Capital Works Management Framework

Guidance Note

Project Management

GN 1.1

Project Management
Document Reference GN 1.1. V.1.0.
28 July 2009

Published by: Department of Finance
Government Buildings
Upper Merrion Street
Dublin 2.

Contents

Foreword

Purpose of this document

This document is one of a number of guidance notes aimed at facilitating the implementation of the Government's reforms in construction procurement, within the ambit of the Capital Works Management Framework (CWMF). Its purpose is to give an overview of the project management structures, processes and procedures that are best equipped for projects using the new forms of *Public Works Contracts* and *Conditions of Engagement for Consultancy Services (Technical)* for capital works.

This document is also intended as a strategic resource for the wider public sector.

Audience for this document

The guidance in this document is intended primarily for Sponsoring Agencies embarking on the procurement of traditional and design-and-build projects. It should be promoted by Sanctioning Authorities as best practice for Sponsoring Agencies to follow throughout all the major stages in the delivery of a public works project.

While many of the principles in this document apply equally to projects that are to be financed through Public-Private Partnerships, the planning of such projects is outside the scope of this guidance note.

Terminology in this guidance note

The **Sponsoring Agency** becomes the **Contracting Authority** for a project once it becomes a party to any contract[1] relating to the project. And from the time the Works Contract is signed, the Sponsoring Agency is referred to as the **Employer**. The term **Client** is used throughout this guidance note as a generic term to cover the Sponsoring Agency / Contracting Authority / Employer.

References in this document

Throughout this document references are made to other documents, including other guidance notes. These references should be understood as referring to the most up to date version in each case.

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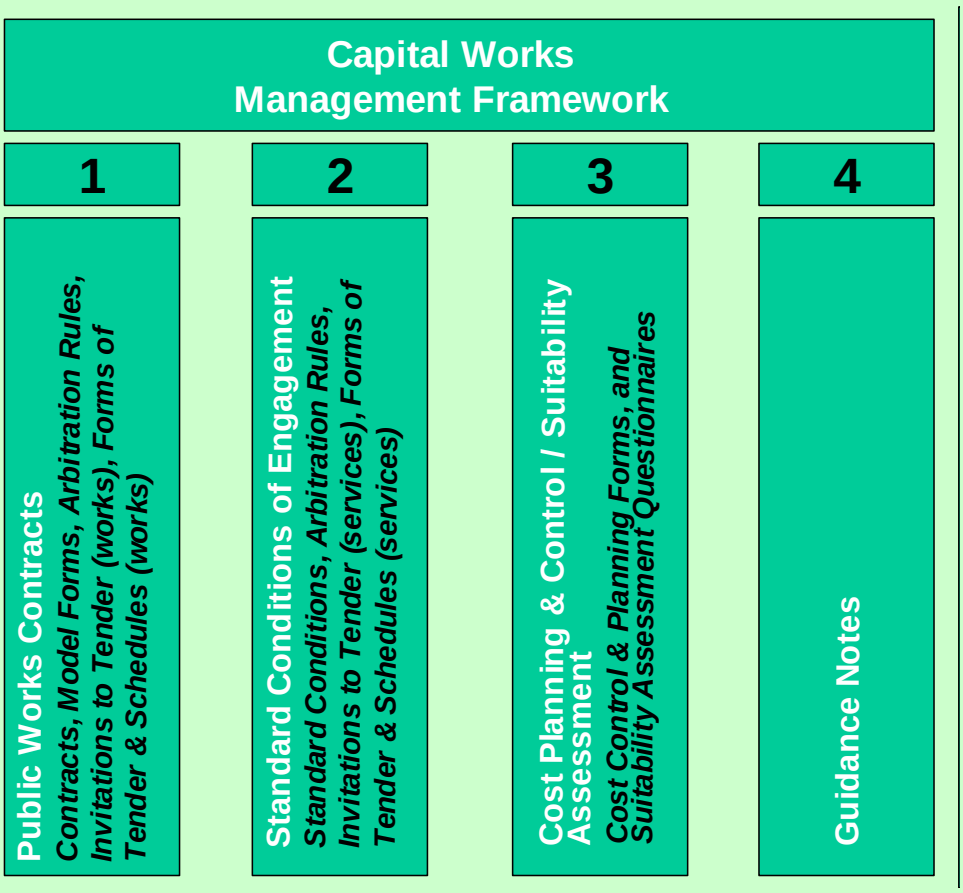
[1] Such as a contract with a design consultant just before the start of the design development process.

What is the Capital Works Framework

The Capital Works Management Framework (CWMF) is a structure that has been developed to deliver the Government's objectives in relation to public sector construction procurement reform. It consists of a suite of best practice guidance, standard contracts and generic template documents that form four pillars that support the Framework; the pillars are:

1. A suite of standard forms of construction contracts and associated model forms, dispute resolution rules, model invitations to tender, forms of tender and schedules;
2. The standard conditions of engagement for consultants, dispute resolution rules, model invitations to tender, forms of tender and schedules;
3. Standard templates to record cost planning and control information; and for suitability assessment; and
4. Extensive guidance notes covering the various activities in a project delivery process.



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What is the Capital Works Framework (continued)

The content of the four pillars is outlined below. The constituent documents are coded according to the following scheme:

Code	Description	Code	Description
PW-CF	*Public Works Contract Form*	*COE*	*Standard Conditions of Engagement*
MF	*Model Form*	*GN*	*Guidance Note*
AR	*Arbitration Rules*	*CO*	*Cost Planning / Control Form*
ITTS	*Invitation To Tender, Services*	*ITTW*	*Invitation To Tender, Works*
QC	*Questionnaire: Suitability Assessment for Service Provider*	*QW*	*Questionnaire: Suitability Assessment for Works Contractor*
FTS	*Form of Tender and Schedule*	*GL*	*Glossary*
WE	*Data on Weather Event*		

CWMF Pillar 1

Public Works Contracts

Contracts, Model Forms, Arbitration Rules, Invitations to Tender (works), and Forms of Tender & Schedules (works)

Contracts	
PW-CF1	*Public Works Contract for Building Works designed by the Employer*
PW-CF2	*Public Works Contract for Building Works designed by the Contractor*
PW-CF3	*Public Works Contract for Civil Engineering Works designed by the Employer*
PW-CF4	*Public Works Contract for Civil Engineering Works designed by the Contractor*
PW-CF5	*Public Works Contract for Minor Building and Civil Engineering works designed by the Employer*
PW-CF6	*Public Works Short Form of Contract*
PW-CF7	*Public Works Investigation Contract*
PW-CF8	*Public Works Short Form of Investigation Contract*
PW-CF9	*Public Works Framework Agreement*
Weather Event	
WE 1.0	*Met Éireann's calculations of Weather Events*

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CWMF Pillar 1
(continued)

Model Forms	
MF 1.0	*Model Forms (compendium of all model forms)*
MF 1.1	*Bid Bond*
MF 1.2	*Letter to Apparently Unsuccessful Tenderer*
MF 1.3	*Letter of Intent*
MF 1.4	*Letter of Acceptance*
MF 1.5	*Letter to Tenderers Notifying Award*
MF 1.6	*Performance Bond*
MF 1.7	*Parent Company Guarantee*
MF 1.8	*Novation and Guarantee Agreement*
MF 1.9	*Novation Agreement*
MF 1.10	*Appointment of Project Supervisor*
MF 1.11	*Professional Indemnity Insurance Certificate*
MF 1.12	*Collateral Warranty*
MF 1.13	*Rates of Pay and Conditions of Employment Certificate*
MF 1.14	*Bond – Unfixed Works Items*
MF 1.15	*Retention Bond*
MF 1.16	*Appointment of Conciliator*
MF 1.17	*Bond – Conciliator's Recommendation*
Arbitration Rules	
AR 1.0	*Arbitration Rules*
Invitations to Tender (works)	
ITTW 1	*Invitation to Tender for Works, Restricted Procedure*
ITTW 2	*Invitation to Tender for Works, Open Procedure*
ITTW 3	*Invitation to Tender, Investigation Contract under an Open Procedure*
Forms of Tender and Schedules	
FTS 1	*Form of Tender and Schedule: Public Works Contract for Building Works designed by the Employer*
FTS 2	*Form of Tender and Schedule: Public Works Contract for Building Works designed by the Contractor*
FTS 3	*Form of Tender and Schedule: Public Works Contract for Civil Engineering Works designed by the Employer*
FTS 4	*Form of Tender and Schedule: Public Works Contract for Civil Engineering Works designed by the Contractor*
FTS 5	*Form of Tender and Schedule: Public Works Contract for Minor Building and Civil Engineering Works designed by the Employer*
FTS 6	*Form of Tender and Schedule: Public Works Short Form of Contract*
FTS 7	*Form of Tender and Schedule: Public Works Investigation Contract*
FTS 8	*Form of Tender and Schedule: Public Works Short Form of Investigation Contract*

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CWMF Pillar 2 *Standard Conditions*

Standard Conditions of Engagement, Arbitration Rules, Invitations to Tender (services), and Forms of Tender & Schedules (services).

Standard Conditions	
COE 1	*Standard Conditions of Engagement for Consultancy Services (Technical)*
COE 2	*Standard Conditions of Engagement for Archaeology Services*
Arbitration Rules	
AR 1.0	*Arbitration Rules*
Invitations to Tender (services)	
ITTS 1	*Invitation to Tender for Services, Restricted Procedure*
ITTS 2	*Invitation to Tender for Services, Open Procedure*
Forms of Tender & Schedule (services)	
FTS 9	*Form of Tender and Schedule, Consultancy Services (Technical)*
FTS 10	*Form of Tender and Schedule, Archaeology Services*

CWMF Pillar 3 *Cost Planning & Control/ Suitability Assessment*

Cost Control & Planning Forms; and Suitability Assessment Forms for works and services.

Cost Planning & Control Forms	
CO 1	*How to Use the Costing Document (Building Works) Template*
CO 1.1	*Costing Document (Building Works)*
CO 2	*How to Use the Costing Document (Civil Engineering Works) Template*
CO 2.1	*Costing Document (Civil Engineering Works, Roads)*
CO 2.2	*Costing Document (Civil Engineering Works, Water Sector)*
CO 2.3	*Costing Document (Civil Engineering Works, Marine)*
Suitability Questionnaires (works)	
QW 1	*Questionnaire: Suitability Assessment for Works Contractor, Restricted Procedure*
QW 2	*Questionnaire: Suitability Assessment for Works Contractor, Open Procedure*
QW 3	*Questionnaire: Suitability Assessment for Works Specialist for specialist area*
Suitability Questionnaires (services)	
QC 1	*Questionnaire: Suitability Assessment for Service Provider, Restricted Procedure*
QC 2	*Questionnaire: Suitability Assessment for Service Provider, Open Procedure*
QC 3	*Questionnaire: Suitability Assessment for Service Provider, Independent PSDP*
QC 4	*Questionnaire: Suitability Assessment for Service Provider, Independent PSCS*

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CWMF Pillar 4 *Guidance Notes*

Guidance Notes	
GN 1.0	*Introduction to the Capital Works Management Framework*
GN 1.1	***Project Management*** [2]
GN 1.2	*Project Definition and Development of the Definitive Project Brief*
GN 1.3	*Budget Development*
GN 1.4	*Procurement and Contract Strategy for Public Works Contracts*
GN 1.5	*Public Works Contracts*
GN 1.6	*Procurement Process for Consultancy Services (Technical)*
GN 1.6.1	*Suitability Assessment of Construction Service Providers, Restricted Procedure*
GN 1.6.2	*Suitability Assessment of Construction Service Providers, Open Procedure*
GN 1.7	*Standard Conditions of Engagement, Guidance Note and Sample Schedules*
GN 2.1	*Design Development Process*
GN 2.2	*Planning and Control of Capital Costs*
GN 2.3	*Procurement Process for Works Contractors*
GN 2.3.1	*Suitability Assessment of Works Contractors, Restricted Procedure*
GN 2.3.2	*Suitability Assessment of Works Contractors, Open Procedure*
GN 2.4	*Tender Process*
GN 3.1	*Implementation Process*
GN 4.1	*Project Review*
Glossary	
GL 1.0	*Glossary*

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[2] The current guidance note.

Stages in capital works management

The four major stages in the delivery life cycle of a public works project are set out in the Department of Finance's *Guidelines for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector* (February 2005) and any subsequent addendum. The four stages are:

	Stage	What happens
	1. Appraisal	The needs are identified, the broad parameters of a solution are agreed, and a decision-in-principle is made to proceed.
Capital Works Management	**2. Planning**	The needs are quantified and assumptions verified, the desired outputs are specified, and the solution is designed.
	3. Implementation	The solution is constructed.
	4. Project review	An assessment is carried out of how successfully the delivered solution addresses the needs.

The Capital Works Management Framework begins once the Approval in Principle is granted, and it covers stages 2 to 4. Project management is required across and between all of these stages.

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Strategic Objectives of the CWMF

The strategic objectives of the Government's Capital Works Management Framework are to ensure:

- Greater cost certainty at contract award stage;
- Better value for money at all stages during project delivery, particularly at hand-over stage; and
- More efficient delivery of a project.

Provided there is a comprehensive definition of client's requirements in terms of output specifications, and (in the case of traditional contracts) adequate pre-tender detailed design input, the new public works contracts will enable the key objectives outlined above be achieved. The degree to which output specifications and the pre-tender detailed design input is developed is determined by the following guiding principles which underpin the new contracts:

- To ensure as far as practicable that the accepted tender prices and the final outturn costs are the same; and
- To allocate risk so that there is optimal transfer of risk to the Contractor.

The public sector client is called 'the Employer' in the new public works contracts. The achievement of optimal risk transfer is dependent on the Employer providing the following detailed information in the tender documentation:

- In design-and-build (Contractor-design) projects: detailed output specifications
- In traditional (Employer-design) projects: comprehensive input designs and specifications in the tender documentation;

In responding to an invitation to tender, prospective contractors can then assess the impact of the risks being transferred and build the costs of such risk into their tender price.

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Content

This document is divided into eight chapters and two appendices, as follows:

Continued on next page

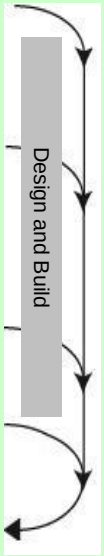
Capital Works Management Framework

Main Project Processes

Capital Appraisal

Standard Conditions of Engagement

Project Stages		Project Management	Design Activities (Building)	Design Activities (Civil Eng.)	Cost Control Activities	Risk and Value Management	Documents for Approval
Appraisal							
Approval in Principle							
Stage 1 ***Planning Initial***	**Stage (i)** ***Feasibility Study / Preliminary Report***	**Manage outputs: Project Definition (through 16 Nº overall parameters)** **Manage technical experts' appointment (if required)**	Conduct Feasibility Studies Develop *Definitive Project Brief* Appoint technical experts (if required) Appoint PSDP (if required)	Conduct Preliminary Report Conduct design studies Develop *Definitive Project Brief* Appoint technical experts (if required) Appoint PSDP (if required)	Conduct cost assessment of Feasibility Studies / Preliminary Report (capital and maintenance costs)	**VM:** Confirm strategic functional performance Review Feasibility Studies / Preliminary Report options Identify VM strategies Develop functional performance model **RM:** Identify and assess risk relating to the *Project Execution Plan* Develop high-level *Risk Management Plan*	*Project Management Structure* *Preliminary Project Brief* *Preliminary Output Specification* *Feasibility Study and Cost Plan* *Design Brief* *Final Output Specification* *Definitive Project Brief* *Project Execution Plan* *Risk Management Plan*
	Stage (ii) ***Design***	***Project Review 1: Confirm approval for design expenditure*** (Report to Sanctioning Authority and await approval prior to proceeding)					
		Manage procurement strategy **Manage design consultant appointment** **Manage assessment of output requirements**	Appoint Design Team / Design Team Leader Assess output requirements	Appoint Design Team / Lead Consultant Develop design standards Assess output requirements	Check / assess budget	**VM:** Consider VM in relation to procurement strategy **RM:** Identify risk in relation to procurement Agree risk allocation	*Definitive Procurement Strategy* *Contract Type Proposal* *Project Team Selection Report*
Stage 2 ***Planning Developed***		***Project Review 2: Confirm requirements; review procurement strategy*** (C ertify compliance to Sanctioning Authority; and proceed after agreed period provided no queries / hold from Sanctioning Authority)					
		Manage Outline Design process	Develop *Outline Sketch Scheme* Appoint PSDP (if not appointed earlier)	Develop Preliminary Planning Appoint PSDP (if not appointed earlier)	Develop *Outline Cost Plan*	VM: Consider VM in relation to Outline Sketch Scheme / Preliminary Planning RM: Consider RM in relation to Outline Sketch Scheme	*Outline Sketch Scheme (Building)* *Preliminary Planning drawings (C. Eng.)* *Outline Cost Plan*
		Project Review 3: Assess project design and Outline Cost Plan (Certify compliance to Sanctioning Authority; and proceed after agreed period provided no queries / hold from Sanctioning Authority)					
		Manage Developed Design process **Manage procurement process**	Develop *Developed Sketch Scheme* Prepare submission for statutory approval	Continue Preliminary Planning Prepare submission for statutory approval	Develop *Developed Cost Plan* Develop *Whole Life Cost Appraisal*	**VM:** Carry out value engineering Assess buildability of the design Consider VM in relation to *Detailed Sketch Scheme* **RM:** Identify residual risks Consider RM in relation to *Detailed Sketch Scheme* Suitability assessment of contractors	*Developed Sketch Scheme* *Developed Cost Plan* *Statutory Approval Submission*
		Project Review 4: Assess project prior to statutory approval (Report to Sanctioning Authority and await approval prior to proceeding)					
		Manage statutory submission process	Submit for statutory approval Review statutory approval outcome	Submit for statutory approval Review statutory approval outcome	Review *Developed Cost Plan*	**VM:** Review any planning conditions for value management impact. **RM:** Review any planning conditions for risk impact.	*Developed Cost Plan (reviewed)*
		Project Review 5: Assess outcome from statutory approval (Certify compliance to Sanctioning Authority; and proceed after agreed period provided no queries / hold from Sanctioning Authority)					
	Stage (iii) ***Tender***	**Manage the Detailed Design Process**	Develop Detailed Design (not design-and-build) Prepare tender documents	Develop Detailed Planning (Design) (not design-and-build) Prepare tender documents	Conduct *Detailed and Pre-Tender Cost Checks* and *Whole Life Cost Update* in advance of preparing tender documents	**VM:** Review suitability assessment of contractors for VM potential **RM:** Review suitability assessment of contractors for risk impact	*Tender Documentation* *Detailed Pre-tender Cost Check* *Whole Life Cost Update* *Contractor List Selection*
		Project Review 6: Approve detailed design solution; review pre-tender cost check; review risk (Report to Sanctioning Authority and await approval prior to proceeding)					
		Manage the Tender Process	Issue tender documents Assess tender returns Recommend successful tenderer	Issue tender documents Assess tender returns Recommend successful tenderer	Develop *Tender Cost Analysis* Develop *Tender Report*	**VM:** Assess tender returns for VM potential **RM:** Assess tender returns for risk impact	*Tender Assessment Criteria* *Tender Analysis And Report* *Contractor Recommendation*
		Project Review 7: Review tender returns in advance of awarding the contract (Report to Sanctioning Authority and await approval prior to proceeding)					
Stage 3 ***Implementation***	**Stages (iv)** ***Construction &*** **(v)** ***Handover***	**Manage the implementation / construction process** **Manage change control** **Manage contract**	Develop Detailed Design (Design and Build) Implement design	Develop Detailed Planning (Design and Build) Implement design	Manage change control for costs Prepare final account	**VM:** Carry out value engineering (for design and build projects only) **RM:** Manage residual risk Manage construction risk	Various contract management reports
Stage 4 ***Review***		**Manage the Project Review**	Conduct design review	Conduct design review	Develop *Analysis of Outturn Cost*	**VM:** Evaluate value achieved **RM:** Evaluate the risk management and risk mitigation process Consider operational risk reviews	*Project Outturn Review*



