Government
Project Delivery

The Teal Book

Project delivery in government

Version 3.0

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The Teal Book is the definitive reference for how project delivery should be done in government. It supports and is aligned with the *Government Functional Standard for Project Delivery* which sets the expectations for the direction and management of portfolios, programmes and projects in government departments and arm's length bodies.

The suite of functional standards, and associated guidance, can be found at GOV.UK: government functional standards.

The Teal Book should be read in conjunction with the government functional standards generally and with the *Government Functional Standard for Project Delivery* in particular. The meaning of words is as defined in the *Shorter Oxford English Dictionary*, except where defined in the glossary.

A number of other publications are referred to throughout and are available either on GOV.UK, legislation.gov.uk, the websites of other government organisations or on projectdelivery.gov.uk.

Version 3.0 of *The Teal Book* replaces version 2.0 and has the same purpose, scope and intent. The main changes relate to general enhancements derived from feedback, use and changes to government policy. This version still covers the technical practices of portfolio, programme and project management, planning and control, and solution delivery in the context of the UK Government, as set by the *Government Functional Standard for Project Delivery*.

For more information, please contact us at projectdelivery.gov.uk/contact.

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About The Teal Book

Introduction

The UK government is responsible for delivering some of the most complex and innovative portfolios, programmes, and projects in the world. Some of these are directly delivered to transform services for citizens and people within the government. Others are delivered with external partners to improve national physical and digital infrastructure, provide humanitarian assistance, or create new capabilities in sectors such as health, environment, energy, defence and space.

It is crucial to invest wisely, deliver efficiently, and ensure sustainable outcomes and benefits for British people. This helps to respond to global challenges, transform the lives of citizens, and puts the UK at the forefront of innovation, digital delivery and sustainability.

To achieve this, practitioners need clear expectations and the necessary procedures, guidance, and tools to help meet them. *The Government Functional Standard for Project Delivery*, first published in 2017, sets the expectation for the direction and management of portfolios, programmes, and projects for government departments and arm's length bodies.

The Teal Book serves as the core and definitive reference on how project delivery should be done in government and provides the structure for presenting more detailed and specific policies, processes, procedures, and guidance. It supports Government Project Delivery's commitment to continue to strengthen the delivery of portfolios, programmes, and projects, to build expertise and share learning and good practice.

Since its first publication, *The Teal Book* has become a widely used reference across UK central government and has attracted interest from other government functions, overseas public sector organisations, and professional bodies. In 2025, HM Treasury recognised *The Teal Book* as its Innovation of the Year for providing a clear, practical model for how central guidance can support delivery teams at every level. This third edition reflects continued feedback from across government and builds on that foundation.

Purpose of The Teal Book

The purpose of *The Teal Book* is to provide guidance to enable practitioners and teams to direct and manage portfolios, programmes and projects in government, ensuring the successful and timely delivery of government policy and business objectives.

The Teal Book supports the *Government Functional Standard for Project Delivery* and provides:

- an overview of project delivery in government and how it is governed, assured and structured
- a description of how project delivery operates in different sectors
- descriptions of the practices and techniques involved in directing and managing a portfolio, programme or project
- descriptions of the activities and techniques involved in planning and controlling the work
- descriptions of the activities and techniques involved in delivering the solution

The guidance set out in this document is primarily aimed at project delivery practitioners and so should be of use and interest to those undertaking any of the roles described in the *Project Delivery Capability Framework*. In particular, this guidance is aimed at:

- portfolio directors and senior responsible owners in ensuring the breadth of practices required for successful delivery are used
- portfolio, programme and project support offices, managers, suppliers and their teams, including those undertaking specialist roles, advising them to understand how to use the practices required
- owners of departmental methodologies, ensuring that processes and techniques used are consistent in concept and scope

The guidance should also be of use to those who need an understanding of project delivery, such as those contributing from other government functions, those providing assurance and audit services, and for accounting officers and senior leaders in ensuring that an environment exists that promotes project delivery success and integrates with the other activities that their organisation is undertaking.

Scope of The Teal Book

The guidance set out in *The Teal Book* applies to portfolios, programmes and projects undertaken within or across UK government departments and their arm's length bodies:

- ranging from those listed in the Government Major Projects Portfolio through to those at the local business level
- whether for digital, infrastructure, transformation, service delivery, military capability, property, regulatory compliance or other purposes
- regardless of delivery methodology, approach or technique used

The guidance is written in the context of UK central government, where funding is authorised by the UK Parliament and managed in accordance with *Managing public money*. The approvals, processes and governance arrangements described throughout *The Teal Book* reflect this context. *The Teal Book* can also be used for project delivery in the devolved governments, where approvals and processes are set under different constitutional and financial frameworks by the relevant devolved government. Other public or private sector organisations might find this guide useful and are welcome to adapt it to their organisational context and operating environment.

The Teal Book in relation to other government guidance

Overview

The Teal Book complements other central government policy and guidance developed to support project delivery. In common with the other publications described here, *The Teal Book* should be embedded in the governance and management approaches used in achieving successful outcomes rather than regarded as a set of standalone or extra processes (see Part B: Tailoring and adopting).

The Teal Book does not replace or duplicate any of these other publications and instead sets out where they are relevant, when and, if applicable, how to apply them in a project delivery context.

Managing public money

Managing public money provides the main principles for dealing with resources in public sector organisations in the UK. It sets out the process for parliamentary authorisation of public resources, personal responsibilities of accounting officers in central government, the governance and management of public sector organisations and how central government organisations can obtain funds.

Government functional standards

Government functional standards are set by each function to set expectations, direction and advice for people working in and with the UK government. They bring together and clarify what needs to be done, and why, for different types of functional work. They are mandated for use in departments and their arm's length bodies through *Managing public money*.

British standards and, later, international standards were created to promote trust and ease trade. Government functional standards work in a similar way and are system-wide reference documents designed to:

- support coherent, efficient and mutually understood ways of working across government

- provide a stable basis for continuous improvement and professional development
- provide a stable basis for proportionate and tailored assurance activities to monitor adherence, enable risk-based control and compare performance
- clarify accountabilities, by defining the roles needed, what people in those roles are accountable for, and who they are accountable to

The common glossary

The *Functional standards common glossary* brings together the defined terms used in the suite of functional standards, and which function owns each definition. This glossary is used when describing functional work to bring consistency in the vocabulary used across organisations, and help people use the same language to mean the same things, wherever they work in government.

The *Project delivery glossary* brings together terms from the *Functional standards common glossary* and defines additional terms that have specific meanings in a project delivery context. See How to use *The Teal Book* for more information on the conventions used.

Other government codes of practice

A number of codes of practice have been issued for central government and are referred to in *The Teal Book* where they apply:

- ***Green Book*** provides guidance on how to appraise policies, programmes and projects
- ***Orange Book*** outlines the principles for good risk management across government departments and their arm's length bodies
- ***Magenta Book*** provides guidance on evaluation in government: its scoping, design, conduct, use and dissemination as well as the capabilities required of government evaluators
- ***Aqua Book*** provides guidance on producing quality analysis for government
- ***Rose Book*** provides guidance on how to manage knowledge assets in government organisations
- ***Commercial playbooks*** are produced by the Cabinet Office to improve decision-making and ensure the assessment, procurement and management of public services delivers better outcomes and value for money for the public

Other government project delivery publications

A wide range of publications, which support *The Teal Book*, are available on the topic of project delivery in government. These are available on projectdelivery.gov.uk. In particular, *The Teal Book* takes its authority and structure from the:

- ***Government Functional Standard for Project Delivery***, which sets the mandatory expectations for the direction and management of portfolios, programmes and projects in government. This standard is supported by its companion *Continuous improvement assessment framework for project delivery* which is designed to drive continuous improvement within and across government, by helping government organisations assess their adherence to and practical application of the project delivery standard
- ***Project delivery capability framework*** which is the professional standard for project delivery professionals, describes the roles and associated skills, experience and learning needed to undertake functional work

The structure of The Teal Book

Overview

The Teal Book expands on the *Government Functional Standard for Project Delivery* and is structured into 6 parts.

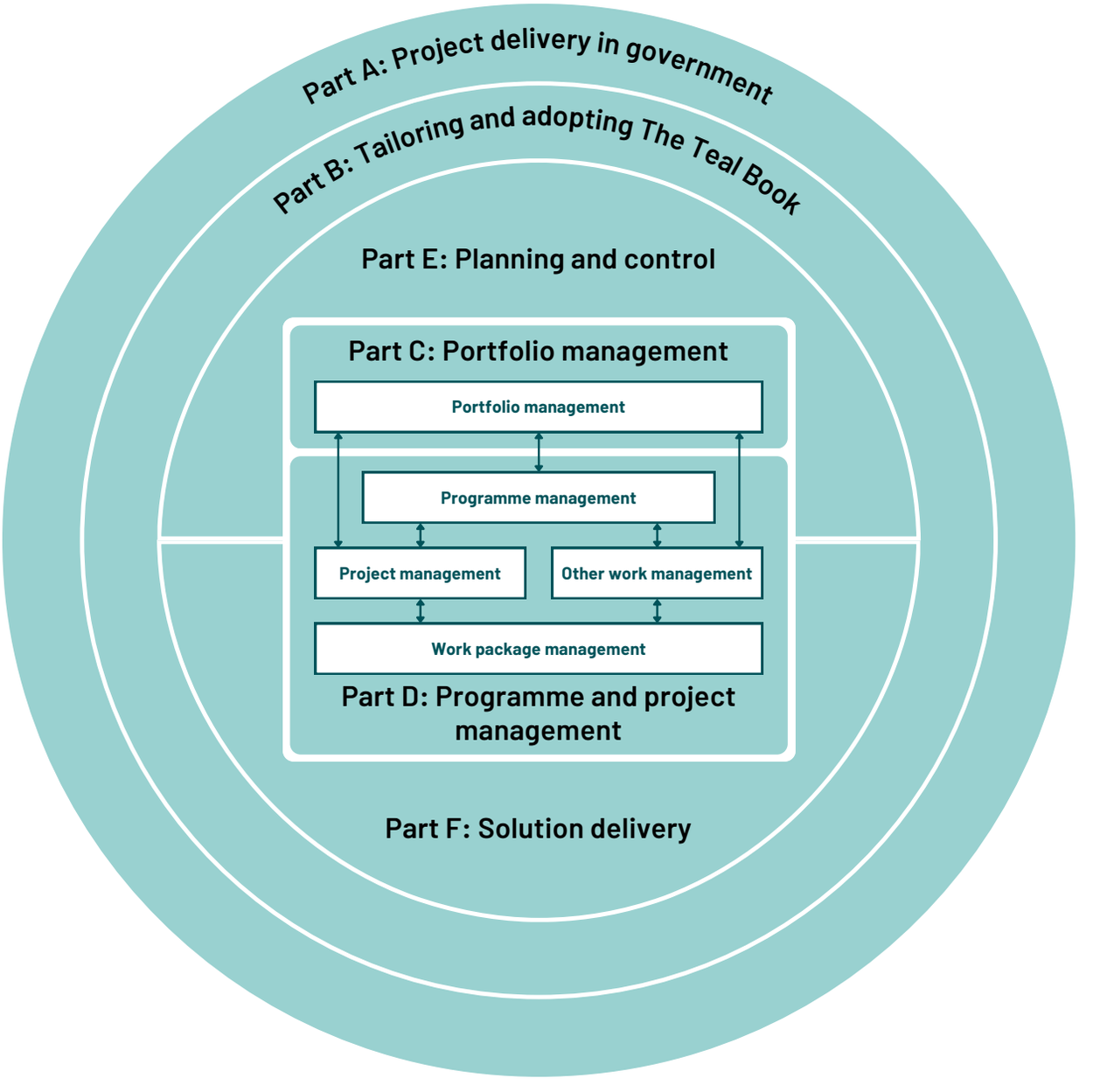


Figure 0.1 The structure of The Teal Book

Part A: Project delivery in government

The first part sets the context for project delivery in government. It describes the principles that underpins government project delivery, the policy and evaluation process and what portfolios, programmes and projects are. This part also includes some background and advice on topics that need to be considered for all project delivery, such as equality, diversity and inclusion, environment and sustainability, security, and health and safety.

Part B: Tailoring and adopting The Teal Book

This part provides guidance on how to tailor *The Teal Book* appropriately to the context of a portfolio, programme or project so that it can be adopted effectively at both delivery and organisational levels. To support this, the part includes background and advice when delivering in specific settings.

Part C: Managing portfolios

This part describes and provides guidance on the practices and activities involved in directing and managing a portfolio.

Part D: Managing programmes and projects

This part describes and provides guidance on the practices and activities involved in directing and managing a programme or project.

Part E: Planning and control

This part describes and provides guidance on the practices involved in ensuring that work is planned and monitored, and that preventative and corrective action is taken where needed, so that the objectives of a portfolio, programme or project can be achieved.

Part F: Solution delivery

This part describes and provides guidance on the practices involved in ensuring that an appropriate and sustainable solution is developed which is of the required quality and meets the needs of users and stakeholders.

How to use The Teal Book

Overview

As *The Teal Book* is designed as a reference, it does not need to be read in full for someone to make use of it. People fulfilling different roles or even those fulfilling the same role can use *The Teal Book* in varying ways, for example:

- those responsible for an organisation's methods, processes and tools might work through the entire book to verify that their approaches are consistent with the guidance
- a senior responsible owner might want to verify whether the governance of their programme or project is effective, proportionate and consistent with good practice
- a programme or project manager at the start of a new programme or project might start in Part D: Managing programmes and projects, and then delve into more of the book as they develop the governance and management framework and work through the life cycle
- a risk manager might start directly in the risk management chapter and then refer out to the chapters on issues management and change control as they seek to ensure alignment
- a change manager might start directly in the chapter on organisational and societal change and then move into other chapters as they seek to ensure that change activities are planned, controlled and appropriate
- a resource manager might start in the chapter on team induction, managing resources, or equality, diversity and inclusion, depending on what aspects they are interested in

While there is no single way to use *The Teal Book*, it is recommended that everyone makes themselves familiar with Part A to understand how project delivery is organised across government and Part B to understand how to tailor the guidance to the sector, scale or environment they could be working in. These parts provide useful context to keep in mind when considering the practices described in later parts of the book.

The structure of a chapter

The Teal Book covers many different topics and concepts and so, while a single structure for every chapter is not possible, each answers the same questions and in the same order when appropriate:

- what is the purpose?
- what are the key points?
- why is this topic important?

- what is involved?
- who is involved in the work?
- how is this done: what to consider; and how to prepare?
- where is there further guidance?

Conventions used in The Teal Book

The term 'project delivery' is defined in the *Functional standards common glossary* and used to collectively refer to portfolio, programme and project management in government. When the individual terms 'portfolio', 'programme' or 'project' are used, the content only relates to those items.

The meaning of words is as defined in the Shorter Oxford English Dictionary, except where defined in the *Project delivery glossary*, which defines terms that have specific meanings in a project delivery context. Where a term has a specific meaning, its definition is presented in the relevant chapter on its first use.

Language is used as consistently as possible and in particular the word **require** indicates that the statement is **mandatory** for government departments and arm's length bodies.

Abbreviations and acronyms are largely avoided; however, where they are used, they are written out in full on the first use.

Bold text is used to highlight the first time a role is mentioned in a chapter or for emphasis.

Italics are used to highlight the names of publications, for example the *Government Functional Standard for Project Delivery*. Publications are referenced in sentence case with a capital letter at the start of the first word, except for headline publications like the functional standards and government codes of practice which are treated as proper nouns and retain their capitalisation.

There are specific requirements placed on programmes and projects that are in the Government Major Projects Portfolio and Departmental Major Projects Portfolio. These are highlighted using a call out box, for example:

Government Major Projects Portfolio and accounting officer assessments

For programmes and projects in the Government Major Projects Portfolio, an accounting officer assessment must be produced at decision points. A summary of the assessment should be published (see *Accounting officer assessments: guidance* for more information).

Diagrams

The Teal Book includes figures which provide a visual summary of key information or concepts. Many of these figures show the key activities involved in a practice or action. These are always drawn in the same way, reading left to right and set in what are called 'swim lanes' to show the roles that are accountable for the activities within that swim lane.

Diagrams use the following elements shown in Table 0.1.

Table 0.1 Key to diagrams in The Teal Book

Element	Description
	Indicates an activity step
	Indicates a decision point
	Indicates assurance activity
	Indicates a project stage
	Indicates activities that take place before a programme or project starts and after it is completed
	Indicates an interaction with a document, such as its creation or updating
	Indicates an off-page reference, usually to an activity diagram in another chapter of The Teal Book, as indicated by the number

Further reading

Each chapter in *The Teal Book* ends with a list of relevant references for further reading. These refer to documents or web pages on either GOV.UK, legislation.gov.uk, projectdelivery.gov.uk or the website of a government organisation. In some cases, they refer to a collection of web pages or documents. Where a reference is not dated, it implies that the latest version should be used.

About Government Project Delivery

When government decides to do something new, whether that is building infrastructure, delivering military capability, creating new public services or improving existing ones, project delivery is how it gets done.

Government Project Delivery supports the over 26,000 civil servants who plan, manage and deliver this work. It sets the standards for how the work is done and makes sure the right people with the right skills and training are in place to do it.

The central Government Project Delivery team sits in the National Infrastructure and Service Transformation Authority within HM Treasury.

Project delivery function

The project delivery function is the project delivery work that happens across government. It includes everyone who contributes to that work, whether their background is in project management, commercial, finance, communications or other disciplines.

The function delivers government priorities by:

- setting up, developing, delivering and assuring portfolios, programmes and projects, whether directly or through other delivery partners
- setting strategies and standards
- building capability and driving continuous improvement
- giving expert advice and support

The Government Functional Standard for Project Delivery sets the expectations for how UK government departments and their arm's length bodies should do this work. *The Teal Book* is the guidance to help deliver this defined functional work, explaining how people in particular roles should apply standards and meet their obligations.

Government head of function for project delivery

The government head of function for project delivery is the senior officer responsible for project delivery across government. They are accountable to the chief operating officer of the Civil Service for supporting successful project delivery across government.

They do this by:

- setting standards and leading development of government-wide policies, processes, tools and guidance

- government project delivery assurance
- providing expert support and advice
- monitoring government project delivery performance and if necessary, intervening
- assessing project delivery aspects in spending reviews
- system-wide improvement of project delivery
- building government project delivery capability

Chief project delivery officers

Chief project delivery officers are senior officials who lead project delivery in their organisations. They work with and are appointed by the government head of function for project delivery and their organisation's accounting officer to make sure project delivery aligns with government priorities.

Project delivery profession

The Government Project Delivery profession is the people whose specialist skills are in project delivery and contribute to the functional work described in the Government Functional Standard for Project Delivery.

The roles, skills, experience and learning needed to undertake functional work is set out in the *Project delivery capability framework*. It covers what is expected of project delivery professionals at each level along with the competencies, behaviours and qualifications people should aim for.

Head of profession for project delivery

The government head of profession for project delivery is accountable for building the capability and professional competence of members of the project delivery profession, who contribute to the work of the function. They are accountable to the government head of function for project delivery for ensuring the members of their profession are skilled and competent to undertake the functional work assigned to them.

They are supported by departmental heads of profession who look to the specific capability needs of their organisation.

The National Infrastructure and Service Transformation Authority is a joint unit of HM Treasury and the Cabinet Office that brings together long-term infrastructure and service transformation strategy to drive UK growth. It oversees the government's 10-year infrastructure strategy, coordinates national infrastructure priorities, helps remove barriers to delivery, provides assurance for the Government Major Projects Portfolio (GMPP), and leads central expertise on private finance.

Part A:

Project delivery in government

Chapter 1. Principles
Chapter 2. Policy and evaluation
Chapter 3. Portfolios, programmes and projects
Chapter 4. The governance and management of project delivery
Chapter 5. Equality, diversity and inclusion
Chapter 6. Environment and sustainability
Chapter 7. Health, safety and security

Part A: Project delivery in government

The purpose of project delivery in government is to provide a structured framework for defining and implementing policy and business strategies to enable the government and its organisations to achieve the outcomes and benefits they need.

Part A provides a foundation for *The Teal Book*, focusing on governance and management as it applies to project delivery overall. It includes:

- the universal, validated and empowering principles that underpin project delivery
- a description of portfolios, programmes and projects
- the key aspects of governance and management that apply to all project delivery, including an understanding of assurance and evaluation
- the need to consider equality, diversity and inclusion, sustainability and environment, and health, safety and security in all government project delivery

As with all parts of *The Teal Book*, the topics described in Part A: Project delivery in government should not be used in isolation and are supplemented by more detailed guidance on tailoring *The Teal Book* to particular situations in Part B, managing a portfolio in Part C, managing programmes and projects in Part D, the supporting planning and control practices in Part E and solution delivery practices in Part F.

