage and nature of the project, to consider major issues, identify achievements and enable potential disputes to be resolved promptly. In addition, the project owner should lead the review of the findings from post project evaluations.

Annex B

Project Sponsor

The main tasks of the project sponsor include the following:

- Agree a statement of need and project objectives with the project owner. Co-ordinate and rationalise the requirements of all the end-users in developing the project definition, design brief, owner objectives and success criteria for the project;

- Contact Property Division to check if the requirement can be met from existing UK Government or Scottish Government estates;

- Put in place a clear written agreement for the management of a jointly funded project in consultation with legal, technical and finance advisers;

- Ensure a proper appraisal of the project. This will involve the commissioning of option appraisals, analysis of outcomes, and choice of the best option to ensure best value for money is obtained. It will include deciding on a strategy to transfer to the private sector those risks that it is better able to manage;

- Determine the procurement route. Ensure that the risks and benefits associated with different routes are fully identified, considered and evaluated and, in the case of mission critical or high risk projects, the evaluation and recommendations are presented to the responsible Minister for decision;

- Secure the appropriate authority for expenditure. This will involve developing the project with all necessary financial and other justification to that stage where it can be confidently submitted for approval. In a timely manner co-ordinate the necessary documentation and present for approval. Secure joint agreements with other funders;

- Undertake, with appropriate professional advice, the commissioning of those professional services required to implement the chosen procurement route. This may include obtaining tenders for professional design team services and the appointment of the selected consultants. In conjunction with the project manager ensure that these various groups are welded into a team motivated to meeting the success criteria of the project. Ensure that the roles, responsibilities and delegated financial (and other) authorities for each key member of the project team are clearly defined;

- In conjunction with the appointed project manager, ensure compliance with all relevant legislation and good practice, covering the procurement of supplies, services and construction works. Ensure compliance with all relevant legislation and guidance as set out in the Scottish Public Finance Manual, the Construction Manual and Health & Safety and other relevant legislation;

- With the assistance of the project manager prepare, and obtain approval from the project owner for a detailed, on-going project execution plan for the project;

- Ensure the installation and operation of a communication, control and monitoring system to inform management decisions throughout the life of the project. Ensure stringent costs, content and change control procedures are utilised during project execution (particularly by the project manager). This includes maintaining records for audit purposes, quality control, etc. If it becomes apparent that the project budget will require to be increased then authority should be obtained in good time;

- Be aware of tools available to improve cost-effectiveness of projects, such as risk assessment, in-project reviews, value engineering and life cycle/whole life costing and sustainability issues, and ensure that these tools are applied by the project manager;

- Monitor carefully through progress reports and review pro-actively project progress with the project manager, intervening as necessary through him whenever the project is perceived to deviate from the established plans (such as on cost, content, time and quality);

- Make promptly, or obtain, those decisions necessary to ensure that the project success criteria are attained. In particular, exert stringent, formal control over all decisions involving material variations and changes in scope to the currently approved project. Where such decisions affect project costs, standards, programme or content, ensure adequate justification is provided, and approval obtained from the project owner, or investment decision maker, where the effect of such changes exceeds his or her delegated authority. In the event that changes are approved, then ensure project budgets and programmes are adjusted accordingly;

- Where delegated power is given to the project manager and Design Team then the limits of such authority should be established and effective change control and monitoring procedures put in place to ensure adequate cost control is exercised;

- Ensure that satisfactory arrangements are established for financing the project to ensure that money is always available to meet timeously the demands of the project. Ensure systems are in place to enable all monies to be paid on due dates according to the terms of contract and in compliance with the policy on prompt payment;

- Ensure that any technical and financial audits of the project are implemented at the pre-planned strategic stages of project execution. Take any necessary corrective action resultant upon the findings of such audits;

- Plan the organisation and resources needed to execute both the pre-start up testing and the commissioning of the completed project. This may include participation in the selection and training of permanent operating staff and, in

close liaison with the project manager and end users, ensuring appropriate commissioning of facilities;

- With the project manager, review the handover documentation and operating instructions requirements of the client organisation and ensure these are prepared and delivered on schedule;

- Ensure the production of all post completion reports analysing the procurement process and the end product, noting whether the project has met the brief and all users' requirements. All lessons learnt should be shared among interested parties in order to inform future project planning; and

- In the light of experience with the project, draw the attention of senior management to any weaknesses in policies, procedures and methods in respect of capital projects. Define where they need modification to better permit utilisation of efficient project execution techniques, justify these modifications to senior management and, on approval, implement where appropriate.

Project Initiation and Business Cases Handbook

Chapter 4

Business Case and Appraisal

Contents:

Overview

1.1.   All projects need a business case and approval system to allow them to proceed. Construction projects are no different, it is likely that a construction project will be a constituent part of a programme and consequently part of the delivery of wider outcomes and impacts.

1.2.   Business cases examine the purpose of the project and consider the best means of delivery of that purpose and are essential for the successful delivery of projects and programmes. They should be proportionate to the scale of the project. It would be unrealistic to create a business case for a very small and simple project which was of the same scale and detail as one for a very large and complex project. Whatever the size, a process of setting out the case for the project and obtaining formal approval should be carried out for all projects.

Guidance

2.1.   All programmes and projects should be appraised following *[The Green Book, Appraisal and Evaluation in Central Government](#)* published by HM Treasury. The process should follow the 'Five Case Model' set out in the Green Book. This model has been described as a 'framework for thinking' about how interventions (projects) can be delivered and, in essence, asks three questions:

- *Where are we now?*

    o This requires an understanding of the existing arrangements in terms of agreed services and policy outcomes, taking account of existing policy, strategy and programmes

- *Where do we want to be?*

    o Understand what the goals are in terms of agreed services and policy outcomes

- *How are we going to get there?*

    o What the potential options are in terms of potential scope, solution, delivery, implementation and funding

    o How to deliver the project

    o What the short, medium and long terms costs are

    o Whether the resources are available to deliver the project

2.2.   The Five Case Model comprises the following five key components:

- The Strategic Case – identify a robust case for change that provides strategic justification for undertaking the project

- The Economic Case – optimise value for money, not simply the financial consequences of an investment decision but wider economic consequences. e.g. - How does the project meet the Scottish Government's National Performance Framework?

- The Commercial Case – is the project commercially viable – how will it be procured?

- The Financial Case – is the project financially affordable?

- The Management Case – is the project achievable?

2.3.   Business areas within the core SG, Crown Office and Procurator Fiscal Service, SG Executive Agencies and non-ministerial departments must seek advice from the Scottish Government's Property Division at the earliest opportunity when an acquisition or disposal of property or interest in a property is being considered and when drafting a property business case including for construction of a property. Other organisations to which the Scottish Public Finance Manual is directly applicable[1] may seek advice from Property Division on a voluntary basis or, in the case of bodies sponsored by the Scottish Government, where required to do so under the terms of their framework document. The Property Division can be contacted at propertydivision@gov.scot.

Quality

3.1   The Business Case should not only set the case for why the project should be undertaken but also set objectives and parameters for delivery. This must include how the organisation's quality culture will be imposed on the project and fed through to the output to be delivered and consequently the outcomes and impacts to be derived from it.

3.2   The Business Case should include a description of how quality will be assured and the quality management systems to be employed, this may also include the expectations for the use of clerks of works and how quality aspects will be reported to the project board or through the relevant project governance structure if a board has not been appointed.

Summary

4.1   Business cases provide a process of assessing the costs, benefits and risks of alternative ways to meet objectives. They help decision makers understand the potential effects, trade-offs and overall impact of options by providing an objective evidence base for decision making and are essential to successful delivery of projects. They also set the environment for project delivery and importantly ensure that all involved fully understand the reason for and expected outputs and outcomes of the project.

---

[1] Organisations to whom the Scottish Public Finance Manual (SPFM) is directly applicable are described in Paragraph 8 of the SPFM chapter *Background and Applicability*

Project Initiation and Business Cases Handbook

Chapter 5

Project Initiation Routemap

Contents:

Overview

1.1.   The initiation of any project is a critical stage and the actions undertaken during the first few months can mean the difference between success and failure. It is therefore essential that projects get off to a good start. Sufficient resource must allocated at the appropriate time and there should be a clear understanding of what requires to be done in order increase the likelihood of project success. Robust processes and the application of the latest thinking and learned lessons can contribute to that.

Guidance

2.1.   The Infrastructure and Projects Authority has developed a [Project Initiation Routemap](#) which aims to achieve more efficient outcomes and address the high cost of delivering infrastructure in the UK.

2.2.   The Routemap is designed for major projects and while its full application on smaller projects may not be entirely appropriate there are clear parallels which mean that some aspects of it will still be helpful. It walks clients through the key considerations for initiating a major project and looks at complexity, client capability, the implications of strategic decisions and how to apply best practice from other projects. Note that complexity in the context of the Routemap is relative to the experience of the client organisation.

Project Initiation and Business Cases Handbook

Chapter 6

Stakeholder Analysis

Contents:

Introduction

1.1.   People are at the heart of every project and successful delivery of projects depends on the effectiveness of the engagement with them. It is often the case that project complexity derives from the complexity of the stakeholder environment rather than from the complexity of the construction of the physical asset itself, therefore time spent understanding the needs of stakeholders will be an investment in successful delivery. This requires the project sponsor and the project team to ensure that the stakeholder landscape is fully understood and engaged early on during project initiation.

Overview

2.1.   Stakeholders are all those people and organisations which have some form of relationship with the project, the asset and the benefits delivered as a consequence of it. The nature of the relationships will be as diverse as the nature of the stakeholders themselves and understanding that diversity is central to being able to properly engage with them.

2.2.   Engaging stakeholders serves a number of purposes including to:

- Define the purpose

- Develop the design

- Inform interested parties

- Influence debate

- Manage messages and people

- Promote inclusion

2.3.   There are five steps to improving stakeholder relationships:

- Plan - think about what you want to achieve and whose views you want to consider.

- Build understanding – understand what motivates stakeholders, what they are thinking and what expertise they have.

- Engage – talk and listen to your stakeholders.

- Build trust – maintain relationships by taking on board stakeholders' suggestions and concerns.

- Evaluate – consider whether the engagement has been successful and what it means for the project and the next steps of engagement.
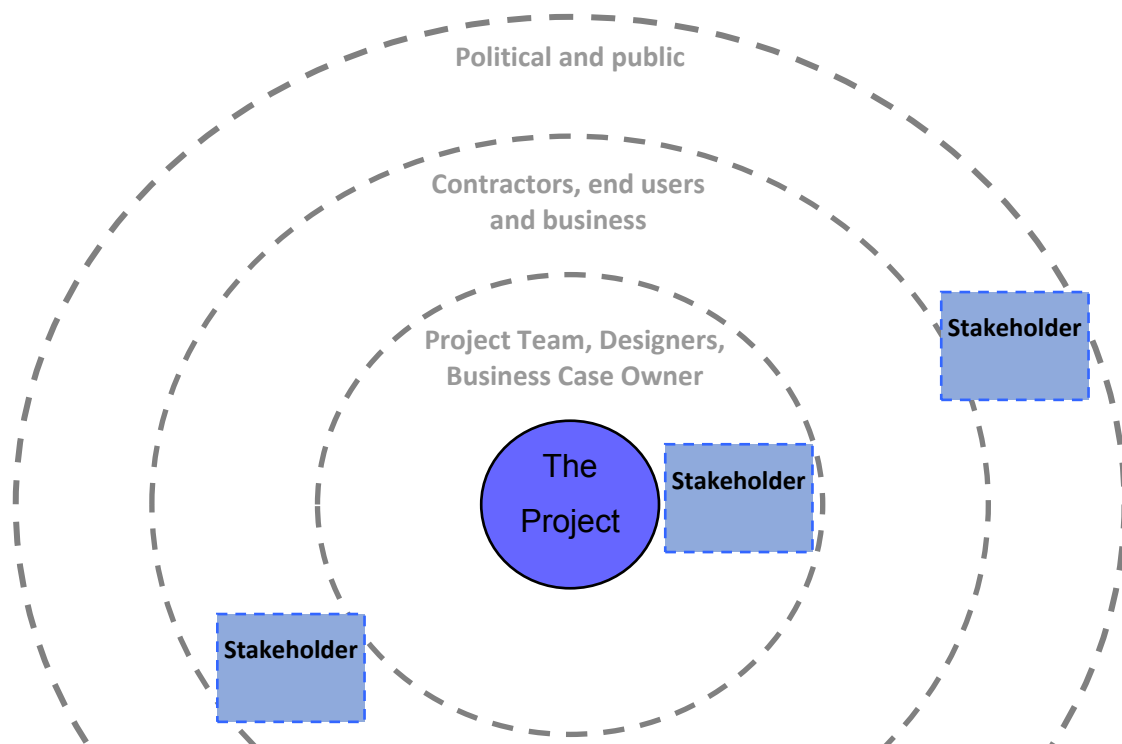
Tools

3.1.   Tools are provided at Annex A and Annex B which will help clients understand the stakeholder environment as it relates to their projects.

Summary

4.1.   Engaging with stakeholders is essential to project success and should be an ongoing activity from project inception and throughout the project period.