1: Introducing Project Management for Capital Works Projects

1.1 Overview

Introduction

Projects undertaken within the Capital Works Management Framework are required to have an appropriate project management structure with a clear definition of the following elements:

- Key roles and responsibilities;
- Authority levels;
- Organisational relationships;
- Communication lines;
- Formal reporting mechanisms; and
- Administrative procedures.

This chapter deals with the underlying principles of project management as they apply to the projects under the CWMF, and how those principles are given effect.

Contents

This chapter contains the following topics:

1.2 Project Management Principles for Capital Works Management Framework

Project management: public sector context

In the public sector, the management of projects is governed by the requirements for public accountability, transparency, probity, equality, sound financial management as well as obtaining value for money. Good project governance also requires that all applicable rules and regulations need to be followed. Those involved with public projects should therefore make themselves familiar with all of the rules and regulations relevant to their role and responsibility on the project.

The requirements set out in the Department of Finance's *Guidelines for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector* (February 2005) and any subsequent addendum must be followed.

Underlying principles

They key underlying principles for managing public sector projects in an efficient and effective manner may be summarised as follows:

Principles	Description
Sound governance	Sound governance requires that an appropriate framework is put in place which allows a good relationships to exist between all the parties to the project, including: ▪ The project's management team; ▪ The key stakeholders – public service delivery personnel and end users; ▪ The Sponsoring Agency; and ▪ The Sanctioning Authority. It also drives forward the processes within the management structure of a project, provides a structure through which the objectives of a project are set, and the means of attaining those objectives and monitoring performance.

Continued on next page

1.2 Project Management Principles for Capital Works Management Framework, Continued

Underlying principles (continued)

Principles	Description
Continual assurance	Throughout the planning stages of a project, the Sponsoring Agency need to verify the continuing viability of the project, including: ▪ That the project needs have not changed; ▪ That technology advances have not made the approach obsolete; ▪ That private sector advancements have not altered the market; ▪ That no significant risks have arisen that would be detrimental to the project; ▪ That the project continues to be affordable and that it represents value for money; ▪ that Departmental priorities have not changed; and ▪ That there is continuing commitment to the provision of the facility. The Sponsoring Agency should report regularly to the Sanctioning Authority and provide continual assurance in these matters**.**
Best practice	The project management team should continually seek to raise standards and to pursue excellence in the management of public works projects under the CWMF. Every endeavour should be made to identify and follow best practice procedures, using appropriate tools and techniques.
Value for money	The Sponsoring Agency needs to confirm regularly that the facility will meet the public need at an acceptable standard and at an affordable price. In particular, the value-for-money assessment must take whole-life costs into account.
Time management	On all public sector capital projects, good time management is an essential ingredient for effective project delivery. The project management team needs to put in place appropriate organisational structures to ensure that decisions are given effect in a timely manner so that the key milestone delivery dates in the Design Programme[3] are met. In particular, and to ensure there is no delay, instructions to consultants must be given at the appropriate time in accordance with the time lines set down in their contract – i.e. the *Conditions of Engagement for consultancy Services (Technical).*

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[3] The Design Programme is part of a bigger programme included in the Project Execution Plan – see *Project Definition and Definitive Project Brief GN1.2)*

1.2 Project Management Principles for Capital Works Management Framework, Continued

From principles to action

Giving effect to the underlying project management principles requires the Sponsoring Agency to take the actions listed below.

1. *Take ownership of and be accountable for their projects*, ensuring that sufficient resources and time are allocated to the management of projects.
2. *Develop a clear understanding of the business case*, ensuring that the business needs of the project are well-established and understood by all of the main parties involved in the project.
3. *Appoint a suitable project coordinator*, to act as the practical leader of the project and to assume the necessary delegated authority to make key decisions relating to the project.
4. *Establish a clear organisational structure* from the outset – including a robust project management structure, with clearly defined roles and responsibilities, reporting and communication lines, and appropriately delegated authority.
5. *Select appropriate people and teams* with the right competencies, skills and approach that are capable of delivering the project.
6. *Provide for a formal staged process* that will provide assurance and control. This should allow for regular project reviews, evaluation and ongoing questioning, ensuring that the business needs of a project continue to hold true.
7. *Provide early and rigorous assessment* – well planned effort up front ensures that time and cost are saved later and risks are minimised.
8. *Put a comprehensive risk management strategy in place* – there should be a detailed knowledge and understanding of the risks relating to a project and reliable plans for risk allocation and proactive risk management.
9. *Take a collaborative approach* – in almost all cases, people involved in projects work in teams, and establishing the right team culture and leading it is a critical success factor.

Note: The Project Execution Plan is the primary expression of how these matters will be addressed and how the project will be actioned – see **2: Project Execution Plan** on page 28.

1.3 Influencing Factors

Introduction

The management structure of a project is influenced by several important factors such as the following: what the project needs to achieve, how complex it is, how long it will take, the project location, and the experience of the Client.

These factors determine key project decisions, such as:

- What skills, attributes and experience are required;
- Where and when people are required and how many people are required;
- Which tasks can be done internally and which need to be outsourced;
- What project controls need to be established; and
- The nature and style of reporting and communication.

Note: If a project is part of a bigger portfolio of work, strategic decisions may influence every project within that portfolio. This would be the case, for example, where a number of similar projects are being implemented within an organisation, or where the project is part of a large scale master-planned development.

Internal experts or external consultants?

The key focus of the Sponsoring Agency should be on ensuring that the appropriate management resources, tools, techniques and lines of communication are put in place as early as possible, so that the project can be effectively monitored and coordinated from the outset.

Where the Sponsoring Agency has internal professional and technical resources in building and/or civil engineering, it should use them. If there is a deficit of resources, every effort should be made to acquire them from elsewhere within the public sector. If that is not possible, then the Sponsoring Agency may consider outsourcing the provision of services to the private sector.

Project duration and principal internal resources

The duration of a project directly impacts on how long an internal resource will be involved. In particular, the Sponsoring Agency needs to ensure that the Project Coordinator remains continuously engaged with the project for its entire duration – see **3.2 Management Team: Roles and Responsibilities** on page 36.

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Starting as you mean to continue

Those charged with the responsibility of designing and supervising the delivery of a project should ensure that an appropriate management and communications structure is put in place at the earliest possible opportunity.

Decisions taken at an early stage in project delivery have a relatively higher impact on such a project going forward. An incorrect decision taken at this stage is very difficult to rectify, if possible, at a later stage.

Procurement options

The choice of which procurement option to use (traditional Employer-designed or design-and-build) has a considerable impact on the management structure for a project.

Traditional contracts

In traditional (or Employer-designed) contracts, the Contractor is responsible for providing the implementation services to deliver a facility designed by (or on behalf of) the Client. While this approach can allow contractors to carry responsibility for designing parts of the project (normally those parts that are designed by specialist sub-contractors), the main body of work is designed by (or by others on behalf of) the Client; and the Client retains responsibility for the design and buildability of the project.

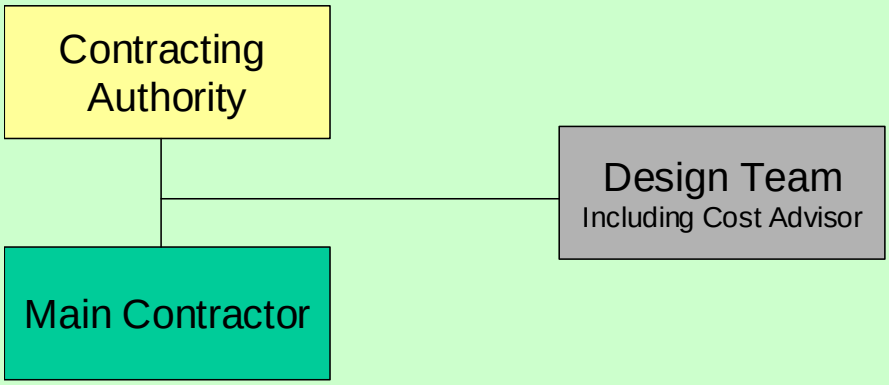

Figure 1: Project management structure for traditional, Employer-designed contract

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Procurement options (continued)

Design-and-build contracts

In design-and-build (or Contractor-designed) contracts, the Contractor is responsible (subject to the terms of contract) for the design, management and delivery of the project, on time and within budget. Where the Client decides to pursue the design-and-build route, this must be based on a clear definition of requirements and a comprehensive output specification.

With the design-and-build type of procurement, contractors offer the Client an integrated project team, which includes designers and implementation personnel. The Client's involvement in the design process depends on when the Contractor is appointed and on what basis. For these projects, the Client engages a design team of professional design consultants (the Design Team) to produce initial design or design studies which are subsequently handed over to the Contractor to complete, at which time design responsibility for the remaining design work is transferred to the Contractor. Once the contract is in place (and provided it has not already been done at an earlier stage) the Client appoints an Employer's Representative to administer the contract on his behalf.

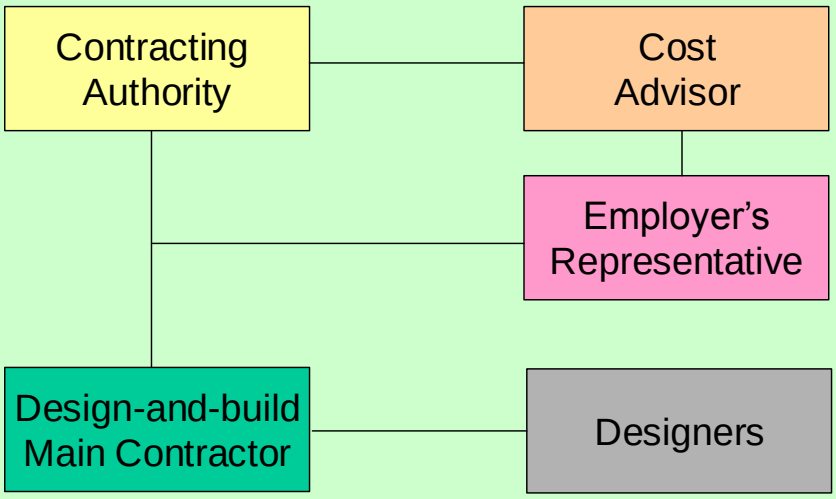

Figure 2: Project management structure for design-and-build contract

1.4 Managing the Project Programme

Coordinating project activities and processes

Drawing up a realistic, adequately detailed Project Programme and managing that programme to achieve the project objectives is the fundamental role of project management on any public works project undertaken in the context of the Capital Works Management Framework. A comprehensive Project Programme needs to take the following into account:

- All project activities in the delivery life cycle of the project, through the four primary project stages – see **Stages in capital works management** immediately below;
- Generic processes within the Client organisation – for example, decision-making processes, approvals procedures and consultation mechanisms that affect and drive activities across all project stages;
- The scheduling and sequencing of project activities, including any agreed intervals between activities;
- Processes for engaging with stakeholders in the wider community.

Adequate time needs to be allowed for all of these activities and processes to combine for the delivery of the project objectives.

The primary role of the project coordinator is to ensure that these activities and processes are sequenced and coordinated correctly, with adequate intervals between them, where appropriate to ensure a successful outcome. The Project Programme is the primary means for defining how this is to be achieved – see **Appendix C** for an indicative Project Programme.

Project activities and reviews

Figure 3 illustrates the generic structure of a project developed and delivered under the Capital Works Management Framework.

This includes the major stages through which a project passes, together with the main activities that the Sponsoring Agency or its personnel and/or consultants engage in during each stage and the project reviews that take place at key development points in the design delivery process of a project. Figure 4, which is an abridgement of the Project Processes Diagram (figure 7 on page 46), outlines the key actions required through each of the project stages.

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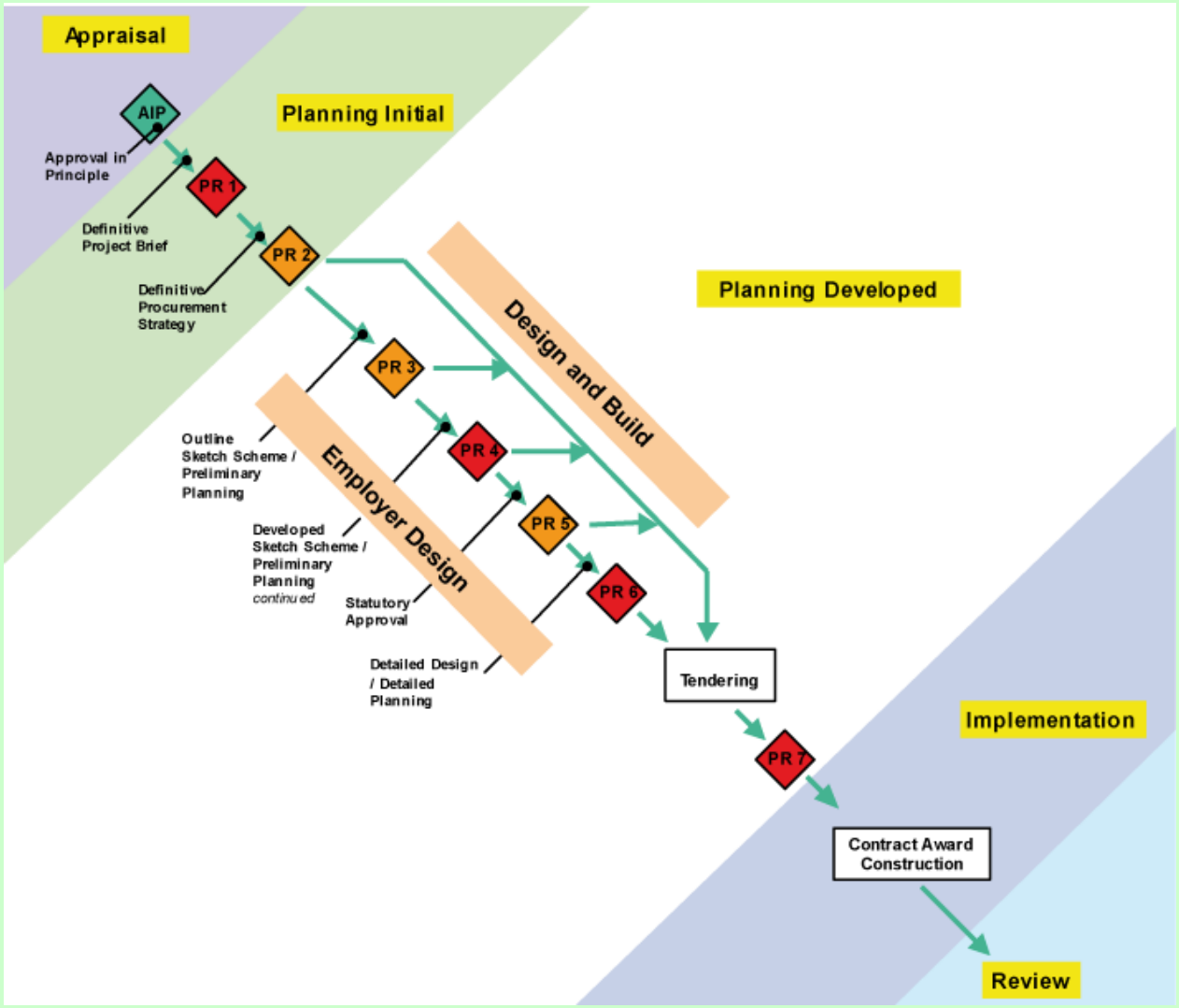

Figure 3: Project Activities and Reviews

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1.4 Managing the Project Programme, Continued, Continued

Stage	Main Project Activities	
	Building	**Civil Engineering**
1. Planning Initial	Make expert appointments (design studies) and appoint PSDP (if required) Develop *Definitive Project Brief*	
	Project Review 1	**Confirm approval for design expenditure**
	Determine procurement strategy Appoint Design Team Design Team assesses output requirements, constraints, budget	
	Project Review 2	**Confirm requirements; review procurement strategy**
2. Planning Developed	Outline Sketch Scheme	Preliminary Planning
	Project Review 3	**Assess project design and *Outline Cost Plan***
	Developed Sketch Scheme	Preliminary Planning, *continued*
	Project Review 4	**Assess project prior to statutory approval process**
	Submit for statutory approval	
	Project Review 5	**Assess outcome from statutory approval process**
	Detailed Design (not design-and-build)	Detailed Planning (not design-and-build)
	Project Review 6	**Approve detailed design solution; carry out pre-tender cost check; review risk**
	Conduct Tender process	
	Project Review 7	**Review tender submissions in advance of awarding the contract**
3. Implementation	Award contract Administer Contract Supervise management of construction process	
4. Review	Manage the Project Review	

Design and Build

Figure 4: Generic project activities (abridged)

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Constructing a Project Programme

Using appropriate project management tools and techniques, the Project Coordinator should construct a project programme that is based on the generic project structure illustrated in figure 4. Such a programme should include detailed scheduling information that takes account of the time required for each activity and also for the intervals that may be required contractually between certain activities. The Project Programme should also be consistent with the timeframe for the Planning, Implementation and Review stages as indicated in the Project Execution Plan (parameter 11 in the project definition).