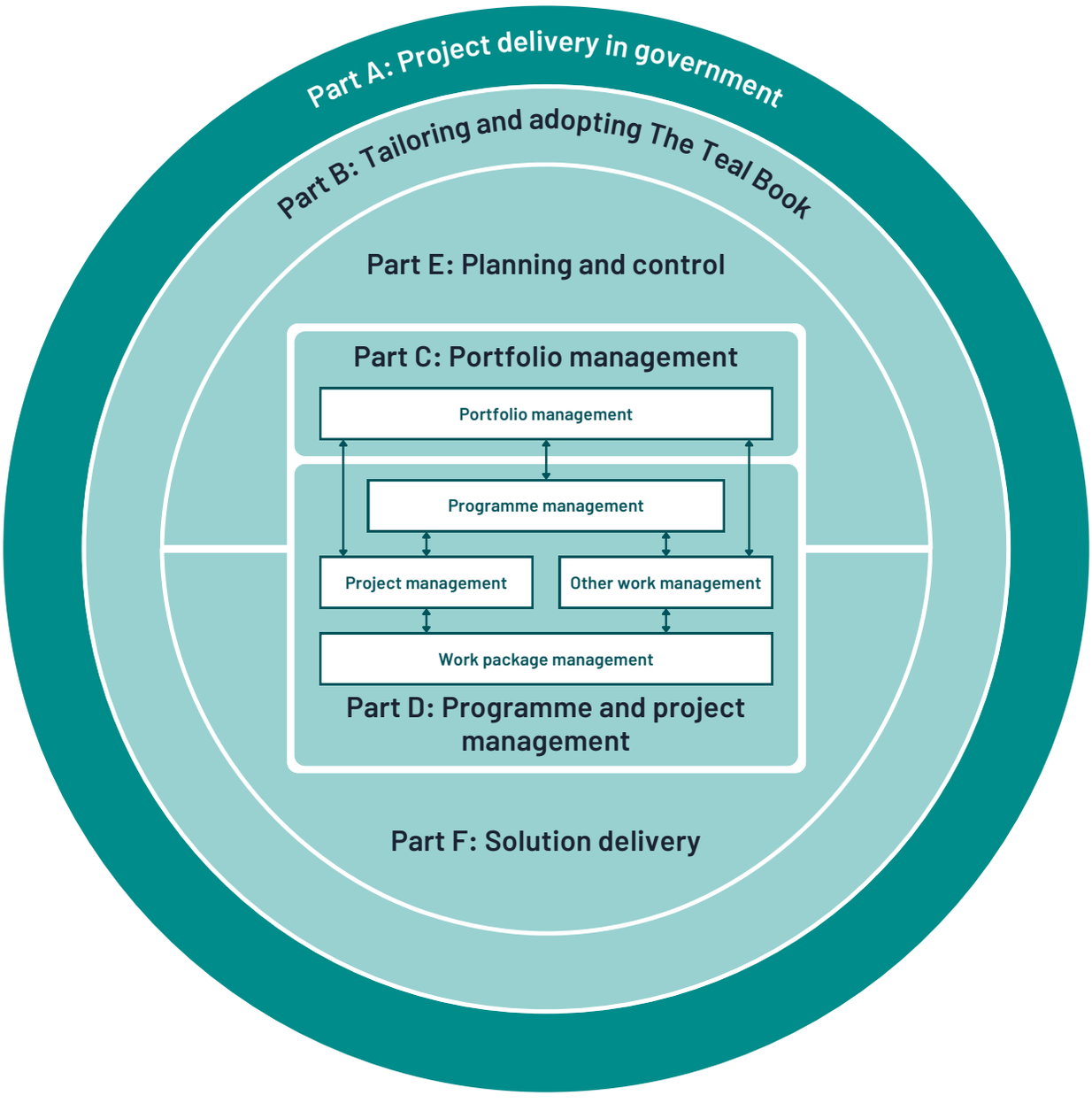


Figure A.1 The structure of The Teal Book

1. Principles

1.1 Overview

The Teal Book is underpinned by the principles required by the *Government Functional Standard for Project Delivery*. These principles are:

- universal as they apply to every portfolio, programme or project
- validated as they have been proven in practice over many years
- empowering as they give project delivery professionals the ability to influence and shape how project delivery in government is directed and managed

1.2 The principles

The principles apply to everything in project delivery and set the direction for the way the practices are implemented in real life. They also form the framework for situations where the standard does not cover a specific need or situation.

1.2.1 Principle 1

Delivery objectives are aligned to government policy and organisational objectives.

1.2.2 Principle 2

Outcomes and enabling outputs meet the identified need and are validated by stakeholders.

1.2.3 Principle 3

There is continuing business justification to confirm benefits can be realised and risks managed within the organisation's risk appetite, and unjustified work is terminated.

1.2.4 Principle 4

Accountabilities and responsibilities are defined, mutually consistent and traceable across all levels of management.

1.2.5 Principle 5

Governance and management frameworks and the control environment are proportionate and appropriate to the nature and complexity of the work and the level of risk.

A

1.2.6 Principle 6

Work is appropriately defined, planned, monitored and controlled, quality is actively managed to maximise the likelihood of success, and defined working methodologies are tailored for use accordingly.

1.2.7 Principle 7

Work is undertaken in multidisciplinary teams and is assigned to people who have the required capability and capacity.

1.2.8 Principle 8

The transition of capabilities to operations is planned, and portfolio, programme or project closure managed, with ongoing operational responsibilities agreed and accepted.

1.2.9 Principle 9

Experience and lessons are captured and shared, outcomes are evaluated, and all are used to promote future performance improvement.

1.2.10 Principle 10

Public service codes of conduct and ethics and those of associated professions are upheld at all times.

2. Policy and evaluation

2.1 Policy

Public policy represents the government's role in improving the welfare, security and prosperity of the nation. It ranges from designing public services and improving education and health, to assessing the infrastructure needs for different parts of the country and ensuring the UK is on track to achieve net zero carbon emissions and strengthen the economy. Policy work centres around 3 pillars defined in the *Policy profession standards*:

- **strategy**, using evidence and analysis to understand context and develop strategies
- **democracy**, supporting good UK governance through robust advice to inform decisions
- **delivery**, designing, overseeing and evaluating policy interventions

Policy interventions can take many forms including passing legislation, enforcing existing laws, tax changes, providing grants, effecting voluntary agreements, providing education and awareness raising, and encouraging behavioural change. Many of these interventions can be sufficiently extensive and complex to warrant being managed using project delivery techniques.

For this reason, where an intervention is managed as a portfolio, programme or project, evaluation should be planned and managed as part of project delivery, involving policy makers and project delivery professionals working together as a team.

2.2 Developing and delivering policy

Policy development involves 4 activities:

- **idea generation**, identifying the root of the problem government wants to solve by analysing evidence, including evaluations and lessons learned (see Chapter 38: Learning from experience), to generate ideas investigation and begin developing a theory of change
- **design and planning**, investigating the options further together with how they might become a proposal or plan, and assessing their potential impacts under statutory public sector duties (for example, on equality, biodiversity and the environment), and typically completing a theory of change until a preferred solution is chosen
- **implementation**, implementing and managing the delivery of the chosen solution and carrying out the groundwork for the realisation of the policy

- **evaluation**: using hard evidence to determine whether the policy is likely to achieve, or is achieving, its desired outcomes, and whether the policy needs to be adapted, improved or stopped

Where it is appropriate that the development and implementation of a policy is managed as a portfolio, programme or project then the 4 policy development activities need to be integrated with the project delivery life cycle and its activities. The way this is done should be decided on a case-by-case basis.

Figure 2.1 shows an example of how the activities in the policy process can be aligned to the stages in the reference project life cycle from the *Government Functional Standard for Project Delivery* and business cases in the *Green Book* (see Chapter 4: Governance and management and Chapter 13: The governance and management of programmes and projects).

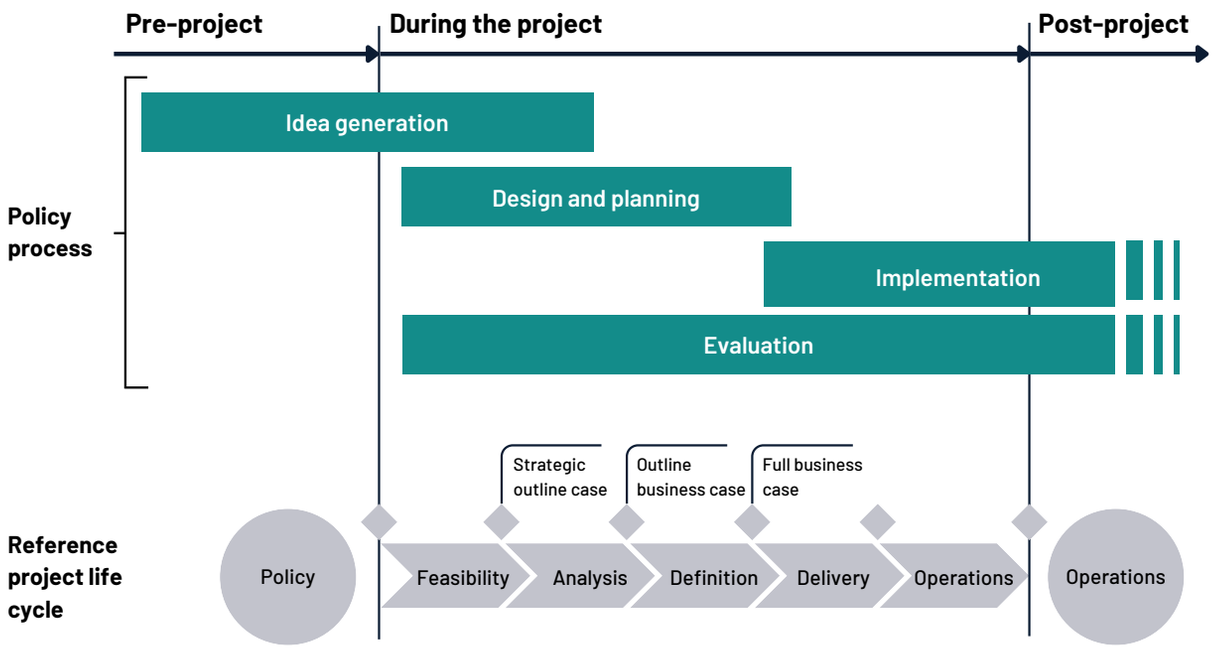


Figure 2.1 An example of how the policy process can be aligned with the reference project life cycle

The policy process, being a 'process', can be iterative while a project life cycle is driven by time. In the example in Figure 2.1:

- **idea generation** starts before the project begins, and at some point, triggers the request to formally authorise the project to start, and continues until a long list of options has been created
- **design and planning** starts at project initiation until a solution is chosen

- **implementation** starts when the delivery phase commences and continues until the solution is no longer in operation
- **evaluation** is shown throughout the project and beyond, which mirrors the principles in the *Government Functional Standard for Project Delivery* for verifying policy and strategic fit (see 1.2.1 for principle 1) and continuing justification (see 1.2.3 for principle 3)

The same approach can be taken for programmes, although, as described in Part D, the varied nature of programmes means that there can be no 'reference' life cycle to align to and so has to be determined in each case. Figure 2.2 shows an example.

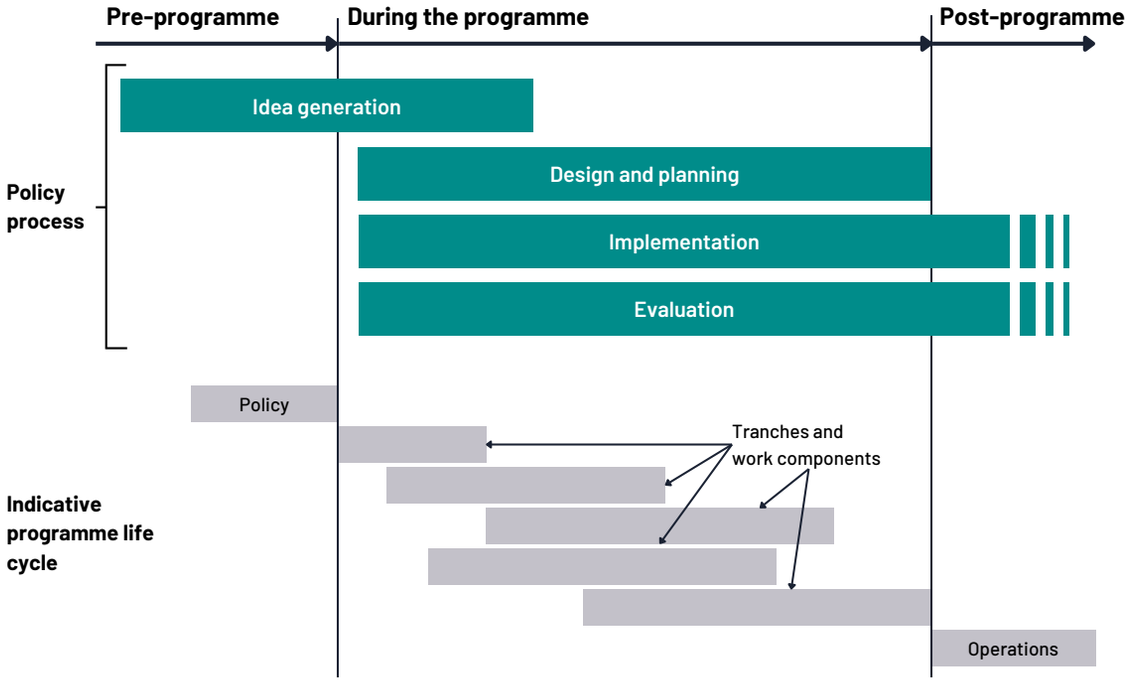


Figure 2.2 An example of how the policy process can be aligned with a programme

2.3 Evaluation

2.3.1 The purpose of evaluation

The purpose of evaluation is to support:

- **transparency and accountability**, to demonstrate that government organisations have fulfilled their accountabilities with respect to the impact and wider outcomes from policy interventions
- **learning**, to understand what works for whom, when and why, informing decisions on future interventions, lessons for improvement, how to minimise risks, and whether to continue current interventions

2.3.2 Why evaluation?

Robust evaluation has an important role to play in maximising the value, understanding the ongoing viability and likelihood of success delivered from public spending and improving outcomes for citizens, as set out in the *Public value framework*.

High quality evaluation evidence can enable decision-makers to better target their intervention, reduce delivery risk, maximise the chance of achieving the desired objectives and increase understanding of what works. Without robust, defensible evaluation evidence, government cannot know whether its interventions are effective or even if they deliver any value at all. Evaluation is particularly useful for novel and complex, high risk and high cost interventions.

2.3.3 What is evaluation?

Evaluation is a systematic assessment of the design, implementation and outcomes of an intervention that emphasises value for money and results. It involves understanding how an intervention is being, or has been, implemented and what effects it has, for whom and why. It identifies what can be improved and estimates its overall impacts and effectiveness in terms of costs, benefits and social value.

Evaluations should be carried out in accordance with the *Magenta Book*. There are 3 main types of evaluation:

- **process evaluation**, discovering what can be learned from how the intervention is being or has been delivered to benefit future policy development
- **impact evaluation**, discovering what difference the policy intervention is making or has made
- **value for money evaluation**, determining if the intervention is a good use of public money

Government Major Projects Portfolio and evaluation

Programmes and projects on the Government Major Projects Portfolio are required to log their evaluation plans and outputs on the Government Evaluation Registry.

See the *Magenta Book* and *Guidance on using the evaluation registry* for more information.

Further, evaluation is mandatory for certain interventions, such as regulatory policies subject to post-implementation review, sunset, or 'duty to review' clauses, and international development.

2.3.4 Who is involved in evaluation?

The **accounting officer** has a duty to inform ministers, Parliament and the public about the outcomes and value of the initiatives they put in place, as well as contributing to spending reviews and responding to scrutiny and challenge from bodies such as the National Audit Office. As such, they are the primary beneficiary from evaluation.

In a project delivery context, the responsibility for evaluation is placed on the sponsoring body or the **senior responsible owner** for the work being undertaken in a programme or project, and the **portfolio director** in a portfolio. Once a portfolio, programme or project is complete, responsibility for evaluation passes back to the accounting officer, or their representative, in the sponsoring organisation as the formal project delivery roles are stood down.

Some aspects of evaluation can be managed by the portfolio, programme or project team as part of normal project delivery practice, for example where the change proposed is small-scale and internally facing. In most other cases, however, specialist analysis is required to supplement the team. This needs to be decided on a case-by-case basis and defined in the programme's or project's governance and management framework and plan. Undertaking an evaluation, although a simple concept, can be a very technical and complex task to do well.

There is a large evaluation community, and a number of specialist techniques and conceptual frameworks that can be used. As a result, evaluation is something that can be best designed, overseen and managed by individuals and teams with specialist expertise. In government, evaluation is typically designed by **specialist evaluators or analysts** from the social research, economics, statistics and operational research professions, working closely with those designing and implementing an intervention, such as policy and project delivery professionals. Additional advice might be needed from the **chief analyst** of the organisation for the most complex evaluation. More often than not, the actual evaluation itself, collecting existing and new data and analysing and interpreting findings is contracted out to independent specialists.

2.3.5 What to consider in evaluation

2.3.5.1 Planning evaluation as early as possible

Planning for evaluation should start before project delivery is initiated and continue throughout the life cycle, considering the organisation's evaluation strategies if applicable. See *Examples of evaluation strategies from UK government departments*.

This helps ensure that analytical and evaluator specialist costs are included in planning and can be mobilised when needed. It also means data can be collected at the appropriate point and in the most cost-effective way.

On closure, arrangements for further evaluation should be agreed and recorded, with responsibility for ensuring evaluation takes place and transferred to the sponsoring organisation.

Where a programme or project exceeds an organisation's delegated authority limit, or is novel, contentious, repercussive or sets a precedent, evaluation should be planned so that findings can inform the *Treasury approvals process for projects and programmes*.

2.3.5.2 Developing a theory of change

Policies operate within specific contexts. Policymakers should consider the environment, stakeholders, and external factors that impact policy effectiveness, identifying what success or failure looks like with respect to the desired outcomes and objectives. Understanding this context helps choose and tailor evaluation methods and identify relevant metrics.

Developing a theory of change helps identify what needs measuring. The theory of change should set out how an intervention is expected to work, the objectives, desired outcomes, key stakeholders, assumptions made, critical success factors and the wider contextual factors (see the *Magenta Book* for more information) can also help identify external factors that might influence policy success or failure, typically, represented as a diagram accompanied by an explanation. Ideally, a theory of change should support project delivery initiation, but if one has not been developed, development should start as soon as possible after initiation.

2.3.5.3 Piloting and validation

Piloting an intervention before full-scale implementation can be valuable. Such validation enables policymakers to assess the feasibility, cost-effectiveness, and potential challenges of the intervention and can be considered in the delivery approach. They can also be used to test out the most suitable evaluation and data collection methods.

Evaluation generates evidence on policy interventions which is crucial for informed decision-making. It becomes especially valuable when:

- the intervention is novel or uncertain
- risks are associated with the policy
- the policy involves significant costs or social change

2.3.5.4 Collecting the required data

Identifying what type of data is needed for an evaluation and how it can be collected should be understood early. This understanding will help to:

- set a reference point to support comparisons
- support more reliable evaluation methods
- identify what data is required to support insights for decision making and benefits management (see 19.6.1.6 for linking benefits management and evaluation)

Situations where it is difficult to collect data may require innovative data collection methods or data sharing agreements to be implemented which can take more time to arrange, for example, when it is difficult to engage with user groups.

2.3.5.5 Aligning evaluations with assurance reviews and significant decisions

Evaluation, like assurance reviews, aims to ensure good decisions are made. Therefore, the timing needs to be decided so that decision makers can be provided with information that informs their decisions. Care should be taken not to duplicate work, and where possible, activities relating to evaluation should be integrated with mainstream project delivery work.

2.4 Further reading

- Evaluation Task Force, *Evaluation Registry*
- Evaluation Task Force, *Evaluation strategies from UK government departments*
- Evaluation Task Force, *Guidance on using the evaluation registry*
- Government Policy Profession, *Policy profession standards*
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Treasury, *Public value framework and supplementary guidance*
- HM Treasury, *Green Book: UK government guidance on appraisal*
- HM Treasury, *Magenta Book: central government guidance on evaluation*
- HM Treasury, *Treasury approvals process for projects and programmes*

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3. Portfolios, programmes and projects

3.1 Purpose of portfolios, programmes and projects

Portfolio, programme and project management is an integrated way of meeting the government's policy ambitions, driving better decisions and increasing the likelihood of successful outcomes.

3.2 Portfolios, programmes, projects and other related work

3.2.1 Overview

The Project delivery glossary defines project delivery as:

> Collectively, portfolio, programme and project management are referred to in government as project delivery.

When starting to understand what project delivery in government involves, it is essential to recognise what distinguishes a portfolio from a programme from a project and how this influences how they are managed. There is a relationship between these work components in the project delivery hierarchy, as shown in Figure 3.1, where each component comprises all of the connected lower-level work components.

3.2.2 What is a portfolio?

The Project delivery glossary defines a portfolio as:

> Part or all of an organisation's investment required to achieve its objectives.

Governed through its **portfolio plan**, a portfolio comprises work components, such as other portfolios, programmes, projects and other related work. A portfolio can represent the entirety of the organisation's investment. In larger organisations or those with multiple, distinct objectives, the organisation can choose to have a number of portfolios, each targeted at their respective objectives. A portfolio is managed on a continuous basis with no defined end point and is usually funded through annual budgets.