Annex A

Stakeholder Mapping Tool

Political and public

Contractors, end users
and business

Project Team, Designers,
Business Case Owner

The
Project

Stakeholder

Stakeholder

Stakeholder

Consider the questions below to identify the stakeholders and their proximity to the project (categories shown in the circles are examples only)		
Questions	**Example stakeholder groups**	
Who is interested in your work? Why?	Academics	Media representatives
Who are you interested in? Why?	Businesses	Members of the general public
Who influences what you do? How?	Client senior management	Non-governmental organisations
Who should you work with now and in the future? Why?	Client team	Other governments
Who can help you deliver our outcomes?	Community leaders	Other policy interests
Who has good ideas, even if they are challenging?	Community-based organisations like	Pressure groups
Who will potentially be impacted by the outcomes?	Consultants	Professional bodies
Who will contribute resources?	Contractors (main and sub)	Project team
Who can slow or stop the project?	Education and training organisations	Public bodies
Have you considered marginalised or harder to reach stakeholders?	End users (inc. staff, the public and other customers)	Scottish Ministers
	Environmental groups	Senior Officials
	Equality organisations	Suppliers
	Faith groups	the Scottish Parliament
	Health authorities	Trade unions and trade associations
	Local Authorities	UK government departments
	Local residents	Voluntary or welfare organisations
		Youth groups and women's groups

Annex B

Influence and Interest Matrix

1.   The influence/interest matrix is a useful tool for prioritising stakeholders once your initial mapping exercise is complete. It analyses:

- how interested the stakeholder is in impressing its views and expectations on what you are trying to achieve.

- whether the stakeholder has sufficient power to influence what you are trying to achieve.

2.   This provides valuable information on how to work with particular stakeholders, and helps determine which stakeholders you need to prioritise.

Using the matrix

Influence: Score the level of influence each stakeholder can exert using the following assessment criteria (each criteria should have a maximum of five points, and a minimum of zero):

- How capable are they of influencing others?

- What's the risk posed by challenge from this stakeholder?

- Can they contribute to successful delivery?

Interest: Score each stakeholder's level of interest in your work using the following assessment criteria (each criteria should have a maximum of five points, minimum zero):

- How well established is the relationship?

- How active has the stakeholder been on this particular policy area?

- How keen is the stakeholder to express their views on the work you are doing?

STAKEHOLDER	INFLUENCE				INTEREST			
	Capacity to influence others	Risk from challenge	Contribution to delivery	TOTAL SCORE	Maturity of relationship	Activity level	Propensity to express views	TOTAL SCORE
[insert name]								
[insert name]								
[insert name]								
[insert name]								
[insert name]								
[insert name]								

Use the scores for each stakeholder to plot them on the template below:
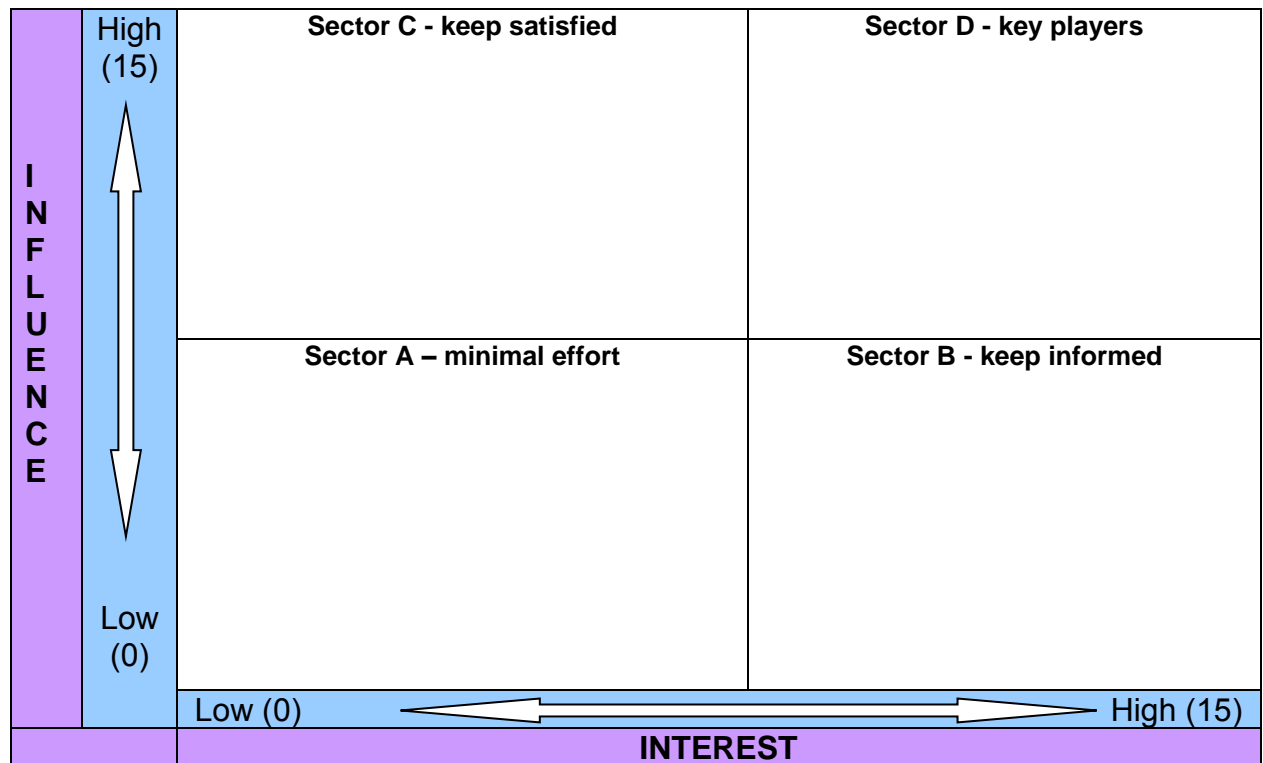
Stakeholders in **sector A** have neither a high interest in the project nor the power to exert significant impact. You should keep these stakeholders informed as necessary, without investing too much effort into relationships with them.

Stakeholders in **sector B** have a high interest in specific areas of the project, but limited means of influence. Nonetheless, they could be valuable allies. It is therefore useful to keep them informed about the issues they are interested in.

Relationships with stakeholders in **sector C** could be difficult. They behave passively most of the time and show a low interest in the work you are doing. Despite this, they can exert an enormous impact if they see fit. It is therefore important to analyse the

potential intentions and reactions of these stakeholders in all major developments, and involve them according to their interests.

The most important stakeholders are those with high interest and high influence in **sector D**. They must be involved in all relevant developments.

Project Initiation and Business Cases Handbook

Chapter 7

Risk

Contents:

Section	Subject

Introduction

1.1.   The Scottish Government Risk Management Guide defines risk as:

"anything that can impede or enhance our ability to meet our current or future objectives ...."

1.2.   All projects contain risks that may affect their cost and quality and the time taken to complete them. Risk is present through the whole life of an asset from inception through to deconstruction and must be actively and effectively managed throughout. Analysis allows us to identify risks and opportunities and use both to ensure project success and maximise the potential of the asset.

Overview

2.1.   **Risk stages.** Risk management is the process of identification and assessment of risk and opportunity followed by the production, and implementation, of an action plan to manage it. The Scottish Government Risk Management Guide sets out five key steps to effective risk management:

- Identify risks

- Assess risks

- Address risks

- Review and report risks

- Communicating and learning.

2.2.   **Risk Assessment.** Risk is assessed on a combination of consequences (impact) and probability (likelihood). The following tables provide an indication of the criteria and scores which can be applied against both.

Impact	Criteria
50 Very High	Destructive and unacceptable impact on objectives that would result in a major change to overall approach. Potentially large resource consequences that outweigh current operational circumstances.
25 High	Significant and unacceptable impact on objectives that would require a material change to critical approach/procedure/process. Resource implications would be challenging to absorb within current operational circumstances.
10 Medium	Moderate impact on objectives that may require multiple changes in approach/procedure/process. Acceptable level of resource consequences.
5 Low	Minor impact on objectives, requires little overall change in approach. Few resource consequences.
1 Negligible	No real impact on achieving objectives.

Likelihood	Criteria
5 Very High	>75% chance of occurring – almost certain to occur
4 High	51 – 75% chance of occurring – more likely to occur than not
3 Medium	26 – 50% chance of occurring – fairly likely to occur
2 Low	6 – 25% chance of occurring – unlikely to occur
1 Rare	1 – 5% chance of occurring – extremely unlikely to occur

2.3.   To calculate the overall risk, multiply the impact by the likelihood.

Impact	Risk Profile				
Very High	50	100	150	200	25
High	25	50	75	100	125
Medium	10	20	30	40	50
Low	5	10	15	20	25
Negligible	1	2	3	4	5
Likelihood	Rare	Low	Medium	High	Very High

2.4.   **Risk levels are described in the following table.**

Risk Level	Score	Risk Level Description
Very High	100 - 250	**Rating**: Unacceptable level of risk exposure that requires immediate mitigating action. **Reporting**: A decision should be taken whether to report the risk to Accountable Officer/Audit Committee level or Programme Board or for possible reporting to the Executive Team and Corporate Board.
High	40 - 75	**Rating:** Unacceptable level of risk which requires controls to be put in place to reduce exposure. **Reporting**: A decision should be taken as to whether risks recorded as high should be escalated. Scores between 40 and 50 would not usually be escalated where scores of 75 should be given careful consideration.
Medium	10 - 30	**Rating**: Acceptable level of risk exposure subject to regular active monitoring. **Reporting**: At next line of management level.
Low	1 - 5	**Rating**: Acceptable level of risk subject to regular passive monitoring. **Reporting**: At next line of management. Consideration should be given as to whether risks recorded as low are still extant.

2.5.   **Risk appetite.** It is important to understand the risk appetite, that is the levels of risk the organisation is prepared to accept or not accept in delivering its objectives. As stated in the Scottish Public Finance Manual, the concept may be looked at in different ways depending on whether the risk being considered is a threat or an opportunity:

- When considering threats, the concept of risk appetite embraces the level of exposure which is considered tolerable and justifiable should it be realised.

constraining the risk with the cost of the exposure should the exposure become a reality and finding an acceptable balance;

- When considering opportunities, the concept embraces consideration of how much one is prepared to actively put at risk in order to obtain the benefits of the opportunity. In this sense it is about comparing the value (financial or otherwise) of potential benefits with the losses which might be incurred (some losses may be incurred with or without realising the benefits).

Quick Guide 4 of the Scottish Government Risk Management Guide provides further guidance on assessing risk appetite.

2.6.   **Lifecycle stages.** The phases of a built asset, which are set out in Chapter 1, are: Planning – Development – Implementation – Operation – Decommissioning. Operation and Decommissioning, although not normally part of the project period, should still be included for the purposes of the project risk assessment and management. All risks must be identified and managed at the earliest possible point and this will usually mean doing so at the very start of the project period including for the operations and decommissioning phases. Each phase should be assessed and managed for risk individually and as part of the overall lifecycle; this will be an ongoing process throughout the project life and beyond.

2.7.   **Risk factors.** PESTLES (Political, Economic, Social, technological, Legal, Environmental and Security) provides a useful breakdown of risk areas for assessment.

2.8.   **Stakeholders.** All stakeholders are different and risks will have different impacts on each. For example, a specific factor is likely to impact differently on a political stakeholder than it would on a contractor even though the phase and the circumstances which cause the risk are the same. Similarly, consideration of the political heading for a political stakeholder, for example, will be likely to result in different risks being identified during each of the lifecycle phases.

2.9.   Whilst risk can be managed, minimised, shared or accepted, it cannot and must not be ignored. It is unrealistic to expect that systematic risk management will remove all uncertainties, but pro-active risk management which is fully integrated into the day–to day management of the project and the asset can reduce the impact of uncertainties and improve the likelihood of a successful project outcome and asset life cycle management. It must though, be actively managed and reviewed regularly to ensure that the plan remains valid.

Guidance

3.1.   As noted above, the Scottish Government Risk Management Guide provides guidance on managing risk generically across any situation, whether in the project setting or in core operations. This guidance is, however, only accessible through Scottish Government intranet pages. For contracting authorities that would benefit from an introduction to the range of considerations which apply in risk management, the HM Treasury Orange Book Management of Risk – Principles and Concepts may be a useful source of guidance.

Summary

4.1.   Effective and proactive risk management is essential to the successful delivery of projects, it informs the conduct of all outputs, outcomes and phases of the planning, delivery and operation and must be afforded appropriate resource and priority.

Project Initiation and Business Cases Handbook

Chapter 8

Community Benefits

Contents:

Overview

1.1.   Under the Procurement Reform (Scotland) Act 2014 all public sector contracting authorities are required to consider including community benefit requirements for all regulated procurements where the estimated value of the contract is at least £4 million.

Guidance

2.1.   The Scottish Government community benefits in procurement webpage provides general guidance and a number of tools to assist contracting authorities. The Scottish Futures Trust developed a Community Benefits Toolkit to assist contracting authorities in delivering community benefits through construction contracts and projects.

Project Initiation and Business Cases Handbook

Chapter 9

Fair Payment

Contents:

Section	Subject

Introduction

1.1.   Short and delayed payment put significant and unsustainable pressures on the industry in particular on sub-contractors which can cause insolvencies and damage to the economy as a whole. Unfair payment can also have an impact on quality and consequently on the outputs and outcomes of projects. It is therefore in the interest of contracting authorities and the industry to bring an end to these practices.