An indicative project programme is included in Appendix C this is a high level overview of the key actions required and is not intended as an exhaustive schedule of all requirements. Each project should be carefully assessed based on its specific requirements. The following are some of the issues that the Project Coordinator needs to consider when putting together the Project Programme.

Procurement Strategy and the Project Programme

The decision on which procurement strategy to follow has a key influence on the content of the Project Programme. In particular, it determines where responsibility for design will rest at key action points in the design process life cycle:

- For design-and-build projects, the Client's design work may be concluded at any stage after Project Review 2, at which point responsibility for design passes over to the Contractor who emerges as the successful tenderer from the tender process.
- For traditional, Employer-designed projects, design can extend right up to the preparation of the tender documentation.

Detail appropriate to the project

Projects developed under the Capital Works Management Framework will vary greatly in scale, complexity and in the functionality of the project deliverables. On less complex projects, for example, it might be possible to combine the Outline Sketch Scheme and the Detailed Sketch Scheme. Or on some civil engineering projects, it might be usual to conduct Project Reviews 3 and 4 in parallel, in a single activity.

Realistic timetables

All of the project activities need to be carefully coordinated and scheduled. The Project Coordinator needs to be sure that any timetables included in contract and appointment documents need to be realistic and achievable.

Continued on next page

Constructing a Project Programme (continued)

General points

Other points that need to be considered in a comprehensive project programme include the following. These are items that will be relevant to different projects at different stages, but not all of them need apply to all projects:

- Land acquisition
- Third party consultations
- Advance works
- Site investigations, transportation studies, other advance studies
- Appointment of various consultants at various stages
- Project funding
- Loose furniture and fittings
- Archaeology
- Move management or temporary relocations / decanting

1.5 Administrative Procedures

Reporting requirements

Defining formal and informal communication channels is an early project management task. Reporting lines should be very clear and should be as short as possible. In their content, style and timing, reports must be designed to suit the nature of the project and the needs of the Sponsoring Agency.

Good practice suggests that additional reporting requirements are needed within each client organisation, to assist with making internal decisions and to keep key people informed. These requirements should be agreed at the start of the project.

As early as possible in a project, preferably just after approval-in-principle, the Sponsoring Agency should agree with the Sanctioning Authority on the frequency and details of reports that it will make to the Sanctioning Authority.

The frequency and content of reports from Consultants to the Sponsoring Agency are set out in Schedule B Management Services of the *Conditions of Engagement for Consultancy Services (Technical).*

Meetings schedule

As early as possible in the project, a **meetings schedule** should be created for all future project meetings. This should be appropriate to the nature of the project and to the needs of the Sponsoring Agency; it should include details about:

- The purpose of the meetings;
- Who should attend;
- How often they should take place;
- Who should chair them; and
- Who should take the minutes.

This schedule should be included in the Project Execution Plan.

Documentation management

Every project needs to have a detailed **documentation management plan** (proportionate to the complexity of the project) to define how project communications are to be transmitted and stored. In most cases a mix of email, intranet and hard copy communications will be appropriate, with central secure storage of all key project documents.

The documentation management plan should be recorded in the Project Execution Plan.

2: Project Execution Plan

2.1 Role of the Project Execution Plan

Introduction

The Project Execution Plan (PEP) is the core document for managing a project and states the policies and procedures, as defined by the Project Coordinator. It is a comprehensive description of the project scope, objectives and relative priorities in a structured format.

Its purpose is to provide a framework for all those directly engaged during the design, procurement, implementation and completion of the project, and who are tasked with delivering the project to the required specifications, within the project capital budget, and to a set timeframe.

The PEP for a particular project should be clear and concise, and consistent with all other contract documentation and terms of engagement relating to the project.

This section presents a high-level overview of what should be included in the PEP, and covers some of the content in more detail.

Appendix A illustrates a typical template of a PEP that might be used for a project. Each project will require its own tailored PEP which should be appropriate in scale and complexity, and may vary substantially from the sample in Appendix A.

Contents

This section contains the following topics:

2.1 Project Execution Plan Content

Detailed purpose

The detailed purpose of the PEP is to:

- Include the plans, procedures and control processes for project design and implementation and for monitoring and reporting progress;
- Define the roles and responsibilities of all project participants, to ensure that everyone understands, accepts and completes their responsibilities; and
- Outline the mechanisms for monitoring, review and feedback, by defining the reporting and meeting requirements, and the criteria for independent external review (where appropriate).

High-level content overview

Much of the format of the PEP is standardised, but it will need to be modified to meet the requirements of each project. In particular, the PEP should include details of key elements that need to be reviewed, updated and reported on as a project progresses through its delivery life cycle. A typical PEP covers the following:

- **Project description;**
- **Project cost plan and cost management procedures;**
- **Programme management;**
- Performance Management Plan;
- Safety and environmental issues, such as implementation design and management regulations;
- Commissioning;
- Risk and sensitivity analysis;
- **Roles, responsibilities and authorities;**
- Contracting and procurement;
- **Administrative systems and procedures;**
- **Project control and assurance;** and
- Project evaluation.

Note: Items in bold type are dealt with in more detail below.

2.2 Detailed Project Execution Plan Content

Introduction

This section describes the contents of some of the items in a PEP in more detail. Such a PEP would be typical for a large and complex project. Smaller and less complex projects do not require such a detailed PEP.

Project description

A brief description of the project should be given, outlining the following principal issues:

- Project particulars (the Client name, project name and reference);
- Business case objectives (Parameter 1 of the *Definitive Project Brief*);
- Operational constraints (Parameter 16 of the *Definitive Project Brief*);
- Construction objectives – the overall budget, and programme limits (Parameters 11 and 15 of the *Definitive Project Brief*;
- Location, general arrangement, physical environment and design constraints (Parameters 3, 4, 5, 13, 14, 16 of the *Definitive Project Brief*);
- Design philosophy; and
- Contract procurement strategy.

Roles, responsibilities and authorities

The PEP should include a comprehensive directory of the project, including all relationships and communication lines; it should describe the following:

- The names, addresses, telephone, fax and email details of all organisations involved in the project (including those within the Client organisation, other stakeholders, and third parties, such as approval authorities);
- The roles and relationships of all involved organisations, including organisational charts with line and functional relationships, contractual and communication links and any changes regarding the various stages of the project; and
- The responsibilities and delegated authority of all involved organisations, as well as the names and responsibilities of key personnel within each organisation.

As the project progresses the roles and responsibilities of contractor(s), sub-contractors, the contract administrator, and others relevant parties should be added to the PEP.

Project control and assurance

The PEP should detail the requirements for the project review process and for project approval and governance procedures.

Review

The PEP is subject to review at Project Review 1.

Continued on next page

Cost management procedures

The PEP should define the procedures for the recording and reporting of cost management, confirm the structure of the cost plan (such as the various 'cost centres' for administrative, estimation and control purposes), and define the development of the control budget.

The PEP should also detail cost management procedures, including:

- The cost plans, at various stages;
- Change controls;
- Risk management;
- Cost reporting;
- Contingency management; and
- Expenditure profile and control.

Programme management

The PEP should indicate what programme (if any) the project is part of. It should also detail the frequency of programme reviews and how progress is to be monitored and controlled.

Depending on the nature of the project, there may be a hierarchy of programmes summarised into a 'master programme' highlighting the main ideas and activities.

The start and completion dates for the project will have been defined, and these need to be developed into a more detailed schedule within the PEP, which should show:

- Key tasks and activities (based on an appropriate 'work breakdown structure');
- The dates by which key stages and events must be completed; and
- The interdependencies of tasks and events.

Appendix C illustrates an indicative Project Programme which could be used on a typical project.

Continued on next page

Administrative systems and procedures

The PEP should detail any administrative procedures that are necessary for effective and controlled project implementation. Typical administrative procedures include:

- Documentation systems;
- Drawing number systems;
- Computer software standards;
- Project reporting;
- Meetings (including objectives, frequency, attendance, and so on);
- Change control procedures;
- Site instruction procedures; and
- Approval procedures.

3: Project Roles and Responsibilities

3.1 Project Teams

Key roles

The key Client roles on a project can be grouped into three groupings: the Management Team, the Design Team, and the End Users.

Management Team	Design Team	End Users
▪ Sanctioning Authority ▪ Sponsoring Agency ▪ Steering Group	▪ Design Team members	▪ End users / stakeholders

Within a typical project, the Project Coordinator (supported by the Project Manager, where one is appointed) acts as the point of liaison between the Management Team and the Design Team, and takes into account the requirements of stakeholders and end users.

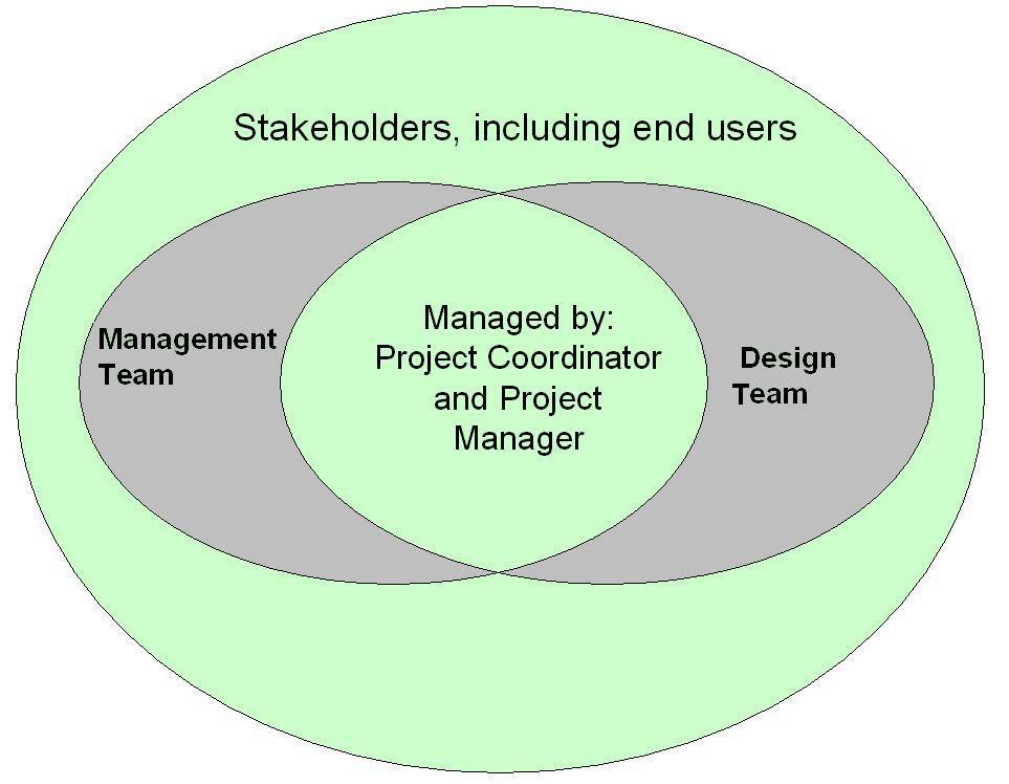


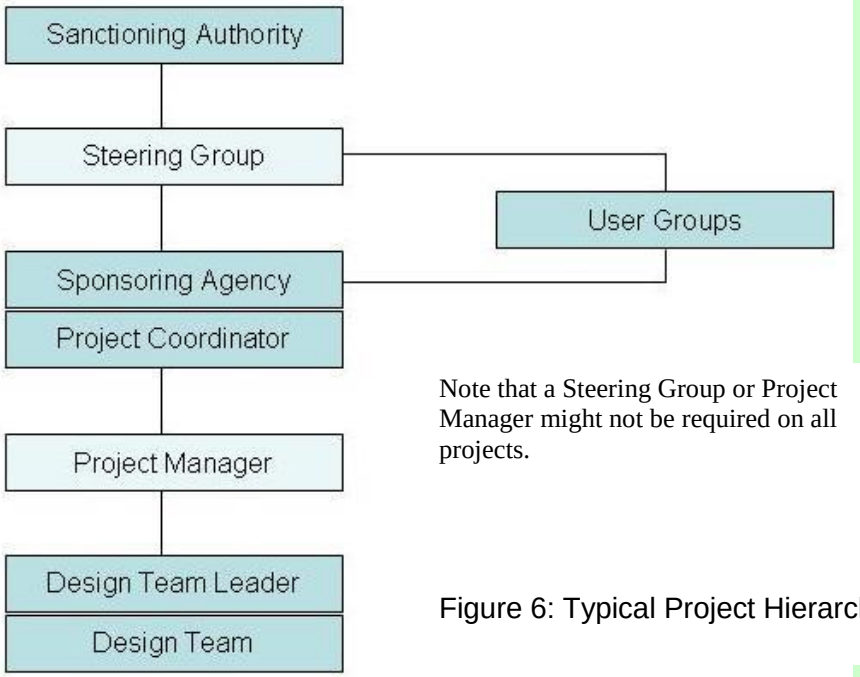
Figure 5: Key Project Roles

This chapter details what the different roles and responsibilities are in these teams. It also deals with the role of stakeholders.

Continued on next page

Typical project hierarchy

The following diagram illustrates a typical project hierarchy (on an Employer- designed contract) for a large complex project, including the Project Coordinator, the Project Manager and the Design Team. The levels of delegated decision-making authority within the Management Team should be clearly established and agreed from the outset between the Sponsoring Agency and the Sanctioning Authority.



Note that a Steering Group or Project Manager might not be required on all projects.

Figure 6: Typical Project Hierarchy

Note: For design-and-build contracts, the Contractor takes over responsibility for design once a contract has been awarded. This may, depending on the option chosen, involve the designers in the Design Team transferring to the employment of the Contractor after contract award, or the Contractor bringing their own design team. Contractor engagement may occur early in the project process, again depending on the procurement option chosen.

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Design-and-build responsibility with novated specialists

Where the Contractor takes over responsibility for a design-and-build project, and where design specialists are novated to the Contractor, the following clauses from the Public Works Contracts are particularly relevant:

Clause 1.7	*The Contractor has satisfied itself before entering the Contract of the adequacy of the Works Requirements.*
Clause 4.6.3	*The Contractor adopts the Novated Design Documents as Works Proposals, and is fully responsible for them.*
Clause 8.1	*The Contractor shall ensure ... that the complete works are fit for their intended purpose as stated in or to be inferred from the Works Requirements.*

Furthermore, the warranty given by the Specialist under Clause 4 of the Novation Agreement commits the Specialist to warranting '*... to the Contractor that it has not breached any of its obligations under the Specialist Contract.'* This enables the Contractor to pursue the specialist if there is a problem regarding design and liability

Contents

This section contains the following topics:

3.2 Management Team: Roles and Responsibilities

The Sanctioning Authority

The Sanctioning Authority is normally the Government Minister, Department or public body who has responsibility for implementing Government policy and for providing financial assistance for capital programmes and projects.

Note: In large or important projects, the Sanctioning Authority is most likely to be the Government.

Responsibilities

The Sanctioning Authority is responsible for:

- Evaluating business cases and development proposals, and giving projects the approval to proceed (for a specific scope of delivery service, within specified budgets, to specified standards and time limits etc);
- Deciding whether a Steering Group is necessary and if so, clearly defining and communicating to all parties at the start of the project, its role, composition, level of delegated authority, responsibilities, and structure;
- Considering major project change requests – for example, those arising from unexpected events; and
- Assessing project reviews and making decisions in a timely manner.