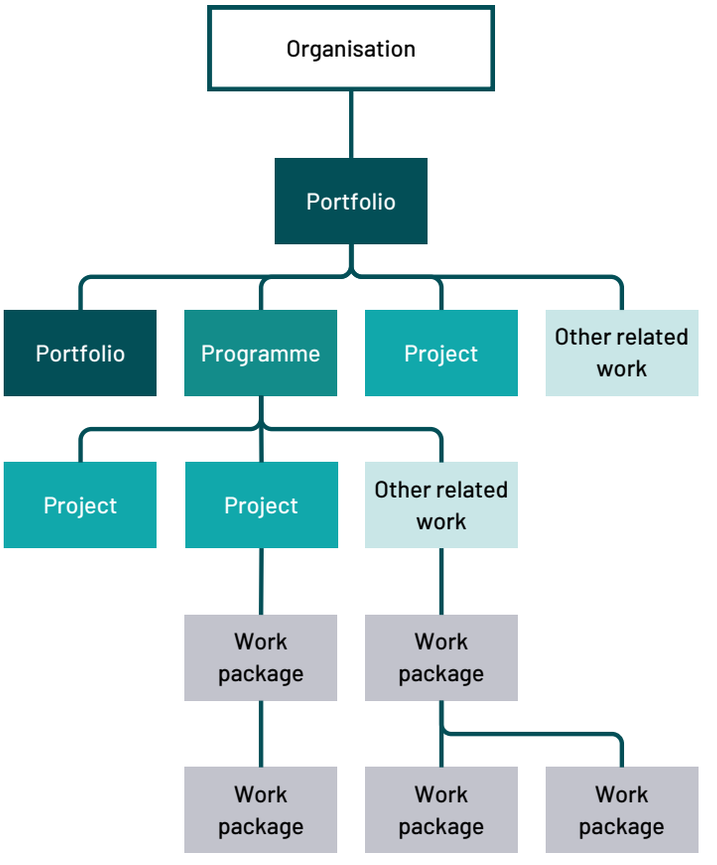


Figure 3.1 An example of a project delivery hierarchy of work components

When used to its full extent, a portfolio provides a broad, enterprise-wide view as it includes not only the change initiatives (programmes and projects) but also improvement initiatives not managed as projects, and business-as-usual. Benefits from change initiatives usually start towards the end of a project. In a portfolio, new benefits start to be realised as soon as the first programme or project within the portfolio puts its outputs to use.

The focus for portfolio management is ensuring that all activities, including programmes, projects and other related work, deliver the desired outcomes and overall benefit, regardless of how individual components perform. By having a holistic portfolio, change initiatives and business-as-usual can be managed together so a shortfall in one can be compensated by making changes in the other. Portfolios, by their nature, are often open-ended and evolve over time.

A **portfolio director** is accountable for the direction and governance of the portfolio. This includes optimising the required benefits at an acceptable level of risk and owning the portfolio's vision and strategy. The **portfolio manager** is accountable to the portfolio director for day-to-day management. The portfolio director and portfolio manager are usually supported by a board or management team.

Chapter 4 looks at governance in more detail and Part C looks at portfolio management in particular.

3.2.3 What are programmes and projects?

The Project delivery glossary defines a programme as:

> A programme is a unique, temporary, flexible organisation created to co-ordinate, direct and oversee the implementation of a set of projects and other related work to deliver outcomes and benefits related to a set of strategic objectives.

Programmes usually have a life that spans several years and can be undertaken in one or more tranches, each of which is usually structured around distinct step changes in the solution being delivered and the benefits being realised.

The Project delivery glossary defines a project as:

> A project is a unique, temporary management environment, undertaken in stages, created for the purpose of delivering one or more business objectives.

As Figure 3.1 shows, projects can be standalone within a portfolio or part of a programme. Projects are undertaken in stages which are preceded by a gate (a decision point) to authorise the start of the next stage and commit resources and funding.

In government, projects as well as programmes can deliver **outcomes** and realise benefits, not just **outputs**. Outcomes are what make the difference, whether for organisational or societal change and so as a result a project should not be considered complete until an outcome has been achieved. That means that a project should ensure enough change has happened and enough benefits have started to flow to know that the objectives are likely to be met before a project is closed. This is built into the reference project life cycle (see Chapter 14: Programme and project life cycles).

A **senior responsible owner** is accountable for a programme or project meeting its objectives, delivering the required outcomes and realising its benefits. The senior responsible owner owns the business case, is the primary risk taker and is accountable for governance. A **programme or project manager** (usually known as a programme or project director for those in the Government Major Projects Portfolio) is accountable to the senior responsible owner for day-to-day management. The senior responsible owner and programme or project manager may be supported by a board or management team.

Chapter 4 looks at governance in more detail and Part D at programme and project management in particular.

3.2.4 What is other related work?

The Project delivery glossary defines other related work as:

> In the context of project delivery, other related work comprises work within a portfolio or a programme which is not managed as a project.

Other related work includes:

- support services, solution architecture, finance and human resources
- ongoing improvement initiatives not run as a project, but using a defined approach, such as platform-based upgrades delivered using agile approaches, Six Sigma and Lean
- service delivery and business as usual operations associated with the work

The management of other related work is addressed in Part D.

3.2.5 What is a work package?

Projects and other related work in a programme comprise work packages.

The Project delivery glossary defines a work package as:

> A group of related activities that have a defined scope, deliverable, timescale and cost, contributing to the required outputs and outcomes.

A work package represents the most granular level of work, where the activities that directly produce outputs and deliverables take place.

Figure 3.1 shows the hierarchical relationship between work components, with each higher-level component comprising the sum of all connected lower-level components. In this way every work package should be traceable to the project or programme it is a part of. A work package cannot be shared between different projects. If 2 projects are relying on the outputs, the work package should be managed in one and treated as an interdependency which the other relies on.

The management of work packages is addressed in Part D.

3.3 Is it a portfolio, programme or project?

The terms **portfolio**, **programme** and **project**, as described in this chapter, are used as the basis for the rest of *The Teal Book*. While it is important that government develops and maintains a common understanding of project delivery, it is also important to understand that these definitions describe the characteristics of each management structure, not

a set of rules that must be followed. It is the nature, or characteristics, of what is to be delivered that should drive the choice of how to structure the work.

Frequently, whether something is a portfolio, programme or project is obvious but there are also times when it is not clear (see Figure 3.2). It is these situations that can cause people a lot of difficulty and this is usually driven by starting at the definitions first.

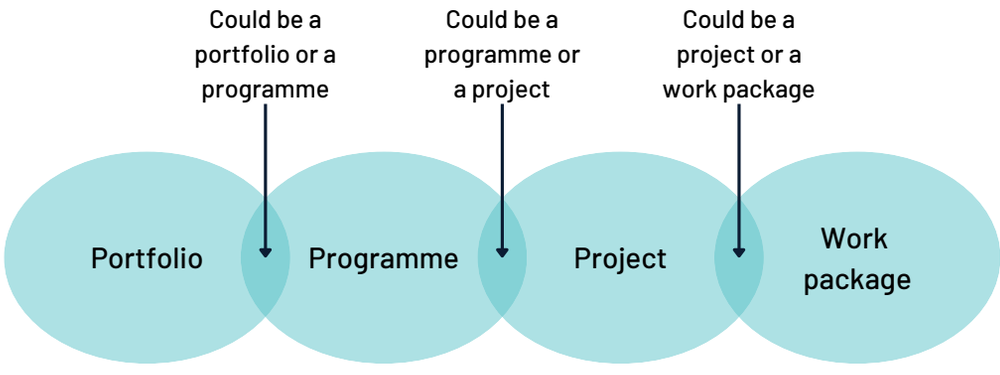


Figure 3.2 Choices can be made over whether the best approach is a portfolio, programme, project or work package

Instead, it is important that the context and work needed is explored first and to use this to decide the most appropriate management approach to apply. This helps to stop the mindset of thinking in terms of whether something is a portfolio, programme or project and instead to start thinking in terms of whether something is best managed as a portfolio, programme or project.

A good starting point to help understand how best the work should be managed is to develop the life cycle which draws out the phasing, assurance reviews and decision points needed (see Chapter 4: Governance and management). It is also important to respect the project delivery hierarchy in Figure 3.1. The question is not simply whether it should be a portfolio or a programme, a programme or a project, or a project or a work package, as in government:

- a programme should always form part of a portfolio
- a project should always form part of a programme or be standalone in a portfolio
- a work package should always form part of a project or other defined work component

When determining the management structure for the work, it should be remembered that there are clear differences between how portfolios, programmes and projects are managed. Designating something as a programme, for example, means that it should be managed as a programme with all that entails.

The title given to the work should clarify whether it is being managed as a portfolio, programme or project. However, this is not always a reliable way of identifying how something is being managed. Similarly, how a supplier chooses to manage their work could be different to how government manages it; they are working to different objectives and have different viewpoints. Finally, an initiative could start off as a project and, later, a decision could be taken to manage it as a programme, for example because further projects or work packages have been added.

3.4 Further reading

- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Treasury, *Green Book: UK government guidance on appraisal*

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4. The governance and management of project delivery

4.1 Purpose of governance and management

The purpose of governance and management is to define how project delivery is to be overseen, directed and managed. It includes activities such as prioritising, authorising, directing, overseeing, decision making, planning, leading, assuring and reviewing performance, in pursuit of government policy.

4.2 Key points

- Governance and management frameworks define how work is to be done.
- The governance of project delivery should align to that of the sponsoring organisation.
- Governance is more than a structure or process as it includes roles and behaviours.
- A portfolio is governed through its portfolio plan.
- Programmes and projects are governed through a business case.

4.3 Why have governance and management?

Effective governance and management ensure that project delivery is aligned to policy and strategy, is delivered effectively, remains viable and is controlled. If the governance of project delivery is not integrated with the governance of the wider organisation, the portfolio, programme or project can become disconnected from the ultimate decision makers whose objectives the work should be delivering. In particular, effective governance and management brings:

- **greater impact**, aligning programmes and projects with strategic goals maximises desired outcomes
- **assured viability**, assuring the sponsoring organisation's leadership that the programme or project remains viable and highly likely to achieve the desired outcomes and realise the required benefits and objectives
- **enhanced stakeholder confidence**, transparency and accountability inspire trust and buy-in

- **reduced risk**, strong governance identifies and mitigates potential pitfalls before they impact progress
- **increased effectiveness**, streamlined decision-making and clear roles prevent confusion and delays
- **improved resource utilisation**, optimised allocation ensures resources are used efficiently

4.4 What is governance and management?

4.4.1 Overview

Governance and management play related but distinct roles in organisations, portfolios, programmes and projects.

The Project delivery glossary defines governance as:

> Governance defines relationships and the distribution of rights and responsibilities among those who work with and in the organisation. It determines the rules and procedures through which the organisation's objectives are set, and provides the means of attaining those objectives and monitoring performance. Importantly, it defines where accountability lies throughout the organisation.

In project delivery, governance includes prioritising, authorising, directing, empowering and overseeing management, and assuring and reviewing performance.

Management is focused on the day-to-day work. This includes planning and resource allocation, team leadership, monitoring performance and progress, and addressing risks, issues and change requests.

As governance bodies can delegate to those undertaking management activities, and management can refer to governance bodies, the boundary between the 2 concepts is not always clear. As such it is important to design both together, ensuring that they work together. This is why, in *The Teal Book*, they are often considered together as 'governance and management'.

4.4.2 Governance and management in government

Governance in government takes place within the UK's system of parliamentary accountability.

The minister in charge of a government department is responsible and answerable to Parliament for the exercise of the powers on which the administration of that department depends. They have a duty to Parliament to account, and to be held to account, for all the policies, decisions and actions of the department, including its arm's length bodies.

The departmental accounting officer is personally responsible and accountable to Parliament for the organisation and quality of management in the department, including its use of public money and stewardship of its assets, as set out in *Managing public money*. More on the role of the accounting officer is set out in Chapter 29: Finance.

Managing public money requires every public sector organisation to establish governance arrangements appropriate to its business, scale and culture. The structure should combine efficient decision-making with accountability and transparency. Central government departments should be guided by the *Corporate governance code for central government departments*, and arm's length bodies are encouraged to adopt similar principles.

Governance and management of the organisation and its resources – finances, assets, people – take place within this accountability framework. The role of the accounting officer is to ensure the effective implementation of government policies and delivery of public services within the resources granted by Parliament, in line with *Managing public money*. In doing so, they should also act at all times in compliance with government functional standards, the *The Civil Service* code and the Parliamentary and Health Service Ombudsman's *Principles of good administration.*

Programmes and projects in the Government Major Projects Portfolio are subject to particular governance, assurance and approval arrangements, set out in Part D: Managing programmes and projects.

4.4.3 Governance and management in project delivery

Project delivery should be an integrated part of the overall governance for the organisation and not treated separately. The functional standard for project delivery sets the requirements for this governance and management, providing a consistent baseline for how portfolios, programmes and projects are directed, controlled and assured across the organisation. A way of achieving this is for governance always to be undertaken within the context of a higher-level organisation and its governance (see Figure 4.1), for example:

- a project's governance should operate within the context of the governance of the programme it is part of (or portfolio, if standalone)
- a programme's governance should operate within the context of the governance of the portfolio it is part of
- a portfolio's governance should operate within the governance of the organisation's project delivery function

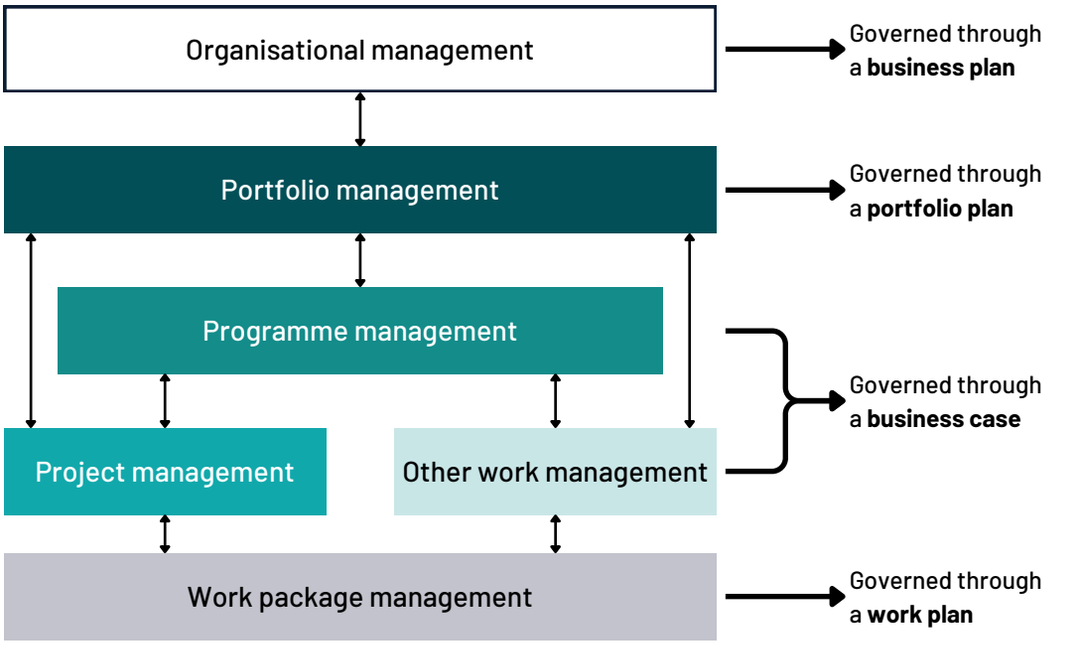


Figure 4.1 Accountability follows a hierarchy, with portfolios governed through portfolio plans, programmes and projects governed through business cases and work packages through work plans

Figure 4.1 illustrates how accountability flows through the governance hierarchy. To support consistent application of the functional standard across this hierarchy, organisations can use the *Continuous improvement assessment framework for project delivery* (see 9.4.8 on using the continuous improvement assessment framework) to assess current practice, identify areas of misalignment, and prioritise improvements to governance and management arrangements.

Governance is often misunderstood or equated with bureaucracy. The characteristics of effective governance, described in Table 4.1, are as much about behaviours and attitudes and need to work together.

These characteristics also help show that governance:

- is **not** a structure, although structure is a vital element
- is **not** a process, although processes are a vital element
- is **not** just about decision-making, although decision-making is a vital activity

Taken together, these characteristics emphasise that effective governance depends on capable behaviours as well as proportionate structures and processes.

Tools such as the Continuous Improvement Assessment Framework can help organisations reflect on how well these characteristics are embedded in practice and support a

structured, ongoing approach to improvement (see 9.4.8 on on using the continuous improvement assessment framework).

Table 4.1 Characteristics of effective governance

Characteristic	Description
Purpose	Setting the vision, values and objectives which are compelling, realistic and take a long-term view of achieving the government's or organisation's objectives.
Knowledge	Understanding the business of the organisation or the policy intent of government and the political, economic, social and technological context they operate within.
Behaviour	Promoting desired behaviours in terms of culture, ethics, reputation and integrity.
Process	Enabling the right level of control, delegation, operational efficiency and effectiveness.
Structure	Having the right tiers, lines of accountability and appropriate structures for decision-making.

4.5 Who is involved in governance and management?

The **accounting officer** is ultimately responsible to their minister and Parliament for project delivery in their organisation. In government departments and their arm's length bodies, the accounting officer may delegate the responsibility for the management of project delivery to a senior officer. This role is usually called the **chief project delivery officer**. However, everyone involved in the delivery of a portfolio, programme or project has a part to play in ensuring that work is effectively governed and managed.

For a portfolio, a **portfolio director**, supported by a board and **portfolio manager**, is accountable for the direction and governance of the portfolio, for optimising the required benefits at an acceptable level of risk, and who owns the portfolio's vision and strategy. See Part C for a fuller description of roles.

For a programme or project, a **senior responsible owner**, supported by a board and **programme or project manager**, is accountable for a programme or project meeting its objectives, delivering the required outcomes and realising the required benefits. The senior responsible owner owns the business case, is the primary risk taker and is accountable for governance. See Part D for a fuller list and description of roles.

4.6 Key aspects of governance and management

4.6.1 Overview

Every chapter in *The Teal Book* is a part of and relevant to the governance and management of project delivery. Part C: Managing portfolios describes the governance and management of portfolios in more detail and Part D: Managing programmes and projects does the same for programmes and projects. However, 5 aspects are particularly relevant to all of project delivery and so are described here:

- the governance and management framework
- business cases, portfolio plans and work plans
- decision-making
- assurance
- behaviour and leadership

4.6.2 The governance and management framework

4.6.2.1 The purpose of a governance and management framework

The *Government Functional Standard for Project Delivery* requires portfolios, programmes and projects and the project delivery function overall to have a defined governance and management framework. These frameworks should be integrated and should align to and work with the organisation's framework for governance and management.

4.6.2.2 Why is a governance and management framework needed?

A well-defined governance and management framework provides consistency in the way work is done which in turn provides assurance that the work is done properly with the aim of avoiding problems and errors (see 4.6.5 for assurance). Further, a consistent approach provides clarity on governance and management arrangements for the work and is the basis for improving working methods.

4.6.2.3 What is a governance and management framework?

The Project delivery glossary defines a governance and management framework as:

> A governance and management framework sets out the authority limits, decision-making roles and rules, degrees of autonomy, assurance needs, reporting structure, accountabilities and roles, together with the appropriate management practices and associated documentation needed to meet this standard.

As work progresses and more information becomes available, the approaches adopted might need to change. It is important that the governance and management framework is maintained and updated as work proceeds to reflect the phase of the work, changes and improvements from any lessons learned from using it (see Chapter 38: Learning from experience).

4.6.2.4 Who is responsible for a governance and management framework?

While the portfolio director and senior responsible owner have accountability for ensuring an effective governance and management framework is in place, the responsibility for defining, establishing and maintaining of the framework lies with:

- for a portfolio: the **portfolio manager**
- for a programme or project: **the programme or project manager**
- for a work package: the **work package manager**

4.6.2.5 What to consider when developing a governance and management framework

When defining the governance and management framework it is important to avoid it becoming a large and unwieldy set of documentation which is rarely used or updated. Organisations which have an enterprise level project delivery framework, such as a project management method, can avoid this problem as each portfolio, programme or project manager needs only to cross reference and document what is different. This usually results in a much slimmer set of documentation which is more likely to be used in practice.

The larger the piece of work, the more data and information generated which needs to be stored and which can be retrieved reliably when required. Having a reliable approach for holding documentation is therefore essential to effective management. Simple projects can be managed in shared folders but anything larger is likely to need a formal document management tool. Chapter 24: Information and data management has relevant information.

Similarly, the act of managing generates data and information which needs to be shared, such as for the support practices in Part E: Planning and control, and Part F: Solution delivery, as well as the management practices in Part C: Managing portfolios and Part D: Managing programmes and projects).

For all but the smallest pieces of work, specialist tools are often needed. Choosing which tools to use and to what extent they are used is an important decision when defining the governance and management framework.

Not every person working in the delivery of a programme or project is likely to be an experienced project delivery professional, and many will come from different professions. The governance and management framework has to be usable by the people involved in the

work and designed accordingly. Work package managers need particular consideration, with induction and support provided if needed (see Chapter 39: Project delivery team induction and training).

4.6.3 Portfolio plans, business cases and work plans

4.6.3.1 The purpose of portfolio plans, business cases and work plans

The purpose of a portfolio plan, business case and work plan is to have a firm basis to justify undertaking the work and upon which to make decisions.

4.6.3.2 Why are portfolio plans, business cases and work plans needed?

Unless the work within a portfolio, programme or project is defined it is not possible to have any clarity on what is required nor to measure progress or performance. Further, there is no basis against which decisions can be made.

4.6.3.3 What is a portfolio plan, a business case and a work plan?

The *Government Functional Standard for Project Delivery* requires that work is governed through a defined and approved document. The type of document used and the approvals required depends on the type and scale of the work being delivered, as shown in Figure 4.1.

For **portfolios**, the work is governed through a **portfolio plan** in accordance with the *Government Functional Standard for Project Delivery*. A portfolio plan is a subset of an organisation's business plan and sets out the portfolio's goals, the approach for achieving them, resources needed, financial projections and risks. A portfolio plan is usually reassessed annually as part of organisational business planning, with quarterly reviews to assess progress and enable realignment if needed.

For **programmes, projects and other related work**, the work is governed through a **business case** or equivalent document (for example, a single justification case) in accordance with HM Treasury's requirements as described in the *Green Book* and its accompanying guidance.

The Project delivery glossary defines a business case as:

> The justification for an organisational activity (strategic, programme, project or operational) which typically contains benefits, outcomes, timescales, costs and risks against which continuing viability is tested.