Overview

2.1.   The Scottish Government is committed to paying all suppliers promptly and encourages all public contracting authorities to follow suit. Scottish Procurement Policy Note 2/2022 sets out that public bodies should evaluate past payment performance of bidders as part of the selection process in order to ensure they have a resilient and sustainable supply chain. A standardised statement is included in the policy note which assesses if the bidder has paid at least 95% of its bidders on time and if not that an improvement plan is provided. The policy note also sets out an award statement to be included in contracts which may require the use of sub-contractors. This ensures payment is made to sub-contractors at all stages of the supply chain within 30 days and that a point of contact for sub-contractors to report to is provided in the case of payment difficulties. Public bodies should also include a terms and conditions clause outlining the above. Relevant existing contracts and frameworks should be reviewed to ensure this clause is embedded when sub-contractors are being used. In the instance of late and non-payment, sub-contractors should escalate this with the public body stated in the contract. If this does not lead to a resolution sub-contractors should seek advice from SPOEprocurement@gov.scot or The Small Business Commissioner. While payment within 30 days is Scottish Government's policy, it also aspires to paying Scottish businesses within 10 days.

2.2.   Section 15(5)(d) of the Procurement Reform (Scotland) Act 2014 requires contracting authorities to:

> *(d) set out (in their procurement strategy) how the authority intends to ensure that, so far as reasonably practicable, the following payments are made no later than 30 days after the invoice (or similar claim) relating to the payment is presented—*
>
> *(i) payments due by the authority to a contractor,*
> *(ii) payments due by a contractor to a sub-contractor,*
> *(iii) payments due by a sub-contractor to a sub-contractor,*

2.3.   Section 18 requires contracting authorities to prepare a report on its regulated procurement activities including whether those procurements complied with its procurement strategy. [The Scottish Government annual report on procurement activity: 2019](#) was published on 4 April 2019.

Project Initiation and Business Cases Handbook

Chapter 10

Project Bank Accounts

Contents:

Overview

1.1.   Project Bank Accounts (PBAs) are ring-fenced accounts from which payments are made directly and simultaneously by a public sector client to members of a construction contract supply chain. Scottish Government bodies must include a PBA in tender documents for public works contracts commencing procurement procedures from 19 March 2019 whose estimated value is at least:

- £2,000,000 for building projects
- £5,000,000 for civil engineering projects

Guidance

2.1.   Detailed technical guidance through which public bodies can implement and operate a PBA in a construction contract is published here. The guidance also enables bodies outside Scottish Government which deliver public contracts to do the same. Construction Policy Note 1/2019 also provides further information and direction on project bank accounts.

Project Initiation and Business Cases Handbook

Chapter 11

Whole Life Cost

Contents:

Overview

1.1.   Public sector focus should always be on the costs of constructing, owning, operating, maintaining and disposing of an asset. This focus supports the concept of Value for Money (VFM) which is defined at a project level as the 'optimum combination of whole life cost and quality to meet the end users requirement'.

Guidance

2.1.   The Scottish Futures Trust developed a [Whole Life Appraisal Tool](#) to assist contracting authorities to "…make informed decisions to optimise a built asset's whole life performance.". The tool consists of an online excel workbook which can be accessed by email request to mailbox@scottishfuturestrust.org.uk . The output of this tool is a dashboard which summarises and compares whole life outcomes for different options or for a preferred solution.

Project Initiation and Business Cases Handbook

Chapter 12

Building Information Modelling (BIM)

Contents:

Overview

1.1.   Building Information Modelling uses digital technology to improve the sharing and analysis of data during the construction and operational phases of projects.

1.2.   Scottish Procurement Policy Note 1/2017 set out the requirement for public authorities within the scope of the Scottish Public Finance Manual to assess their projects for BIM via the BIM Grading Tool for projects above £2m in value.

1.3.   Full guidance is provided via the BIM Portal which also provides case studies, descriptions of the BIM standards and other resources to assist project teams in their use of BIM.

Project Initiation and Business Cases Handbook

Chapter 13

Project Assurance

Contents:

Introduction

1.1.   Organisations must have a defined and consistent approach to project assurance as part of their assurance framework (such as an integrated assurance strategy) to provide confidence to Ministers, Accountable Officers and Senior Responsible Owners that the work is controlled, on track to deliver and, in terms of Scottish Government funded projects, aligned with Scottish Government policy and industry best practice.

1.2.   Assurance reviews deliver this, but must be planned, costed and take place before significant decisions (such as approval gates). Clients must include in the appointment agreements of project team members a requirement to participate fully in reviews to test whether or not objectives and value for money have been achieved. Following the completion of reviews, assessments must be made of the lessons learned and a lessons learned report produced.

1.3.   Approaches to assurance must comprise at least three lines, including:

- **First line**: carried out by, or on behalf of, the operational management that own and manage risk to ensure appropriate standards are being used.

- **Second line**: undertaken by, or on behalf of, those who have no first line responsibilities, to ensure the first line defence is properly designed, in place and operating as intended.

- **Third line**: carried out by an independent audit or independent body to provide senior management with an objective opinion on the effectiveness of governance, risk management and internal controls, including the effectiveness of the first and second lines of defence.

1.4.   The [Scottish Public Finance Manual](#) (SPFM) mandates core Scottish Government, SG Executive Agencies, non-ministerial departments and SG sponsored bodies responsible for the delivery of major investment projects to put arrangements in place to identify and evaluate benefits and capture lessons from project delivery. Other organisations to which SPFM is directly applicable should follow procedures consistent with the guidance.

1.5.   Senior Responsible Owners of major investment projects must ensure that:

- the Scottish Government's [SG's Risk Potential Assessment (RPA) Form(s)](#) are completed to determine the type of assurance support the project should have;

- those projects assessed as potentially high risk are considered for [SG Gateway Review](#) support; and

- those projects assessed as potentially low or medium risk are supported with appropriate peer or in-project reviews (which may vary from sector to sector), undertaken at regular intervals as part of on-going monitoring arrangements.

1.6.   In addition, high risk or mission critical projects not defined as major investment should also be considered for formal Gateway Review.

1.7.   Delivery bodies should be aware that some sectors have specific requirements for evaluating and assuring the delivery of programmes and projects. Information on these requirements for health sector projects and programmes is set out in the NHS Scotland Scottish Capital Investment Manual (SCIM). Certain major investment projects may require Key Stage Reviews, these are undertaken by the Scottish Futures Trust

Scottish Government's Independent Assurance Framework

2.1.   The Scottish Government's Programme and Project Management – Centre of Expertise manages and supports the delivery of the independent programme and project assurance framework. Independent assurance aims to increase the likelihood that change initiatives delivered by policy, programmes or projects achieve the intended results and outcomes. It involves people who are not directly associated with the initiative or delivery area. This brings a fresh perspective and constructive challenge for teams tasked with delivering in complex but strategically important environments.

Key Stage Reviews

3.1.   It is a condition of Scottish Government funding support that all projects in the revenue funded programme are, in addition to any existing project approval processes, externally validated by the Scottish Futures Trust. This validation approach includes Key Stage Reviews of projects at key stages of the procurement process by providing an assessment of the readiness and application of best practice of projects before they move onto the next stage of the procurement process. Each review is an assessment of whether the project is suitably developed in terms of: project readiness, affordability, value for money and commercial robustness.

Post Project Evaluation and Post Occupancy Evaluation

4.1.   Project reviews include:

- Completion of a formal post project evaluation in order to review the project performance, its delivery of objective and value for money, and to identify lessons to be learned from the procurement process. These lessons should be used to influence the approach to the procurement of future schemes; and

- Completion of a post occupancy evaluation (possibly by an independent consultant) which focuses on whether the building is meeting users' needs and identifies lessons to be learned. These reviews are usually carried out within twelve to eighteen months of occupation and repeated at regular interviews.

Summary

5.1.   Assurance provides confidence to all stakeholders including the client that projects will achieve their scope, time, cost and quality objectives, and realise their benefits. It is essential and must be as integral a part of projects as good design and risk and cost management are.

Project Initiation and Business Cases Handbook

Chapter 14

Quality Assurance

Contents:

Introduction

1.1.   Public sector clients, responsible for major investment projects, must protect the safety of the communities they serve and put in place appropriate project wide quality assurance processes to confirm the safety of all users of their facilities.

1.2.   This chapter provides contracting authorities with guidance on the planning and key activities required to establish the structures which will set a project up for success. It also reminds clients of the importance of embedding whole life-cycle quality assurance systems within their project delivery plan to provide confidence to senior leaders and stakeholders that their project will deliver its agreed objectives, achieve value for money and will be well designed and well-constructed.

Overview

2.1.   The role of the client is pivotal in determining the quality of a project both in terms of establishing and managing an effective project delivery process and ensuring the end product achieves the agreed design and 'as built' standards. Recommendation 1.1 of the Report of the Independent Inquiry into the Construction of Edinburgh Schools, February 2017, emphasised that public sector bodies engaged in the procurement of facilities should maintain, or have assured access to the requisite level of expertise and (time and funding) resources that allows that body to act as an "intelligent customer" in undertaking transactions with Private Sector Construction Companies. The role of the "intelligent customer" is set out in Annex A.

2.2.   To help contracting authorities assess their capability to deliver investment projects, the Scottish Futures Trust has developed the Baseline Skillset for Construction Procurement. In addition, the Scottish Government has launched a Construction Procurement Capability Assessment tool, which enables clients to identify any skills and experience gaps which inhibit their ability to act as an "intelligent customer".

2.3.   Construction Policy Note, CPN 1-2017 Site inspection and assurance states "Regardless of the procurement strategy it is incumbent upon public sector clients to implement project appropriate site inspection and assurance processes that mitigate resultant risk from the construction phase". Guidance to support clients to determine the appropriate level and scope of independent site inspection and monitoring required, based on a risk assessment of the complexity, scale and nature of the project and an understanding of the level of assurance the inspection will provide, is included at Annex A**.**

2.4.   Further advice on how to procure the requirements of the project brief, including guidance on procurement strategies, models and procedures and how to score and maximise value for money are set out in Handbook 2, Construction Procurement. Handbook 3, Construction Delivery will cover all aspects of managing the delivery of the construction contract, including the management and delivery of assurance of quality standards and specifications of the building.

Annex A

Quality assurance roles and responsibilities

1.   As an "intelligent customer", public bodies must have the capability or assured access to knowledge and skills to:

• Identify the appropriate level and scope of independent inspection and monitoring required based on a risk assessment of the complexity, scale of and nature of the project. These inspections will be bespoke to each project and depend on a range of variables. The list below is not exhaustive but highlights some of the potential examples that might be relevant, including:

   o Below ground conditions and materials (formation level stability, reinforcement specification, concrete strength, waterproofing)

   o Construction method of the built asset (offsite/onsite, timber, concrete, steel, hybrid)

   o Health and safety (plant, scaffold, PPE, welfare, personnel)

   o Environmental impact of construction techniques deployed both off and on site

   o Engineered details requiring approval by relevant qualified personnel

   o Elements falling within accredited certification schemes (such as ISO 9001, 14001 and 18001)

   o Requirements stipulated by the Construction Compliance Notification Plan (CCNP) issued by the local authority building standards division with the approved building warrant

   o Commissioning of internal systems.

• Put in place and manage appropriate governance arrangements. Effective governance gives an organisation the necessary internal controls to ensure the required approvals and direction is obtained at each appropriate stage of the project. Requiring a single point of accountability, usually the project sponsor, it necessitates clearly defined roles and responsibilities for the rest of the project team. It is key to achieving compliance in regard to regulation and legislation and minimise risk across the project. Benefits include the optimisation of investment, prevention of reoccurring reasons for failure, motivation of the workforce through improved communication channels, and promotes engaged external stakeholders. Examples of how governance arrangements may be put in place include:

   o Creating a project management lifecycle that ensures defined points for approval

- o Approval from the management board of the governance procedures and processes, including their acceptance of responsibility

- o Establishment of clearly defined roles, responsibilities and performance criteria for suitably qualified and experienced people

- o Documenting and communicating decisions made at approval stages

- o Implementing procedures that allow the management board to require an independent analysis of the project

- o Fostering a culture of improvement and frank disclosure

- o Ensuring business cases are supported by information that allows reliable decision-making

- o Implementing a risk management and change management process

- o Building stages into the project schedule to check the viability of the project against original goals of the business case.

- Consider how they will satisfy themselves that the construction works will be carried out in accordance with the contract and to the required design and built quality standards. They must clearly set out the assurance requirements in the contractual arrangements of the relevant design and project team members to ensure all parties understand the scope of the service required and the level of comfort this will provide that the quality of the design and construction will be fully compliant with the Project Requirement. Periodic checking that governance mechanisms are being applied should be performed by someone external to the project management team and who reports to the project sponsor. Examples of assurance requirements which may be set out in contracts include:

- o Contractors and designers Quality Plan or Project Plan; a document describing the management arrangements that will be used to control work both off and on site to the standard required by the contract

- o Inspection and Test Plan (ITP)

- o Clerk of Works or specific technical advisor roles and responsibility

- o British Research Establishment Environmental Assessment Method (BREEAM)

- o Certification requirements for design (energy/structure) and construction (plumbing/electrical)

- o Warranty provider details (NHBC/Zurich/Premier)

- These examples are in addition to the requirements set out by the building regulations. It is worth noting that the purpose of the building standards system is to protect the public interest. It is not intended to provide protection to a client in a contract with a builder. The building standards system sets out the standards to be met when building work or a conversion takes place, to the extent necessary to meet the building regulations. Inspections during construction and submissions for completion are to protect the public interest in terms of compliance with the building regulations and to discourage avoidance of the legislation. The inspections do not provide a system to control work onsite. That is a matter for the contracts and arrangements put in place between the client and builder.