To be effective in this role, the Sanctioning Authority needs to be organised appropriately and have sufficient resources to deal efficiently with issues referred to it.

Project reviews

The following project reviews will be received by the Sanctioning Authority for their approval:

Project Review 1	Occurs after the Project Definition stage and prior to the appointment of the Design Team.
Project Review 4	Occurs prior to submission for statutory approval / planning permission.
Project Review 6	Occurs prior to the invitation of main contract tenders.
Project Review 7	Occurs prior to the acceptance of main contract tenders. Approval of this review is critical for receiving project finance.

These are red reviews and a project must not proceed beyond these points without the approval of the Sanctioning Authority – see **5: Project Reviews** on page 57 for further details).

Project reviews 3, 4, 5 and 6 are not necessary if the Client's responsibility for design has concluded before they fall due – this is the usual scenario for design-and-build projects.

Continued on next page

The Sponsoring Agency

The Sponsoring Agency is the Government Department, Local Authority or other State body or agency that requires the project to be undertaken.

Note: In some cases, the Sponsoring Agency and the Sanctioning Authority can be the same body – for example, the National Roads Authority or non-Exchequer-funded commercial state companies. Where this arises, there needs to be a separation of responsibilities with clear demarcation lines between the two functions within the body.

The Sponsoring Agency becomes the Contracting Authority for a project once it becomes a party to any contract relating to the project. And from the time the Works Contract is signed, the Sponsoring Agency is referred to as the Employer. The term 'Client' is sometimes used as a generic term to cover the Sponsoring Agency / Contracting Authority / Employer.

Responsibilities

The Sponsoring Agency is responsible for:

- Overall planning and management of the project;
- Gaining approval from the Sanctioning Authority for the original proposal and for any subsequent changes;
- Nominating and appointing the Project Coordinator;
- Appointing the Project Manager;
- Appointing the members of the Design Team; and
- Appointing the Contractor.

To ensure a successful project outcome, the Sponsoring Agency must have sufficient resources available to be able to discharge its functions properly.

Appointing the Project Coordinator

The Sponsoring Agency appoints a Project Coordinator who is responsible for project decisions made by the Sponsoring Agency (such as those relating to delivery, quality and budget) and who usually works within the Sponsoring Agency. In appointing the Project Coordinator, the Sponsoring Agency needs to consider the importance of continuity in personnel for the duration of the project. This is especially important on projects with long duration where issues relating to past events are raised late in the process and need to be addressed promptly to avoid possible waste of expensive resources.

The responsibilities of the Project Coordinator are discussed in more detail on page 38.

Continued on next page

The Steering Group

The Steering Group is established for the purpose of overseeing the execution of the project on behalf of the Sanctioning Authority. It is usually only required on complex and large scale projects, particularly where a number of bodies are interested or involved.

Membership of the Steering Group

A Steering Group typically includes a representative from the Sanctioning Authority and may also include a representative from the Department of Finance. Depending on the nature of the project, other Departments may be represented – particularly those that have a considerable interest in the project or who have personnel with relevant business or technical expertise that they can make available to the project.

The Steering Group would normally be chaired by a senior representative of the Sponsoring Agency, though not usually the Project Coordinator.

End Users

End users are the people who will eventually benefit from the provision of the works. Their role in the project management structure is to influence the project brief during the Planning Initial stage. They can also be involved in the design process and at project reviews, where appropriate.

How best to engage end users is an important consideration on each project, and the Project Coordinator is responsible for managing this process.

The Project Coordinator

The Project Coordinator is the main promoter and practical leader of the project, and has the pivotal roles of liaising between the Design Team and the Management Team, of engaging with all the stakeholders, and of implementing the decisions of the Sponsoring Agency. The person chosen for this role needs to have a direct and open relationship with all decision-makers within the Client organisation. Normally, the Project Coordinator is appointed from within the Sponsoring Agency's resources; on exceptionally large or complex projects, however, the Project Coordinator may be appointed from an external company.

The Project Coordinator must have the necessary delegated authority to make decisions, must have appropriate status and resources, and must be assured of direct access to higher authority when required.

Continued on next page

The Project Coordinator (continued)

Responsibilities

The Project Coordinator is responsible for the following:

- Managing the Project Programme;
- Developing the Project Execution Plan;
- Approving interim reports and ensuring that any project changes are evaluated and reported;
- Ensuring the development of the Definitive Project Brief;
- Ensuring that all stakeholders (including end users) are involved with and committed to the project;
- Managing project reviews and obtaining approval from the Sanctioning Authority where required;
- Appointing a Project Manager and other consultants (if required);
- Ensuring that the Sponsoring Agency's health and safety procedures are implemented on the project; and
- Ensuring appropriate risk management.

Personal attributes

The individual selected for the role of Project Coordinator needs to have attributes, skills and experience appropriate to the particular project. For implementation projects, these include an understanding of the following:

- The Sponsoring Agency's business, culture, objectives and financial regime;
- The functional activity of the project;
- The requirements of the Government's capital appraisal system;
- Methods of developing a project brief;
- Risk management and value management, health and safety issues and sustainability / environmental issues;
- The design and implementation process;
- The tendering process, contract forms and the impacts of different contract types;
- Project management techniques;
- Project reviews and Sanctioning Authority requirements;
- Performance measurement and benchmarking; and
- Whole-life costing and cost management.

Continued on next page

The Project Manager

The Project Manager's role is to lead, manage and coordinate the Design Team on a day-to-day basis to achieve the project's objectives.

There is no automatic requirement to appoint a separate Project Manager, as the project management functions can be undertaken by a suitably experienced Project Coordinator – for example, if that person is a construction professional. However, if the project is large or complex or there are individual circumstances affecting it (such as resource availability) the day-to-day management could be delegated to a Project Manager. In this case, the Project Manager could be a nominated member of the Sponsoring Agency's team, or the role could be outsourced to a project management firm.

At an early stage in the project, the Sponsoring Agency needs to establish whether or not a separate Project Manager is needed. In the case that a Project Manager is needed, the appointed person or firm can then be available to assist in managing the project definition stage, including the selection and appointment of the Design Team (if necessary). The decision to appoint a Project Manager should receive the specific approval of the Sanctioning Authority.

The relationship between the Project Coordinator and the Project Manager

The relationship between the Project Coordinator and the Project Manager requires careful development and nurturing, and should follow these guidelines:

- Regardless of how much responsibility is delegated to the Project Manager, the Project Coordinator retains higher authority;
- The Project Manager will report to and receive directions from the Project Coordinator;
- In delegating authority to the Project Manager, the Project Coordinator must make the extent of that authority clear; and
- Formal communication between the Project Coordinator and the project team (including contractors), should be directed through the Project Manager. However, the Project Coordinator should also establish and maintain regular informal contact with the project team.

3.3 Design Team: Roles and Responsibilities

Introduction

This section describes the different roles and responsibilities of the Design Team.

The Design Team

The Design Team is the group of professional consultants and specialists who advise and support the Client and undertake various activities within their service disciplines to implement the project. Where these services are outsourced, each Design Team member will usually be appointed under a separate contract with the Sponsoring Agency.

- On traditional (Employer-designed) projects, the Design Team carries out the detailed design work prior to award of the Works Contract and (post contract award) they supervise the construction work; and
- On design-and-build (Contractor-designed) projects, the Design Team can be involved in some element of design, and also reviews tenders from prospective contractors and (post-contract award) they monitor design and construction activities..

When is the Design Team appointed?

The Design Team is appointed after Project Review 1. At this point the Definitive Project Brief which includes the Project Execution Plan and the Risk Management Plan have already been developed, and the Sanctioning Authority has granted approval for design expenditure.

Using service providers for design work

Best practice requires that the appointment of external designers should be subject to two separate competitions:

- One for design studies[4] (up to the Definitive Project Brief); and
- One for design services for project delivery (after the Definitive Project Brief).

In the event that a single competition is used, this must include the following two options:

- An option to cancel the contract for that service (at no cost to the Client) if the Client should decide not proceed after the Definitive Project Brief is completed; or
- An option to change the terms of the contract for that service to allow for any changes in the nature of the project that come to light during project definition.

See the guidance notes *Procurement Strategy for Consultancy Services (Technical)* (GN 1.6) and *Standard Conditions of Engagement* (GN 1.7) for more information on the appointment of consultants.

Continued on next page

[4] Such as a Feasibility Report or a Preliminary Report

3.3 Design Team: Roles and Responsibilities, Continued

The Design Team Leader

A Design Team Leader (or principal consultant) should be appointed for every project with more than one professional consultant.

The Design Team Leader has responsibility for coordinating the Design Team (for example, assisting design team members to coordinate their services in regards to content and timing and resolving any coordination conflicts) and is also the main consultant for the majority of the design work.

In building projects, the Design Team is usually led by the architect and in civil engineering projects by the engineer. The Design Team Leader liaises with either the Project Coordinator or the Project Manager (if one is appointed).

Project Supervisor for the Design Process (PSDP)

The Project Supervisor for the Design Process (PSDP) though separately appointed is usually a member of the Design Team. The PSDP has a duty to coordinate the designers in relation to safety, health and welfare implications throughout the project. For details of the PSDP's responsibilities, see 1.6 Design and Safety, Health and Welfare in *Design Development Process* (GN 2.1).

Cost Adviser

The Design Team includes a cost adviser / quantity surveyor whose responsibilities include:

- Preparing estimates and quantifying risks;
- Cost planning, cost management and reporting, tender document preparation;
- Whole life costing; and
- Preparing tender pricing documentation, interim valuations, cost control and final settlement of accounts.

For further reference

For further information relating to client design roles and responsibilities, see the following guidance notes:

- *Design Development Process* (GN 2.1) and *Planning and Control of Capital Costs* (GN 2.2) – these explain how the various consultants are engaged at each stage of the design process.
- *Standard Conditions of Engagement* (GN 1.7) – provides information on consultant services and how to select and appoint consultants.

3.4 Consultation with Stakeholders

Identifying stakeholders

Consultation and dialogue on the construction of a public sector structure in a particular location is essential and could include a wide range of people or groups such as the community within the Client body or outside such as vested interest groups or the general public (depending on the type of project and the organisation requiring the project).

To identify who the stakeholders are, key questions need to be answered, for example:

- Who will be affected by the project?
- Who will be using the built asset in the future?
- Who might have their quality of life affected by the project?
- Who might obstruct a decision if they are not involved?
- Who is influential in the area, community, and organisation?
- Who has been involved in a similar project in the past?

Stakeholders involved in a project may include:

- Staff and visitors – for example, students, patients, the general public, local residents etc;
- Organisations involved in financing a project – including the Sponsoring Agency, the Sanctioning Authority, banks, charities etc;
- Local Authorities and other statutory bodies and organisations who provide project approval; and
- Clients, designers or contractors involved in adjacent projects or larger programmes of work which include the project.

The management of stakeholders is an important function of the Project Coordinator.

Stakeholder management

Where there is a large stakeholder group, a system of planned stakeholder management arrangements should be established.

The particular stakeholder consultation methods to be used depend on the groups concerned and the specifics of the project. Typical consultation methods might include meetings and focus groups, questionnaires, newsletters, intranet or internet sites and the media.

Scheduling and managing the process of formal consultations with third parties (who will provide approvals at different project stages) is part of the project management process.

Continued on next page

Stakeholder Communications Plan

A Stakeholder Communications Plan should include the following:

- A schedule with identified internal and external stakeholders, their contact details, and their interest in the project;
- Include a programme of planned workshops, meetings, visits etc;
- Details of who is responsible for project communication – for informing all parties of who is doing what, and when; and
- Provision for regular updates as the project progresses.

Note: Wider community consultation requires careful management. On some projects a communications consultant may be required.

4: Overview of Project Processes

4.1 Overview

Contents

This chapter describes the four stages which occur after Approval in Principle, and through which most capital works projects undertaken within the Capital Works Management Framework, are progressed. The Project Appraisal stage – which leads to Approval in principle, is discussed briefly.

Main Project Processes

Figure 7 is a schematic representation of the generic project activities, as they move (in time) through the four main stages: Planning Initial, Planning Developed, Implementation and Review.

The project activities listed here are carried out by the Sponsoring Agency or by those appointed by the Sponsoring Agency.

Red project reviews require the sign-off of the Sanctioning Authority.

Continued on next page

4.1 Overview, Continued

Stage	Project Activities	
	Building	**Civil Engineering**
1. Planning Initial	Appoint technical experts (if required) Appoint PSDP (if required) Develop *Definitive Project Brief* Determine procurement strategy Conduct cost assessment	
	Project Review 1	**Confirm approval for design expenditure**
	Determine and allocate procurement risk Appoint Design Team (Design Team Leader / Lead Consultant) Assess output requirements, constraints, budget	
	Project Review 2	**Confirm requirements; review procurement strategy**
2. Planning Developed	Outline Sketch Scheme	Preliminary Planning
	Develop *Outline Cost Plan*	
	Project Review 3	**Assess project design and *Outline Cost Plan***
	Developed Sketch Scheme	Preliminary Planning, *continued*
	Develop *Developed Cost Plan* Conduct whole life cost reviews	Develop *Outline Cost Plan (revised)* Conduct whole life cost reviews
	Prepare for statutory approval	
	Project Review 4	**Assess project prior to statutory approval process**
	Submit for statutory approval	
	Project Review 5	**Assess outcome from statutory approval process**
	Detailed Design (*not* design-and-build)	Detailed Planning (*not* design-and-build)
	Conduct pre-tender cost check / Whole life cost update Prepare tender documents	
	Project Review 6	**Approve detailed design solution; review pre-tender cost check; review risk**
	Issue Tender documents Assess tender returns Tender cost analysis report Write tender report, including recommendation of contractor	
	Project Review 7	**Review tender returns in advance of awarding the contract**
3. Implementation	Award contract Implement design Supervise management of construction process Manage change control Administer contract Manage handover / final account	
4. Review	Conduct *Analysis of Outturn Costs* Conduct *Project Outturn Review*	

Design and Build

Figure 7: Generic project activities

4.2 Project Appraisal

Purpose of Project Appraisal

Proper appraisal is essential before the project can proceed to the planning stage. This involves both the Sponsoring Agency and the Sanctioning Authority. The purpose of appraising the project is to assess whether the project:

- Has sufficient merit;
- Is consistent with programme or policy objectives;
- Has clarity of purpose with measurable benefits;
- Represents value for money in both the short term and long term; and
- Is affordable and deliverable.

Appraisal parameters

The appraisal stage addresses, in general, key issues particular to any investment proposal to justify that an investment proposal. These are:

- Objectives
- Location
- Scope
- Governance
- Deliverables
- Restrictions
- Performance
- Purpose
- Budget
- Time
- Options
- Risks
- Assumptions
- Management Strategies
- Constraints
- Functional Life

Note: All or some of these issues are considered individually or collectively at Appraisal stage to determine if Approval in Principal should be granted.

A more formal structure is put in place during the development of the Definitive Project Brief (at the start of the Planning Initial Stage) in which these issues are formally defined as a set of 16 project parameters against which project activities are tracked as a project proceeds. As the project definition proceeds, each of these parameters is continually developed, enhanced, expanded, amended and clarified, so that the final output from this process is a Definitive Project Brief that is as detailed, comprehensive, final and certain as possible.

The sixteen project parameters help to establish the following:

- The high-level requirements that the project is intended to meet;
- The assumptions upon which the decision to proceed is based;
- The constraints on the project – including financial, environmental, technological and other constraints; and
- Project management principles that must be applied throughout the project.

The level of detail to which the appraisal stage goes (within these parameters) depends on the scale and type of project.

Note: The appraisal stage is covered in further detail in the *Guidelines for the Appraisal of Capital Expenditure Proposals in the Public Sector* (Department of Finance, February 2005).

Continued on next page

Approval in Principle

At the conclusion of project appraisal, the Sanctioning Authority takes a decision (in principle) to proceed (or not), based on the broad parameters of the solution arrived at. If approval is granted, the project is allowed to progress to the Planning stage but without the placement of any major contracts or irrevocable commitments.

4.3 Stage 1: Planning Initial

Purpose of the Planning Initial stage

Once a project has passed the appraisal stage, it moves into the Planning Initial stage, during which the Output Specifications are developed within the framework of the 16 project parameters which ultimately leads to the development of the Definitive Project Brief. In summary, the key tasks and activities of the Planning Initial stage include:

- Establishing the project management structure that will be used throughout the life of the project;
- Reviewing and confirming assumptions and constraints on which the Approval in principle was based, including budget estimates;
- Reviewing options for how to meet the project requirements and determining project feasibility;
- Preparing the Design Brief, Output Specifications and Definitive Project Brief.;
- Confirming a definitive procurement strategy and contract type;
- Identify value management strategies and consider value management in relation to procurement strategy;
- Identify and assess risk relating to the Project Execution Plan and the procurement strategy.
- Preparing a cost assessment (capital costs and whole life costs);
- Selecting and appointing the design team – Client departments need to assess whether design input is needed, and if so to appoint design consultants to complete the design work; and
- Preparing the Project Execution Plan.

Note: Project Review 1 takes place during the Planning Initial stage – see **5.2 Project Review 1** on page 59.

Note: Project Review 2 takes place at the end of the Planning Initial stage – see **5.3 Project Reviews 2 and 3** on page 60.