The business case justifies the expenditure over the life of the project or programme and should be used as the basis for planning, taking into account the full benefits stream and operational and disposal costs which result from using the solution (see Part F: Solution delivery). The business case should be reviewed and refreshed if needed before significant decision points (gates) in the life cycle of the work to verify the work is still justified.

For work packages, the work is governed by a **work plan** which defines the information to deliver a specified output or outcome. It generally includes the scope and the anticipated constraints such as time, cost and resources, together with the working methods to be used.

4.6.3.4 Who is responsible for portfolio plans, business cases and work plans?

Responsibility generally follows the project delivery hierarchy (see Figure 3.1):

- the portfolio director owns the portfolio plan
- the senior responsible owner owns the programme's and/or project's business case
- the work package manager owns the work plan

Each is accountable to the next higher level of authority in the project delivery hierarchy. Each document should be aligned with that above but usually includes more detail. It is not necessary for each level to have its own document if the content can adequately be covered in the higher-level document. For example, a project or other work within a programme may be covered under the programme's business case and may not need to be justified separately.

4.6.3.5 What to consider when developing a portfolio plan, business case or work plan

The 5 case model is a framework for developing business cases. It covers the main considerations when preparing a programme or project business case but is also generally applicable for portfolio plans. These are summarised in Table 4.2.

The *Green Book* and its supporting documentation provide detail on preparing business cases.

Work plans should be concerned with the detailed definition of the work, the scope of the work and the constraints imposed on it such as budget and deadlines.

4.6.4 Decision-making

4.6.4.1 The purpose of decision-making

The purpose of decision-making is to make effective decisions on future intent that are focused on the objectives, take account of risks and communicated to those with a need to know.

Table 4.2 Primary considerations for portfolio plans and programme or project business cases

Portfolio plan	Programme or project business case
Sets the mission, strategy and objectives for the planning horizon	Provides strategic fit and is supported by a compelling case for change
Maximises public value to society through the optimal combination of policies and desired outcomes, and the selection of programmes, projects and other work to deliver them	Maximises public value to society through the selection of the optimal combination of components, products and related activities focusing on options appraisal and the identification of the preferred option
Is supported by a sustainable and secure supply chain	Is commercially viable and attractive to the supply side focusing on the development and procurement of the potential solution or its parts
Is affordable within the funds provided	Is affordable and is fundable over time focusing on the whole life costs of the proposed solution
Can be delivered by the organisation at an acceptable level of risk	Can be delivered successfully by the organisation and its partners focusing on the implementation arrangements for the proposal

4.6.4.2 Why should some decision-making be formal?

While informality can foster nimble action and quick responses, certain situations demand the structure and accountability of formal decision-making. Formal processes bring clarity and focus. They ensure relevant information is gathered, diverse perspectives are considered, and established criteria guide the choice. This reduces bias, builds trust, and fosters transparency, especially when dealing with complex issues or decisions impacting large groups. Additionally, formal documentation acts as a record, to support future actions and decision-making and safeguarding against accusations of non-propriety or unfairness (see Chapter 24: Information and data management). While formality might seem cumbersome for minor choices, and should always be proportionate, it becomes essential for decisions with significant consequences, ensuring responsible, well-considered outcomes.

Part C: Managing portfolios and Part D: Managing programmes and projects include recommendations for the decisions which require formality.

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4.6.4.3 What is decision-making?

Decisions involve making choices, and there are several things that can help. Individually, mind maps can organise ideas and pros and cons lists can offer a balanced view of options. In group settings, brainstorming can generate possibilities, and scoring matrices can help weigh options against predefined criteria.

Decision trees map out potential consequences of each choice. A strengths, weaknesses, opportunities and threats (SWOT) analysis examines internal strengths and weaknesses against external opportunities and threats. Stakeholder analysis identifies interested parties and their concerns, and techniques like using the 6 thinking hats encourage diverse perspectives.

When facing uncertainty, simulation modelling (such as the Monte Carlo technique) or scenario analysis can help investigate various outcomes, and pilots offer real-world validation before full commitment.

The *Magenta Book* and *Aqua Book* and their supplementary guidance include many techniques to inform decision makers.

4.6.4.4 Who is responsible for making decisions?

Decision-making authority generally follows the project delivery hierarchy but the following need also to be considered, including:

- the authority of the individual undertaking the role
- *HM Treasury's approval process for programmes and projects*
- the government organisation's own delegated authority limit and internal scheme of delegation and controls

4.6.4.5 What to consider when making decisions

In government, decisions on portfolio, programmes and projects should seek to optimise the social value produced through using public resources, taking account of the four standards of regularity, propriety, value for money and feasibility set out in *Managing public money*. All options, including 'do nothing', have inherent risks and these can be influential in choosing the course of action take.

Decisions do not have to be absolute but can be conditional or phased to manage risk. Some decisions can also be changed if more information becomes available; the phased approach to managing work facilitates this. The phased approach to programmes and projects described in Chapter 14 is a primary way of managing risk.

Decisions relating to project delivery should be made in a way that is timely, communicated and in consultation with stakeholders and subject matter experts. Decisions should be

made by assessing options against defined criteria, in accordance with the *Green Book* and the *Government Functional Standard for Analysis*.

Effective systems and processes need to be in place to support formal decision-making so that there is an efficient flow of information to the decision makers. This does not mean setting up any separate processes, but ensuring that information, data, reporting and communication are built into the working approaches for managing project delivery. It should be determined who decides when there is a conflict of priority or other need for escalation.

It is important that everyone understands the decision that has been made and so it should be noted that the meanings of approval and authorisation are different.

Approval indicates that a deliverable is acceptable to the decision makers.

Authorisation gives an individual or group the authority and permission to do something, typically with defined constraints or conditions attached.

An example of this is the approval of a project plan. This simply means that the plan presented is acceptable but on its own does not give any authority to proceed. Authorisation would also be needed to proceed with any work. Being clear and deliberate with the use of language when making decisions will help stop confusion.

Similarly, **agreement** means that 2 or more parties have come to a consensus on a topic. It neither implies approval nor authorisation.

4.6.5 Assurance

4.6.5.1 The purpose of assurance

The purpose of assurance is to provide, through a systematic set of actions, confidence to senior leaders and stakeholders. This confidence comes from providing evidence that work is controlled and supports the safe and successful delivery of policy, strategy and objectives.

The *Government Functional Standard for Project Delivery* requires that assurance activity is done in accordance with the *Orange Book* and internal audits in accordance with the *Government Functional Standard for Internal Audit*.

4.6.5.2 Why is assurance needed?

Senior leaders cannot see and check everything for themselves and yet are accountable for the delivery of their assigned objectives, often overseeing hundreds, if not thousands of people. Assurance is about providing those leaders with the confidence that the right objectives are being addressed, work is proceeding according to plan and their objectives are highly likely to be achieved. This can be achieved through:

- employing skilled and experienced people
- using trusted processes and methods with the right level of scrutiny, challenge, verification, and validation
- drawing on independent expert opinion

4.6.5.3 What is assurance?

The Project delivery glossary defines assurance as:

> A general term for the confidence that can be derived from objective information over the successful conduct of activities, the efficient and effective design and operation of internal control, compliance with internal and external requirements, and the production of insightful and credible information to support decision-making. Confidence diminishes when there are uncertainties around the integrity of information or of underlying processes.

Organisations should have a defined and established approach to the assurance of project delivery, integrated with their overall organisational assurance framework as described in the *Orange Book*. Typically, assurance should be on at least 3, and sometimes 4 or more, separate levels.

How this works varies according to the context and organisation. In project delivery, an example of this could be:

- **first line assurance** by or on behalf of managers who own and manage risks directly, for example the programme or project manager, to provide assurance to the senior responsible owner that the appropriate standards and practices are being met
- **second line assurance** by or on behalf of the sponsoring organisation, for example led by the central portfolio, commercial, digital or finance function, to provide assurance to the accounting officer that the first line assurance is properly designed, in place and operating as intended
- **third line assurance**, by a body external to the organisation, for example the National Infrastructure and Service Transformation Authority on behalf of HM Treasury, or another regulatory body, to provide the government with an objective opinion on the effectiveness of the first or second line assurance
- **fourth line assurance**, by a body external to the organisation, for example the National Audit Office on behalf of Parliament, to provide an objective opinion on the effectiveness of organisational or systemic governance, risk management and controls

This model helps delegation and coordination assurance roles, responsibilities and activities within and across organisations. The accounting officer, their board and senior leadership are not considered lines of assurance as they are likely the primary stakeholders the model serves, seeking rather than providing assurance.

The level of assurance is always relative to those being assured. In project delivery, the portfolio director and senior responsible owner are the ones seeking assurance. They in turn have to assure the sponsoring organisation, which forms an additional line above that of the portfolio, programme or project's leadership team.

The hierarchy of the portfolio, programme and project can also create additional, lower-level lines. For example, assurance manager in a programme could cover all the work within it, or a large project within the programme might have its own quality assurance team. This depends on the extent of delegation within the hierarchy (see Figure 3.1).

For more on how assurance works in practice, see Part C: Managing portfolios and Part D: Managing programmes and projects.

4.6.5.4 Who is involved in assurance?

Accountability for effective assurance sits with:

- the **accounting officer**, supported by their board and **audit and risk assurance committee**, at organisation level
- the **portfolio director** at portfolio level
- the **senior responsible owner** at programme or project level

Under the assurance model, the first 2 levels are covered by the design and use of the governance and management framework; everyone involved in the portfolio, programme or project has some part to play. The third and fourth levels can be undertaken by bodies which are internal or external to government such as:

- the National Infrastructure and Service Transformation Authority
- inspection bodies
- the Government Internal Audit Agency
- the National Audit Office

For more on how assurance works in practice, see Part C: Managing portfolios and Part D: Managing programmes and projects.

4.6.5.5 What to consider when planning for assurance

The prime consideration, as with all aspects of managing project delivery, is that the level of assurance needs to be appropriate to the nature and complexity of the work being undertaken and proportionate to the level of risk exposure.

Verification and validation are important aspects of assurance and often incorporate reviews (see Chapter 34: Verification and validation). These reviews can take many different forms depending on the context of the work and can include:

- peer review of deliverables
- technical assurance from, for example, parts of the solution selected and built
- point-in-time assurance reviews of a portfolio, programme or project
- internal or external audits

Assurance reviews usually add significant value but can be disruptive if not planned well. They need to be scheduled to inform major decisions and aligned with any planned evaluation (see Chapter 2: Policy and evaluation). Assurance reviews typically include a period of desk research, as well as follow up interviews and meetings. If the management records and documentation are not kept up to date, they can generate more questions, taking up more management time and reducing the value of a time-bound review.

4.6.6 Behaviour and leadership

The governance of portfolios, programmes and projects, and their delivery overall, involves the coming together of a team of people who have different interests, styles and ways of working. However, for the governance of project delivery to be effective, people need to genuinely demonstrate the right behaviours. No matter how good the processes, methods and tools are, poor behaviours are likely to threaten morale and the success of the work.

The *Project delivery capability framework* includes a set of 10 behavioural and leadership competencies which are aligned to Civil Service behaviours. These are shown in Table 4.3.

Table 4.3 The behavioural and leadership competencies from the *Project delivery capability framework*

Behavioural or leadership competence		Related civil service behaviours
Visible leadership	The ability to engage, motivate and coach others. To act as a role model and inspire and empower others.	Leadership
Credible action	The ability to promote the wider public good in all actions and to act in a morally, legally and socially appropriate manner at all times. Challenges unacceptable behaviour.	Leadership
Working with ambiguity	The ability to work in an environment or uncertainty and continual change. Able to feel comfortable making decisions and setting direction without having the full picture and re-focus as details emerge. Can apply knowledge and techniques to reduce ambiguity.	Making effective decisions
Collaboration	The ability to establish and develop productive relationships with internal and external stakeholders, bringing people together to benefit the project.	Working together
Influencing	The ability to influence, change and impact decisions with both internal and external stakeholders.	Communicating and influencing
Conflict resolution	The ability to recognise, anticipate and effectively deal with existing or potential conflicts at an individual, team or strategic level.	Working together Leadership
Inspiring others	The ability to create and present a compelling vision and set clear direction that motivates other to work towards a common goal.	Leadership
Resilience	The ability to adapt to changing circumstances and adverse situations whilst remaining calm, reassuring others and maintaining performance.	Delivering at pace

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Table 4.3 The behavioural and leadership competencies from the *Project delivery capability framework*, *continued*

Behavioural or leadership competence		Related civil service behaviours
Innovation	The ability to think of, research and apply new ideas and ways of doing things. Encourages and supports innovation from others, is willing to experiment and follow ideas through to implementation.	Changing and improving
Culture change	The ability to plan, lead and effect positive cultural change, securing commitment and buy-in and promoting a positive long-term vision. Recognise when broader cultural change is necessary to deliver a project.	Seeing the big picture Changing and improving

4.6.7 Other aspects to consider

The above topics are the primary aspects for governance and management. How a governance and management framework is designed, however, can be influenced by and needs to take account of many other aspects.

4.6.7.1 Roles

Ensure people know what they are accountable for and to whom they are accountable. The work breakdown structure normally defines the reporting line and so is fundamental to accountability and decision-making.

The governance and management framework should explain the roles, and who is **responsible**, **accountable**, or to be **consulted** or **informed** in decision-making, usually in a table known as a responsible, accountable, consulted, informed (RACI) matrix.

Chapter 11: The governance and management of portfolios and Chapter 13: The governance and management of programmes and projects have more information on roles supporting governance and management.

4.6.7.2 Quality and technical assurance

Ensure the work achieves the quality of outputs and outcomes needed and that the specified quality meets the stakeholders' needs (see Chapter 30: Quality management).

4.6.7.3 Contracts with suppliers

Ensure suppliers know and meet their obligations and that the government does the same, knowing explicitly who is accountable for each contractual obligation and formal approval required (see Chapter 25: Procurement and contract management).

4.6.7.4 Meetings

Define who the core members and other attendees are, their terms of reference and what authority they have as individuals and as a group.

4.6.7.5 Codes of conduct and ethics

The *Government Functional Standard for Project Delivery* requires that all public service codes of conduct and ethics are upheld, including those from associated professions. As project delivery is multidisciplinary, consideration should also be given to those working on portfolio, programme or project teams from other government professions, not just the project delivery profession.

4.7 Further reading

- Cabinet Office, *Success profiles: Civil Service behaviours*
- Civil Service, *The Civil Service code*
- Government Project Delivery, *Project delivery capability framework*
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 009: Internal Audit*
- HM Government, *Government Functional Standard GovS 010: Analysis*
- HM Treasury and Cabinet Office, *Corporate governance code for central government departments*
- HM Treasury, *Green Book: UK government guidance on assurance*
- HM Treasury, *Magenta Book: central government guidance on evaluation*
- HM Treasury, *Orange Book: management of risk – principles and concepts*
- HM Treasury, *Treasury approvals process for projects and programmes*

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5. Equality, diversity and inclusion

5.1 The purpose of equality, diversity and inclusion

Equality, diversity and inclusion are important considerations to ensure that everyone working in government:

- meets the public sector equality duty and other legal requirements protecting equality within the United Kingdom
- champions diversity and inclusion in how public services are developed and delivered, to help all British people, tackle disadvantage and improve lives
- helps create an inclusive culture that draws on a rich diversity of talent, skills and experience, welcomes innovation and challenge, guarantees fairness and provides a safe and supportive place to work

5.2 Key points

- Build equality, diversity and inclusion into working practices, solutions and outcomes.
- Listen to different voices.
- Be creative in how to involve different ideas and perspectives.
- Value people, skills, and diversity of thought.
- Trust and empower people to deliver.

5.3 Why are equality, diversity and inclusion important in project delivery?

Equality, diversity and inclusion are fundamental principles underpinning the work of government. The work done in government and the outcomes delivered involve and affect many people across the UK and internationally. People working in government must meet the legal obligations on equality and champion diversity and inclusion, both in the outcomes delivered and how they are delivered. These are therefore important considerations for everyone working in project delivery, underpinning the work and culture of government.

The public sector equality duty, established by the *Equality Act 2010*, places a duty on all public authorities, in the exercise of their functions, to:

- eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the *Equality Act 2010*
- advance equality of opportunity between people who share a protected characteristic and those who do not
- foster good relations between people who share a protected characteristic and those who do not

The UK is a signatory to the United Nations sustainable development goals, as set out in the *2030 agenda for sustainable development*. The goals most relevant to equality, diversity and inclusion are around:

- good health and wellbeing
- gender equality
- decent work and economic growth
- reduced inequalities

Government project delivery, nationally and internationally, has a key part to play in working towards these collective goals.

Championing diversity and inclusion creates an open, inclusive and welcoming working culture, where people feel safe, able to contribute freely and valued for what they bring.

Encouraging diversity of thought and approach involves:

- attracting people with a wide range of skills, experience and backgrounds
- working collaboratively across different disciplines
- listening to different voices in teams and among stakeholders

This helps ensure work is inclusive by design and delivered in an appropriate way.

5.4 What is equality, diversity and inclusion?

Equality is a fundamental principle in UK and international law, whereby everyone is equal before and under the law and is entitled without any discrimination to the equal protection and benefit of the law.

In the UK, the *Equality Act 2010* defines age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation as protected characteristics. It is unlawful to discriminate directly or indirectly on the basis of a protected characteristic, subject to certain additional provisions under the Act.

The *Functional standards common glossary* defines **diversity and inclusion** as:

> Diversity provides a focus on championing a broad range of backgrounds and opinions - including those protected by prevailing equality legislation - with the merit principle front and centre and drawing on the talents of the widest possible range of geographical, social and career backgrounds. All diversity and inclusion people policies, processes and practices should be data-driven, evidence-led and delivery-focused.

The *Functional standards common glossary* defines **inclusion** as:

> Inclusion describes how we ensure that all staff feel valued, supported and have a sense of belonging to their organisation and team, supporting them to drive organisational performance through innovation, creativity, productivity and utilisation. All diversity and inclusion people policies, processes and practices should be data-driven, evidence-led and delivery-focused.

5.5 Who is responsible for promoting equality, diversity and inclusion?

Everyone who works in a public function or provides public services, including suppliers, shares in the duty to promote equality. In government project delivery, everyone also has a part to play in championing diversity and inclusion in the design, development and delivery of the work and in the day-to-day working environment.

The **portfolio director**, within a portfolio, or the **senior responsible owner** in a programme or project, have a specific accountability for ensuring that legal requirements are met at all times, for championing diversity and inclusion, and for establishing a safe and inclusive environment for delivery, with day-to-day responsibility then held by the **portfolio, programme or project manager**.

Work package managers have a duty to make sure those needs are reflected in the management of their teams and deliverables they produce.

Business case managers also play an important part in ensuring that equality, diversity and inclusion are considered in framing outcomes and options in the business case.

Behaviours are fundamental in promoting equality, diversity and inclusion. Leaders have a critical role in setting and modelling standards, but everyone contributes.

5.6 What to consider in managing equality, diversity and inclusion

5.6.1 Consider equality, diversity and inclusion in planning

Public investments are expected to deliver social value through their outcomes, benefiting the UK's communities, economy and nation as a whole. To achieve this, it is important to consider the differential impacts of proposals on different social groups when planning and making decisions on public investment; this includes the mandatory requirements set out in the *Green Book* and summarised below.

The *public sector equality duty* must be considered in appraising all proposals for public investment. It requires public authorities to have due regard to advancing equality for individuals with protected characteristics identified in the *Equality Act 2010*: age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex, sexual orientation, and, for some purposes, marriage and civil partnership.

The consideration of equality issues must influence the decisions reached by public bodies, and practitioners are required to inform decision-makers of the potential differential impacts on groups or individuals with characteristics identified by the Act. Accordingly, equalities analysis is a required element of investment appraisal when developing and refining the long list and short list of options, and the results must be made visible to decision-makers.

The *Green Book* recommends that where people with protected characteristics are negatively impacted by options differentially to the general population, consideration should be given to reduce the likelihood of this occurring. It also requires analysis of particular diversity and inclusion impacts to be considered in appraising options, specifically:

- **place-based analysis** to consider how an intervention might have different impacts in different geographical areas, or in rural areas
- **distributional analysis** to consider how an intervention might have different effects on individuals according to their characteristics (for example, income level or geographical distribution)
- **the family test** to consider impacts on family relationships in the development of policy

The *Green Book* provides further guidance on conducting equalities and other forms of impact analysis in investment appraisal.

Ensure that sufficient time is allocated for this analysis and that the appropriate expertise is available. Start early, so that risks and issues can be identified and worked through robustly as part of options development and appraisal: equality, diversity and inclusion can raise many different considerations, and so analysis is often iterative and takes shape over time.

Engaging early with a wide range of stakeholders, including those who oppose the proposals, is critical in ensuring that outcomes are framed with equality, diversity and inclusion in mind, and can help address evidence gaps and find ways to address risks and issues identified as the analysis progresses. Chapter 26: Stakeholder engagement sets out more detail on this.

Where risks or issues on equality, diversity and inclusion remain, following decisions on investment, these should be added to the relevant register and managed through the established procedures.

Equality, diversity and inclusion should also be considered in evaluation design and implementation throughout the life cycle, both to understand whether the desired outcomes and expected social value are being delivered, and to identify any unexpected impacts. Further guidance on this is set out in Chapter 2: Policy and evaluation and in the *Magenta Book*.

See *Achieving inclusive outcomes by design* for further support on embedding equality, diversity and inclusion in planning throughout the project life cycle.

5.6.2 Design for inclusion

Decisions on solution design and development are critical in determining how well the solution works for different users and influences the outcomes delivered and social value generated by the work. Solution design and development should ensure that equality, diversity and inclusion considerations are understood by the design and development teams before work begins, and that the relevant expertise is available, so that these are factored into the work as it progresses.