- Set an appropriate budget for the project, which includes the relevant allowance to manage quality at all stages throughout the whole project life-cycle. This is particularly important at the earliest project delivery stage and during the development of the brief in order to establish and clearly define the quality objectives and approaches to ensure quality will be achieved.

- Identify the appropriate procurement arrangements to ensure they will provide the level of communication between themselves and members of the design team and that they will benefit to the fullest extent from the professional advice and expertise of the design team.

Independent assurance

2.   Contracting authorities are responsible for determining and engaging the appropriate level and frequency of independent assurance required, which reflect the risks associated with delivering the project. The allocation of time must be sufficient for the party engaged to deliver this assurance to inspect the key aspects of construction and to sign off areas of work before they are covered up or enclosed. To secure this independent assurance clients may engage a clerk of works, inspector and/or technical adviser. Not all projects will merit, or justify, a full time clerk of works. Whilst larger, more complex projects may do so, smaller, less complicated projects will not.

3.   Clients have a number of options as to how to discharge this obligation, including:
- In-house resource with the appropriate availability, experience and capability.

- From a partner or associated organisation which has the requisite resource.

- The requirements in the remit for the Technical Adviser to the Authority.

- Appointing an independent external organisation with the required experience and capability.

4.   Extending the remit of the Independent Certifier (on revenue funded projects) to include the required presence to inspect on an ongoing basis.

Project Initiation and Business Cases Handbook

Chapter 15

Design in Construction

Contents:

The Role of Design

1.1.   Public construction projects are significant investments and can have profound impacts on communities and the environment. It is therefore essential to ensure that the potential opportunities of a project are properly understood and harnessed to maximise positive outcomes and return on investment. Good design processes are central to achieving this.

1.2.   Design costs often account for a fraction of the long-term project costs, but design can often have the biggest impact on efficiency, sustainability and overall success.

1.3.   Design fees for skilled designers should be viewed as an investment, rather than as a cost. Good design can deliver real efficiencies and is the primary tool to deliver longer-term savings through initial preventative spend in construction projects.

1.4.   It is vitally important that all parties involved in the commissioning and creation of projects understand at the outset that a stated requirement for good design is not a matter of style but one that is focussed on achieving the best outcome for public good. Information on the benefits of design can be found in Creating Places, the Scottish Government policy statement on architecture and place.

Design Process and Design Outputs

2.1.   There are two important elements to consider in relation to design: the design output and the design process.

2.2.   The design process is a creative and iterative method of interpreting and responding to a challenge. If the design process is to be effective, there needs to be a commitment to and investment in the quality of the process and the relevant skills.

2.3.   The quality of the design output is a product of the quality of the design process. Design quality can be understood in terms of how well it delivers each of 3 main components:

- physical quality (such as appearance, robustness and build quality);

- functionality (such as performance, accessibility, security, health and safety, flexibility and whole-life value); and

- impact (how well the facility relates to its environment and how it addresses cultural, social, economic and environmental needs).

Design Leadership

3.1.   Delivering quality outcomes requires a commitment to good design at a strategic level and, consequently, design leadership is crucial throughout the project lifetime.

3.2.   This may be achieved through the early appointment of client Design Advisor or Design Champion roles. These are independent advisors with relevant specialist

knowledge, appointed to interpret and represent the client's business needs and project objectives. Typically, a Design Champion may occupy a senior role, such as on a project board, with Client Design Advisor involved in more detailed issues. However, what is most important is that the process puts in place appropriate advice on design issues, and that decision-making power is informed by this advice. Both roles report directly to the client, i.e. not through the design team.

Project Initiation and Business Case Handbook

Chapter 16

Change Control in Construction Projects

Contents:

Section   **Subject**

Introduction

1.1   In an ideal world, projects are procured with all the necessary (design and technical) information in place according to the method of procurement. The client gives the main contractor the drawings and/or specifications necessary for them to complete construction and hand over an asset fit for purpose. Sometimes, though, it is necessary to make changes to the plan baselined at the time the contract was tendered. This may be required for a number of reasons including, for example: a change to the business case; a change in market conditions which means that an assumption or decision made is no longer valid; or because of changes to the construction conditions, for example, unexpected ground conditions.

1.2   Change is a realised risk and action must be taken to assess, minimise and manage its impact or, better still, prevent it happening. Prevention is best enabled by sound planning including for example, during risk analysis and management. However, where change is unavoidable it must be actively and deliberately controlled and managed rather than simply being allowed to evolve and run its own course. A well set out and rehearsed system must be in place to mitigate the risk posed by it and to manage it. A change to the design may impact on the ability of the asset to deliver the planned benefits. Therefore, change must be considered in the context of the business case, project brief and the specification.

1.3   Whilst the focus of this guidance is on projects; the process is scalable up to programmes and portfolios and down to parts of projects, for example tasks or phases, if necessary.

Reducing the need for change

2.1   Whilst acknowledging that change is, sometimes, inevitable and necessary it should be minimised and managed. Good project management is at the heart of this and will include:

- Effective and timely project initiation and management including forward planning and future proofing
- Thorough site investigation
- Comprehensive project briefing fully involving and reflecting the needs and commitment of all stakeholders and end users of the asset
- Risk management
- Design development, co-ordination and integration (eg through use of BIM)
- Appropriate procurement strategy and processes.
- Clients/organisations should allow appropriate time for these actions to be programmed and delivered
- Where the procurement route features early contractor involvement, close liaison and collaboration between the authority and the contractor.

2.2   It is important to understand interdependencies with other projects and operations. This will help ensure that relationships are managed and events, whether they occur or impact inside or outside the project, are understood, communicated and managed appropriately. This will include ensuring that there is a mechanism in

place to manage the impact on the project of events happening outside it. Similarly, changes to the project should be assessed for impact outside it. Where projects are part of wider programmes, changes to the project should be assessed to consider whether it would also have an effect on the programme. Risk management should consider, therefore, where projects may be impacted by external factors and how those might result in changes to the project being required.

Legislation

3.1　Any contract which is awarded by a public body is subject to the appropriate legislation set out in Chapter 1 of the Construction Procurement Handbook. If the contract value is above the relevant thresholds then the Public Contract (Scotland) Regulations 2015 apply. Regulation 72 addresses modifications to contracts. Changes will normally constitute a modification to a contract and it should be noted that changes to the contract which are defined as 'substantial' are not possible without a new tender exercise.

Change Control Process

4.1　As noted above, change may be inevitable or necessary but regardless of how it occurs it must be anticipated and managed. A change process aims to get a project from one agreed position to a new one. Change control aims to ensure that this happens with minimum disruption and as efficiently as possible. It ensures that:

- The consequences of the change are fully understood (eg cost, programme impact, specification and stakeholders' needs);
- All those who need to know are informed and consulted;
- All relevant documentation is amended accordingly;
- The process is recorded;
- The change is authorised (or rejected); and
- The change is implemented.

4.2　It must be clear that, as the project progresses, the ability to make changes to it reduces in inverse proportion to the cost of making any changes. See the diagram below.

Time/Project Phase
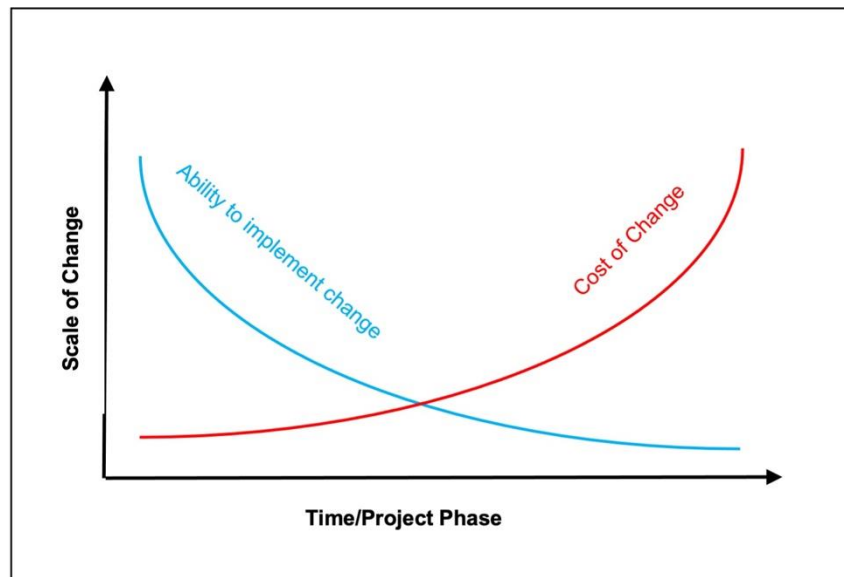
4.3   **Baseline Design** Good project management requires that there is a sound understanding of where the design is at any given point in time, this will be anchored to the cost plan and the project programme. Each of these documents must share the same fixed points (which may be a point in time and or a stage in the project, for example the RIBA Plan of Works). Changes must be reflected across all relevant project documentation to ensure consistency and ease of comparison.

4.4   The baseline must be owned by the Project Manager (PM). Changes to it must be made through a change control process, this is part of good document control and management. It is essential, for example, that an interrogation of the cost plan can relate directly to the same version of the design and programme and that everyone is clear which version is the extant version and that everyone is talking about the same thing. A cost plan which is 'as at' a different date or point from the design and programme will immediately raise suspicions around its accuracy and significant work will be required to re-calibrate them to bring them into alignment.

4.5   Consideration of changes to the baseline design must include all consequentials of the change. The original design will have been based on calculations, assumptions and standards. It is, as part of the change process, essential that these are reviewed to ensure that they remain accurate and relevant. For example, does the change compromise air tightness calculations and design decisions taken as a result of them?

4.6   Any instruction constituting a change or variation to the client's requirements, set out in the contract, must be subject to the formal change control approval process. The contract will set out who the *Contract Administrator* is; although this is normally the PM (the specific term for the person who can issue instructions to the contractor will be set out in the contract). The *Contract Administrator* is the only person authorised to issue *instructions* (also known as *Contract Administrator's Instructions*, *Architect's Instructions* or *Engineers Ordered Variation*) that identify variations in accordance with the construction contract. This is to ensure that there is strict control on how the contractor is managed and avoids confusion potentially

leading to difficulties in contract management and disputes over performance and delivery. Note that standard forms of contract have specific clauses relating to how contractors are notified of change, how they manage it and pricing of additional costs associated with it. This does not change the requirement for a sound process for managing change within the construction project.

4.7   **Responsibility** The Change Control process is usually managed by the PM, whilst decision-making will be according to the delegated authority levels set out in the project execution plan. The Project Manager is responsible for co-ordinating and managing all change documentation and activity including maintaining the *Change Control Register*. Authority levels must be clear and set so that good governance is assured and the client is fully involved. They allow decisions to be made in good time and at the appropriate level. Delays to decision making, particularly during the construction phase, can have a disproportionate impact on time, cost and quality and consequently can impact on the prospect of project success.

4.8   **Stages** A change should follow a set process and this should include the following steps:

Request	Review	Assess	Decide	Implement
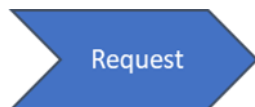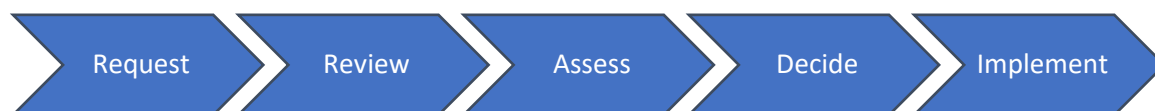
Request

A change request can originate from any person or organisation involved in the project, and sometimes from those outside it. Wherever it originates, it *must* enter the project by a ***Change Request Form*** (see Annex A for a sample Change Request Form) via a specific entry point, this will be specified in the project execution plan and is usually the PM. The Change Request form is the means by which the client, through the Project Manager, is notified that a change to the deliverables is required and by which the PM records and manages the change.
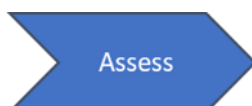
- The request for change is logged in the ***Change Register*** noting: the date received, the originator's name and organisation, a description of the change requested and any dependencies including time (a sample Change Register is at Annex B)
- List the type of change, eg contractor, client, design team or site conditions
- Change Requests must never go direct to the contractor without first going through the change control process
- The Change Request Form should contain as much information as possible to allow it to be properly considered and costed. However, this should be balanced against delay and the knowledge that a full review will be conducted by the design team and other consultants. This should include:
  - The name and organisation of the originator
  - Outline of the change requested

- Reason why the change is necessary
- Any dependencies or other affected works
- Time criticality
- Impact of the changes on costs, specification and health & safety. The form should also be sub-divided into sections for the various stages of the process with sign-off boxes to indicate that it has formally cleared each stage.