Project outputs during the Planning Initial stage

The following main outputs are developed during the Planning Initial stage:

Output	Description
Project Execution Plan	The core document for managing a project; this defines the roles and responsibilities of the various Client parties within the project management structure. See Appendix A for a sample Project Execution Plan.
Feasibility Study / Preliminary Report	Considers quantitative and cost aspects of the project in sufficient detail to enable a final and reasoned decision to be made on whether or not to proceed.

Continued on next page

Project outputs during the Planning Initial stage (continued)

Output	Description continued
Design Brief / Preliminary Report	Represents a complete statement of the Sponsoring Agency's functional and operational requirements for the project. This will be passed to the designers as part of the Definitive Project Brief.
Final Output Specifications	This is focused on what the Sponsoring Agency wants to achieve with the project, and is based on the sixteen project parameters.
Definitive Project Brief	This is the final complete statement of the user requirements and other technical, administrative and financial information relating to the project. It gathers together the detailed accumulated knowledge about a project as it has been developed, refined, enhanced and verified throughout the project definition process in the Planning Initial stage.
Procurement Strategy Report	Records the procurement strategy to follow and which contract type to use.
Risk Management Plan and Risk Register	The Risk Management Plan is a formal statement of the actions that management need to take to mitigate risk. The Risk Register is a risk management tool used to catalogue and communicate risks as they are identified.

For further reference

Further information relating to the Planning Initial stage is to be found in the following guidance notes:

- The process of determining project requirements is detailed in *Project Definition and Development of the Definitive Project Brief* (GN 1.2).
- For information on how to choose the appropriate procurement strategy and contract type, see *Procurement and Contract Strategy for Public Works Contracts* (GN 1.4)
- For more information on the appointment of consultants, see *Procurement Process for Consultancy Services (Technical)* (GN 1.6).
- For more information about managing the design process, see *Design Development Process* (GN 2.1).

4.4 Stage 2: Planning Developed

Key tasks of the Planning Developed stage

During the Planning Developed stage, the design is developed to a level appropriate for the chosen contract type, (whether traditional, or design-and-build). There are three key activities during this stage:

- Design development;
- Cost control; and
- Management of the tendering process.

Project reviews

Project reviews 2–7 take place at different points throughout the Planning Developed stage. These include *amber* reviews which gives informal approval for the design development to proceed if the project is within its approved limits, and *red* reviews that require formal approval from the Sanctioning Authority before the design work can proceed .

Project outputs

At the end of the Planning Developed stage, the main outputs are:

- Design documentation; and
- Other tendering documentation such as the Pricing Document.

Risk Management and Value Management

Risk issues and value management issues must be considered throughout the Planning Developed stage.

Design development

Design is developed through a number of different stages, depending on whether it is a building or civil engineering project:

	Building projects		Civil engineering projects	
Process	**Stage**	**Description**	**Stage**	**Description**
Outline Design	A1	Outline Sketch Scheme	B1	Preliminary Planning (Design)
Developed Design	A2	Developed Sketch Scheme, *including Statutory Approval*		Preliminary Planning (Design), continued, *including Statutory Approval*
Detailed Design	A3	Detailed Design	B2	Detailed Planning (Design)

Design development follows a process that allows for ideas to develop into drawings, which can be used to construct the project.

The extent of the Contractor's design work in all stages in a design-and-build contract, is determined by when the Contractor was appointed and what the agreed scope of the design work transferred was. The Sponsoring Agency / Contracting Authority should decide the level of detail required for each of these stages, depending on the complexity of the project and proposed risk allocation.

Continued on next page

Design development (continued)

Design management

Design management is an important activity in the design development process, and is usually the Design Team Leader's / Lead Consultant's responsibility. It involves coordinating, analysing and testing the design as well as managing different stakeholders.

One of the most crucial elements in design management is how the Client delegates this responsibility and its boundaries. This must be clearly established by the Client at the beginning of the design process, and be fully supported throughout.

Addressing stakeholder concerns to achieve a successful outcome to an application for statutory approval / planning permission usually arises during this stage. Managing these approvals is a key activity, which requires careful coordination and programming.

Cost management

Effective planning and control of capital costs are essential elements of good project management. Initially costs should be established based on updated historical data and approximate measurements taken at the beginning of the project to establish benchmark figures, so that deviations from the planned costs can be identified early on, and any necessary corrective measures can be taken to avoid breaching the approved budget.

The Cost Plan

The Cost Plan for the project is developed from the original budget and is managed through review processes, which are part of the design development process. Generally, there will be:

- A formal Outline Cost Plan that will be revised as the design develops;
- Detailed cost checks in the form of a Developed Cost Plan / Outline Cost Plan (revised) as the design progresses; and
- A detailed pre-tender cost check (i.e. Developed Cost Plan [amended] / Cost Plan) prior to obtaining approval to tender.

Cost Planning and cost management is usually the responsibility of the cost adviser (on building projects) or the civil engineer (on engineering projects).

Continued on next page

Managing the tendering process

The tendering process involves four main stages, each with its own management requirements:

Stage		Description
1	Preparing the Invitation to Tender	At this stage, the detailed tender documents are prepared.
2	Inviting tender responses	The tender documents are published and prospective contractors are invited to respond.
3	Evaluating responses	The design team evaluate the responses from prospective contractors.
4	Gaining tender approval	The Sponsoring Agency request approval from the Sanctioning Authority to award the contract.

For further reference

Further information relating to the Planning Developed stage is to be found in the following guidance notes:

- For more information about managing the design process, see *Design Development Process* (GN 2.1);
- For more information about cost control, see *Planning and Control of Capital Costs* (GN 2.2);
- For more information about managing the tendering process, see *Procurement Process for Works Contractors* (GN 2.3)

4.5 Stage 3: Implementation

Introduction

The Implementation stage of a project begins once final approval for awarding the contract has been received and the contract has been awarded. It is commonly referred to as the Construction stage.

Projects can have several implementation stages during their life cycle – for example, demolishing existing structures, enabling works, constructing advance works/buildings or vehicle accesses, temporary works, creating diversions, or even off-site prefabrication. It is also possible to have separate stages for fit-out or landscaping works towards the end of projects.

The critical success factors for the Implementation stage are good planning and preparation, good processes, good communication and a team approach.

Contractual agreements

The Implementation stage is governed by contractual arrangements between the Sponsoring Agency (acting as the Contracting Authority) and the Contractor. Under the terms of the Public Works Contract, the Sponsoring Agency / Contracting Authority is known as the Employer during the Implementation stage.

The type of contract used determines the roles and responsibilities for each party during the Implementation stage.

Employer responsibilities

During the Implementation stage, Employers should have personnel, systems, procedures, contracts and checks in place to ensure that the project is delivered safely, on time, to budget and to the required quality standards.

Although employers are generally disengaged during the implementation process (particularly for design-and-build projects), it is important for them to obtain assurance regularly that everything is on track.

Management reports

Under Schedule B Management Services of *Conditions of Engagement for Consultancy Services (Technical)*, the Design Team is required to produce technical reports. In parallel with these, the Project Coordinator / Employer's Representative should produce regular management reports to include key information from the technical reports, along with other information covering all significant project developments and costs.

These management reports should be circulated by the Project Coordinator / Employer's Representative to other key personnel in the Sponsoring Agency. If adverse developments occur (such as unforeseen cost increases which challenge the desirability or viability of a project), the relevant personnel in the Sponsoring Agency needs to submit a report to the Sanctioning Authority straight away, outlining measures proposed to rectify the situation.

Continued on next page

The handover stage and 'defects period'

The project is considered to be substantially completed (that is, ready for use/occupation) at the handover stage. There is normally a period after this called the Defects Period, during which the Contractor is required, under the contract, to rectify defects on the project. The Defects Period usually lasts for 12 months.

For further reference

Guidance notes relevant to the Implementation stage are:

- *Public Works Contracts* (GN 1.5) which covers the following:
  - The nature of contracts and risk allocation;
  - What forms the contract and what documentation is involved;
  - The contractual links between the main parties;
  - The roles, duties and responsibilities under the contract (including the administrative duties of the Employer, the Employer's Representative and the Contractor); and
  - The types of decisions the Employer needs to make.
- *Implementation Process* (GN 3.1) outlines the role of the Sponsoring Agency / Employer during implementation, completion and handover.

4.6 Stage 4: Project Review

Introduction

The project review provides useful information to enable improvements in future projects. The review confirms:

- Whether project objectives have been met;
- Whether the project has been delivered to the required standards, on time and within budget, and
- A detailed analysis of the contract costs.

The purpose of the review is to ensure that the knowledge gained throughout the project can be passed on to other projects and also in the use of the new asset.

It is the responsibility of the Employer to complete project reviews.

Timing of reviews

A project review is ideally completed three to six months after implementation has finished, and should focus on how well the project was managed, the quality of the facility, the time it took to deliver and the final outturn cost. For a large or complex project, it could include the views of stakeholders, suppliers and specialists who have been involved; and it could also include a 'lessons learned' report. For smaller or less complex projects, the review should be to an appropriate level of detail.

In certain circumstances, it might be useful to conduct a post occupancy evaluation review when the facility has been in use for long enough to determine whether the business benefits have been properly achieved.

For further reference

For general guidance on project review requirements, see *Guidelines for the Appraisal of Capital Expenditure Proposals in the Public sector* (Department of Finance, February 2005) and any subsequent addendum.

See also *Project Review on Completion* (GN 4.1) – for details of the best practice to follow with respect to project review on completion.

5: Project Reviews

5.1 Overview of Project Reviews

Introduction

Project reviews allow Sponsoring Agencies to review the project at key development stages during the Planning Stage to ensure that it is on track to deliver its objectives. Typically there are seven project reviews, which can be tailored to suit project circumstances.

Within these reviews, there are also certain approval points, which emerge when a large expenditure decision needs to be made.

Project reviews are an essential control mechanism, but they also add value to the project as they allow continuous evaluation of the project's business case.

This chapter details the purpose and outcome of the seven project reviews.

Responsibilities

Project reviews are the responsibility of the Sponsoring Agency and are managed by the Project Coordinator. They require input from the Project Manager (if there is one), the Design Team and some stakeholders, depending on the nature of the project and on the project stage.

Reviews and procurement strategy

Project reviews 1 to 7 are all appropriate to traditional, Employer-designed projects. For design-and-build projects, Project reviews 1, 2 and 7 are always appropriate. Project Reviews 3, 4, 5 and 6 are appropriate only while the Client continues to retain the design risk.

	Traditional / Employer-designed	Design and-build / Contractor-designed
Project Review 1	✓	✓
Project Review 2	✓	✓
Project Review 3	✓	Appropriate only while the Client remains involved in design work
Project Review 4	✓	
Project Review 5	✓	
Project Review 6	✓	
Project Review 7	✓	✓

Continued on next page

5.1 Overview of Project Reviews, Continued

Review format

There is no prescribed format for project review reports. However they should at least address the following:

- The budget (including capital and fee costs);
- Continuing level of demand for the project ;
- How risks have been managed, mitigated or transferred;
- Identification of new risks;
- Management of the contingency fund (if any); and
- Programme and quality issues.

The format is established by the Sanctioning Authority. In the case of project reviews 3, 4, 5, 6 and 7 (for capital costs), the format may be influenced by the standard cost templates that the Design Team is required to produce under the reporting requirements in Schedule B Management Services *Conditions of Engagement for Consultancy Services.* These templates include the Outline Cost Plan, Developed Cost Plan, Cost Check and Cost Analysis. Once the Approval in Principle is given, the Sanctioning Authority should advise the Sponsoring Agency immediately on the format it requires for reports.

The schedule for project reviews should be included in the Project Execution Plan (project definition, parameter 11).

Types of project reviews

There are two different types of project review:

Red light reviews are those that require a report to be produced for the Sanctioning Authority to approve in order for the project to proceed further. The report enables the Sanctioning Authority to evaluate the business case and the project parameters, and to confirm the budget.

Amber light reviews are those that require formal collection and reporting of evidence within the Sponsoring Agency and the Design Team to confirm that the project is on track. The Sanctioning Authority should be informed of the outcome of such reviews. The number and timing of amber light reviews varies depending on the type of project and the procurement route.

Contents

This chapter contains the following topics:

5.2 Project Review 1

Introduction

Project Review 1 is a mandatory **red light review** that takes place after the *Definitive Project Brief* has been developed when approval for design expenditure is needed.

Purpose

The purpose of Project Review 1 is to:

- Confirm that the project is in line with the approval in principle and that the business case is still relevant;
- Confirm the budget for all project costs;
- Confirm that all relevant options have been explored (demonstrating long-term value for money), and that the project is feasible and achievable;
- Confirm that the Definitive Project Brief, Final Output Specification and the Design Brief have been developed with sufficient detail and accuracy, are comprehensive and have been signed off by all relevant parties;
- Demonstrate that each of the project parameters is sufficiently well developed;
- Ensure that project controls, organisational arrangements and roles of key parties are clearly defined, that financial controls are in place and that all necessary resources are available;
- Ensure that key risks are understood and that there is a plan in place to manage, transfer or mitigate them;
- Demonstrate that the proposals have stakeholder support;
- Confirm that there is a plan for ongoing project review and evaluation; and
- Confirm that the Project Execution Plan has been established, and that it is appropriately detailed and realistic.

Review Outcome

If Project Review 1 reveals a conflict with the project appraisal or the assumptions underlying the Approval in Principle, or if support for the preferred project solution cannot be obtained, then project work should be suspended and the project should be referred back to the appraisal stage for reassessment.

This is a critical period in the project because once design has commenced, any changes in project scope or objectives should not be made unless absolutely necessary, or if the proposed changes could reduce the overall project cost.

If changes are made, the cost (including design costs) and timing implications should be fully appraised and a approval from the Sanctioning Authority should be sought before an amended Design Brief is given to the design consultants.

5.3 Project Reviews 2 and 3

Project review 2

Project review 2 is an **amber light review**, which takes place after the procurement strategy is agreed and Design Team has been appointed.

The purpose of this review is for the Design Team to check that the requirements are adequate and to review the procurement strategy.

Procurement strategy report

The chosen procurement strategy requires specific approval from the Sanctioning Authority. A procurement strategy report should be provided detailing:

- The rationale for the strategy chosen;
- How the strategy is going to be implemented;
- How key risks are going to be dealt with;
- The roles of key parties; and
- A schedule.

The report should also confirm that there is an available supplier market for competitive tendering purposes.

Project review 3

Project review 3 is an **amber light review**, which takes place at an appropriate point during:

- Stage A1: the Outline Sketch Scheme stage (for building projects); or
- Stage B1: the Planning Preliminary (Design) stage (for civil engineering projects).

The purpose of this review is for the Design Team to assess if the project design and the Outline Cost Plan are aligned with the requirements of the project brief. If they are, the Sanctioning Authority should be formally notified of this at the end of the review.

Project Review 3 is not necessary if the Client has already handed over design responsibility to the Contractor who will emerge as the successful tenderer from the tender process.

5.4 Project Reviews 4 and 5

Introduction

Project Review 4 is a mandatory **red light review** that takes place at an appropriate point during:

- Stage A2: Developed Sketch Scheme and prior to the submission for statutory approval (for building projects); or
- Stage B1: Preliminary Planning (Design) and prior to the submission for statutory approval (for civil engineering projects).

Purpose of Project Review 4

The main purpose of Project Review 4 is to review the project before it proceeds through the statutory planning process. Once a project passes into the planning process it becomes more difficult to make changes to the scheme. For this reason, Project Review 4 needs to do the following:

- Confirm that the business case is still relevant and the project is still required;
- Confirm that the proposed solution meets the business needs;
- Confirm that capital costs are in line with the budget (see *Planning and Control of Capital Costs* (GN 2.2);
- Confirm that the implementation costs forecast is in line with expectations and that funding is available;
- Confirm that the design is developed to a sufficient level, considering the nature of the project and the contract type;

Project Review 4 is not necessary if the Client has already handed over design responsibility to the Contractor who will emerge as the successful tenderer from the tender process.

Review Outcome

If Project Review 4 reveals a deviation from the agreed parameters, or if support for the preferred project solution cannot be obtained, then project work should be suspended and the project should be referred back to the Sanctioning Authority for guidance on reassessment of the project.

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5.4 Project Reviews 4 and 5, Continued

Project review 5

Project review 5 is an **amber light review** that takes place once statutory approval has been received, or when comments/conditions have been received from statutory authorities (for both building and civil engineering projects).

If …	Then …
... approval is received and no design changes are required, or costly conditions attached	... the Sanctioning Authority should be formally notified of compliance at the end of the review.
... there are comments or conditions attached that require design amendments or significant capital outlay for fees or to augment the cost of local infrastructure	... a report should be produced for the Sanctioning Authority, detailing the cost, time and design implications of such comments and conditions. **Note:** If this report highlights cost that have not been budgeted for, approval is needed from the Sanctioning authority before proceeding to the next stage.

Project Review 5 is not necessary if the Client has already handed over design responsibility to the Contractor who will emerge as the successful tenderer from the tender process.

5.5 Project Review 6

Introduction

Project Review 6 is a mandatory **red light review** that takes place at the end of the Detailed Design / Detailed Planning stage of design development and before the issue of invitations to tender. This is the most critical review for design and it involves the review and approval of the detailed design solution, a pre-tender cost check and a risk review.