User-centred design practices, in particular, play an important role in ensuring that a solution meets the current and future needs of users in an accessible and inclusive way, and meets statutory requirements on accessibility. These include obligations under the *Equality Act 2010* which require all public services to be accessible to everyone who needs them, including services only used by public employees; and specific provisions on access to digital services under the *Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations (2018)*, which cover websites and mobile applications and apply to all public sector bodies. Further information on this is set out in the *Government Functional Standard for Digital* and in associated guidance on GOV.UK.

Designing for inclusion and accessibility is not just about meeting the needs of specific identified groups, however. All users can have different needs at different times and in different circumstances: their ability to use a service could be temporarily affected, for example, by their location, health or equipment. Beware, too, of making assumptions about user needs. Bringing in first-hand user experiences, developing and validating user stories and journeys – virtually, or even better, physically – helps bring breadth of thinking into the team.

Consider also how the solution is to be validated, assured and implemented. For example:

- are delivery partners aware of inclusion requirements?
- have the needs of different groups been included in trials?
- are guidance and signage accessible to all?
- does a service rollout prioritise larger user groups and leave minority groups, for example, those requiring special adjustments, to the end?
- is a solution required to meet all identified user needs as a condition of acceptance, or is there a risk that some minority user needs might be passed to operations to sort out as part of 'snagging'?

Such issues can have a significant impact on whether or not a solution is felt to be inclusive by users, and on subsequent take up, as well as on wider reputation.

More information on user needs and requirements, solution design and delivery is set out in Part F: Solution delivery.

See *Achieving inclusive outcomes by design* for further support on embedding equality, diversity and inclusion in solution design within the project life cycle.

5.6.3 Build diverse teams

Project delivery is an inherently diverse discipline, involving people from many different professions and backgrounds. It also takes many forms in government, from iterative digital service transformation using product-based approaches, to major construction and defence projects, and international, national and local social and economic programmes. Attracting, retaining and developing the diversity of skills and experience needed, and being able to work collaboratively across disciplines, organisations and environments, are critical for successful project delivery in government.

Diversity, inclusion and fairness should underpin all people activities in government project delivery, as set out in the *Government Functional Standard for People*. In particular:

- **recruitment activity** should be transparent, data-led and ensure a merit-based approach based on fair and open competition. Recruitment panels should be diverse, as defined in cross-government and organisational policies on diversity and inclusion
- **learning and development opportunities** should be offered fairly, taking account of the results of capability, learning needs, and talent and diversity analysis, as well as organisational objectives
- **performance management** should comply with policy and recommended practice on equality, diversity and inclusion; and consideration should be given to workplace adjustments that might support performance and progress

- **bullying, harassment and discrimination** should not be tolerated under any circumstances, and appropriate policies, guidance, learning and communication should be in place to enable people to recognise and report any instances

Beyond these core requirements, consider how best to enable everyone in the team to use and grow their skills, experience and professional expertise effectively, even if they are only involved for a limited period. Encourage people with different backgrounds and expertise to share their experience, and provide opportunities for more junior staff to present to wider or more senior groups. Working collaboratively with people from other professional disciplines and backgrounds also provides excellent opportunities for learning and development as well as supporting the work: think about how to encourage and support this.

5.6.4 Build social value and diversity in the supply chain

Government investment has a lasting impact on individuals, communities and the environment including through its commercial activity. A focus on social value can encourage inclusive employment and supply chain practices, address skills gaps, promote co-design, community integration and environmental sustainability. A competitive and diverse supply landscape can help deliver innovation in public services, manage risk and provide greater value for taxpayers' money.

The *Social Value Act 2012* requires all public bodies to consider how what they are proposing to buy might improve economic, social and environmental wellbeing. Government departments and arm's length bodies must use the social value model to explore and identify social value opportunities during early engagement with supply markets and service users in support of the government's missions to kickstart economic growth, make Britain a clean energy superpower, take back our streets, break down barriers to opportunity and build an NHS fit for the future. Public sector bodies must maximise social value effectively and comprehensively through procurement and account for it in their evaluation criteria.

Social value should be considered as early as possible pre-procurement, in discussion with commercial managers and in consultation with stakeholders, the supply market and service users to understand what social value might look like for the contract. Further information is set out in Chapter 25: Procurement and contract management, in the *Sourcing playbook* and *PPN 002: Taking account of social value in the award of contracts*.

See *Achieving inclusive outcomes by design* for a case study on building social value through the supply chain.

5.6.5 Build inclusive working practices

Inclusion should be considered in setting up the work and the team to do it, particularly in developing the governance and management framework. This plays an important part in creating an inclusive and welcoming environment for the work, where people with different skills and talents, backgrounds and experience can thrive and contribute fully.

Consider how the work is to be organised, governed and managed, including expectations on location and working arrangements. Do these encourage inclusion and diversity of participation? Do they mean that some people or groups have more influence than others? Are there particular considerations in terms of accessibility?

Think about the needs of everyone in the team. For example, governance and management can seem complicated, hierarchical and restrictive. Consider this in the design, so that everyone in the team understands how arrangements work and how to contribute and make their voice heard. Being clear on formal governance and decision-making arrangements, agreeing roles, responsibilities and accountabilities and documenting them, together with agreed routes for escalation, is critical in this. So too, however, are informal channels and opportunities for people to raise ideas and issues beyond their formal remit, for example through town halls, Scrum meetings and retrospectives, team and individual meetings; these also should be considered in designing the governance and management framework.

Consider also how to involve a diverse range of voices in the team and in formal governance fora, including user perspectives where possible. Rotating representation can help bring balance and new perspectives and ideas, as well as providing development opportunities for individuals. Shadow boards can also help explore ideas and generate a wider range of contributions.

Collective development and discussion at an early stage helps set clear expectations on inclusive working practices and build understanding of how they work. Some teams also agree a short 'charter', setting out shared commitments to expected values and behaviours, including on inclusion within the working environment.

5.6.6 Create a safe, inclusive and empowering working environment

The need to work across professional disciplines and organisational boundaries can create misunderstandings and tensions among project delivery team members. The pressure to deliver to agreed parameters can create conflict. Risks and issues raise the stakes further. Unless these challenges are managed, working environments can quickly become unpleasant and divided places to work, increasing the likelihood of people feeling excluded, harassed, bullied or discriminated against.

Psychological safety is recognised as a key factor in establishing high-performing teams, particularly in challenging environments. It is also a critical foundation for promoting inclusion. Creating a working environment where people feel safe to express their views, raise issues and challenge assumptions is critical in this; as is building a strong culture of inclusion, trust and empowerment across all parts of the team. This also means recognising that no-one has a monopoly on knowledge and everyone makes mistakes: encouraging people to try new things, admit errors, ask for help and seek feedback helps create a learning culture across the whole team.

Leaders have a particular role to play by setting expectations and modelling behaviours. Ministry of Defence research, *Psychological Safety in MOD major projects*, highlights the importance of clear direction and shared goals; a strong focus on learning, particularly across different teams and cultures; empowering people to deliver; and recognising individual contributions as part of celebrating team success.

Ultimately, project delivery cannot happen without people and relies on a diversity of skills, talent and experiences to be successful. Creating an inclusive environment where people feel safe and valued for what they bring, regardless of grade, discipline, background or any other factor, enables everyone to contribute to their best in delivering the work.

See *Achieving inclusive outcomes by design* for further support on implementing safe and inclusive working environments throughout the project life cycle.

5.6.7 Use data and evidence

Data and evidence are important in promoting equality, diversity and inclusion, particularly in:

- framing outcomes, appraising investment options and evaluating progress against them
- considering representation, for example in stakeholder engagement and trials
- assessing impacts on different groups as part of trialling and implementation
- understanding perceptions in teams, among stakeholders, and more widely

The *Government Functional Standard for People* requires that all policies, processes and practices concerned with diversity and inclusion should be data-driven, evidence-led and delivery-focused.

Care is needed in gathering and analysing data in relation to equality, diversity and inclusion as that data is often sensitive and often involves protected personal data. Published data sources should be drawn on where possible. Further information on the use of data and analysis is set out in the *Aqua Book*.

See *Achieving inclusive outcomes by design* for further support on using data and evidence throughout the project life cycle.

5.7 Further reading

- Cabinet Office, *Civil Service diversity and inclusion strategy*
- Cabinet Office, *Making your service accessible*
- Cabinet Office, *PPN 002: Taking account of social value in the award of contracts*
- Cabinet Office, *Sourcing playbook*
- Government Project Delivery, *Achieving inclusive outcomes by design*
- HM Government, *Government Functional Standard GovS 003: People*
- HM Government, *Government Functional Standard GovS 005: Digital*
- HM Treasury, *Aqua Book: guidance on producing quality analysis for government*
- HM Treasury, *Magenta Book: central government guidance on evaluation*
- HM Treasury, *Green Book: UK government guidance on assurance*
- Ministry of Defence, *Psychological Safety in MOD Major Projects*
- UK Parliament, *Equality Act 2010*
- National Archives, *Public Sector Bodies (Websites and Mobile Applications)(No.2) Accessibility Regulations 2018*
- Office for Equality and Opportunity, *Public Sector Equality Duty: guidance for public authorities*
- United Nations, *Transforming our world: the 2030 agenda for sustainable development (2015)*

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6. Environment and sustainability

6.1 Purpose of considering the environment and sustainability

The environment and sustainability are important considerations to ensure that portfolios, programmes and projects work to protect the natural environment, help combat climate change and create social value by:

- meeting the legal requirements of the *Environment Act 2021*, the *Biodiversity Duty* and the *Public Services (Social Value) Act 2012*, which requires people who commission public services to think about how they can also secure wider social, economic and environmental benefits
- ensuring that impacts on the environment and sustainability are fully considered in making investment decisions and managed through the life cycle
- supporting delivery of the UK's commitment to achieving the net zero target by 2050 and to the United Nations' Sustainable Development Goals set out in the *2030 agenda for sustainable development*

6.2 Key points

- Understand the legal requirements on environment and sustainability.
- Consider environment and sustainability throughout all phases of the life cycle.
- Use the *Green Book* natural capital framework to identify and value environmental and sustainability impacts.
- Set clear requirements and expectations of the supply chain on environment and sustainability in procurement and contract management.
- Encourage innovation and leverage technology advances to drive improvements in solution development, use and disposal to help meet environment and sustainability goals.

6.3 Why consider the environment and sustainability?

The environment and sustainability are fundamental considerations in government policymaking and the delivery of policy objectives through portfolios, programmes and projects. Government work can play a critical role in protecting and enhancing the environment and preserving natural assets, building resilience to biodiversity loss

and managing changing climate impacts, or it can have negative impacts on them. Environmental and social impacts are therefore important considerations in investment decisions and in the assessment and delivery of social value within the work of the UK government.

The need to consider the environment and sustainability is also a legal requirement.

The *Climate Change Act 2008* sets legally binding greenhouse gas reduction targets and 5-yearly carbon budgets to be set by the government. This was updated in 2019 to include the binding 'net zero' target, to reduce greenhouse gas emissions by 100% by 2050, compared to 1990 levels. The Act also requires the government to make provision for climate change adaptation, including a 5-yearly government *Climate change risk assessment* with response measures set out in the *National adaptation programme*.

The *Environment Act 2021* sets out a series of measures to ensure that such impacts are properly considered and to steer policy-makers towards opportunities to prevent environmental damage and enhance the environment. This includes specific statutory duties placed on ministers and public servants to consider environmental principles and biodiversity.

These requirements are also underpinned by the UK's various international commitments, including the United Nations' *Paris Agreement*, an internationally binding treaty on climate change, and the United Nations *Sustainable Development Goals*.

Plans to meet these statutory targets and international commitments are set out in the *25-year environment plan* and the *Environmental improvement plan*, with monitoring and evaluation supported by the *Outcome indicator framework* and *natural capital and ecosystem assessment (NCEA)*, and progress reported on annually, overseen by the Office of Environmental Protection. All government organisations are expected to have regard to these targets and commitments, and to consider them in developing and assessing policy proposals.

Considering the environment and sustainability from the outset supports effective project delivery by:

- supporting optimal design up front and reducing the need to change solution design retrospectively
- supporting realistic costing of work early on, avoiding the need to request extra funding during programme and project life cycles due to scope change
- enabling meaningful evaluation which takes full account of environmental and biodiversity impacts in assessing outcomes, benefits and social value

6.4 What is meant by environment and sustainability?

Environment is usually used to refer to the natural environment and defined under the *Environment Act 2021* as including plants, wild animals and other living organisms, their habitats, land (except buildings or other structures), air and water, and the natural systems, cycles and processes through which they interact.

Sustainability is concerned with meeting the present needs without compromising the environment for future generations. It is central to the concept of sustainable development, defined by the United Nations as an approach to development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development therefore seeks to find a balance between economic development, environmental protection, and social well-being.

6.5 Who is responsible for managing environment and sustainability?

Compliance with statutory requirements on environment and sustainability falls within the policy and business responsibilities of government ministers and their accounting officers, as set out in *Managing public money*, and should form part of the governance and management framework for the organisation.

The **portfolio director** responsible for a portfolio, or the **senior responsible owner** of a programme or project is accountable for ensuring that environmental and sustainability considerations are properly considered as part of the planning, control and delivery of the work, in line with statutory requirements and government and organisational policies.

Day-to-day oversight of environmental and sustainability matters is the responsibility of the **portfolio**, **programme** or **project manager**, who might also delegate specific responsibilities to others, for example those involved in planning, business case development, solution design, risk and benefits management, depending on the nature, scale and complexity of the work. Specialist expertise is also often needed, for example to understand and assess particular sustainability and environmental impacts.

6.6 What to consider in managing environment and sustainability

6.6.1 Considering environment and sustainability in objectives and outcomes, and throughout the life cycle

Environmental and sustainability requirements should be considered as part of the objectives and outcomes envisaged for the work and documented as part of its scope. This should cover the outcomes for all phases of the work, including development, use and decommissioning or disposal.

Consideration should include, not only how the work might impact on the environment and sustainability, but how climate change and other environmental changes might impact on the solution and how it is to be used. These considerations should then be factored into planning, investment appraisal and risk management throughout the life cycle, to help maximise positive impacts and minimise negative impacts where possible on the environment, and to build resilience and the ability to adapt into solutions where appropriate.

Consideration must include identifying and ensuring compliance with relevant statutory, regulatory and other government requirements throughout the life cycle, including in use and disposal (see 6.6.2 on identifying environmental and sustainability impacts).

If not already covered in organisation-wide policies and procedures, the management of environment and sustainability should be covered in, or referenced from, the respective portfolio, programme or project governance and management framework, aligned to the objectives and outcomes for the work.

6.6.2 Identifying environmental and sustainability impacts

Environmental and sustainability impacts must be identified and assessed as part of investment planning and appraisal, as set out in the *Green Book*. This includes meeting the various statutory duties established by the *Environment Act 2021*, which place obligations on ministers and public servants to have regard to the environment, biodiversity and sustainability in making policy.

The *Environmental principles policy statement* sets out that when making policy, and where relevant, ministers need to consider the:

- integration of environmental principles within policy
- prevention of environmental damage
- rectification at source
- polluter pays principle
- precautionary principle

To comply with the principles, public servants are required to consider the impact of a policy change on the environment, both positive and negative, and to estimate the impacts on emissions, climate change and the net zero commitment, when appraising the costs and benefits of any proposal.

There are also obligations on biodiversity.

The **biodiversity duty** requires all public authorities in England to consider what they can do to conserve and enhance biodiversity in England, determine policies and specific objectives for taking action, and then take that action as soon as possible.

The **biodiversity net gain (BNG)** requirement is an approach to development designed to ensure that habitats for wildlife are left in a measurably better state than they were before the development. In England, BNG is mandatory under the *Town and Country Planning Act 1990* (as amended by the *Environment Act 2021*), and developers must deliver a BNG of at least 10%.

Policy makers, planners and business case teams must be aware of these requirements when generating options, and in valuing costs and benefits as part of investment appraisal. Further guidance to support appraisal of environmental and biodiversity impacts is provided in the *Green Book* and accompanying guidance on climate change and environmental valuation and valuation of energy use and greenhouse gas emissions for appraisal.

The Department for Environment, Food and Rural Affairs also has guidance on *Enabling a Natural Capital Approach (ENCA), Assessing environmental impact, Complying with the biodiversity duty* and *Understanding biodiversity net gain*.

Climate change impacts should also be considered, as these can significantly affect the benefits, costs and risks associated with many government policies and can mean that adaptation measures need to be considered as part of planning and investment appraisal. The impacts could be from the realisation of physical risks such as rising temperatures and sea level rise, and the loss of asset value during the transition to net zero, such as fossil fuel infrastructure.

The *Green Book* and its accompanying guidance, *Green Book supplementary guidance: climate change and environmental valuation*, provides further guidance.

6.6.3 Valuing and appraising environment and sustainability

Where positive and negative impacts on the environment and sustainability are identified, these need to be valued and included within the economic case for investment appraisal.

The *Green Book* uses the concept of **natural capital** to provide an overall framework for appraisal of a wide range of environmental effects and externalities such as air pollution, noise, waste and greenhouse gas emissions. Natural capital includes the 'stocks' of elements of nature that have value to society, such as forests, fisheries, rivers, biodiversity, land and minerals, and can be valued in various ways (for example, in terms of use or non-use, market value or non-market value). The *Green Book* sets out how to determine whether an intervention might impact on natural capital, and how to value them, with guidance on valuation provided in the Department for Environment, Food and Rural Affairs' *Enabling a natural capital approach*.

In particular, the statutory requirements established by the *Climate Change Act 2008* and the *Environment Act 2021* (see 6.6.2 on identifying environmental and sustainability impacts) mean that the following should be considered and, where relevant, included in valuation and appraisal.

6.6.3.1 Greenhouse gas emissions and energy efficiency

Greenhouse gas emissions are generated in many ways, whether through emissions arising from running, maintaining and using new assets or services, or the emissions from the materials and work to create them.

See the National Infrastructure and Service Transformation's *Whole life carbon management handbook* for guidance on how to maximise whole life carbon reductions throughout the life cycle of infrastructure and construction projects.

The creation of greenhouse gas emissions has a social cost based on its contribution to climate change, and this should be included in estimating the social cost of an intervention. Direct impacts to society, in terms of energy savings or increased energy demands should also be valued. The *Green Book* provides specific guidance on how to quantify and value greenhouse gases and energy efficiency for the purposes of investment appraisal, statutory reporting and evaluation.

6.6.3.2 Biodiversity

Biodiversity value is measured in standardised biodiversity units, used to calculate biodiversity net gain. A habitat will contain a number of biodiversity units, depending on things like size, quality, location and type. Biodiversity units can be lost through development or generated through work to create and enhance habitats. When seeking to value biodiversity, the advice of an ecologist should be sought, both to measure the biodiversity value of the habitat concerned and to advise on suitable habitat creation or enhancement for the land. Further guidance is set out in the *Biodiversity net gain* collection by the Department for Environment, Food and Rural Affairs.

6.6.3.3 Vulnerability to climate change

The latest *Climate change risk assessment* should be used to consider current and potential future climate risks and vulnerability to risks of an intervention to which resilience may be needed. This provides a framework that quantifies interactions with climate risk, such as flood and coastal erosion, and also resilience factors. *Green Book supplementary guidance: climate change and environmental valuation* provides steps to determine whether climate risks are relevant in relation to the appraisal of an intervention.

6.6.4 Working with the supply chain to embed environment and sustainability

Advances in technology provide opportunities to drive improved productivity and efficiency, not only in how solutions and assets are designed, built and operated but also to support adaptation to climate change, net zero and environmental gain.

This could be achieved by:

- developing solutions that reduce carbon emissions during manufacture and construction, for example through standardisation and offsite production
- optimising energy use and other impacts during use and disposal
- retrofitting existing buildings to reduce greenhouse gas emissions
- developing net zero pathways for communities

Environment and sustainability considerations should feed into procurement and contract management, such as through early market engagement, specifying statutory and other requirements (see Chapter 25: Procurement and contract management).

The *Sourcing playbook* sets out how to ensure that the government's statutory and other commitments to the environment and sustainability are factored into procurement, including:

- meeting applicable requirements of the *Environment Act 2021*, including to deliver biodiversity net gain, and other potential requirements such as waste reduction and recycling, and air and water quality
- requiring solutions proposed by suppliers to be accompanied by a whole life carbon assessment, to agreed technical specifications, where proportionate and appropriate
- requiring a consistent approach to whole life carbon assessment across contracts on a single programme or project
- including measurable carbon reduction commitments, where relevant and proportionate, in frameworks, contracts and associated specifications
- requiring suppliers bidding for major government contracts to detail their commitment to achieving net zero through publication of a carbon reduction plan

Further requirements are also set out in recent *Procurement policy notes PPN 002: Taking account of social value in the award of contracts* sets out how to take account of social value in the award of central government contracts using the social value model (see Chapter 25: Procurement and contract management), which includes fighting climate change and effective stewardship of the environment. *PPN 06/21: Taking account of carbon reduction plans in the procurement of major government contracts* requires carbon reduction plans to be incorporated into procurement assessments, and *PPN 01/24: Carbon Reduction Contract Schedule* provides contract schedules to incorporate objective setting and monitoring of decarbonisation.

Further guidance on decarbonisation in procuring construction and infrastructure is also available in *Promoting net zero carbon and sustainability in construction*. This draws

on extensive industry research to provide ratings of carbon content in steel, concrete and diesel. Clients and procurement bodies set minimum ratings for the carbon content of these products over time. Use of this approach is recommended by the National Infrastructure and Service Transformation Authority as a means of promoting an outcomes-based approach on decarbonisation in contracts with suppliers.