Review

A review is conducted to understand the viability of the change to allow the client to make a decision. The following may be involved in the process:

- **PM** An initial review to confirm that the proposed change is within the scope of the project, has not already been actioned, is generally desirable and would deliver value for money. The PM should involve the following members of the team:
  o **Design team** considers the technical aspects of the change request and develops it, in outline, into a viable scheme. Legislative and other statutory requirements should be considered at this stage. This can then be passed via the PM to the cost consultant
  o **Cost consultant** to work out an indicative cost for the implementation of the change.
  o **Contractor**. At some point prior to the final decision the contractor should be invited to review the change. This should be after as much of the information has been collated and dependant on the type of contract once the design team have worked up an outline design. A design and build contract will not require a client side design team design as this will be worked up by the contractor. Clients may wish to give preliminary approval in outline prior to the change request being passed to the contractor for their review. If this is the case then the change will come back to the PM for finalising and then will progress to the Assess and/or Decide stage. The contractor should be requested to give a price for the change including any additional prelims including those resulting from impact on programme.
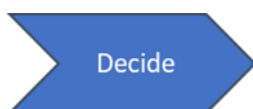
Assess

Once the review is complete, the PM should collate all the information and summarise the outcome of the review on the Change Request Form. Any supporting documents as appropriate and an indication of whether the change is achievable from a construction point of view should also be included. This collated Change Request is then passed to the client for their consideration. The client should consider the change in the context of:

- The overall project aims and the business case and determine whether it is desirable or not. If the business case does not support the nature of the change, but it is determined that the change is desirable

then a review of the business case may be required. Such a change will require to undergo amended business case approval. In pure project management terms a significant change to the business case may technically require the project to be halted and re-initiated although in practice, this is less likely to be achievable in a construction project particularly if contracts have been awarded or the construction phase has commenced. A decision to halt a construction project will carry significant cost and reputational risk as well as risk to the service ultimately planned to be delivered by the built asset.

- The impact of the change on stakeholders and other agencies and this may require direct engagement with them to get their views on the change
- The Risk management plan and the impact on deliverability of the project. This should include consideration of:
  - Impacts on the construction programme and of possible delay and disruption claims for additional costs from the contractor.
  - How long might it take to complete final design information for the change, including any client or statutory approvals? Allow time for possible re-submissions.
  - Will other aspects of the works require design amendments to suit coordination?
  - Any requirements for amendments to building warrants or planning consents?
  - Will any element of the construction works require to be postponed to accommodate the change? If so, what will be the likely impact?
  - Are materials readily available or, if not, what is the delivery period?
  - If the proposed change is likely to cause the contractor to be entitled to an extension of time, what is the likely cost?
  - What is the client operational impact of a delay to the completion date?
  - Note that not all changes will require to be referred to the client, delegated authority levels will be set out in the Project Execution Plan. Similarly some changes may require clearance at a higher level for example at Project Board or Ministerial level. It is though worth ensuring that the delegated authority level is appropriate for the specific change being considered. For example a relatively low cost change may have a larger impact on the business case and whilst the PEP may suggest no referral to the client the business impact might.

Decide   Once the assessment is complete, a decision is required. This may be *Approve*, *Reject*, *Defer* or *Further information required*. A deferral may, for example, be because other dependent activity is pending which may have an impact. For example, future changes to legislation which may make the proposed change redundant. A deferred change will remain on the register and be brought forward at an appropriate time for further

consideration. The authoriser may also want more information to inform their decision in which case the Change Request Form is annotated accordingly and returned to the PM who will restart the process at the review stage. Note that a deferral or request for further information can be made at any stage during the process as appropriate.
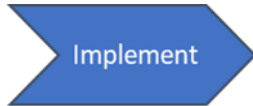
Implement   If the change is authorised, all documentation is updated to take account of the change and the baseline is stepped forward accordingly and version control updated. The change is then notified to all relevant parties and appropriate action taken to implement it. This will include full design development of the change by the design team, amendment to the cost plan and integration of the change into the construction programme by the contractor.

4.9   **Fees** Fees payable to consultants are normally set out in the contract documentation and the method of calculating them is fixed according to it. The contract will also set out rates of fees for undertaking work additional to the contract, this will include for work on changes. Therefore, changes will incur additional consultant fees. Each consultant should consider and estimate their fee for implementing the change in the event it is approved and for the work undertaken for considering the change request. Note that even a rejected change is likely to incur a fee. Most standard forms of contract have built-in provisions for the contractor to provide an estimate of the time and cost impact of a proposed change. Authorities should use that mechanism but be aware that except for simple changes, firm cost and time implications will only be available once a new design has been produced and approved. Similarly, the change will incur additional cost from the contractor as it is likely to be a variation on the original contract, this will include the cost of the work itself and any prelims required to deliver it. All costs should be estimated through the change control process and used to help determine whether the change is desirable.

4.10   It is imperative that these costs are considered against the current version of the recognised and agreed baseline to which the changes are being made and once made a new version of the baseline must be created and published. This allows a controlled and incremental approach to managing change and ensures that the changes and their impact are known and recorded.

Governance and Approvals

5.1   The procedure for approval of changes should be set out in the *Project Execution Plan (PEP)* or *Project Implementation Document* (PID). Besides describing the change control process and its management, it should also define the delegated authority levels and procedures for consideration of changes at each delegated level.

5.2   Decisions regarding changes will normally require authorisation by the Project Sponsor, although these may be escalated to the Senior Responsible Owner or the Project Board depending on the complexity, cost or impact of the change. Authority

can also be delegated further down, although this further delegation of authority will normally require to be approved at Project Board level.

5.3   Approval should be conducted at the most appropriate level considering the impact and cost of decisions, whilst ensuring that the process is time effective, this is particularly important during the construction phase when quick decisions are often required. An overly bureaucratic and hierarchical approvals process will be slow and delay decisions and will impact on project cost and programme. Consideration should also be given to the effect of aggregation on delegated authority. For example, a team member who has authority to approve changes up to £10,000 may make ten changes which total £100,000 and that amount may have a significant impact on the project so checks should be put in place to ensure that delegated authority is appropriately managed.

Document Management

6.1   Changes, and the process to reach a decision about them, must be recorded to a) allow effective management of them and b) provide an audit trail for accountability. Changes can come thick and fast and without an efficient system for recording and monitoring, mistakes and confusion can occur. Effective documentation ensures that everyone is clear about exactly what is being requested, supports accurate decision making and records what has been decided.

6.2   An audit trail also provides an open and transparent record for subsequent enquiries, *lessons learned reviews* and *post project evaluation* and ensures that there is a clear record of the decisions made in spending public money. The following documents should be maintained:

- Document control register
- Change Request Form
- Change Control Register
- Cash flow/Cost Plan recording impact of changes on costs
- Programme

Summary

7.1   Change is an inevitable part of construction projects and whilst it should be minimised, the manner in which it is managed is critical and can have a make or break effect on project outcomes. Active and timely management of them is essential with all those with a need to know being involved at the appropriate time and with the appropriate authority to make decisions. It is the client's responsibility, as with everything relating to project delivery, to ensure that a system is in place for managing it before it is needed.

SUGGESTED CHANGE REQUEST FORM

	Change ID:	

Change Request Form		
Project Name:		
Design Stage/Version	**Cost Plan/Cash Flow Version**	**Programme Version**

Request ▶ Review ▶ Assess ▶ Decide ▶ Implement
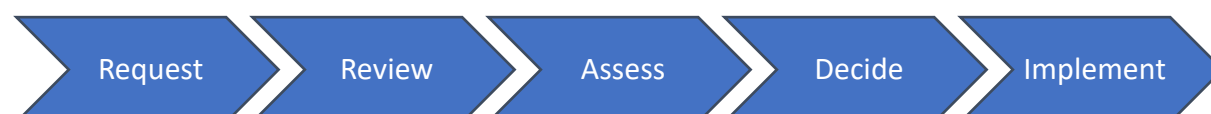
Change Status and Date		Approval Status and Date	
Request		In consideration	
Review		Approved	
Assess		Rejected	
Decide		Deferred	
Implement		Request for Information	

Impact Level (check all that apply)				
Portfolio	**Programme**	**Project**	**Phase**	**Task**

Change Type				
Client	**User**	**Site Condition**	**Design Development**	**Contractor**

Originator Details	
Name:	Organisation:
Date submitted:	Date required:

Request Details
Description of request:
Reason for change:

Change Status and Date	Approval Status and Date
Impact of Change:	

Costs	
Construction Costs	
Construction prelims	
Fees	
PM	
DT	
QS	
Other consultants	
Other eg statutory	

Comments
PM
Signed by: Date:
Designers
Signed by: Date:
Cost Consultant
Signed by: Date:
Other Consultants
Signed by: Date:
Client
Signed by: Date:

Decision			
Approve	Reject	Defer	RFI

Implementation
Client Instruction

Action

Change Status and Date	Approval Status and Date
Actioned by:	14.
Date:	
Confirmed:	
Review:	

SUGGESTED CHANGE CONTROL REGISTER

Request						Review				Assess						Decide		Implement		
Change ID No'	Requester	Requester Organisation	Date of Request	Change Type	Change Status	PM	Design Team	Cost Consultant	Contractor	PM	Client	Cost Estimate	Total Fees	Total Cost	Programme Impact	Approve/Reject/ Defer/RFI	Comments	Instr to Consultant/ Contractor	Related Documentation Update	Review
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(s)
Unique identifier number	*Name of the person requesting the change*		*Date request received by PM*	*Client, User, Site, DD, Contractor'*	*Consider, Approved, Deferred, Rejected, RFI*	*Dates: deadline, in, out, and complete*	*Dates: deadline, in, out, and complete*	*Dates: deadline, in, out, and complete*	*Dates: deadline, in, out, and complete*	*PM recommendation date*	*Client consideration deadline and decision date*	*£*	*£*	*£*	*Yes/No short description*			*Date of instruction, instruction reference*	*Ensure all related documents are updated and recorded here*	*Review the change post implementation*

Project Initiation and Business Case Handbook

Chapter 17

Retention in Construction Contracts

Contents:

Section   **Subject**

Summary

1.1   Contracting authorities considering using retention in construction projects must follow the provisions in this guidance, which are summarised as follows:

- Assess the likelihood and impact of defective work occurring
- Ascertain whether or not retention is needed at all
- Avoid defaulting automatically to standard retention percentages
- Analyse evidence, use experience and assess risk to implement retention
- Apply retention as the minimum required amount
- Accumulate and hold retention for the shortest appropriate duration
- Administer one assurance process per project where possible
- Aim for and prioritise the objective of zero defects
- Acknowledge the possibility of defective work occurring
- Agree a remediation estimate to supplant the accumulated retention
- Automatically release retention when the contractual trigger is achieved
- Activate clauses which apply these principles fairly in the supply chain

Definition

2.1   These provisions complement the [Quality chapter](#) of The Client Guide to Construction Projects and adopt the definition agreed by the short life working group:

- Retention is an amount deducted and withheld from each progress payment made to a contractor or subcontractor to secure obligations under a construction contract and ensure defects are remediated without the holder becoming liable for costs arising from unmet contract performance

Scope

3.1   Public bodies in scope of the Scottish Public Finance Manual (SPFM) must consider the following for capital works projects:

- Is a cash retention appropriate; and if so
    - how much is proportionate to the likelihood and impact of defective work?
    - how long should it be retained?
    - what requirements should trigger its release?
    - how can it be implemented to incentivise zero defects?

3.2   Where retention is deemed relevant, the practices set out in these provisions should be implemented regardless of the estimated capital works cost. Monetary value is not always a reliable measure of risk and complexity. Smaller projects should not be exempt from benefitting from a considered approach to retention. Those closest to a project are best placed to make an assessment which is scaled and proportionate to its particular characteristics.

3.3   A contracting authority may have to consider taking on more risk than they otherwise might have under traditional retention practices. They should not take on

any more risk than they can manage within the parameters permitted by their corporate governance. Underestimating the retention needed for remediating defective work is avoidable if authorities interpret their project and its inherent characteristics accurately.

3.4   These provisions do not cover bonds, parent company guarantees etc, regarding which contracting authorities should seek relevant advice (e.g. financial, legal, procurement etc). They should understand what various means of assurance are intended to achieve and avoid implementing more than one to serve the same purpose. That is unless doing so is considered absolutely necessary to mitigate the assessed likelihood and impact of failure to comply with the contract specification.

3.5   These provisions are to be given effect in the contracting authority's contract with the main contractor. Where 'standard' contracts are not aligned with or impede them, authorities should develop relevant alternative terms and conditions. These provisions do not contain model or template terms and conditions. It is impossible to anticipate and provide for every way they might be implemented within every 'standard' form used by each contracting authority.

Preparing for procurement

4.1   The interfaces and configurations of materials in the design of construction projects can imply certain predictable working sequences and construction process ergonomics. The potential sources, likelihood and possible impact of defects can also be reasonably predictable. The combined experience of seasoned practitioners can bring reliable insight to, and inform an objective assessment of, a proportionate amount of retention.