Purpose of Project Review 6

The purpose of Project Review 6 is to:

- Confirm that the business case is still relevant and the project is still required;
- Confirm that the proposed solution meets the business needs;
- Confirm that capital costs are in line with the budget (see *Planning and Control of Capital Costs* (GN 2.2);
- Confirm that the implementation costs forecast is in line with expectations and that funding is available;
- Confirm that all statutory and stakeholder approvals have been received;
- Confirm that the design is developed to a sufficient level, considering the nature of the project and the contract type;
- Confirm that contract conditions have been established and that all required tendering documentation is available;
- Ensure that all key risks are either resolved or appropriately allocated;
- Confirm that the implementation stage has a realistic schedule;
- Confirm that the approved procurement strategy has been followed and there are appropriate tendering procedures; and
- Confirm that there are robust systems for managing and monitoring the implementation of the project.

Project Review 6 is not necessary if the Client has already handed over design responsibility to the Contractor who will emerge as the successful tenderer from the tender process.

Review Outcome

The following table summarises the possible outcomes of Project Review 6:

If the review reveals that the project …	Then …
is not aligned with the project brief	... the design proposal should be amended *– or –* ... the project Implementation stage should be suspended and the project referred back to the Sanctioning Authority for a decision.
... meets the requirements of the project brief	... following clearance from the Sanctioning Authority, tenders are invited to take the project to the next stage.

5.6 Project Review 7

Introduction

Project review 7 is a mandatory **red light review** that takes place at the end of the tender process. It is appropriate for all projects, both traditional, Employer-designed projects and design-and-build projects.

Purpose

The main purpose of Project Review 7 is to review the results of a tender competition in advance of awarding the contract. This is a significant review as the decision at this point involves a considerable commitment to capital expenditure. The review involves:

- The Design Team producing a tender Cost Analysis based on the preferred bidder's tender price – the template used for this analysis should be the same as that used for the pre-tender Cost Check. This enables the costs of works in various cost holding categories in the tender price to be examined in detail – to identify peaks and troughs that highlight the difference between the tender price and the pre-tender budget cost. It enables a Contracting Authority to see the Contractor's view on how various costs should be spread over the project cost.
- In addition to the production of a Tender Cost Analysis (above) a tender report is also produced commenting on the participants in the competition and wider issues such as method statements, design issues and clarifications;
- Contractor selection (for design-and-build projects, the tenderers' detailed design must be assessed);
- Risk assessment of tender proposals in terms of price, methodology and contractor selection (in the case of an open procedure). For design-and-build projects, the proposed quality of the built facility also needs to be considered;
- Confirming that the preferred tender submission provides the basis for the physical delivery of the project and that it represents value for money; and
- Resolving all outstanding issues relating to the tender, before awarding the contract, including a list of post-tender clarifications highlighting those that will be included in the Letter of Acceptance and which will be part of the Contract in accordance with Article 5 of the *Agreement* to the Public Works Contract.

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5.6 Project Review 7, Continued

Outcome

If a particular tender submission is found to be acceptable, the Sponsoring Agency should request the Sanctioning Authority's approval to proceed to contract award and to the Implementation stage.

If, however, no satisfactory tender has been received and there is no basis for proceeding to the Implementation stage, the project proposal should either be *amended* or *stopped* completely, subject to the decision of the Sanctioning Authority.

- *Amended project proposal*: where the project cost is higher than expected, or tenderers identify Employer's design flaws, or the Contracting Authority identifies Contractor's design flaws (design-and-build) the proposed amendments can include design changes.
- *Stopped project proposal:* in the case of a project that is stopped, it must be borne in mind that substantial amounts of money have already been spent on planning, and a thorough analysis of how the project got so far before being stopped must now be undertaken.

6: Risk Management

6.1 Overview

Introduction

Risk management is an essential project management tool that is used to create the conditions for a successful project outcome. It should begin at the earliest stage in the project and continue throughout the project delivery lifecycle.

Effective use of risk management requires a project team to consider the project and its environment in their entirety, rather than focusing strictly on technical issues. Effective risk management contributes to achieving the best value for money and helps clients make better informed decisions.

The risk management process should feed into the consideration of optimal risk transfer at the following points in the project life cycle:

- When the procurement strategy is being determined – where design-and-build is the chosen strategy, more of the project risk is transferred to the Contractor; and the earlier the involvement of the Contractor the greater the risk transfer.
- When the tender documentation is being prepared, and at contract award stage when the contract documents are being prepared – including, in particular, Part K or the Schedule, which deals with Delay Events, Compensation Events, Programme Contingency, Delay Costs and Adjustments.

Contents

This chapter contains the following topics:

For further reference

See also *Planning and Control of Capital Costs* (GN 2.2) for further details on how risk management relates to the cost management process and budget control

6.2 About Risk Management

What is risk management?

Risk management enables the whole project team to understand and manage potential risks, thereby minimising their impact and the negative of value they might entail. It also enables the team to take advantage of any opportunities that might arise to enhance value.

Risk is defined as the 'uncertainty of outcome' whether positive or negative. Risk management incorporates all the activities necessary to identify and control exposure to risk that could impact on the ability to achieve project objectives.

Some amount of risk-taking is necessary in a project in order to maximise benefits. Therefore, the aim of risk management is not to eliminate all project risk but instead to control the risks taken by either transferring them or retaining and managing them.

Risk management success factors

To implement risk management successfully, there needs to be:

- Visible senior management support;
- Clearly communicated policies;
- A culture that supports and understands the concept of controlling risk; and
- The implementation of effective plans and regular reviews.

Benefits of risk management

Effective risk management improves project performance by:

- Enabling organisations to select projects that have a reasonable chance of delivering the expected benefits;
- Enabling project teams to manage risk methodically and to reduce negative impacts in advance;
- Concentrating team efforts and action on issues that really matter;
- Improving the certainty of successful project delivery for clients and teams;
- Improving communication and understanding of the project;
- Giving the team responsibility, within a measurable process; and
- Enabling better-informed decisions and providing an audit trail for them.

The difference between risks and issues

Risks are events that may or may not occur, and they must be clearly distinguished from **issues**, which represent the *realisation of risks* despite the best efforts undertaken by the team to prevent them. When issues do occur, the team must change its focus from prevention to damage limitation.

Both risks and issues cause project uncertainty and both need to be mitigated. It is good practice to have separate registers for risks and for issues.

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Different levels of risk

Organisations with mature risk management programmes establish different levels of risk, usually categorised by type – including the following:

Type of Risk	Description
Strategic	Strategic risk impacts the highest level of an organisation, and is usually managed by senior management. If strategic risks are realised, they could have a substantial negative impact on reputation, organisational efficiency, or high level business performance.
Programme	Programme risk impacts a portfolio of projects, and are usually managed by a Client programme team. Risk in this area takes in decisions that transform strategy into action, including those relating to funding, organisational and cultural issues, quality, business continuity, and so on.
Project	Project risk directly affects the successful delivery of a project, and is usually managed by the project team. Project risks are commonly quantified in terms of time, cost and quality.
Operational	Operational risk is that which might affect the future operation of a facility by end users, after it has been handed over by the Client.

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Managing project risks

Project teams manage risks by using a 4-step process:

Step	Action
1. Identification	Identify all significant risks (excluding external risks).
2. Analysis	Analyse risks in terms of likelihood and impact (on cost, time and quality).
3. Management	Actively manage risks to reduce or eliminate the possibility of occurrence, or to take advantage of any opportunities that might arise for value enhancement.
4. Review	Review the risks and monitor the performance of the Risk Manager throughout the project.

Risks and their management plan are recorded in a Risk Register, which should be constantly reviewed and updated.

Risk management should be considered at every stage in a project.

What is a risk review?

A risk review provides a forum for updating the Risk Management Plan. One of the most effective ways to do this is to convene a workshop involving all key project stakeholders.

At each risk review, any new risks should be identified, old risks that no longer apply should be closed, and the effectiveness of management actions should be assessed. Any changes should be captured in a Risk Register. The most severe risks should be reviewed at every project meeting, and escalated to a higher management level if necessary.

Formal risk reviews should occur at key project milestones, to ensure that the Risk Register accurately reflects the current state of the project and that any assigned management actions are completed.

Regular risk reviews are imperative to effective risk management. As risks are mitigated, changed or introduced over time, it is essential that risk management is integrated into the project management process.

6.3 Risk Management Strategies

Four main risk management strategies

Strategies for mitigating risk at each project stage should be tailored to suit the level of risk tolerance or project / organisation willingness to accommodate risk.

There are many documented strategies for managing risk. The four main risk management strategies commonly used are:

Strategy	Description
Terminate biggest risks	Severe risks that threaten to cancel or fail the entire project must be *terminated*. This usually means either removing the risk entirely or converting it so that it can be dealt with in some other way.
Treat risks	Risk treatment aims to minimise risk, and risks are *treated* by surveys, re-design and use of other materials, different methods, or changes to the procurement strategy. This strategy is less extreme and more common than terminating risks. Risk reduction is accomplished by the project delivery team for example, the design team can change the part of the design which causes the risk.
Transfer risks	Risks are *transferred* via insurance. In this case, if a risk is realised, it is covered by an insurance policy. Risk can also be transferred to the Contractor as part of the contract – in which circumstances the Contractor takes their own provisions for dealing with the risk. For example, events 17–21 of Part 1k of the Schedule to the Contract may be excluded from consideration as compensation events, and the Contractor will need to cover such risk.
Tolerate risks	Risks are *tolerated* within unallocated contingencies. This is the strategy to adopt for all minor risks, as it involves no active management. If the risk is realised, the cost is affordable within the risk allowance or the project's contingency fund.

Risk workshops

A risk workshop involves all key project stakeholders and is one of the most effective ways of identifying and managing risk. Workshops can run for either a half-day or a full day, depending on the project size and complexity.

Risk workshops should be run by a competent facilitator with a knowledge of the risk process. The role of the facilitator is to lead the team through the process and guide an effective discussion forum.

The output of a risk workshop is an accurately compiled Risk Register, which the team can then actively manage throughout the project lifecycle.

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The key to effective risk management

The nature of risk changes throughout the life cycle of a project; such changes include the following:

- Changes in scope or changes that require new actions to mitigate their effects;
- Reduction in the likelihood of risk being realised;
- Emergence of new risks; and
- Disappearance of past risks.

It is imperative that the risk management process is not viewed as a once-off or tick-box exercise. This is because active management of risk throughout all project stages is the key to risk management success.

Mitigation actions

The project team is responsible for carrying out the mitigation actions identified and agreed during risk reviews.

6.4 The Risk Identification and Management Process

What is risk identification?

Risk identification involves determining the individual risks that are likely to impact on the project and describing their characteristics.

Risk analysis

Risk analysis (or assessment) provides a greater understanding of project risks and their severity. Project team members assess each risk in terms of the likelihood of it occurring and the impact on project objectives.

Risk managers generally use a weighted scoring scheme (including qualitative and quantitative methods) to determine individual and aggregate risk ratings. Such ratings highlight the relative significance of each risk and help the team to identify appropriate management actions.

Qualitative or quantitative analysis?

Risks can be assessed qualitatively or quantitatively, depending on the purpose of the analysis.

- **Qualitative analysis** involves assessing risk in terms of likelihood and impact, in order to understand its project severity. This is most useful where the purpose of the analysis is to aid project management or to create a system for managing risks
- **Quantitative analysis** uses actuarial data to put cost or time delays against risks using statistically sound methods. This is best used where the purpose of the analysis is to establish risk contingencies.

Roles and responsibilities

In managing risk it is important to allocate the roles and responsibilities appropriately:

Role	Responsibility
Risk owner	The person who is accountable should the risk be realised.
Action owner	The person with responsibility for management actions in relation to risk.
Risk manager	The person who owns and drives the risk management process.

Continued on next page

Management actions

Management actions reduce the likelihood or impact of a risk, thereby reducing the level of risk rating and the potential damage to project success.

The Risk Management Plan

The Risk Management Plan consists of a series of management actions designed to mitigate risks. These actions should:

- Be assigned to an action owner; and
- Have specific completion dates (rather than vague terms such as 'ongoing') assigned for each management action. Poorly defined dates can lead to unmanaged risk escalations and a decreased project performance.

The Risk Management Plan also defines when the team should complete formal and informal risk reviews.

Reporting risk

Risks are usually reported in a Risk Register. This is a live risk management tool used to communicate the risk status of the project. Appendix B contains a template for a typical Risk Register.

Risks occur at various levels and commonly move between levels, therefore the project team should establish guidelines on how and when risks are to be raised to a more senior management level.

If a project is part of a wider programme of projects, the team should investigate the potential impact the risk could have on the whole programme. There are a number of reasons for project risks to be escalated to programme level – for example, where:

- Project risks affect more than one project within the programme;
- Project risks threaten programme milestones or budgets; and
- Project risks impact strategic business issues.

7: Value Management

7.1 Overview

Introduction

Value management is an essential project management tool, used to create the conditions for a successful project outcome. It should begin at the earliest stage in the project and continue throughout the project lifecycle.

Effective use of value management requires a project team to consider the project and its environment in its entirety, rather than focusing strictly on technical issues. Value management contributes to achieving the best value for money.

This section will detail what value management is and the benefits of implementing it. It also deals with value management issues and value management techniques.

Contents

This section contains the following topics:

7.2 About Value Management

Definitions

Value management relates to a set of structured activities that maximise project benefits while minimising the use of resources. It:

- Enables the Management Team, the Design Team and end users to define value, and to communicate this to the project delivery team;
- Allows investments to be managed in a structured way; and
- Involves continual checking that the project will deliver value for money to the Sponsoring Agency.

What is value for money?

Value for money in procurement (as defined by the national Public Procurement Policy Framework) is the optimum combination of whole life costs and/or price, and quality (or fitness for purpose) to meet the users' requirements. This should be set against a backdrop of affordability.

Benefits of value management

Maximising value for money involves improving the ratio between benefits and investment. This can be achieved by improving benefits, reducing costs or a combination of both. In some circumstances costs may actually increase, but this must be matched by a greater increase in the benefits that accrue.

The benefits of value management are:

- Projects are defined clearly and unambiguously in terms of the long-term business needs of the Client and of the end users.
- Decisions are made in value terms;
- Whole-life costs are optimised, because either costs are reduced, or benefits are increased, or both; and
- Improvements in value for money can be measured.

The earlier the better

Opportunities to improve value reduce with time, so the earlier value management starts in a project, the more effective it is likely to be. Typically, 80 per cent of project costs are committed in the concept stage of the project, and as a project matures, over time:

- The potential for change reduces;
- Resistance to change increases; and
- The cost of change increases.

Value management should be considered at every stage in a project

Continued on next page

Value study workshops

On large or complex projects, the best way to administer value management is for trained value management facilitators to lead value study workshops. These workshops usually involve key stakeholders, including members of the project team and end users.

A typical value study is comprised of:

- A preparation period;
- Information gathering and analysis;
- One or more workshops; and
- Decision building and reporting.

For smaller or less complex projects, these activities can be scaled back appropriately.

When should value study workshops occur?

Value management studies should be planned at key project milestones and at decision points in the project life cycle. Each stage of a project benefits from value management in different ways.

Value management success factors

To successfully implement value management, there needs to be:

- Visible senior management support;
- Clearly communicated policies;
- A culture that supports and understands the concept of maximising value; and
- The implementation of effective plans and regular reviews.

Continued on next page

Value management issues

As a project moves from inception to completion the value management issues change. The following table shows the issues that can be addressed at different project stages:

Project Stage	Value Management Issues to Be Addressed
Planning Initial	**Before Project Review 1** ▪ Confirm strategic functional performance ▪ Review feasibility studies /preliminary report ▪ Identify value management strategies ▪ Develop functional performance model ▪ Consider value management in relation to the Definitive Project Brief
	Before Project Review 2 ▪ Consider value management in relation to procurement strategy
Planning Developed	**Before Project Review 3** ▪ Consider value management in relation to the Outline Sketch Scheme / Preliminary Planning;
	Before Project Review 4 ▪ Carry out value engineering ▪ Assess buildability of the design ▪ Consider value management in relation to Developed Sketch Scheme / Preliminary Planning (continued)
	Before Project Review 5 ▪ Review any planning conditions for value management impact;
	Before Project Review 6 ▪ Review suitability assessment of contractors for value management potential
	Before Project Review 7 ▪ Assess tender submissions for value management potential – for example, tender options and variants / design proposals)

Continued on next page

7.2 About Value Management, Continued

Value management issues (continued)

Project Stage	Value Management Issues to Be Addressed
Implementation	▪ Carry out value engineering (for design and build projects only) ▪ Under Clause 4.8 of the *Public Works Contracts*, both traditional and design-and-build, *'The Contractor may give to the Employer's Representative a written value engineering proposal that will, if adopted, either* *(i) Reduce the Contract Sum or* *(ii) Accelerate the execution of the Works, or otherwise be of benefit to the Employer, with no increase to the Contract Sum.'*
Project Review	▪ Evaluate value achieved

7.3 Value Management Techniques

Introduction

Experienced value managers use a range of techniques to maximise project value. These include the following:

Technique	Description
Value profiling	Value profiling is a technique for defining how the Client defines value and of prioritising key value drivers based on the Client's preferences. This enables the Client and the project team to make informed value-based decisions.
Function analysis	Function analysis is a way of breaking down project objectives into their component parts and determining how they contribute to the overall project objectives. A completed function analysis shows what the financial investment 'buys' for a Client. Successful function analysis drives innovative project decisions, and also forms a basis for risk management.
Value metrics	Value metrics is a technique that is used for measuring improvements in value, including the value for money index. Using this technique enables a Client to maximise non-monetary benefits, including aesthetic matters, staff well-being etc.
Option selection	Option selection is a technique that helps project teams to select value-based options, by using the techniques described above.
Whole life costing	A technique for calculating the cost of a building or other facility over its whole life, including the capital costs for building (including design and other consultancy costs), and the operating and maintenance costs over the whole of its useful life.
Value engineering	Value engineering is a technique that involves continually monitoring project processes to determine if there are any alternative ways of proceeding or any innovative solutions that can enhance the use-value of the project *without increasing the cost*. The purpose of value engineering is to maximise the value for money of a project design.