6.6.5 Environment and sustainability in government property

Particular considerations arise on the environment and sustainability in managing government property. The *Government Functional Standard for Property* requires management of the whole property life cycle to be directed towards compliance with government policy for the environment, and plans to improve sustainability within defined timescales, designed to:

- achieve net zero carbon emissions for each building or property portfolio, contributing to published government targets
- undertake new developments in a way that uses resources in an efficient and responsible manner, leaving the natural environment in a measurably better state than it was before, including conserving and enhancing biodiversity

Specific requirements are set out in more detail in the *Government Functional Standard for Property*, and the *Net zero estate playbook* provides guidance on how government estate managers can plan to achieve targets set by government policy.

6.6.6 Reporting and evaluation on environment and sustainability

Portfolios, programmes and projects should monitor environment and sustainability impacts through the life cycle, and include them in reviewing performance and benefits realisation. Post-project evaluation should take full account of environmental and biodiversity impacts in assessing outcomes, benefits and social value, as set out in the *Green Book*.

Reporting on environmental and sustainability impacts should also be included within wider organisational reporting as appropriate. This includes reporting on impacts which contribute to the environmental targets set for government departments under the *Greening government commitments* framework.

Specific requirements for major projects

Programmes and projects in the Government Major Projects Portfolio have to report on environmental targets and sustainability through the Government Reporting Integration Platform (GRIP) reporting process. These include:

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- whole life carbon assessment and reporting against carbon budgets
- climate resilience, natural environment and social value reporting
- social value
- biodiversity net gain (infrastructure programmes and projects only)

Further guidance on reporting is available from the National Infrastructure and Service Transformation Authority.

6.7 Further reading

- Cabinet Office, *Procurement policy note 002: Taking account of social value in the award of contracts*
- Cabinet Office, *Procurement policy note 01/24 carbon reduction contract schedule*
- Cabinet Office, *Procurement policy note 06/21: Taking account of carbon reduction plans in the procurement of major government contracts*
- Cabinet Office, *Procurement policy notes collection*
- Department for Environment, Food and Rural Affairs, Assessing environmental impact
- Department for Environment, Food and Rural Affairs, *Biodiversity net gain*
- Department for Environment, Food and Rural Affairs, *Climate change risk assessment and the national adaptation programme*
- Department for Environment, Food and Rural Affairs, *Complying with the biodiversity duty*
- Department for Environment, Food and Rural Affairs, *Enabling a natural capital approach*
- Department for Environment, Food and Rural Affairs, *Environmental improvement plan 2025*
- Department for Environment, Food and Rural Affairs, *Environmental principles policy statement*
- Department for Environment, Food and Rural Affairs, *Greening government commitment: 2021 to 2025*
- Department for Environment, Food and Rural Affairs, *Natural capital and ecosystem assessment (NCEA) programme*

- Department for Environment, Food and Rural Affairs, *Understanding biodiversity net gain*
- Government Commercial Function, *Promoting net zero carbon and sustainability in construction*
- Government Commercial Function, *The Sourcing Playbook*
- Government Property Function, *Government Functional Standard GovS 004: Property*
- Government Property Function, *Net zero estate playbook*
- HM Treasury, *Green Book: UK guidance on appraisal*
- HM Treasury, *Green Book supplementary guidance: climate change and environmental valuation*
- HM Treasury, *Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal*
- HM Treasury, *Managing public money*
- HM Government, *Government Functional Standard GovS 002: Project delivery*
- Infrastructure and Projects Authority, *Transforming infrastructure performance: roadmap*
- National Infrastructure and Service Transformation Authority, *Whole life carbon management handbook*
- UK Parliament, *Climate Change Act 2008*
- UK Parliament, *Environment Act 2021*
- UK Parliament, *Public Services (Social Value) Act 2012*
- UK Parliament, *Town and Country Planning Act 1990*
- United Nations, *Paris Agreement (2015)*
- United Nations, *Transforming our world: the 2030 agenda for sustainable development (2015)*

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7. Health, safety and security

7.1 Purpose of managing health, safety and security

The purpose of managing health, safety and security in project delivery is to ensure the public and people engaged in government work are not at risk and that government property and information, public assets and citizen and employee data are protected from harm. Managing health, safety and security is a critical part of managing risk within a portfolio, programme or project.

7.2 Key points

- Portfolios, programmes and projects can create new or increased risks on health, safety and security which require active planning and management.
- Health, safety and security should be integrated into the governance and management framework and into day-to-day practice.
- Involve everyone in managing health, safety and security and provide appropriate information and training.
- Encourage an open culture in identifying risks and issues relating to health, safety and security and take prompt action to address them.
- Monitor, review and report on health, safety and security through the life cycle.

7.3 Why does managing health, safety and security matter?

Protecting the health and safety of employees and members of the public involved in, or affected by, government work or activities is a critical part of risk management in government project delivery. Failure to consider health and safety can have catastrophic results for individuals and organisations. Health and safety law applies to everyone but places particular duties on organisations and employers, whose leaders can have both collective and individual responsibility for health and safety and can be personally liable if these duties are not met.

Protecting the security of employees and members of the public involved in, or affected by, government work and activities is also a critical part of risk management and is closely linked to health and safety. Failure to manage security, whether of people, property, services, information and data, makes them vulnerable to attack or exploitation, putting employees and the public at risk, with potential to cause harm, loss or threat to life to

individuals or to the UK. Government security is also subject to certain legal requirements, notably the *Official Secrets Act 1989* and statutory provisions on data protection and cyber security (see Chapter 24: Information and data management).

7.4 Managing health and safety

7.4.1 What is health and safety management?

Managing health and safety involves establishing the framework for managing health and safety, identifying and assessing risks and implementing control measures (see Chapter 20: Risk management), monitoring and reviewing performance (see Chapter 17: Controlling), and acting on lessons learned (see Chapter 38: Learning from experience). It should combine a systemic approach to preventing and controlling health and safety risks with a strong focus on human behaviours and wellbeing. There are various industry-specific approaches to managing health and safety, typically based on the 'Plan, Do, Check, Act' approach recommended by the Health and Safety Executive, as described in *Managing for health and safety*.

Employers have a legal duty to put in place suitable arrangements to manage health and safety, both in terms of securing the health, safety and welfare of people at work and protecting others against risks to their health or safety arising out of or in connection with work activities.

The *Health and Safety at Work etc. Act 1974* and the *Health and Safety at Work (Northern Ireland) Order 1978* are the primary pieces of legislation covering occupational health and safety. They require employers to protect their workers and others from getting hurt or ill through work. If they do not, action can be taken against them by a regulator (such as the Health and Safety Executive or local authority) under criminal law and/or a person affected can make a claim for compensation against them under civil law.

These provisions apply to all organisational activities, and organisations should have established health and safety policies and procedures as part of their governance and management framework which should be followed. However, portfolios, programmes and projects, in initiating new work and delivering change, can raise different considerations for health and safety and create new risks that require changes in practice or behaviour.

In addition, change itself can be stressful, both for those delivering it and those affected by it. These impacts of change can also present risks to health and wellbeing that need to be managed (see Chapter 35: Management of organisational and societal change).

The context of the work has a significant impact on requirements for health and safety.

Infrastructure, construction and military capability work requires a rigorous focus on physical health and safety, designed to keep workers and members of the public safe and minimise the risk of accidents and other harmful impacts, for example, resulting from the release of dangerous substances and emissions. It also requires a strong focus

on the welfare and wellbeing of employees, who often work in challenging and stressful environments, which can impact significantly on physical and mental health.

Digital and transformation work can affect health and safety in several ways. Changes to organisational layouts and working arrangements may need updated fire safety procedures. However, such work typically requires a strong focus also on the handling of potentially significant impacts for individuals, in terms of changes to jobs, teams and working practices, and managing the impacts of this is also a critical consideration for health and safety.

International work has safeguarding risks. Steps need to be taken to safeguard staff, other people involved in the work, and beneficiaries. Health and safety requirements for different countries being worked in must also be considered.

There are a range of specific laws and regulations governing health and safety in different industries and environments which need to be followed. Further guidance on the different statutory requirements and on health and safety in general is provided on the Health and Safety Executive website.

7.4.2 Who is responsible for managing health and safety?

In government organisations, the organisation's **accounting officer** has overall accountability for health and safety within the organisation, supported by the executive board and **audit and risk committee**, and oversees the organisational governance and management framework for managing health and safety. Each organisation is also expected to designate an individual responsible for health and safety in the organisation, accountable to the accounting officer.

At least 1 **health and safety representative** independent of the organisation's chain of command might be appointed by trade unions or elected by employees. They represent the interests and concerns of co-workers and respond on their behalf, typically at an organisation level.

Within this framework, the **portfolio director** responsible for a portfolio, or the **senior responsible owner** of a programme or project, is accountable for ensuring health and safety within the work for which they are responsible, acting in line with wider organisational and government policies.

Day-to-day oversight of health and safety is the responsibility of the **portfolio, programme or project manager**, who can also appoint individuals to manage health and safety within the team, depending on the scale and complexity of the work.

7.4.3 What to consider in managing health and safety

7.4.3.1 Understanding the legal requirements

Legal requirements for managing health and safety relevant to the work should be identified as early as possible. These must be complied with and should be reflected in the governance and management framework for the work (see 7.4.3.2). Note in particular the provisions of the *Health and Safety at Work etc. Act 1974* and associated regulations, including the *Management of Health and Safety at Work Regulations 1999*. These require employers to ensure that:

- risk assessments are conducted (and reviewed at least annually), hazards are identified and control measures are implemented
- employees (and where necessary, others working in the environment) have information, instruction and training on all safety matters, including on equipment and safe systems of work.
- accidents are reported, recorded, and actions taken to reduce the risk of recurrence
- safety management is designed around the 'Plan, Do, Check, Act' model as described in *Managing for health and safety*

Organisations are also required to establish arrangements to improve health (physical and mental) and wellbeing in the workplace by:

- developing, implementing and communicating a health and wellbeing at work plan, which considers inclusivity and access for all
- establishing and promoting support for employees through occupational health and employee assistance programmes and other key bodies
- considering the impact of these arrangements on the health and wellbeing of employees and monitoring the effectiveness of initiatives

Specific regulations govern the reporting of work-related accidents, injuries, occupational diseases, dangerous occurrences and gas incidents, under the *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013*, often referred to as RIDDOR. These require all work-related deaths, specified reportable injuries to, and occupational diseases affecting workers and members of the public, and specified dangerous occurrences and gas incidents to be reported to the Health and Safety Executive by employers and other 'responsible persons', including the self-employed and those in control of premises. In government this is typically through organisation-level reporting arrangements, other than where specific procedures are in place. A culture of reporting should be encouraged to ensure safety arrangements are sufficient and strategic hazard reviews are comprehensive.

Health and safety is led from the top of the organisation and responsibility is delegated throughout the management chain. Leaders and managers in portfolios, programmes and projects are expected to ensure that employees are aware of organisational and local health and safety arrangements and put in place any support needed to respond to specific health and safety considerations arising as part of the work. This should include ensuring that building and facilities management procedures, including fire safety requirements, are always followed. It should also include ensuring that employees are aware of any employee wellbeing initiatives and services, for example employee assistance programmes and occupational health services, which are often provided at organisational level.

Further information on health and safety legislation is available on the Health and Safety Executive website, and information on employee wellbeing in government in the *Government Functional Standard for People*.

7.4.3.2 Creating the framework for managing health and safety

Managing health and safety should be an integral part of the governance and management framework for a portfolio, programme or project. The approach and arrangements for managing health and safety should be aligned to those of the host organisation but should be primarily determined by the nature and context of the work. This should be underpinned by an assessment of the risk profile and linked to or part of the wider risk management framework (see Chapter 20: Risk management).

The governance and management framework should set out how health and safety is to be organised and managed as part of the work. This should include how it is considered in planning and decision-making, and integrated with other governance and management practices. It should set out the aims for health and safety through the life cycle and how performance is to be measured.

The framework should also set out expectations on health and safety in terms of workplace behaviours and attitudes, and particularly on:

- the role of senior leaders and managers in establishing appropriate health and safety practices, and maintaining channels for sharing information and reporting risks, issues and incidents
- the need for appropriate workforce skills and training
- creating an environment where people are trusted, involved, and encouraged to raise concerns, near-misses and incidents

The level of detail within the framework on health and safety should be tailored to the scale, complexity and risk profile of the work and should be reviewed regularly to ensure that it continues to meet the requirements, to identify patterns of near-misses and incidents, and to reflect new risks arising as the work progresses through the life cycle.

7.4.3.3 Involving everyone in managing health and safety

Everyone involved in working on a portfolio, programme or project needs to know how to work safely and without risk to their health. This includes those working under contract as well as visitors to a building, site or other facility. This means ensuring that everyone has appropriate information, instruction and training on hazards, risks and the control measures in place to deal with them, and knows how to follow emergency procedures.

Where work is delivered through a delivery partner, there should be a joint approach to risk assessment, agreement on the approach to managing health and safety, and agreed common practices adopted where possible, particularly where people from different organisations are co-located.

Workers are often the best people to understand risks in the workplace as they are closest to them; they should be included in the risk assessment process. This means creating an active health and safety culture where the focus is on prevention rather than reaction to incidents after the event. Health and safety should be routinely considered in meetings as part of risk management and factored into planning and reporting. Senior leaders and managers have a vital role to play here, by actively championing health and safety, challenging unsafe behaviours, ensuring prompt action in response to risks, issues and ideas for improvement, and that lessons learned are followed through.

Employers are legally required to consult workers on health and safety, allowing employees to raise concerns and influence decisions on managing health and safety, either directly or through a health and safety representative. While formal consultation is typically done at organisational level, seeking the views of employees is also important in the context of a portfolio, programme or project, particularly where there are specific considerations on health and safety.

Programmes and projects can also present particular challenges for health and safety in terms of continuity. People joining and leaving the team regularly can result in gaps in awareness of hazards and risks, safe systems or work and management systems. This makes it essential to have systematic arrangements for providing up-to-date information, instruction and training on health and safety, particularly as part of induction for new joiners, when people change roles or take on extra responsibilities, and for people with health and safety responsibilities (see Chapter 39: Project delivery team induction and training).

Young workers are particularly vulnerable to accidents, and there are specific laws under the *Management of Health and Safety at Work Regulations 1999* in relation to the protection of young workers, for example apprentices and those on work experience. Pregnant workers and workers who have recently given birth are also protected under this regulation.

In addition, under the *Equality Act 2010* those individuals with a protected characteristic as described in the act should be subject to risk assessment under the *Management of Health and Safety at Work Regulations 1999*, with reasonable adjustments prescribed as necessary.

Further guidance on promoting a strong culture of health and safety with employees and all other stakeholders is provided in *Managing for health and safety*.

7.4.3.4 Ensuring appropriate monitoring and reporting

Health and safety should be monitored and reported on in line with organisational and any local requirements, supported by relevant key performance indicators. Monitoring and reporting should be proportionate to the nature, scale and complexity of the work. It should normally include both active methods (for example, controls implemented, training compliance, inspection results) and reactive methods (for example, accidents and incidents, ill-health and sickness, wellbeing surveys).

Monitoring and reporting must include the mandatory recording and reporting of work-related accidents, injuries, incidents and other categories under the *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013* (RIDDOR), typically through wider organisational reporting arrangements (see 7.4.3.2 on creating the framework for managing health and safety). This also includes reporting by the employer of incidents involving people employed under contract.

The causes of any accidents, incidents or near-misses should be investigated and reported, with corrective actions put in place to reduce or eliminate the chances of a similar incident recurring, and to share lessons learned. Further guidance on accident and incident investigation is described in *Managing for health and safety*.

It is important to monitor trends on health and safety over time, using key performance indicators appropriate to the hazard profile of the work, and to act where these indicate risks or issues arising. If there are particular concerns, an in-depth review or audit should be commissioned.

7.4.3.5 Reviewing performance

Reviewing health and safety performance, on the basis of data gathered over time, provides a view on how arrangements are working and whether any changes are needed, for example, because some things are no longer necessary or new factors or risks have arisen.

The timing of a review depends on the nature of the work, its risk profile, and where it is in the life cycle. For example, a review could be important if a project is due to move from planning into delivery, to inform detailed planning for the next phase of the work; or in a portfolio to inform learning from experience across multiple projects and/or programmes. Further guidance on reviewing health and safety is included in *Managing for health and safety*.

Reviews of health and safety play a critical part in enabling lessons to be learned and reducing risks and incidents. A review also provides the opportunity to recognise success in health and safety management and promote positive lessons for the future (see Chapter 38: Learning from experience).

7.5 Managing security

7.5.1 What is security management?

Security management is concerned with the protection of government security and includes strategy and planning, prevention and detection, incident management and reviews from lessons learned, protecting:

- the government's assets (people, property and information)
- visitors to government property, and third-party suppliers whilst engaged on government business
- personal data

Protective security in government comprises 4 interconnected domains, through which attacks are perpetrated: physical, personnel, cyber and technical. Although they are considered as separate domains, they rarely occur in isolation and are managed holistically.

Physical security is the practice of protecting elements of government infrastructure, estates, physical assets and personnel against attacks or compromises in the physical (a tangible and real-world) environment.

Personnel security is the practice of ensuring the security of government information and infrastructure against threats arising from government personnel, others working for government and those who formerly worked in government circles. This could include deliberate attacks, criminal activity for profit, unmalicious and unwitting insider threat, or gross negligence, and could manifest in a variety of environments, including the physical or virtual environments. Such individuals could join government service intending to commit such acts, or decide to do so after employment.

Cyber security comprises technologies, processes and controls that are designed to protect systems, networks and data from the deliberate and inadvertent exploitation of computer systems, technology dependent enterprises and networks.

Technical security is the practice of detecting the compromise of protective security systems, analysis and prevention of technical attack, mitigation of technology vulnerabilities and the deployment of countermeasures.

Government security also extends to the security of its supply chain, referred to as **industry security**. Maintaining oversight of the security arrangements of any third-party suppliers that provide goods and services to government or which hold government or international partners' classified information is essential for the overall management of security.

The *Government Functional Standard for Security* sets out the expectations for managing security in government, and is underpinned by subject specific standards which define the requirement for physical, personnel, cyber, and incident management. Guidance on information and data security is also available in the *Government Functional Standard for Digital*. Further guidance and information is available at security.gov.uk.

Information management is closely allied to security in government and requires the implementation of protective security measures that mitigate insider threat and ensure consistency and efficiency between government organisations. All organisations are required to have policies, systems and processes for information handling that are compliant with HM Government information security policies and standards, and relevant legislation and regulations, such as the *Data Protection Act 2018* and the *Public Records Act 1958 (as amended)*(see Chapter 24: Information and data management).

Also allied to security management is the management of activity to counter fraud, bribery and corruption, which cuts across a number of domains. More information on this is in Chapter 29: Finance, and in the *Government Functional Standard for Counter Fraud*.

7.5.2 Who manages security?

The **Prime Minister** is ultimately responsible for the security of HM Government, and delegates accountability to the **cabinet secretary**, who in turn delegates accountability to departmental permanent secretaries and accounting officers.

Policy on national security is led by the National Security Council, working with the Cabinet Office's National Security Secretariat and other bodies concerned with security across government. Functional leadership on security is provided by the Government Security Group.

Expert advice and support are provided in the four domains of security from the UK National Technical Authorities: the National Protective Security Authority (NPSA) on physical and personnel security; the National Cyber Security Centre (NCSC) on cyber security; and the UK National Authority for Counter-Eavesdropping (NACE) on technical security. Work to counter fraud, bribery and corruption is led by the Public Sector Fraud Authority.

In a government organisation, the **accounting officer** has primary accountability for managing the organisation's risks, including security and fraud, supported by the executive board and audit committee, and sets the organisational governance and management framework in accordance with government policy. Each organisation is expected to designate a separate individual responsible for security, for information security, and for countering fraud, accountable to the accounting officer. Other specialist roles are defined to suit the needs of the activities being undertaken.

Within this framework the **portfolio director** responsible for a portfolio, or the **senior responsible owner** of a programme or project, is accountable for managing security and

fraud risks within the work for which they are responsible, acting in line with organisational and government policies.

Day-to-day oversight of security is the responsibility of the **portfolio, programme or project manager**, who can also appoint individuals to manage security and fraud risks within the team, should the scale and complexity of the work make this necessary, working with specialists in the organisation and other parts of government as required. **Information asset owners** also have particular responsibilities for security in relation to the assets they oversee.

Everyone who works with government (including employees, contingent labour and suppliers), has a duty of confidentiality and a responsibility to safeguard any government assets, information or data that they access. Individuals are accountable for their own security decisions and should complete any security training mandated by their organisation.

7.5.3 What to consider in managing security

7.5.3.1 Understanding the government security policy framework

Overview

The *Government Functional Standard for Security* sets the expectations for consistent and coherent security behaviours across government. Its provisions apply to those working within and for the government who have a responsibility to ensure security practices are followed, including employees and third-party suppliers.

These expectations are designed to protect:

- the government's assets (people, property and information)
- visitors to government property and third-party suppliers whilst engaged on government business
- citizen data

Government security policy operates within the context of domestic law, including the *UK General Data Protection Regulation (UK GDPR)*, the *Data Protection Act 2018* and the *Official Secrets Act 1989*, and other provisions relating to freedom of information (see Chapter 24: Information and data management).

The security policy provides the underpinning framework supporting the *Government Functional Standard for Security*.

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Personnel security

The government personnel security controls ensure that anyone (whether an employee or someone employed under contract) given access to government assets is subject to appropriate checks to confirm their identity and to provide a level of assurance as to their trustworthiness, integrity and reliability. This requires, as a minimum, passing the Baseline Personnel Security Standard (BPSS), but often more detailed clearance to different levels through National Security Vetting. Further information on security levels and requirements is provided in the *HMG personnel security controls*.