4.2   An objective assessment and analysis of potential factors which might generate the potential for defective work and other non-compliant delivery should be carried out. By way of illustration, the following considerations are among those which are relevant:

- Technical complexity of design, particularly at interfaces e.g. materials, components
- Materials selection and characteristics e.g. shrinkage; cracking; warping
- Extent of novel and/or innovative design
- Ergonomics and buildability inherent in design
- Volume, detail and format of as-built, operating and maintenance information, including compliance with BIM requirements[1]
- Extent of off-site and on-site work implied by the design
- Standard of finish required
- Standard of vocational qualification needed to achieve the specified finish
- Availability of labour at required standards
- Frequency and intensity of site inspection envisaged by the contracting authority
- Extent of contractor self-certification anticipated

---

[1] Building Information Modelling in Construction: CPN 8/2017

- Contractors' commercial ability to provide the contracting authority's retention

4.3   Normal multi-disciplinary collaboration necessary for working up the design and specification of a project naturally lends itself to undertaking such an assessment. Usual preparatory activities can also serve to inform an assurance strategy's relevance to the project and its proportionality to the likelihood of defective work. Where this involves a procurement route featuring early contractor involvement then the contractor should be consulted.

4.4   Contemplating the possibility of defective work does not make it inevitable. On the contrary, it is the first action in a systematic process of implementing an integrated commercial, contractual and inspection regime. This should be more targeted to the project's specific profile compared to the cover assumed by a standard percentage applied to the contract sum.

4.5   An evidence-based, relevant and proportionate retention may be higher or lower than a sum produced simply by applying standard percentages. It will however be based on and aligned with the project's design, buildability, ergonomics, specification and materials. It will consider the specific likelihood and impact of defective work occurring in a project and so should achieve the following objectives:

- Produce a fund to cover the holder against having to pay for all remedial work necessary to comply with the contract specification
- Avoid retaining an amount greater than actually required by the project's intrinsic characteristics

4.6   A systematic approach which produces a retention that seems excessive or penal may indicate hitherto unknown or unrecognised project characteristics. The contracting authority will have to address this, which can include the following:

- Inherent but unacknowledged riskiness
- Potentially unsuitable procurement strategy
- Possible inappropriate risk posture, at corporate and/or individual level

4.7   Project particulars in public procurement procedures may state the maximum level of retention that will apply. Contracting authorities should frame their evaluation criteria to focus on a bidder's ethos for complying with the specification and how they implement it. Some factors for consideration include the following:

- Which position in the bidder's senior management is responsible for ensuring work on site complies with the specification?
- How will the bidder embed their processes in day-to-day work on site?
- How objective and investigative are the bidder's project delivery processes?
- When are these processes supported in practice e.g. regular inspections?
- Where can site workers access the bidder's procedures for ensuring work on site complies with the specification?
- What commitments have been made in the tender submission relating to ensuring work on site complies with the specification?

- How does the bidder describe their approach to delivering compliant as-built, operating and maintenance information?
- Has the bidder committed to delivering zero defects?

4.8   Contracting authorities should replicate where possible the manner and amount/proportion of main contract retention as the maximum permissible level in supply chain contracts. This would ensure that retention in contracts between businesses will not exceed those provisions. The same detailed retention regime should only be applied without unsustainably burdening supply chain firms.

4.9   Contracting authorities should consider the feasibility of applying a retention regime targeted on distinct activities. Payment processes triggered by demonstrable milestone events on site instead of set intervals of time could facilitate a more systematic and proportionate approach. For example (illustrative only):

- Groundwork and/or excavations complete - potential for little or no risk where deemed suitable to build upon - little/no retention potentially need be withheld
- Structural steelwork - potentially minimal risk once fixed and permanently erected - little/no retention potentially need be withheld
- Envelope complete - potential risk of compromised wind and weather tightness or poor joint/seal integrity - retention possible
- Internal decoration complete - potential risk of smearing, poor coverage, cracking etc - retention probable

4.10   No retention should be applied to payments for temporary works procured directly by the public contract that will not be permanently incorporated.

4.11   Contracting authorities must support the implementation of their chosen retention process in order to make it properly operational. This includes providing the necessary terms and conditions of contract describing the parameters within which the retention will be administered. Contracting authorities must themselves adhere to the procedures they implement for making the governance properly functional and effective.

4.12   For example, pricing documents should allow work that the contracting authority has advised may be treated as retention-free to be readily identified and separately priced. It will be difficult if not impossible for the contracting authority to implement a targeted approach to retention without the commensurate level of supporting detail. It is in the contractor's interests to supply it, proactively if necessary, for example in their method statement and price breakdown.

4.13   Contracting authorities can implement a retention strategy based on a percentage deduction from the progress payment due to the contractor, as per traditional practice. This may only be done to accumulate the necessary amount for a reasonable pre-determined assessment of the likelihood and impact of defective work.

After contract award

5.1   After contract award, contracting authorities should consider scope to abate the

retention commensurate with the contractor's work on site. They should ensure deployment of such a strategy is appropriate, proportionate and practicable.

5.2   Contracting authorities could for example apply less retention as work proceeds where patently defective work is absent or very quickly rectified. Traditional retention practice assumes a contractor's performance will be constant whereas in reality it may vary depending, for example, on their own staff and subcontractors. It assumes that standard percentages will not accumulate excessive retention despite these variances, particularly where zero defect delivery is the objective.

5.3   Information/evidence of the contractor's performance on site gleaned by direct inspection of their work would help establish a factual basis for an active retention regime. This would seek to reduce the prevalence of defective work, aiming towards zero defects at handover. The contractor would have certainty on the maximum amount/proportion stated in the contract. Potential reductions would be determined by their own performance. An active retention process where retention cashflow depends on specification compliance empowers the contractor to eliminate defective work.

Project delivery culture

6.1   Contracting authorities should ensure that their contract terms both enable and empower a collaborative culture to be established on site. They should lead by example and exhibit themselves the conduct and behaviours they expect of supply chain businesses. Regular and detailed site inspections as work proceeds can inform and support the commercial element of the overall project delivery strategy. They can help sustain the focus on ongoing defect remediation to deliver a specification-compliant project with zero defects at practical completion.

6.2   Implementing these provisions may involve more frequent site inspection and/or more detailed payment assessments. This is an unavoidable consequence of the increased focus on site productivity, compliance inspection and commercial management inherent in and necessitated by better retention practice. The contracting authority should identify the inspection regime deemed necessary to receive a compliant project into their estate. Financial headroom may potentially be carved from a fixed capital budget through cash freed-up by engineering best value into project or programme scope and specification.

6.3   A contracting authority's inspection regime is not a substitute for the contractor's obligation to deliver the standard of materials and workmanship required by the specification. The contractor remains obliged to perform the contract and should routinely, objectively and rigorously apply their policies for complying with the specification. A greater propensity to regularly deliver compliant projects demonstrates reliable and efficient corporate processes. This in turn produces more reliable project budgeting. Contractors can choose to recover related costs by charging them to tenders if they wish.

6.4   The need for and the amount of retention should be inversely proportionate to how reliably the contractor complies with the specification. This is within the gift of every contractor engaged in delivering construction projects to the public estate to

control. Where a contracting authority considers improvements in the standard of project delivery to be permanent and ingrained, they should decrease retention applied to future projects. Where a contracting authority considers that a contractor is capable of and committed to delivering zero defects, they should consider applying zero retention.

Handover

7.1   The practical application of the portion of cash retention accumulated for potential patent defects should be aligned to identified defects. It should not persist as a general remediation fund. The contracting authority's decision to take possession of an asset is always a matter for the contract and is not supplanted by these provisions.

7.2   The contracting authority and contractor should collaborate to identify and agree instances of defective work to be noted in a schedule of patent defects. They should work together to develop it into an estimate of the cost and time needed for remediation. This will include any defective work manifesting at handover which was not previously discovered in addition to any pre-existing outstanding defects.

7.3   Where the remediation estimate for patently defective work exceeds the amount of retention held to cover it, the contracting authority must avoid paying the difference. For example, a progress payment should not include defective work which is patent when evaluated for payment purposes. The following factors can help inform the contracting authority's retention process at practical completion:

- Amount of retention accumulated to date
- Cost and duration of remediating patently defective work
- Amount to be held for remediating potential latent defective work
- Retention with no attributable purpose for return to the contractor

7.4   These provisions extend the systematic process for accruing retention into a more consistent and transparent remediation regime attributed to specification compliance. They seek to make retention an active process which places maximum cashflow under the contractor's control by minimising patently defective work at practical completion.

7.5   Traditional practice leaves contracting authorities with only half of the accumulated retention fund at practical completion just as the extent of patent defects is evident. Such a release of retention may not fully reflect the contracting authority's potential exposure to the cost of remedial work. The contracting authority should retain the estimated cost of remediating patently defective work from a retention fund accumulated under contract terms drafted to reflect this guidance. They will also retain the amount for potential latent defects. The contractor can no longer assume they will receive half the accumulated retention at practical completion. They will receive the amount unable to be contractually attributed to rectifying patent defects evident at that point.

7.6   Any defects remaining latent at handover clearly cannot be subject to a process of attributing remedial time and money. They are inherently unknowable and unquantifiable unless and until they manifest, for example if the structure or systems

are sensitive to seasonal conditions. Authorities should not interpret this guidance to permit holding a greater retention for latent defects than would have been held traditionally. A percentage of the contract sum held for the pre-specified period as in traditional practice is acceptable. The contracting authority's position in the event of latent defects manifesting after the final payment of retention to the contractor is beyond the scope of these provisions. Potential recourse may be available through manufacturers' performance warranties and suppliers' guarantees.

Conflict avoidance

8.1   Contracting authorities should consider embedding a conflict avoidance approach into the project delivery process. This is particularly pertinent to drawing up the schedule of patent defects, a process which can ill-afford to suffer unnecessary disagreements and delays. The schedule's focus on detailed technical matters will need to be balanced with the strategic benefit to the contracting authority of occupying and using the asset. Construction Policy Note 2/2021 confirmed Scottish Government's support for the principle of avoiding conflict in construction contracts. The provisions in this guidance do not supplant the terms of compliance for handing the asset over stated in the contract.

Duration and release

9.1   Contracting authorities should carefully consider the duration to be specified in the public contract for holding the accumulated retention pending release. Retention should only be held for the minimum duration necessary for any defective work to have a reasonable opportunity to manifest itself. The contracting authority must release the retention due to the contractor as soon as the necessary contractual triggers for doing so have been met. The contractor should not have to apply for this money, the contracting authority should return it of their own volition.

Supply chain equivalence

10.1   Contracting authorities should ensure that the public contract contains provisions for the contractor to implement retention as set out therein to subcontractors. Contracting authorities should enact retention provisions of the public contract towards the contractor in the way they expect supply chain business to do so between themselves. Those provisions should be drafted to enable them to be replicated in so far as is reasonably possible in successive contracts along the supply chain. This is in effect the same principle as set out in SPPN 2/2022 (Prompt Payment in the Supply Chain - terms and conditions).

Trust accounts

11.1   Where deemed proportionate to and feasible for a particular project, contracting authorities can require the main contractor to open a trust account with each subcontractor. These separate accounts should be opened in joint names with each subcontractor to deposit the retention, ring fence and protect it from upstream insolvency. The availability of this type of account to serve the stated purpose at the required time and at reasonable cost may vary. Contracting authorities should check this in good time.

Compliance

12.1   Accountable Officers in Scottish Government are required to prepare governance statements as part of the annual accounts for which they are directly responsible. They rely on key individuals to provide them with reasonable assurances of compliance with applicable policies and procedures. It includes procurement policy stated in The Client Guide to Construction Projects and Construction Policy Notes[2] as implemented by contracting authorities in scope of SPFM. It covers their consideration, implementation and operation of cash retention, as noted in these provisions, in their construction contracts.

---

[2] [Construction Policy Notes](#)

Sustainability in Construction

Contents

Introduction

1.1　The Scottish Government is committed to ending Scotland's contribution to climate change. We will do this by 2045, in a fair and just way.

1.2　The Scottish Government fully supports sustainable development, the concept that the needs of the present must be met without compromising the ability of future generations to meet their own needs[1]. As part of the national endeavour to achieve net zero greenhouse gas emissions by 2045, the Scottish Government's Programme for Government commits to action on the climate impact of significant annual public procurement spend[2]. Climate change reporting duties and public procurement policy require public bodies to consider and act to reduce emissions in order to meet greenhouse gas emissions targets.

1.3　The built environment is one of the biggest contributors to carbon emissions, estimated to account for nearly 25% of total UK greenhouse gas emissions.　The UK Green Building Council reports that operational and embodied carbon from construction currently accounts for around 6% of the UK's annual emissions[3].

1.4　As part of the Just Transition to net zero and a more resource efficient, low carbon economy, there is a need to significantly reduce associated carbon emissions from the built environment. This chapter summarises good sustainable construction practice. Links to a wide set of resources have been provided in section 11 of this chapter. These cover policy, technical guidance and good practice notes from Scottish Government, public sector bodies and industry representative bodies. The Scottish Government also intends to develop a draft Buildings and Construction Just Transition Plan by end 2023, which will build on this work and provide sector-wide clarity.