8: Improving Project Performance

8.1 Achieving Continuous Improvement

Introduction

A fundamental aim of the Capital Works Management Framework is to achieve continuous performance improvement, both within projects, and from one project to the next. Fundamental to this objective is a system that can:

- Monitor and measure performance in capital projects;
- Determine whether or not improvements in effectiveness, efficiency and quality are being achieved; and
- Learn lessons for future projects.

Project Evaluation and Feedback

Project evaluation and feedback are part of the Project Coordinator's role, but may also be delegated to a specially appointed person who takes responsibility for the day-to-day tasks of evaluation and feedback.

Information relating to project evaluation should be maintained consistently throughout the life cycle of a project and reports should be distributed to the parties affected by the particular performance area they relate to.

Effective project management (including managing improvement within organisations and across programmes), involves performance evaluation of the project and feedback of project participants both during the project (In-Project Evaluation) and after project completion (Post Project Evaluation).

Benchmarking

Benchmarking is a management tool to help clients and supplier organisations understand how their performance compares to that of their peers and to drive improvements in processes and outputs.

Looking outwards

Clients and project teams should be outward looking, recognising that there is much to gain from sharing experiences, comparing performances or using innovative approaches to solving a problem.

Client performance

Client bodies also need to measure their own performance and use benchmarking against other clients, to identify areas for improvement.

Projects within a programme

Where an organisation has a programme of similar projects, there should be mechanisms in place to help drive continuous improvement from one project to the next.

8.2 Success and Performance Criteria

Defining success criteria

It is essential that a project's success criteria are clearly defined and agreed on at the beginning of the project. The Project Coordinator or Project Manager must facilitate this. The criteria for success can be defined through:

- Business objectives;
- Technical performance / requirements; and
- Measurable key performance indicators such as cost, time, quality, experience etc.

An early value management workshop (or something similar), should be used to establish these criteria, and should be encouraged as a way of obtaining commitment and agreement from all parties.

The success criteria should be incorporated into the Project Execution Plan.

Measuring success criteria

Quantitative performance measures include:

- Time predictability;
- Cost predictability;
- Number of defects; and
- Accident frequency.

Client satisfaction can also be measured in terms of service and product.

Performance measurement of individual parties

As well as measuring overall project performance, the performance of each party can be measured.

The purpose of measuring individual performance is to facilitate improved performance in the future, not to berate a party for poor performance or to allocate blame for project failure.

Continued on next page

Defining individual performance criteria

To measure individual performance, specific criteria need to be defined. These criteria should relate directly to the project and the attributes needed to make the project a success. Criteria may include:

- Communication – effectiveness, clarity, openness, and level of involvement;
- Proactiveness – ability to identify and resolve issues early;
- Cost management – appreciation of cost parameters, promptness and accuracy of advice, early agreement, risk approaches;
- Programme management – appreciation of parameters, compliance with deadlines, effective resource management;
- Appreciation of quality – ability to solve technical problems and knowledge of appropriate quality standards; and
- Teamwork – ability to work as part of a team.

Measuring individual performance

Individual performance can be measured during formal project reviews (see Chapter 4), or through informal checks.

Regular informal checks are a technique of good project management and contract administration procedures. They provide a learning mechanism for what works well and opportunities for improvement.

Appendix A

Sample Project Execution Plan

The sample Project Execution Plan (PEP) presented here illustrates the level of detail that a Project Coordinator needs to go to for a large and highly complex project.

Smaller projects will not usually require the level of detail shown here, and a Project Coordinator will typically develop a PEP to a level that is appropriate for the particular project.

Even for smaller projects, however, best practice requires the development of the PEP. The PEP is the key document for managing the project, and every project undertaken within the Capital Works Management Framework must have a PEP.

Continued on next page

[Project Name] Project Execution Plan:

Overview

Contents

This document is the *Project Execution Plan* for [project name]; it contains the following sections:

Note: Other items that could be added, where appropriate, include; payment procedures, completion / handover/ commissioning processes, construction matters, health & safety matters, and procurement procedures.

1. Document Control

Identification

The Project Execution Plan (PEP) is categorised as follows:

Category	Details
Project Title	
Project Code	
Plan Author	
Plan Contributors	
Master Programme	*Give details of the master programme to which the Project belongs, if there is one*

Document Approval

Document approval must be sought from the following list of personnel after each revision of the PEP.

Name	Department	Position	Approval	Date

Revision History

Each new revision of the PEP must be reviewed and recorded in the table below.

Version	Author	Review	Reason for issue	Date

Document Distribution

Each revision of the PEP should be distributed to the personnel listed in the table below.

Name	Department	Position

Continued on next page

1. Document Control, Continued

Related Documents

This PEP should be read in conjunction with the following documents, for example:

Document	Details
Definitive Project Brief	
Procurement Strategy Report	
Risk Register and Management Plan	

2. Project Definition

Background

Project Objectives/ Summary of Project Brief

Project Scope

Inclusions

Exclusions

Pre-requisites

Constraints

Interfaces

Assumptions

Key Issues

3. Roles, Responsibilities and Authority

Introduction

This PEP contains a comprehensive directory of project personnel and documents all relationships and communication lines, as follows:

- the names and contact details of all organisations involved in the project (including those within the client organisation, other stakeholders and third parties, such as approval authorities);
- the roles and relationships of all involved organisations, including organisational charts with line and functional relationships, and contractual and communication links. It also documents any organisational changes which occur throughout the duration of the project;
- the responsibilities and delegated authority of all involved organisations, as well as the names and responsibilities of key personnel within each organisation.

As the project progresses the roles and responsibilities of contractor(s), sub-contractors, the contract administrator and other relevant parties should be added to the PEP.

Project Contact List

A Project contact list is given in the table below:

Organisation/Role	Name	Telephone	Fax	Email
Sponsoring Agency				
Sanctioning Authority				
Client Representative				
Project Coordinator				
Project Manager				
Administrative Lead				
Design Team Lead				
Other consultants as required / appropriate.				

Continued on next page

3. Roles, Responsibilities and Authority, Continued

Project Role Responsibilities

A description of the responsibilities of each organisation/role is given in the table below:

Role	Responsibilities
Sponsoring Agency	
Sanctioning Authority	
Client Representative	
Project Coordinator	
Project Manager	
Administrative Lead	
Design Team Lead	
Other consultants as required / appropriate	

Project Organisation Chart

The relationship between parties involved in the project are displayed below:

Insert project organisational chart for project

Continued on next page

3. Roles, Responsibilities and Authority, Continued

Project Responsibility Matrix

This table outlines the key tasks associated with a Project deliverable and the key parties associated with each task; for example:

Task	Sanctioning Authority	Project Coordinator	Project Manager	Cost Adviser	Design Team Lead
Develop Design Brief					
Develop Procurement Strategy					
Develop PEP					
Develop Definitive Project Brief					
Approve DPB					

Scope of Service/Work

The services and works to be provided on the project are defined as follows:

Service/Work	Provider	Reference
	Project Office	
	Project Coordinator	
	Design Team	
	Cost Adviser	

4. Programme Management

Programme Hierarchy Overview

The project is likely to consist of a master programme which includes a hierarchy of sub-programmes or stages, which are summarised here. Each sub-section below should include a summarised description of the stage and a reference to the stage's own PEP.

Planning Initial Stage

Planning Developed Stage

Implementation Stage

Schedule

The start and completion dates of key project tasks which constitute the baseline Schedule should be defined in the Definitive Project Brief and summarised in the table below:

Key Task, Activity or Deliverable	Start Date	Completion Date	Key Dependencies	Owner
Develop Design Brief				
Develop Procurement Strategy				
Develop PEP				
Develop Definitive Project Brief				
Approve DPB				

A chart version of the baseline Schedule is available at the following location:

Reference to GANTT chart etc.

Continued on next page

Schedule Change Management

Current Schedule

The start and completion dates of key project tasks which constitute the current or Master Schedule are summarised in the table below:

Key Task, Activity or Deliverable	Start Date	Completion Date	Key Dependencies	Owner
Develop Design Brief				
Develop Procurement Strategy				
Develop PEP				
Develop Definitive Project Brief				
Approve DPB				

A chart version of the current or Master Schedule is available at the following location:

Reference to GANTT chart etc.

Schedule Update Procedure

The following procedure is to be used when making changes to the schedule:

Give details of schedule update procedure. (The update procedure may take the form of a weekly meeting to collect input followed by a weekly update by the PM of the master schedule stored in a central location.)

Continued on next page

4. Programme Management, Continued

Schedule Update History

The table below lists updates to the baseline schedule together with a description of each update:

Update	Description	Date	Master Schedule Version

Resources

This section lists the personnel required to complete each stage and describes their duties.

Stage	Personnel	Description

5. Project Cost and Value Management

Cost management procedures

The procedures for the recording and reporting of cost management are outlined below.

Budget

Define the control budget developed on the basis of the guidance note 'Budget Development', (GN1.3).

Expenditure Profile and Control

Tabulate the various 'cost centres' for administrative, estimation and control purposes. Detail or reference purchase request and approval procedures.

Cost Reporting

Confirm the structure of detailed cost plans on the basis of the guidance note 'Planning and Control of Capital Costs' (GN2.2) Detail reporting requirements and reference actual cost plans as they become available at various stages.

Cost Change and Contingency Management

Detail Cost Change controls, approval mechanism and contingency management according to the guidance notes.

Value management plan

Value management strategies or methods should be stated here, changing as the project moves from inception to completion, as shown in the guidance note 'Project Management' (GN11). The following table shows how issues will be addressed at different project stages.

Project Stage	Value Management Method	Output	Participants	Owner/ Sponsor
Preliminary planning	Workshops (as per project schedule)	Agenda		

6. Project Control and Administration

Overview

This section of the PEP describes the project management procedures and administration necessary for effective and controlled project implementation.

Documentation System

The organisation of the project documentation is described in the table below.

Documentation Type	Naming/ Numbering	Version/Revision Control	Storage	Archiving
text, spreadsheet, drawing, chart etc.				

Contractor's Documentation

The table below lists the documentation which the Contractor is required to maintain and describes procedures for accessing this documentation.

Contractor's	Naming /	Version/Revision	Storage
Planning files			
Employee Records			
Health and Safety Records			

Continued on next page

6. Project Control and Administration, Continued

Software / IT Strategy

The table below describes the software packages for use on the Project

Software Package	Version

Issue and Change Control Procedures

During the course of the project issues relating to design, commissioning etc may arise. Where an issue requires a change to be implemented, for example a design change, a change control procedure must be followed which includes approval from the appropriate personnel. Procedures to deal with these issues are as follows:

May include reference to external document.

Issue and Change Control Logs

Issue and change control logs are created, formatted and maintained as follows:

May include reference to external document.

Continuous Improvement and Review

The Project is committed to continuous improvement as described previously in the PEP under Value Management and in the Risk Management Plan *{ref details}*. Regular meetings will be held to review progress and discuss issues as described in the Communication Plan.

Continued on next page

6. Project Control and Administration, Continued

Lessons Learned Log

A lessons learned log will be kept to record details of problems and their resolution, and other useful learning points. The log will be used for future reference on similar projects.

Event	Description	Resolution	Post-Project Action	Owner

7. Communication Plan

Introduction

The communication plan details all the communication necessary to keep people informed at the correct level.

Typical components include:

- Project reporting requirements and details of Project Reviews;
- Meeting schedules;
- *{Introductory Information Packs; and*
- *Instruction and Training Materials.}*

Reporting Requirements

The project reporting requirements are summarised in the table below and should be updated as the project progresses; for example:

Information Type	Provider	Medium	Frequency / Timing	Target
Feasibility Report	Engineer	Word/email/paper	Date	Circulation
Project Status Report	PM	Word/email	Frequency	Project Coordinator
Design Status Report	Architect	Word/email	Frequency	PM
Construction Status Report	Contractor	Word/email	Frequency	PM
Cost Monitoring Report	Cost Adviser	Excel/email	Frequency	Project Coordinator
End Project Report	PM	Word/paper	Project Closure	Circulation

Feasibility Report

Description and reference to template.

Project Status Report

Description and reference to template.

Design Status Report

Description and reference to template.

Construction Status Report

Description and reference to template.

Cost Monitoring Report

Description and reference to template.

Continued on next page

7. Communication Plan, Continued

Reporting Requirements (continued)

End Project Report

This report examines the project and:

- reviews performance against the objectives and success criteria given in the Project Definition;
- reviews performance in relation to the planned time and cost;
- reviews the status of any outstanding issues and recommends follow-on actions;
- assesses the positive and negative impact of approved changes;
- reviews the *Lessons Learned Log* and considers what can be done differently on future projects.

Meeting Schedule

The following table outlines the schedule for project meetings; for example:

Meeting	Chair	Purpose	Frequency / Timing	Output
Project Steering Committee	Project Coordinator	Set high level direction Forum for solving major issues	Monthly	Agenda and minutes 3 days prior and post meeting respectively
Project Team	Project Manager	Manage project implementation Monitor, control and coordinate project team	Fortnightly	Agenda and minutes 1 day prior and post meeting respectively
Design Team	Design Team Leader	Coordinate design Discuss issues and resolve conflict	Fortnightly	Agenda and minutes 1 day prior and post meeting respectively
Construction Site Meetings	Contractor's Representative	Coordinate construction Resolve any construction issues	Fortnightly	Agenda and minutes 1 day prior and post meeting respectively
Post-project Review	Project Manager	Review End Project Report	Project Closure	Agenda and minutes 1 day prior and post meeting respectively

8. Quality Plan

Quality Standards

The Project will comply with the following Quality Standards:

List of or reference to internal and external quality standards.

Quality Responsibilities

The table below lists quality responsibilities and the personnel responsible for each.

Quality Responsibility	Personnel	Role

Quality Processes

The table lists the quality processes which will be applied on this project.

Quality Process	Description

Acceptance Criteria

The table below lists the criteria which will be used to gauge acceptance of the completed project and the personnel required to approve each criterion.

Acceptance Criteria	Approval Personnel	Role

Continued on next page

8. Quality Plan, Continued

Success Criteria

Success on this project will be measured as follows:

Criterion	Measurement
Design quality	
Construction quality	
Health and safety record	
Budget outcome	
Schedule	

Appendix B

Risk Register

Overview

The Risk Register for the project lists all the identified risks and the results of their analysis and evaluation. Information on the status of the risk is also included. It is a live document that is updated as the project proceeds. It should be set up during the start of a project, ready to record project risks, including any noted in the project brief.

It should be used on projects that carry a high risk or on projects with a value of more than €5m. For projects below this threshold a simpler approach can be looked at although the structured approach that the completion of a Risk Register necessitates is recommended as a good discipline.

Format for Risk Register

The normal format for a Risk Register is a table, or matrix, listing the identified risks within specified categories, agreed by the project team as being suitable for their project. Suggested content includes:

Risk Identification

- Risk identification number (based on an established numbering system);
- Date identified;
- Raised by *name*;
- Risk description (e.g. possible ground contamination); and
- Consequence of risk occurring (e.g. for project risks – possible impact on cost, time, quality)

Risk Analysis

- Likelihood of risk occurring (e.g. low, medium, high, very high)
- Likely impact if risk occurs (e.g. low, medium, high, very high)
- Risk matrix (e.g. VHVH)
- Rating system (see below)
- Risk status (red, amber, green)

Risk Management

- Management actions taken (description);
- Management actions planned (description);
- Risk Owner (e.g. client, architect, contractor);
- Action Owner (e.g. client, architect, contractor);
- Date by: (the date by which action must be taken); and
- Comments.

Continued on next page

Rating System

An alternative to assessing risks in general terms (e.g. low, medium, high, very high) is to consider employing a rating system whereby numerical values / scores are given to the likelihood of occurrence and likelihood of impact. Adopting numerical scales can give due emphasis to the highest impact risks that need managing, something that other simpler scales may not do – depending on the nature of the project and types of risk involved.

Graphic presentation of risk

The status or profile of a risk can be presented graphically to increase the visibility of risks. A simple 'heat diagram', such as that in figure 8, can be used to help illustrate this.