Information security

To manage information in line with the *Government Functional Standard for Security*, the *Government security classifications policy* provides an administrative system for the government and its partners to protect information assets appropriately against prevalent threats. Any information that is created, processed or moved (whether sent or received) as a part of government work falls within the classifications policy.

The policy uses 3 classification tiers (OFFICIAL, SECRET and TOP SECRET). Each classification provides a set of protective security controls and baseline behaviours that are proportional to the potential impact of any compromise, accidental loss or incorrect disclosure of information, and to the level of interest expected from threat actors that might arise from this.

Most of the day-to-day business of government is held at the OFFICIAL tier and uses appropriate commercial solutions used by many large corporate organisations. Assets held at SECRET and TOP SECRET typically require bespoke additional security controls. Guidance on security controls for all tiers can be found in *Guidance 1.5: Considerations for security advisers*.

All government information should be clearly marked with a classification level (unless this requirement is superseded by organisational policy), other than OFFICIAL information cleared for public release or disclosure, or which is freely available in the public domain. Material assets can also be given a security classification due to the information they could reveal. Additional considerations apply to the handling and sharing of data with international partners, and advice should be sought. Further information is available in the *Government security classifications policy*.

Physical security

As set out in the *Government Functional Standard for Property*, all government organisations are expected to provide a safe and secure working environment and protect employees and the public from a wide range of threats (including theft, terrorism or espionage), through:

- processes and plans, including those developed from the early stages of building design, to determine the appropriate physical security requirements through planning and risk assessment
- mechanisms to implement internal and external security controls in a layered fashion that deter or prevent unauthorised access and protect assets, especially those that are critical or sensitive, against forcible or surreptitious attack
- substantial controls for controlling access and proximity to the most high-risk sites and assets designated as critical national infrastructure (facilities, systems, sites, information, people, networks and processes necessary for a country to function and upon which daily life depends).

Cyber security

Reliance on technology and data-driven solutions brings with it a heightened risk of cyber threats, making cyber security an essential component of project delivery. Cyber security encompasses the practices, technologies, and processes designed to protect networks, devices, programs, and data from unauthorised access or attacks.

All government portfolios, programmes and projects should be run and operated in compliance with *The cyber security standard* and should comply with all relevant data protection law.

Products and services developed must also meet the requirements set out in *The cyber security standard*, including meeting outcomes specified by the *Cyber assessment framework*, and complying with the *Secure by design* principles. Good cyber security outcomes should be considered as part of the outcomes, benefits and social value of the work.

7.5.3.2 Identifying potential threats relating to the work and the solution

Identifying the security-related threats and measures needed to manage them is a critical part of early planning for the work and designing the solution, as this can have a significant impact on requirements, solution design and development, resourcing, timescales and costs. For instance:

- physical, data, personnel and other aspects of security should work together and so designed as a system rather than in isolation (see the introduction to Part F: Solution delivery on taking a systems approach)
- particular requirements for national security vetting of workers or contractors can extend recruitment or contract mobilisation timescales significantly
- secure development and hosting environments typically cost more, and specialist testing and assurance can add further cost and time to the schedule

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- concerns about threats to the integrity of a solution or its potential exploitation by malicious actors can lead to major changes in design or removal of features from scope

Identifying potential threats to the security and integrity of the solution early is essential to avoid additional costs, delays and scope changes further down the line. Further guidance on designing solutions for security is provided in *Secure by design*.

Often, the organisational context and nature of the solution determine the security considerations. For example, the development of military capability is subject to very rigorous standards of security, which are likely to be common across a particular portfolio. Sometimes, however, this is much less clear cut: some organisational portfolios include multiple programmes and projects operating at very different levels of security. Even within a single programme or project, different parts of the work can be subject to different security considerations and requirements, for example to protect specific parts of a solution against threat.

Security needs to be considered both in terms of the conduct of the work and the use of the solution, to ensure that the solution developed is not vulnerable to exploitation or attack. Sometimes, risks are not evident, so it is important to consider the potential threats that might arise in each of the security domains, individually and operating together – physical, personnel, cyber, technical and industry security – during conduct of the work and during use and disposal of the solution.

Protecting the work and future solution against the risk of fraud, bribery and corruption is also a critical consideration, closely allied to security. This can arise as a threat across the different domains and should therefore also be considered as part of risk assessment. All government organisations are required to have a counter fraud, bribery and corruption strategy, and this should be considered in identifying risks and setting goals for the work. For further information see Chapter 29: Finance, and the *Government Functional Standard for Counter Fraud*.

Initial assessment of the potential security and fraud risks should be carried out as part of early planning. This work should underpin development of the framework for managing security and fraud risks (see 7.5.3.3 on creating the framework for managing security), which should be part of the wider risk management framework for the portfolio, programme or project, as appropriate. The security and fraud risk assessments should be developed as planning progresses, typically as part of wider risk assessment.

Government Major Projects Portfolio and mandatory fraud assessments

Programmes and projects on the Government Major Projects Portfolio must conduct an initial fraud risk assessment (see 29.6.1.6 on protecting against fraud, bribery and corruption for more information).

7.5.3.3 Creating the framework for managing security

Managing security should be an integral part of the governance and management framework for a portfolio, programme or project (see Chapter 4: Governance and management). The approach and arrangements should be aligned to those of the host organisation but also need to take account of the nature and context of the work. The framework should be underpinned by the initial security and fraud risk assessment (see 7.5.3.2 on identifying potential threats relating to the work and the solution) and linked to the wider risk management framework for the work (see Chapter 20: Risk management).

The governance and management framework should set out how security requirements and activities are to be organised and managed as part of the work. This should include how they are considered in governance and management practices, including planning and decision-making. It should consider how activities need to evolve through the life cycle, and arrangements for assurance, incident management and reporting, which should be aligned to those of the host organisation.

The framework should also set out expectations on security in terms of workplace behaviours and attitudes, and particularly on:

- establishing appropriate security practices, and maintaining channels for sharing information and reporting risks, issues and incidents
- the need for appropriate workforce skills and training
- creating an environment where people are trusted, involved, and encouraged to raise concerns

The level of detail within the framework on security should be tailored to the scale, complexity and risk profile of the work and should be reviewed regularly to ensure that it continues to meet the requirements and risks arising as the work progresses through the life cycle.

7.5.3.4 Involving everyone in managing security

Everyone involved in working on a portfolio, programme or project in government needs to be aware of the importance of protecting security, and their personal accountability for following procedures and raising any concerns. This includes those working under contract as well as visitors to a building, site or other facility. Security aspects should be clearly defined as part of all contracts with third-party suppliers (see Chapter 25: Procurement and contract management).

Those working on programmes and projects should be encouraged to play an active role in raising security risks and reporting incidents promptly through the defined routes. Senior leaders and managers have a vital role to play in actively championing security, challenging inappropriate behaviours, and ensuring that incidents are managed and followed up effectively.

Programmes and projects can present particular risks to security, with people joining and leaving the team on a frequent basis as work packages start and finish. This makes it especially important to put in place:

- secure joiner and leaver processes, including appropriate security vetting and prompt removal of access rights, particularly for contingent workers and contractors
- appropriate induction and information covering essential security requirements and procedures, including routes for raising concerns and for reporting data breaches and security incidents (see Chapter 39: Project delivery team induction and training)
- if necessary, additional briefings and/or training relating to specific areas of risk, or for people with responsibilities relating to security or counter fraud activity

For further information on national security vetting and allied requirements, see guidance on *HMG personnel security controls*.

Organisations also provide a range of security education and awareness activities to help ensure members of the workforce are aware of and understand the organisation's security and counter fraud policies, processes, systems and controls, and people should be encouraged to take this up as appropriate. Further guidance on promoting an active security culture is set out in the *Government Functional Standard for Security*.

7.5.3.5 Managing security incidents

In the context of security, an incident is any circumstance that arises where assets may be damaged, compromised, lost or leaked as a result of failure of policy or codes of conduct, existing security measures or controls, or something that requires an action or response following a direct threat or individual action, or to prevent one of the above. These could be accidental or deliberate acts by those internal or external to the department.

A security incident, when detected, should be reported as soon as possible within the organisation's defined timeframe, so it can be investigated. Individuals with security-related responsibilities have legal obligations for reporting incidents to organisation management boards and to other interested parties, such as the Government Security Group and the Information Commissioner's Office (see Chapter 24: Information and data management).

Where a security incident is reported, an incident manager is appointed by and reports to the senior officer accountable for security in the organisation, not the portfolio director or senior responsible owner. The incident manager leads the response to an incident and any subsequent breach, in particular assessing:

- the type of incident
- the risk and impact on organisational assets

- any commercial or supply chain considerations
- implementation of plans to respond to the incident
- updating of any procedures

Following the event, incident or crisis, a post-response review should be carried out and the security response plan updated, if necessary, to include learning that can streamline the response process and to ensure that the same situation cannot be repeated. Identified vulnerabilities should be remediated and degree of risk should be reassessed. Organisations should implement necessary changes to their security governance and management framework or put in place training to prevent further occurrences. Further information on incident management is set out in the *Government Functional Standard for Security* and the *Security standard: security incident management*.

7.6 Further reading

Health and safety

- Health and Safety Executive, *Managing health and safety (HSG65)*, and supporting guidance on the Health and Safety Executive website
- HM Government, *Government Functional Standard GovS 003: People*
- UK Parliament, Health and Safety at Work (Northern Ireland) Order 1978
- UK Parliament, *Management of Health and Safety at Work Regulations 1999*
- UK Parliament, *Health and Safety at Work etc. Act 1974*
- UK Parliament, *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013*

Security

- *Cabinet Office, Government security classifications policy*
- HM Government, *Government Functional Standard GovS 002: Project delivery*
- HM Government, *Government Functional Standard GovS 007: Security*
- HM Government, *Government Functional Standard GovS 010: Digital*
- HM Government, *Government Functional Standard GovS 005: Property*
- HM Government, *Government Functional Standard GovS 013: Counter Fraud*

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- HM Government, *Secure by design*
- HM Government, *Security policy framework*
- Government Security Group, *HMG personnel security controls*
- Government Security Group, *The cyber security standard*
- Government Security Group, UK security collection
- National Cyber Security Centre, *Cyber assessment framework*
- UK Parliament, *UK General Data Protection Regulation (UK GDPR)*
- UK Parliament, Data Protection Act 2018
- UK Parliament, Official Secrets Act 1989
- UK Parliament, Public Records Act 1958

Part B:

Tailoring and adopting The Teal Book

Chapter 8. Tailoring

Chapter 9. Tailoring and embedding The Teal Book in an organisation

Chapter 10. Tailoring to the nature and context of the work

Part B: Tailoring and adopting The Teal Book

The guidance set out in *The Teal Book* should be tailored and adopted to the particular circumstances and delivery of the work. As it is not possible to create a single project delivery framework that can apply directly to all portfolios, programmes and projects, tailoring helps ensure that the level of management applied is proportionate while still giving an appropriate level of governance and control.

Part B supports users by providing:

- guidance on how to tailor and adopt *The Teal Book* and its practices for use on a portfolio, programme or project
- guidance and considerations on how to adopt *The Teal Book* into an organisational project delivery framework
- specific considerations for different types and aspects of project delivery to take into account when tailoring *The Teal Book* to a specific context or set of environments

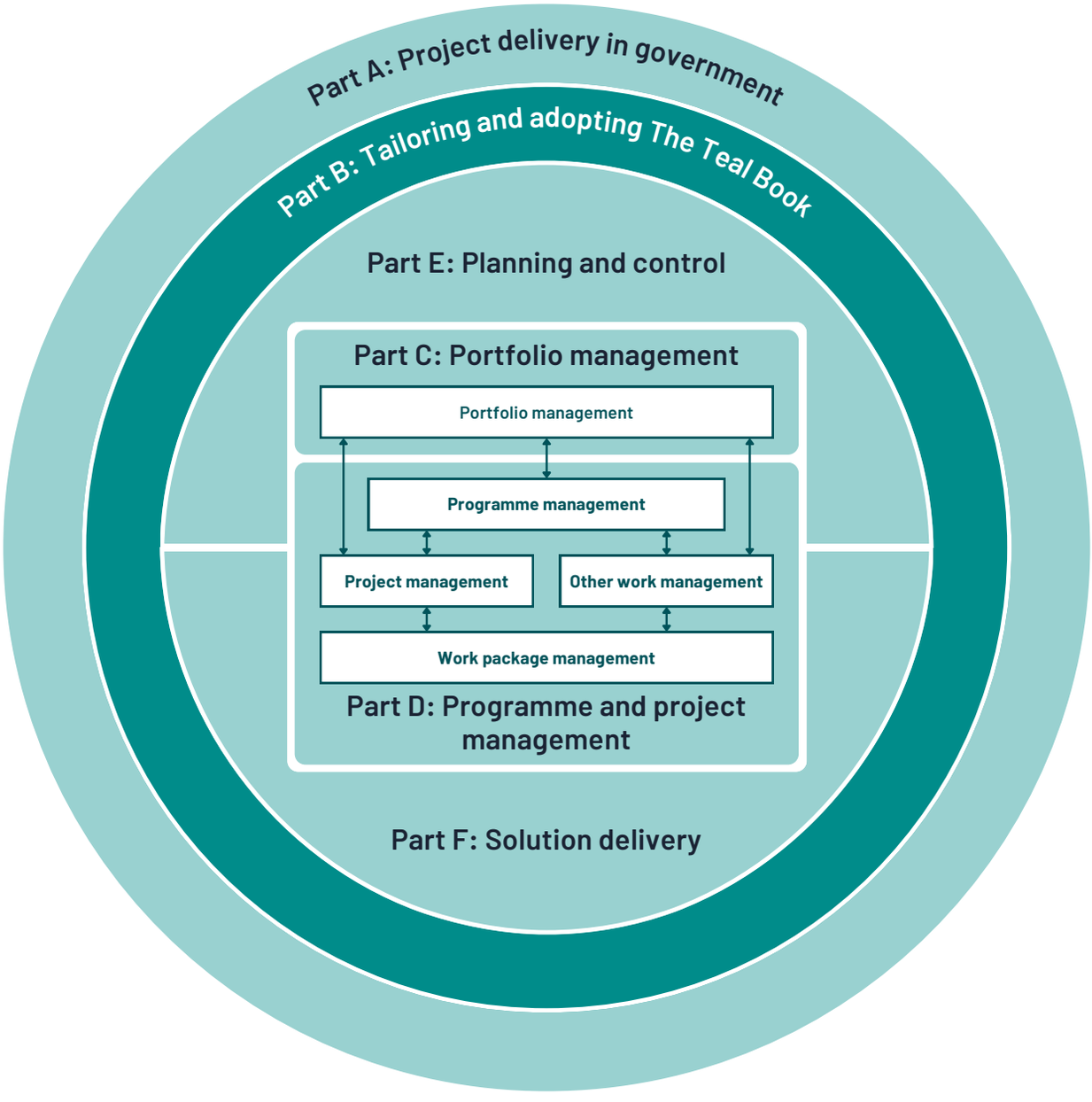


Figure B.1 The structure of The Teal Book

8. Tailoring

8.1 Purpose

The purpose of tailoring is to adapt the guidance and practices in *The Teal Book* to suit the situation in which it is intended to be used in an organisation or for a particular portfolio, programme or project. Tailoring is a means to ensuring that approaches to project delivery are proportionate and appropriate to the context. Often, tailoring is only needed on certain aspects of the portfolio, programme or project.

8.2 Key points

- Tailored approaches should conform to the government functional standards.
- Tailoring should be within the constraints of any higher-level governance and management frameworks and can be adopted in full if it works in the situation.
- Tailoring is essential for effective and efficient project delivery.
- Tailoring should take account of both internal and external constraints.

8.3 What is tailoring?

The *Government Functional Standard for Project Delivery* principles set out that:

- governance and management frameworks, and controls are proportionate and appropriate to the work and the level of prevailing risk
- defined working methodologies are tailored for use accordingly

Tailoring does not change the purpose of a practice, nor what should be done but allows those responsible for establishing and maintaining the governance and management framework to determine how the practice should be undertaken (see Chapter 11: The governance and management of portfolios and Chapter 13: The governance and management of programmes). This means that managers are not restricted in the methods they use and opens the way for innovation.

The following aspects of *The Teal Book* may be tailored:

- the practices and activities in Part C: Managing portfolios and Part D: Managing programmes and projects
- the practices and activities in Part E: Planning and control

- the practices and activities in Part F: Solution delivery, for delivering the solution in a way that reflects the overall delivery approach to be used for the outputs and outcomes
- the number and purpose of life cycle phases for programmes and projects may be chosen to reflect the type of work and risk profile (see Chapter 14: Programme and project life cycles)
- tools or techniques can be applied that are appropriate to the work being undertaken

Roles may be combined or split, provided that accountability is maintained, there are no conflicts of interest, there is sufficient capacity and the competencies in the *Project delivery capability framework* are met.

Management information and documentation may be combined or split into any number of documents or data sources, and held in document or digital forms.

Tailoring does not mean that any of the practices in *The Teal Book* can be excluded. *The Teal Book* is built on the expectations set in the *Government Functional Standard for Project Delivery* on practices that need to be fulfilled. If a practice is omitted, the management of the work will be weakened and so threaten a successful outcome.

Tailoring can be done at the organisational level (see Chapter 9: Embedding *The Teal Book* in an organisation) or at portfolio, programme or project level.

Tailoring is not simple and requires skill, experience and judgment to get right and there is no single solution that can be applied to every portfolio, programme or project in government throughout the life cycle.

8.4 Why tailor?

It is not feasible to develop a one-size-fits-all approach to project delivery that is suitable for every government organisation, portfolio, programme, or project. This is because there are approximately 600 government bodies, each with its unique context and requirements, and thousands of projects. This is where the significance of tailoring comes into play. By customising the practices, tools, techniques, and approaches used in *The Teal Book* or an organisational project delivery framework, it is possible to ensure that they are appropriate and proportionate for the specific work's context, while avoiding wasteful overheads.

Using *The Teal Book* as a core reference to tailor from helps ensure that approaches are appropriate for the work while also providing a consistent basis across government for:

- sharing experience, processes and tools between organisations
- risk-based assurance, control and maturity comparison

- continuous improvement and professional development
- developing new common tools across government

Tailoring appropriately, within the required elements of the *Government Functional Standard for Project Delivery*, also enables novel working approaches to be used and therefore promotes innovation.

8.5 Who is responsible for tailoring?

At the organisational level, the **senior officer accountable for project delivery** (such as the chief project delivery officer in a government department) is responsible for determining the level of tailoring that can be applied in that organisation. This is generally in the form of an organisational project delivery framework or approach incorporating tailoring guidance.

At the portfolio, programme and project levels, the respective **portfolio, programme or project manager** is responsible for developing their respective governance and management frameworks. This should be done with the support of their work component managers (such as work package managers for a project manager) and in consultation with the **portfolio director** or **senior responsible owner**.

8.6 Key considerations when tailoring

8.6.1 Overview

For tailoring to be effective, it needs to be deliberate, controlled and to take into account the wider context. This includes considering:

- the position the work has in the hierarchy of portfolios, programmes and projects within the organisation (see Chapter 3: Portfolios, programmes and projects and Figure 8.2)
- external constraints imposed by others, outside the organisation
- internal constraints, such as policies and rules that the organisation imposes on itself
- influences due to the unique circumstances of the work being done

This is shown in Figure 8.1.

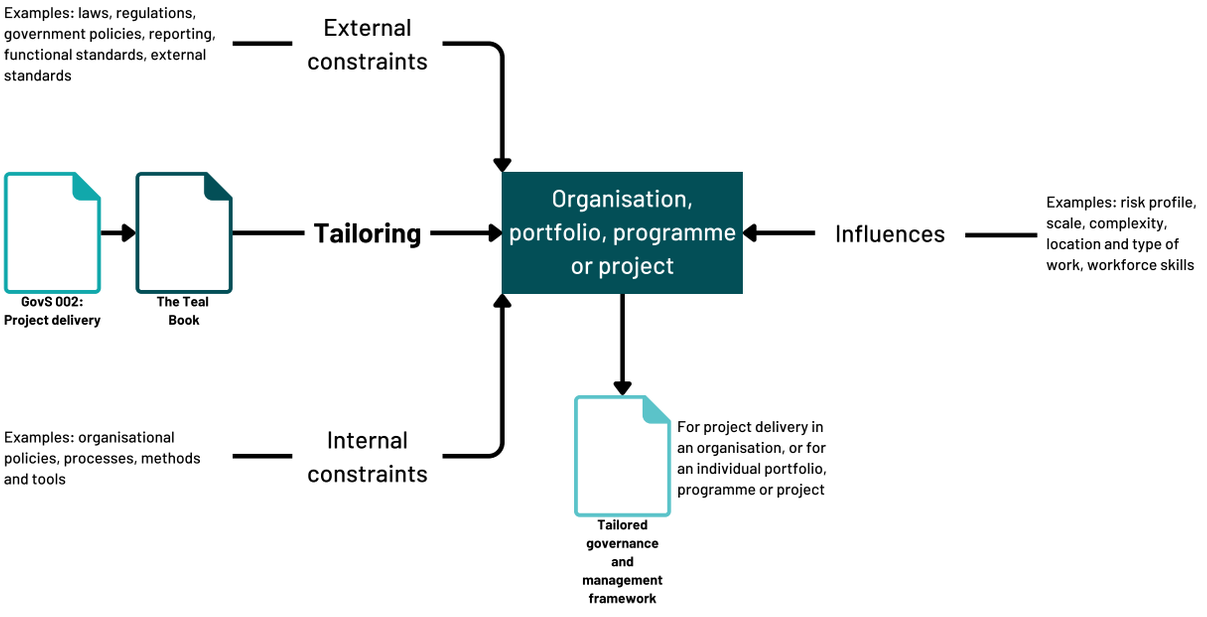


Figure 8.1 The constraints and influences on tailoring

8.6.2 Aligning with higher-level governance and management

The governance and management framework for a portfolio, programme or project should be aligned with that of the sponsoring organisation or, where different, the delivery organisation. If the organisation has its own project delivery framework, that framework is part of the organisation's governance and management framework.