Background

2.1　 This Sustainable Construction guidance embraces the three traditional pillars of sustainability, which are social, environmental and economic. Considering the three pillars simultaneously will assist public sector clients deliver outcomes that are:

- Socially sustainable – demonstrating socially responsible leadership through the delivery of healthy and inclusive outcomes
- Environmentally sustainable – actively protecting biodiversity and the environment through the adoption of a whole life approach and effective mitigation strategies
- Economically sustainable – enabling inclusive economic growth through fair and resilient practices

2.2　The term 'project' is used broadly to encompass a full range of built environment and civil engineering works through the work stages. It covers what you

---

[1] Sustainability | United Nations
[2] Public procurement - taking account of climate and circular economy considerations: SPPN 3/2022
[3] Climate change - UKGBC - UK Green Building Council

need to consider as a client, project manager or consultant etc. when sustainably delivering a public sector construction project.

2.3 The guidance contained here is complementary to and aligns closely with the principles of a range of other policies and legislation which are referred to and linked throughout the guidance. A key example being the Scottish Government's Sustainable Procurement Tools which are available to all public bodies. These support the aims of the National Performance Framework. The tools include indicators and guidance to support Scottish public sector buyers to consider and act on a number of climate change considerations. One such tool is the Sustainable Public Procurement Prioritisation Tool, which is designed to assist public sector clients strategically plan and prioritise their social, environmental and economic considerations.

Importance of Good Governance

3.1 Good governance and the early implementation of a robust governance strategy are crucial in delivering a sustainable construction project. This approach promotes goal setting, awareness raising and information sharing. At each life cycle stage this decision making needs to consider the identified social, environmental and economic priorities and objectives and be governed by responsible and robust practices. This approach encourages individuals to take appropriate levels of responsibility and provides assurance of sustainability.

3.2 Guidance on project governance can be found in Chapter 2 of the Project Initiation and Business Cases Handbook of the Client Guide to Construction Projects. This emphasises the importance for everyone involved in a project taking individual and collective ownership and being accountable for the conduct and delivery of the project.

3.3 Sustainable procurement considerations must encompass every construction life cycle stage. However, as demonstrated in figure 1, the ability to influence sustainable outcomes is greatest right at the very start of a construction project in the planning phase. Informed, early stage decision making and adopting a collective, integrated and holistic whole life approach maximises the opportunity to deliver long-term value. This helps improve quality of delivery in a considered and sustainable way.
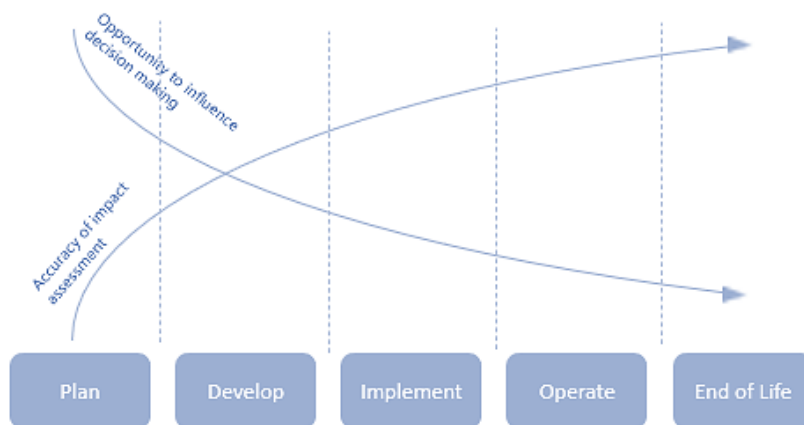
Figure 1: Construction Life Cycle Stages

3.4   The guidance follows the stages below, which relate to the construction lifecycle:

- **Planning** – identifying and responding to the end user need, informing options appraisal activity and planning for delivery
- **Development** –influencing procurement activity, informing the design development and instructing any pre-constructing activity
- **Implementation** – inform detailed design, construction and commissioning strategy
- **Operation** – responsibly manage, utilise and maintain the asset
- **Decommissioning** – plan for end of life and future re-use, repurpose and /or recycling opportunity

3.5   The development of a Sustainability Matrix can help to summarise and communicate the various needs and requirements of a project. It provides clients with a tool that assists them in reviewing and evaluating the project's sustainability credentials. We have developed a Sustainability Matrix to assist public contracting authorities and this is shown in Annex B.

Planning

4.1   The planning stage is critically important in developing all projects and this must include sustainability considerations. It requires adequate appropriate resourcing during the earliest planning stages to ensure end user needs are clearly defined and understood and fully integrated into the project brief and plan (see chapters in the Client Guide for developing a Business Case (chapter 4) and Creating the Project Brief (chapter 2).

4.2   As part of this planning stage, sustainability priorities and performance outcomes should be identified and agreed, influencing any investment decisions, option appraisal activity and providing strategic direction from the very outset.

4.3   A Circular economy approach that adopts the waste hierarchy principles and that seeks to conserve and value all resource use should inform early conceptual design and construction approaches. The Project business case should follow the Scottish Government's Investment Hierarchy, as developed by the Infrastructure Commission for Scotland, and supported by the Scottish Government, as shown in Figure 2 below[4]:
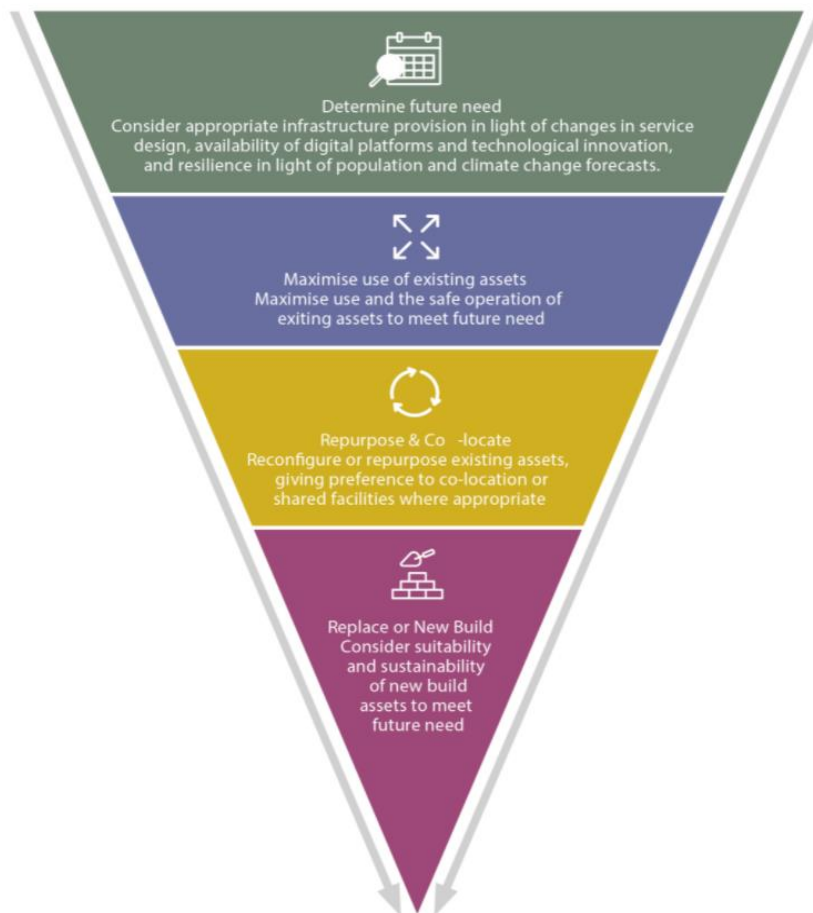

Figure 2: Scottish Government Investment Hierarchy

4.4   As described below, planning for the sustainable construction of a sustainable whole-life built assets requires consideration of many factors across social, economic, environmental and carbon fields. Key factors to consider are:

- The importance of understanding, respecting and developing relationships between **people and place** and the impact of the built asset on the place and the people.   Reference should be made to guidance on Place-based approaches and consideration given to the impact of the project for inclusive growth including Community Wealth Building, Fair Work First employment and the Scottish Business Pledge, promoting fairness, equality, opportunity and innovation.

---

[4] A National Mission With Local Impact: Infrastructure Investment Plan for Scotland 2021-22 to 2025-26 (www.gov.scot)

- It is estimated that people spend 90% of their time inside buildings. The **internal and external environment** therefore has a significant impact on the health and wellbeing of occupants. Projects should prioritise physical and mental wellbeing through the creation of healthy places and there are a number of standards, tools and strategies related to Ventilation design (internal air quality), Secured by Design (for safe and secure access) and Biophilic Design (incorporation of nature) that are available for those requiring technical detail.

- Projects should consider what preventative, protective and enhancement measures are required to support and enhance **environmental security** and adaptation to the irreversible impacts of climate change. This is the protection of the natural environment from the potential negative impacts of human activities such as construction works. As a minimum an environmental security strategy should be produced which would typically be expected to cover:

  - land use
  - geo-environmental risk
  - adapting to climate change and minimising greenhouse gas emissions in the construction, operation and decommissioning phases
  - biodiversity (required levels of protection and opportunity for enhancement)
  - water management
  - waste minimisation and recycling options
  - air quality
  - noise pollution
  - other nuisances and any risk from external sources of pollution
  - opportunity for optimising site layout (for buildings and people)
  - opportunity for greenspace intervention

- Projects should help to prioritise **active travel and more sustainable transport modes** by making these options more accessible, attractive and inclusive to all users. The 20 minute neighbourhood concept may be helpful in recognising opportunities to bring together and address a number of socio-economic and environmental priorities. This approach may help enable people to meet most of their daily needs within a 20-minute walk from home, with safe cycling and local transport options.

- To be sustainable, it is critical that projects adopt a **whole life carbon approach**, considering both embodied and operational carbon and associated impacts at every life cycle stage. It is recommended that projects set whole life carbon targets and / or objectives referring to the Scottish Government Net Zero Public Sector Building Standard guidance for the setting of embodied and operational targets, where appropriate. This approach will encourage more responsible, efficient and circular resource use.

- Whole Life Costing should be used on projects to consider capital and operational costs. The results should be used to inform early decision making and improve design, specification, through-life maintenance and operation.

Development

5.1   Following the planning stage described above, a fully integrated and well-considered project development approach is required by the entire project team. This will ensure the project is delivered in a holistic and sustainable way. It is essential that all time, cost and quality impacts connected to the sustainability targets are allowed for at this point, prior to the implementation stage.

5.2   Sustainability assessments should be scheduled throughout the project life-cycle to allow clients to review and assess proposals in detail. A sustainability matrix such as in Annex B can be utilised for this purpose. This assessment process will enable clients to consider how well the needs of the end user and priority outcomes are being met prior to progressing to the next delivery stage. This allows for collective review and enables clients to intervene to support and encourage optimisation against all priority social, economic, environmental and carbon outcomes.

5.3   To enable the sustainable delivery and development of all projects, a programme for continued stakeholder engagement and a communication strategy (including the provision of feedback) should be in place throughout the development stage. This should continue to align with place-based principles and allow structured, consistent approach to focus on end user needs and optimised operational requirements from the outset of a project.

5.4   Early supply chain viability testing should be undertaken to consider options and maximise opportunity for specification, procurement and use of lower embodied carbon products, circular products and natural materials. Early supply chain engagement can also help to drive innovation through the supply chain. See chapter four, Preliminary Market Consultation of the Construction Procurement Handbook of the Client Guide to Construction Projects.

5.5   The use of Modern Methods of Construction, such as Offsite construction, should be explored during early development stages, recognising quality and environmental benefits (for example, greater resource efficiency and less waste) that could be achieved.

5.6   To ensure accuracy and reliability of results, credible and robust life cycle assessment calculation tools, methodologies and information sources must be used.

Implementation

6.1   Chapter 3 of the construction phase handbook of the Client Guide to Construction Projects provides an overview of the client's role in achieving quality, particularly during the construction phase. It provides guidance to assist contracting authorities to successfully deliver outputs and outcomes in their construction projects which meet the requirements stated in the Project brief and business case.

6.2 A carbon mitigation strategy should be implemented to mitigate carbon emissions associated with the Construction Stage. This should consider:

- Transport of materials to site e.g. prioritisation of local sourcing and promotion of low emission vehicles
- Resource efficiency e.g. resource management plans (with industry recognised best practices waste reduction actions and targets) and diversion from landfill strategies and targets
- Energy consumption e.g. the use of 'green' energy supplies for site accommodation and reduced reliance on diesel generators for plant use (the use of diesel replacement fuels, for example, could be explored)
- Choice of materials to minimise embodied carbon impacts and consideration of the carbon impacts associated with where to source materials

6.3 A design for disassembly/deconstruction/recycling guide should be prepared in advance of handover. The guide should consider realistic and feasible project-specific scenarios for the intended / expected future handling of items beyond the end-of-life stage. It is expected that the guide will provide clients with information on the following, where relevant:

- Functional adaptation: the likelihood for the asset to support multiple or alternative uses (as informed by client / end user need)
- Exposed and reversible connections: more visible connections providing opportunities to optimise material and product reuse. Welded connections can prohibit disassembly and it is preferable to use screws and bolts to allow for disassembly and material reuse.
- Layer independence: designing systems and components in layers so that removal, adjustment or replacement of some elements is feasible, especially when different components have different life spans and maintenance needs
- Avoidance of unnecessary toxic treatments and finishes. Some finishes can contaminate the substrate in a way that they are no longer reusable or recyclable (this should be avoided unless finishes serve a specific purpose)
- Standardisation can accommodate reuse and upgrading - it involves aspects such as dimensions, components, connections and modularity.