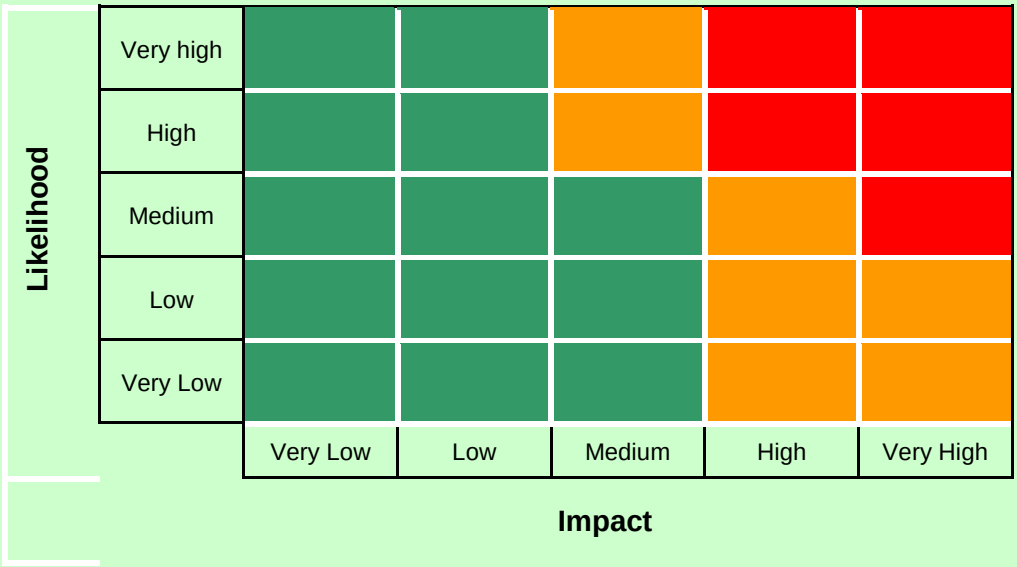

Figure 8: Sample heat diagram illustrating risk

Project risk management should ensure that there are no 'red' by the time the project goes to tender. And risk management strategies should be put in place to manage all identified risks.

Continued on next page

Risk Register, Continued

Developing Risk Categories

To assist with identifying risks it is useful to develop risk categories, such as the following:

Risk Category	Description
Corporate / Business Risks	The occurrence of one of the risks breaks out into the public domain and has an adverse affect on the Sponsoring Agency or Sanctioning Authority; or leads to external economic or political influences beyond the control of the project.
Benefit Risks	The failure of the project to deliver the performance expected, leading to an undermining of the long-term business case.
Project Risks	The possibility that something may go wrong during the execution of the project, i.e. those risks that could affect the successful delivery of the project. ▪ **Time (**e.g. delays to different stages in the design development) ▪ **Cost Management** (e.g. market condition changes etc.), ▪ **Design Management** (third-party consents, Health and Safety issues, Fire Safety issues etc)**,** ▪ **Quality Management** (e.g. completeness of project information) ▪ **Communication Management** including those relating to changes in management organisation and personnel, lack of clarity on roles and responsibilities, bad decision making by personnel etc.

Appendix C

Indicative Project Programme

The Project Coordinator constructs a project programme that includes detailed scheduling information, that takes account of the time required for each activity and also for any intervals required between activities. The following pages show a sample or indicative project programme for a typical project.

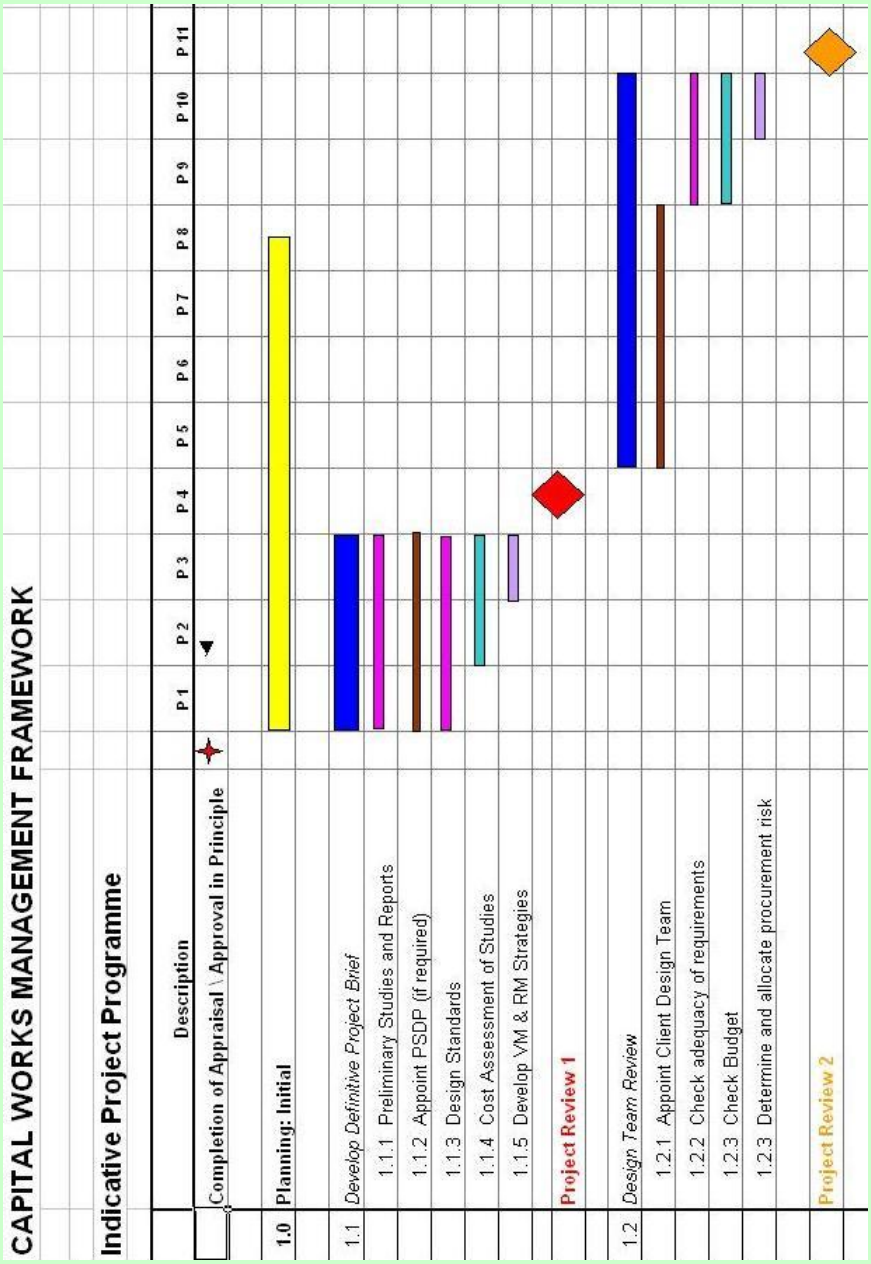

Figure 9: Indicative Project Programme (**Planning Initial**), page 1/5

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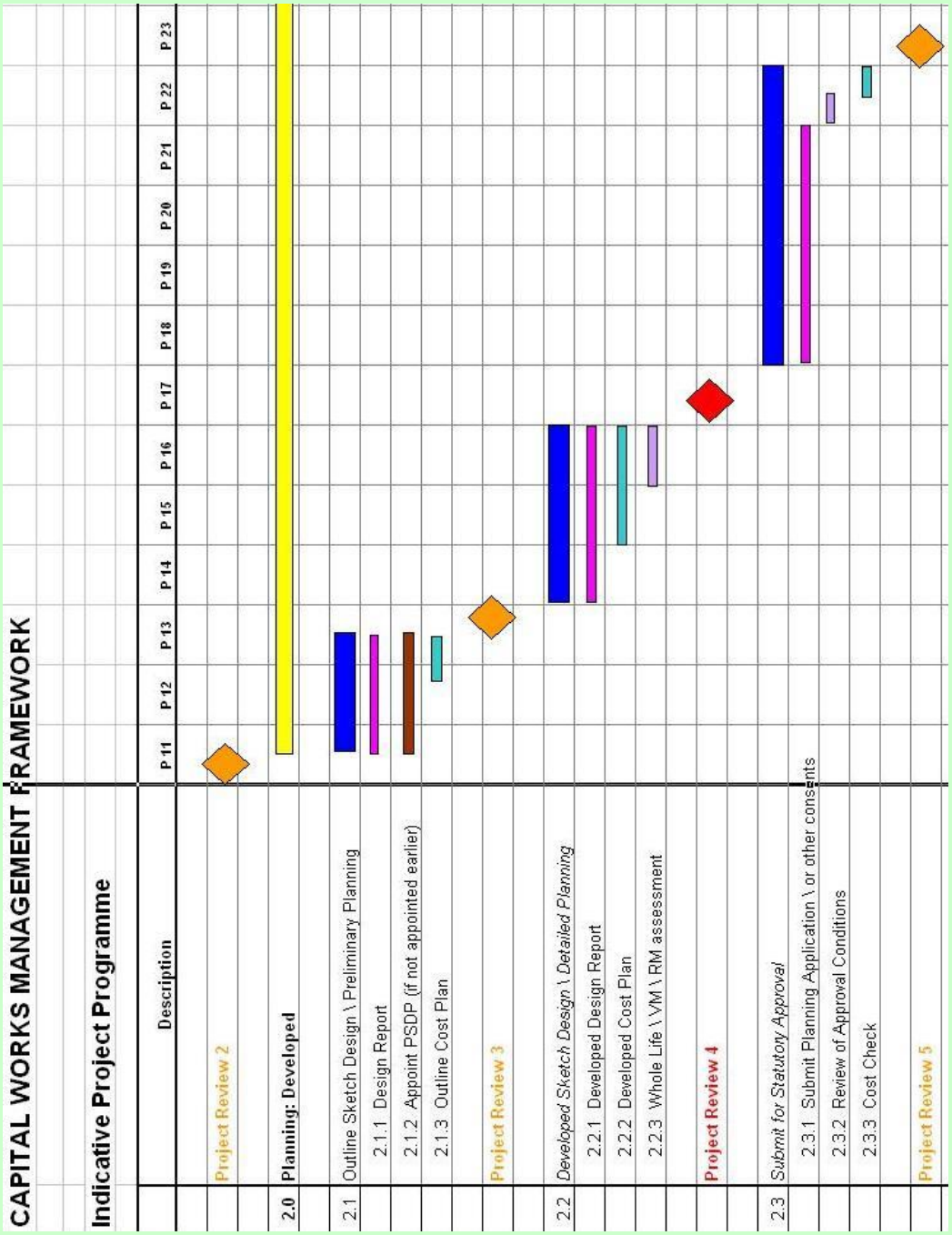

Figure 10: Indicative Project Programme (**Planning Developed I**), page 2/5

Continued on next page

Indicative Project Programme, Continued

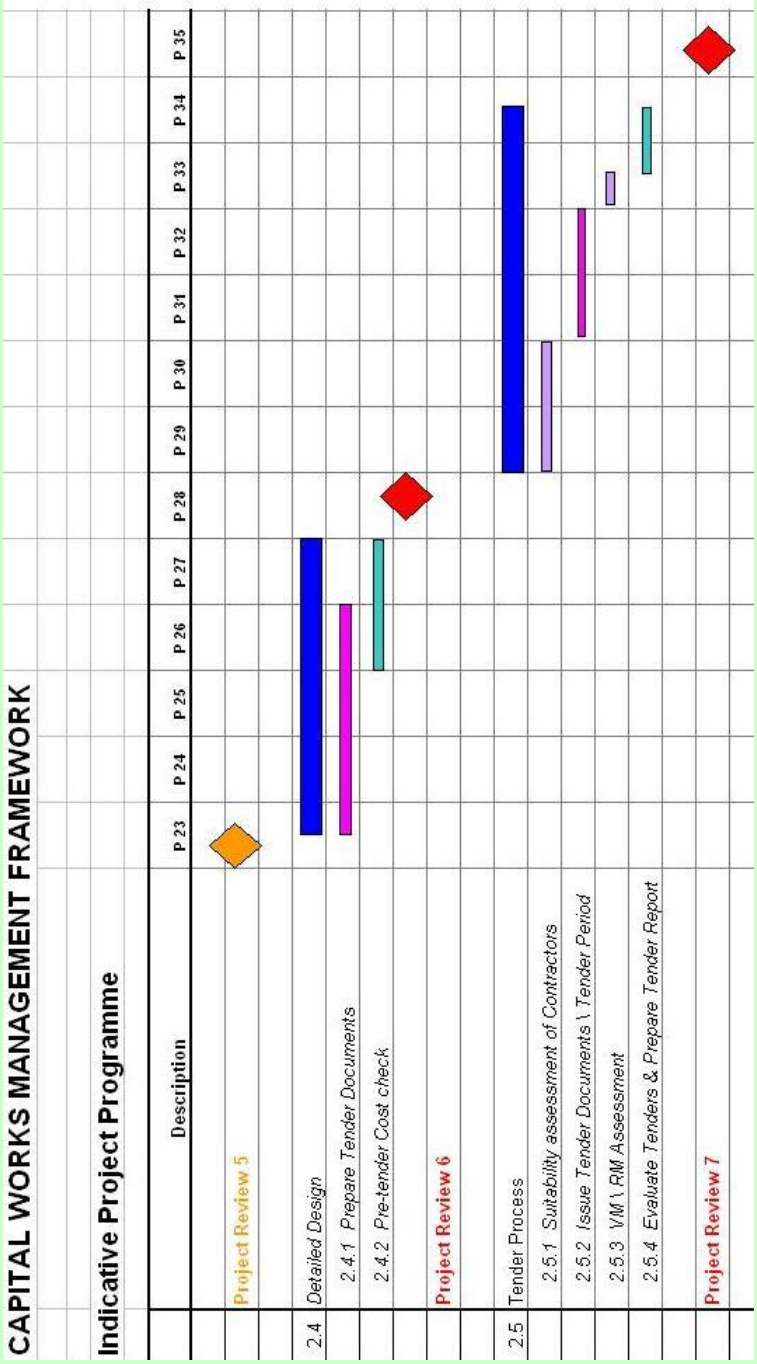

Figure 10: Indicative Project Programme (**Planning Developed II**), page 3/5

Continued on next page

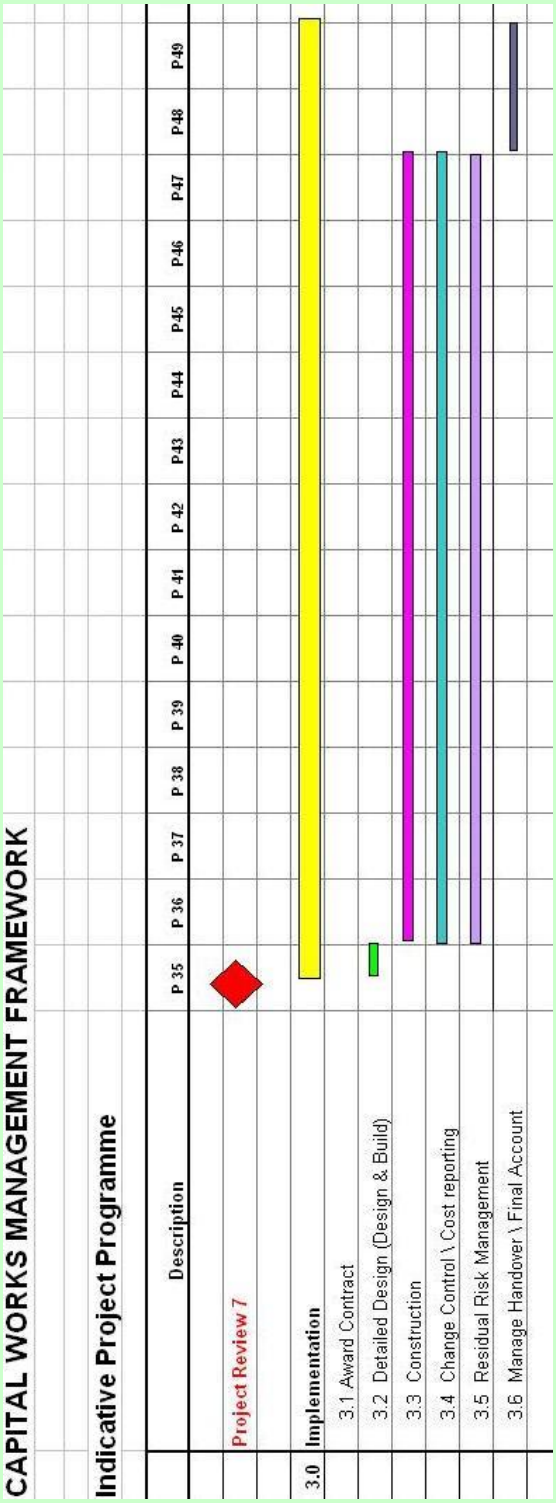

Figure 11: Indicative Project Programme (**Implementation**), page 4/5

Continued on next page

Indicative Project Programme, Continued

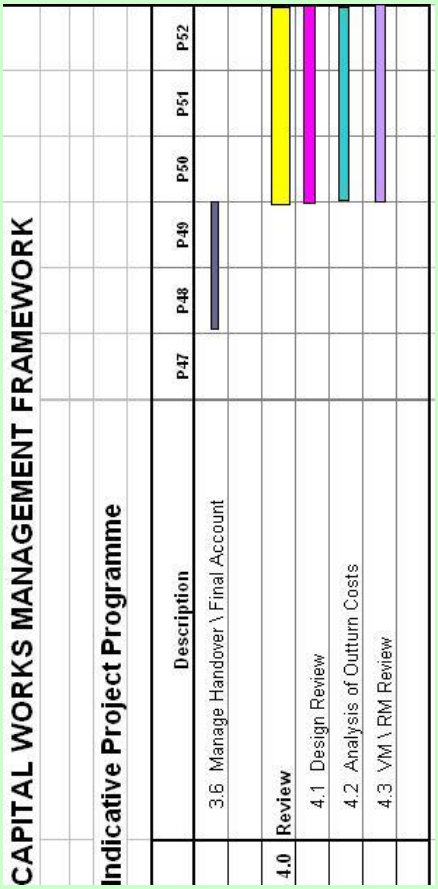

Figure 12: Indicative Project Programme (**Project Review on Completion**), page 5/5