6.4 As part of the implementation phase it is advised that the overarching principles of people and place, health and wellbeing, whole life carbon, sustainable travel, environmental security, inclusive growth and economic resilience should be adhered to. This includes:

- A programme of pre-completion inspection, commissioning and testing is allowed for, ensuring the project has successfully delivered against the agreed performance requirements.
- Principal contractors are required to ensure responsible site management procedures, processes and practices are in place and are understood and adopted by all during the construction phase. It is expected that this will include procedures that promote responsible environmental and carbon management activities and pollution prevention procedures.
- Prior to handover, project specific user guides / information are prepared including relevant management and optimisation information.

- A site-specific travel plan is prepared in an accessible format to communicate the sustainable travel aspirations of the development.
- The benefits of adopting circular design and construction practices are captured and reported including a decommissioning plan.

Operation

7.1   Once the construction stage is complete it is vital that the built asset is operated in the way it was intended to ensure the economic, social and environmental benefits are maximised. This will require a smooth and supported handover process with provision of aftercare established to support optimisation from day one and to allow for a period of fine-tuning and adjustment as required. Critically, comprehensive operation and maintenance and health and safety manuals must be completed, handed over and subsequently kept up to date.

7.2   To enable the sustainable management and operation of all projects, the following social, environmental and economic issues should be considered during the operation stages:

- A Post Occupancy Evaluation programme is necessary to determine if the facilities meets the users' requirements and function as required. This could include physical monitoring and user consultation exercises.
- A post project review exercise should take place to capture lessons learned as a result of adopting a whole life approach to carbon, and to promote wider knowledge share.
- Operating costs, including planned and reactive maintenance and replacement costs should be monitored and reported, allowing a comparison with design stage predictions and for any discrepancies to be analysed.
- A strategy for monitoring of impacts should be established with reviews used to inform continuous improvement strategies. This is likely to include carbon footprint, sustainable travel trends, review of management and maintenance strategies and the effectiveness of resilience, pollution control and environmental strategies as well as monitoring initiatives that support Community Wealth Building and inclusive growth.

7.3   The project aftercare strategy must be implemented. This will promote activities aimed at supporting optimisation during the Use stages, for example, seasonal commissioning activity that will support the fine-tuning of systems and services to enhance comfort, efficiency and sustainability, a detailed review of the facilities management strategy and the impact of operations and any alterations to the 'as constructed' status of the asset on the Carbon Management Plan.

7.4   The project should continue to adopt a whole life carbon approach during operational stages. The integrated *Life Cycling Costing* and *Life Cycle Assessment* activity should continue to support this. It should also aim to inform more responsible procurement practices. Consideration should be given to the carbon impacts of hard and soft facilities management and appropriate mitigation strategies adopted.

7.5   Annual operating costs, including planned and reactive maintenance and replacement costs and the level of functional adaptation that the project has allowed

for should be monitored and reported, allowing a comparison with design stage predictions and for any discrepancies to be analysed.

Decommissioning

8.1   The Scottish Government considers a **circular economy** as an essential part of the solution to the recognised global climate emergency. This approach requires materials, services and systems to be designed to maximise value and minimise waste in a cycle of disassembly and reuse. To achieve this, the building must be designed for deconstruction and it's materials capable of remanufacture and reuse. Adopting these principles will give a new life to construction materials at the end of their initial lifecycle.

8.2   In support of circular economy, the following issues should be considered during the decommissioning stages:

- A Whole Life Carbon approach will require benefits beyond the project's end of life stage to be considered and reported separately.
- Circular economy principles and practices should continue to be supported and followed with the extent of any reuse or recycling tracked and monitored.

Summary

9.1   Sustainable construction should be considered from the beginning of a project. The ability to influence sustainable outcomes is greatest right at the very start of a construction project. Informed early-stage decision making creates maximum opportunity for socio-economic and environmental impacts to be realised at every life cycle stage.

9.2   Contracting authorities should adopt a holistic whole life carbon approach when tackling sustainability issues in the design, delivery, operation and decommissioning of their construction projects.

9.3   Construction projects cannot be procured sustainably by simply looking to address singular issues in sustainability: a collective, integrated and holistic whole life approach, such as the one described in this guidance is required. All projects must prioritise those issues that are most significant to the project and identify where particular opportunities and challenges may arise.

Recommended Further Reading and Support

10.1 Below are links to recommended further reading on the topic of sustainable construction. These cover policy, guidance and good practice notes from Scottish Government, public sector bodies and industry representative bodies. This list is not exhaustive but provides direction to some of the background information available.

Scottish Government:

[Reducing greenhouse gas emissions - Climate change](#)

[Sustainable Procurement Tools (sustainableprocurementtools.scot)](#)

[Sustainable procurement duty - Public sector procurement - gov.scot (www.gov.scot)](#)

[Public procurement - taking account of climate and circular economy considerations: SPPN 3/2022 - gov.scot (www.gov.scot)](#)

[Fair Work First: guidance - Scottish Government](#)

[National Performance Framework - Scottish Government](#)

[Place Principle: introduction - Scottish Government](#)

[Creating Places: A policy statement on architecture and place for Scotland](#)

[Making Things Last: a circular economy strategy for Scotland](#)

[20 minute places (partnersinplanning.scot) - Scottish Government](#)

[Taking account of climate and circular economy considerations in public procurement - Scottish Government](#)

[Net Zero Public Sector Buildings Standard - Scottish Futures Trust](#)

[What is the National Planning Framework? | Transforming Planning - Scottish Government](#)

[Heat in Buildings Strategy - Scottish Government](#)

[Whole Life Appraisal Tool for the Built Environment - Scottish Futures Trust](#)

[National Just Transition Planning Framework – Scottish Government](#)

[The Place Principle | Our Place](#)

Other Reference Guidance:

Climate Emergency Design Guide | LETI

LETI Embodied Carbon Primer - supplementary guidance to Climate Emergency Design Guide

Net Zero Estate Playbook - UK Government Property Function

Whole Life Carbon Assessment for the Built Environment, 1st edition (rics.org)

IMPACT Life Cycle Assessment Tools - BRE Group

RIBA-2030-Climate-Challenge

Renewable Energy Procurement & Carbon Offsetting Guidance for Net Zero Carbon Buildings - UKGBC - UK Green Building Council

Net Zero Whole Life Carbon Roadmap for the Built Environment - UK Green Building Council

PRINCIPLES AND POLICIES IN PRACTICE - CASE STUDIES

1.0   Listed below are a series of case studies which evidence sustainable construction principles in infrastructure projects across the public sector. These have been split across various topic headings to assist in navigation to topics of interest or relevance.

Case study examples

1.1 People and place: NHS Asset Management Case Study
casestudysftplacehealthhub.pdf (scottishfuturestrust.org.uk)

1.2 Local Authority Urban Design Forum, Architecture & Design Scotland
SERVICE: Local Authority Urban Design Forum (LAUDF) – A&DS (ads.org.uk)

1.3 Health and wellbeing: NHS Forth Valley, Building with Nature
Forth Valley Hospital detail — Building with Nature

1.4 North Toryglen Green Infrastructure and Access Project, Building with Nature
Toryglen detail — Building with Nature

1.5 Whole Life Carbon: The Cross Tay Link Road: Reducing Embodied Carbon Through Construction Project Design
Sustainable procurement duty - Public sector procurement - gov.scot (www.gov.scot)

1.6 Designing Out Waste – constructing a circular economy, South Lanarkshire College Low Carbon Teaching Building Case Study
Designing Out Construction Waste Guide_0.pdf (zerowastescotland.org.uk)

1.7 Merkinch Primary School: A lesson in low carbon construction
Construction Scotland | Industry Leadership Group | Merkinch Primary School: A lesson in low carbon construction (cs-ic.org)

1.8 TECA: A tale about team work
teca-clf.pdf (cs-ic.org)

1.9 Net Zero Public Sector Building Standard Pathfinder Projects, Scottish Futures Trust
overviewofstandardpathfinderprojectsv1.pdf (scottishfuturestrust.org.uk)

1.10 Environmental security: Stirling Council, SEPA Sustainable Growth Agreement
stirling_council_sga_booklet.pdf (sepa.org.uk)

1.11 Sustainable travel: Stirling Council and Partners, Transformational active travel - Places for everyone
Transformational active travel project soon to begin in Stirling - Sustrans Showcase (showcase-sustrans.org.uk)

1.12 Inclusive growth: North Ayrshire Council, Community Wealth Building Strategy
[NAC CWB Strategy Brochure (north-ayrshire.gov.uk)](#)

1.13 Measuring social impact in public procurement, case studies
[Measuring social impact in public procurement: SPPN 10/2020 - gov.scot (www.gov.scot)](#)

ANNEX B

SUSTAINABLE CONSTRUCTION MATRIX

12.1   The development of a sustainability matrix can help to summarise and communicate the various needs and requirements of a project during early stages. It can also provide clients with a tool that supports review and evaluation during the development stages of a project.

A example of a Sustainability Matrix is available in the supported documents section.

Chapter 19

The Construction Capability Assessment Tool

Contents:

Section   **Subject**   2.

Section   **Subject**   2.

Introduction

1.1   The successful delivery of construction projects relies on several critical elements being in place, not least of which will be having a team with the right skills, right experience and right expertise in place at the right time. This team may be made up of permanent in-house staff, contracted-in consultants, or a mix of both. The team's make up will be influenced by a number of factors including:

- the size of the organisation

- the frequency which it undertakes construction projects. and

- the scale and complexity of the projects it manages.

1.2   Some organisations which regularly deliver construction projects may have a permanent construction team capable of managing the most complex of construction projects. For others, it may not be effective either from a cost perspective or in terms of maintaining currency and competency of the team to have permanently employed staff. It may, in these circumstances, be more appropriate to scale up the team at the right time to deliver specific projects. However, teams are resourced and composed, they must be available at the right time and in the right configuration to support the successful delivery of the project.

1.3   The Construction Capability Assessment Tool helps client organisations assess their capability and capacity both in terms of what they are established for and what they will require to deliver a specific project.

1.4   The specific skills and expertise required to deliver a project are discussed in Chapter Three of Project Initiation and Business Case Handbook – Client Team Roles and Responsibilities. A key member of a client project team will be the client advisor, this person will be a construction professional with experience of delivering public sector construction projects. This is a critical role that must be established at the very earliest stage of the project.

Overview

2.1   The Construction Capability Assessment Tool has been devised as a self-assessment tool for contracting authorities who procure construction projects. It does this by methodically looking at the various facets of a project and what the client will need to deliver it. It has been designed to encourage reflection and discussion regarding the resources, skills and expertise an organisation currently has for managing construction projects and whether that resource is appropriate for delivering specific projects. It should be used both generally and as part of preparation for the conduct of specific projects.

2.2   The CCAT is not a comparison tool; it is not scored; and does not require to be submitted to the Scottish Government. This tool will help your organisation objectively identify and enable planning for the expertise and resources that need to be in place at the right time to support the delivery of construction projects.

2.3   Some organisations regularly procure construction projects of a complex natures. Others seldomly deliver construction projects. The Construction Capability Assessment tool has been designed for the use of any organisation that delivers construction projects, regardless of their frequency, scale or nature.

2.3   The CCAT links in to the Client Guide to Construction Projects, Construction Policy Notes (CPNs) and Scottish Procurement Policy Notes (SPPNs).

What it is

3.1   The CCAT consists of sixty-five questions in six separate sections. These sections are:

- Project Management
- Fair Work and Fair Payment
- Project and Quality Assurance
- Sustainability and Community Benefits
- Procurement Strategy
- Continuous Improvement

3.2   Instructions on how to use the guide is contained in the introduction to the CCAT. The questions consist of a mixture of closed and leading questions and columns to record actions, further information requirements and conclusions drawn from the analysis.

3.3   As the CCAT is a self-evaluation tool, consequently there is no requirement for it to be submitted to the Scottish Government. Feedback on the form and structure of the process from users will, though, be gratefully received and used to ensure that the CCAT is up-to-date and reflects the needs of users.

When to use it

4.1   The completed CCAT should be maintained as a dynamic document updated as required, for example when circumstances change or a project is about to be commenced. An organisation's CCAT should be managed and regularly updated to ensure that the learning from it can be applied at short notice if required. We suggest that it should be checked on a quarterly basis to ensure that it does not contain information that is more than twelve months old. It is also applicable at various organisational levels from strategic to delivery. This should help ensure that the appropriate policies are in place along with a staffing resource appropriate to the size of the organisation.

4.2   It should also be used prior to starting any new project either by updating an existing analysis or as a new CCAT assessment. In both cases, the focus would be on the project delivery rather than the wider organisation.

Project Assurance

5.1   Project Assurance teams (e.g., Gateway Review Teams) may benefit from sight of the completed CCAT prior to conduct of reviews to understand how teams have been put together for projects, in particular the proactive, objective and structured process for doing so.

CCAT Template

6.1   The CCAT template along with advice and guidance on the delivery of construction projects is available, on request, from the Construction Procurement Policy Unit PropertyandConstruction@gov.scot.