In practice project delivery practices, processes, and techniques should be based on the organisation's internal policies, methods and practices, but can be tailored at each level of the hierarchy (see Figure 8.2):

1. A portfolio's governance and management framework may be tailored from the organisation's framework.
2. A programme in the portfolio should then have a governance and management framework tailored from the one for the portfolio.
3. A project in the programme should then have a governance and management framework tailored from the one for the programme (or the portfolio if it is a standalone project).
4. A work package should then have a governance and management framework tailored from the one for the project or other work it is a part of.

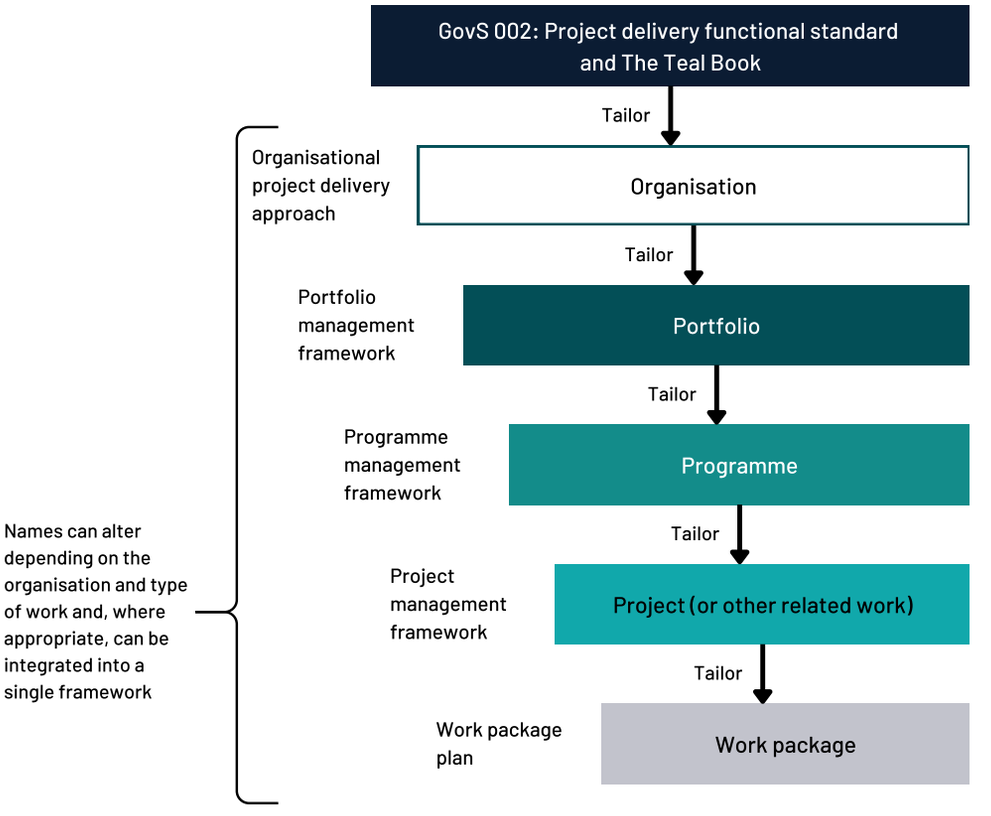


Figure 8.2 The cascade of tailoring from organisation to work package

This does not mean that each level of the hierarchy needs to have a separate and distinct governance and management framework document or set of documents. Tailoring should always be proportionate, if needed at all, and it is frequently the case that a single and integrated framework exists. For example, a governance and management framework for a programme can integrate the arrangements for the projects, other related work and work packages that are a part of it.

For good governance, it is important that the chain of accountability from top to bottom should not be broken and that everyone understands what has been tailored, why, and what impact it has on how they do their work. Usually, a manager should consult the next higher level and secure approval before tailoring their practices. Tailoring should normally only apply to those aspects which are unique to the portfolio, programme or project being managed. Tailoring for the sake of it or to satisfy a personal viewpoint is not a good use of resources.

Formalising tailoring can at first glance appear unnecessary but is important to ensure traceability and, if done well, it can reduce considerably the management overhead for the work (see 8.6.6 on documenting the tailored framework).

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8.6.3 Taking account of external constraints

Constraints which limit discretion to tailor *The Teal Book* can include:

- treaties, laws and regulations, including those around procurement, employment, equality and accessibility, health, safety, security, data handling, sustainability and the environment
- mandatory certification points in regulated sectors, which may determine the the most appropriate life cycle phases to use
- government-wide governance requirements, including those defined in *Managing public money*, functional standards and other central government spending approval and controls, reporting, procurement policy and subject specific standards, codes of practice and cross-government shared services and platforms
- requirements for programmes and projects that are part of the Government Major Projects Portfolio and the Departmental Major Projects Portfolio
- department's specific HM Treasury delegated limits and with the wider approach to functional controls set out in the Department's Memorandum of Understanding with HM Treasury
- professional codes of practice and other publicly available standards such as those set by the British Standards Institution (BSI), International Organization for Standardization (ISO) or the International Electrotechnical Commission (IEC), where the government has committed to their use
- These are referenced throughout *The Teal Book*.

8.6.4 Taking account of internal constraints

Within the external constraints above, and subject to the overall control and direction of ministers, government departments can organise, direct and manage the resources at their disposal, with control and accountability through the accounting officer.

Arm's length bodies have similar freedoms, within the terms of their framework document.

Organisations can therefore adopt their own policies, processes and methods for project delivery. These are often linked to digital platforms and applications, such as enterprise resource planning, accounting software and document repositories.

8.6.5 Taking account of influences

The Teal Book should be tailored according to the nature of the work and its context, including risk profile, size, complexity, location and type of work. The level of detailed guidance required also depends on the the complexity of the governance and management

arrangements and capability of the team, and methods and tools need to be appropriate for both the work and the people using them (see 8.6.6 on documenting the tailored framework).

Contracts with suppliers also influence how work is delivered. The obligations and terms in contracts should be aligned to the required governance and management arrangements, as far as possible. They should consider supplier preferred and specialist ways of working.

The portfolio, programme or project manager is responsible for integrating all of these factors to deliver outcomes and realise benefits.

8.6.6 Documenting the tailored framework and briefing the team

Documenting a governance and management framework is important, and it has to be accessible when needed and kept up to date. Documentation that is bulky or partly out of date is unlikely to be used, causing team members fall back on previous experience. This can make it difficult for a manager to maintain control over the work. See Chapter 24: Information and data management.

An effective tailoring approach is to prepare a concise, version-controlled set of information which refers directly to the primary source being tailored, rather than copying large amounts of existing material. In most cases this means documenting only what is unique to the work, such as:

- organisation structure
- names and roles
- delegated authorities for key decisions (including change requests)
- categories of risks, issues and changes
- risk matrices
- planning processes

A similar approach can be done for the practices in Part F: Solution delivery. As these practices relate to methods for developing outputs or realising a particular outcome, it is unlikely there are standard approaches for every circumstance. Those involved in managing and undertaking the work should be aware of, and able to define, their working approach, especially how quality and progress are to be measured.

It can be tempting to document guidance and processes in extensive detail, but this should be avoided. Other approaches to sharing knowledge and experience are more effective, such as team induction, briefings, coaching and mentoring (see Chapter 38: Learning from experience and Chapter 39: Project delivery induction and training).

8.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- HM Government, *Government Functional Standard GovS 002: Project delivery*
- HM Government, *Managing public money*

9. Tailoring and embedding The Teal Book in an organisation

9.1 Overview

While the *Government Functional Standard for Project Delivery* describes what is expected from government departments and arm's length bodies in the direction and management of individual portfolios, programmes and projects, it does not describe how this should be done.

The Teal Book builds on the functional standard and can be used as a basis to develop an organisational project delivery framework that is both compliant with the standard and which is adapted to the particular needs and circumstances of the organisation, such as the types of project it does.

Using *The Teal Book* at an organisational level involves 2 activities:

- tailoring *The Teal Book* to create or refine the organisation's own project delivery framework as appropriate
- embedding the tailored framework into day-to-day work by ensuring that people in the organisation understand and use it appropriately

9.2 Establishing a tailored organisational approach to project delivery

The organisational approach to project delivery should form part of the organisation's governance and management framework. The external and internal constraints depend on the portfolios, programmes and projects the organisation typically undertakes (see Chapter 8: Tailoring) , as shown in Figure 9.1. This needs a good understanding of the characteristics of the business and societal changes delivered by the organisation, such as agreed categories of work, scale of cost, timescale, risk and achievability.

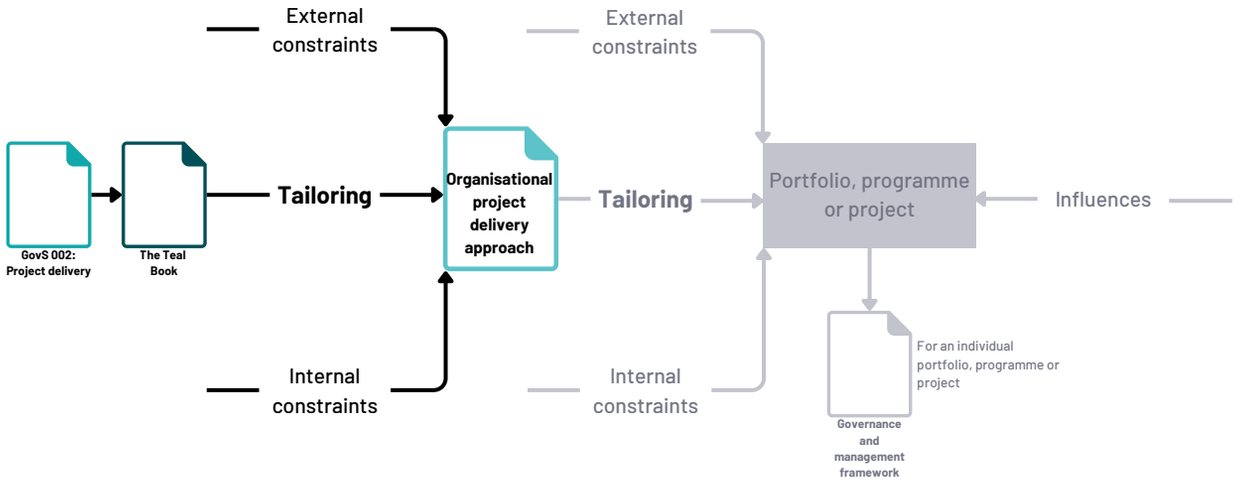


Figure 9.1 Tailoring The Teal Book to create an organisational project delivery approach which can then be tailored for individual portfolios, programmes or projects

Tailoring *The Teal Book* to create an organisational project delivery approach should be undertaken by the owner of the processes, guidance, tools and templates used in the organisation, under the direction of a senior officer accountable for project delivery, such as a **chief project delivery officer**. This team could be a portfolio office or an organisation's centre of excellence for project delivery.

Where there is an organisational project delivery framework, the portfolio, programme and project managers should be able to tailor it to define their own framework for the work they are conducting where localised tailoring is required.

9.3 Embedding The Teal Book in an organisation

Once the organisation has agreed an organisational project delivery approach, it has to be embedded as the normal way of working and as a basis to drive maturity improvements. This involves the deliberate and consistent development, introduction, deployment, maintenance and use of the framework.

Embedding the approach starts when it is being developed. Securing the support of individuals across the organisation who need to change their ways of working is essential, and an effective way to do that is to involve them in the development work, either as authors or to review it as it evolves. Changing the way people work involves understanding the current situation, designing the future state of how the organisation is to operate, identifying what changes are needed to move from the current situation to the future state, developing the necessary capabilities to meet the required changes, such as defining roles, processes, and behaviours, and engaging those affected by the change to gain their buy-in and support their transition (see Chapter 35: Management of organisational and societal change).

The organisation's project delivery framework, once deployed, needs to be managed on a day-to-day basis so that it is consistently and effectively used. This should include introducing improvements based on the experience of using it and to reflect changes in the organisation's influences and internal or external constraints and evolving best practice in the profession.

9.4 Considerations for organisational tailoring and adopting

9.4.1 Deciding who to involve

The people involved in the development or improvement of a project delivery governance and management framework in an organisation should have the right skills and experience, an understanding of the context and have the respect of their peers.

The framework needs to be acceptable to the users and wider stakeholders. This can involve bringing together some experienced portfolio, programme and project managers from across the organisation who can compare the way they do things now and then agree on an approach that is acceptable to all. If there are any contentious areas, bringing in recognised experts to facilitate discussions and, if necessary, recommend a solution can help.

Portfolio, programme and project management practices need to interact with processes provided by an organisation's commercial, finance, digital and legal functions and with other teams, for example policy and operations. Bringing these teams in to help design or improve a project delivery framework not only helps to create a comprehensive approach but also helps to secure buy-in, which is essential for embedding the use of the framework into day-to-day working.

The work involved in developing an organisational project delivery framework is often best run as a project or work package, depending on the scale of change needed. However, consideration should also be given to who owns and manages the framework on a day-to-day basis once it has been created. There are many models for this, for example creating a centre of excellence or giving the responsibility to the organisation's portfolio team. Dedicating resources to the management and ongoing development of a project delivery framework is a powerful way of ensuring momentum and improving the efficiency of delivering portfolios, programmes and projects.

9.4.2 Using the resources in Part B

There are many types of portfolio, programme and project in government which have different scales, complexity and risk profiles, and which operate in different sectors. To support tailoring and adopting, Part B of *The Teal Book* describes different aspects of project delivery to support and prompt tailoring of its content and practices to these circumstances. Where an organisation undertakes the same type of programme

or project, these chapters should be taken into consideration when designing the organisational project delivery framework. If the type of programme or project is a one off, it would be more appropriate to support that programme or project manager in using these chapters to tailor their specific programme or project's governance and management framework.

9.4.3 Using language consistently

The consistent use of terminology is important, as using words in the same way promotes unambiguous communication and common understanding. Problems can occur when different parts of the organisation, suppliers and government use different terms, so it is helpful to agree on the definitions of key project delivery terms.

Where possible, use Government Project Delivery's *Project delivery glossary*. The glossary brings together the defined terms used across all of the government functions and more specific project delivery terms. The glossary has been used in the standard, *The Teal Book* and the *Continuous improvement assessment framework for project delivery* and so adoption of these terms not only helps users in an organisation understand them against their organisational framework but also helps with interactions across government organisations.

9.4.4 Using consistent and effective presentation

The way that a project delivery approach is drafted and presented can influence the extent to which it is taken up. An organisational project delivery framework which has a consistent structure, flow, look and feel should promote more confidence in its users than one which is documented in a variety of locations, formats and styles. Consistency in the presentation of material should also make it easier for people to understand and find what they are looking for. For example, the chapters in *The Teal Book* mirror those in the *Functional Standard for Project Delivery*.

Consideration should also be given to the different needs of users. Not everyone needs the same level of detail and so information should be presented in a consistent way while taking into account the context, and the roles and individuals who will access it.

9.4.5 Using a standard life cycle

The *Functional Standard for Project Delivery* requires that each programme and project has a defined life cycle which is aligned to its reference life cycle (see Chapter 14: Programme and project life cycles and Figure 9.2). The reference life cycle could be adopted 'as is' in an organisation or built on to reflect the typical work undertaken by either combining or expanding out the 5 stages in the life cycle.

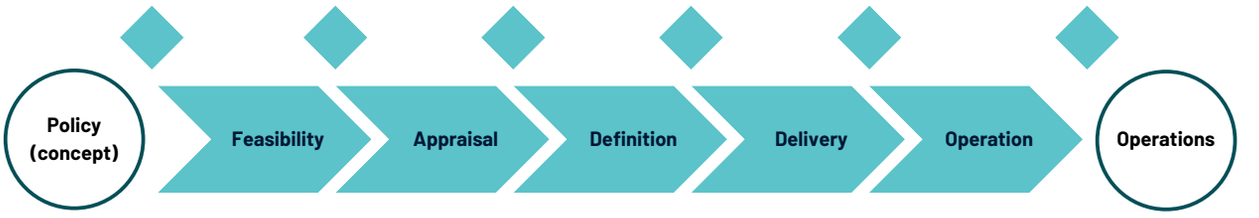


Figure 9.2 The stages of the reference project life cycle from the Government Functional Standard for Project Delivery

Although no single life cycle works for every programme and project, having a standard life cycle in the organisation's project delivery framework, suited to the types of work it does, makes the framework more relevant and more likely to be used.

It gives programme and project managers something relevant to them, which they can adopt or tailor. It also helps organisations understand the nature and progress of programmes and projects across the portfolio, supporting effective portfolio management.

As the framework matures, the standardisation of life cycles can go further, moving from a single generic life cycle to ones that reflect the types of programmes and projects the organisation runs. For example, separate life cycles for infrastructure, software development, transformation and other work.

9.4.6 Developing tailoring guidelines

When developing the project delivery framework, it is helpful to agree rules on what can be tailored, who can tailor it and who can provide advice, guidance and approvals.

The goal is always to keep project delivery proportionate to the scale and complexity of the work being undertaken and so basing tailoring rules on these 2 factors can be helpful, using the *Risk potential assessment form* as a starting point.

9.4.7 Managing and maintaining the approach

Once the project delivery framework has been defined, it needs to be managed and maintained so it remains effective and useful. The framework should include guidance, templates, processes and policies that describe how it is managed and operated.

Define a role with responsibility for managing the overall system and ensuring all its parts work together. A form of change control should be developed as changing one part of the project delivery framework often has impacts on other parts, so this needs to be recognised, managed and acted on.

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9.4.8 Using the continuous improvement assessment framework

Ongoing improvements to the approach should be made if they add value. As well as direct feedback from users, consider outputs from surveys, audit and assurance activities, external scrutiny reports, and lessons from professional bodies, sector advisory groups and academia.

The *Continuous improvement assessment framework for project delivery* can be used to support ongoing improvements. This draws on the *Government Functional Standard for Project Delivery* and includes a set of statements indicating different levels of organisational capability against aspects of the standard, ranging from non-compliance or adopting ('developing'), through meeting the minimum ('good'), to better and best, as shown in Figure 9.3.

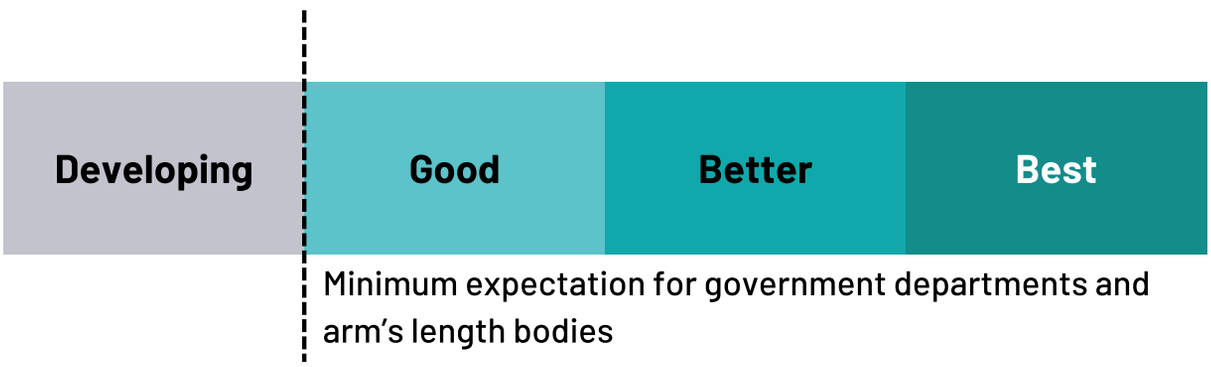


Figure 9.3 The good, better and best rating system for continuous improvement assessment frameworks

Using the assessment framework can help with understanding the maturity of the organisational project delivery framework and support its development by:

- helping the organisation's leaders decide the level of capability they need to achieve to meet their policy and business needs (not every organisation needs to be 'best' at everything)
- creating a reliable capability baseline against which improvements can be identified and measured
- providing an objective assessment of strengths and weaknesses
- justifying investment in project delivery infrastructure and methods
- demonstrating service quality in support of assurance and auditing activities
- reducing delivery costs and increasing benefits

- indicating what the next logical improvement steps are to improve project delivery maturity

As the *Government Functional Standard for Project Delivery*, *The Teal Book* and the *Continuous improvement assessment framework for project delivery* are all fully aligned, using the assessment framework in this way can support adherence to the expectations placed on government organisations and drive mutually understood ways of working. Consistent use of the assessment framework across all government organisations also enables different departments to understand and support each other in improving project delivery practice for all of government.

9.5 Further reading

- Government Project Delivery, *Project delivery capability framework*
- Government Project Delivery, *Continuous improvement assessment framework for project delivery*
- Government Project Delivery, *Project delivery glossary*
- HM Government, *Government Functional Standard GovS 002: Project delivery*
- Infrastructure and Projects Authority, *Risk potential assessment form*

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10. Tailoring to the nature and context of the work

10.1 Overview

In government, portfolios, programmes and projects are used to achieve a wide range of outcomes and can take many different forms. The nature of the work and its context are therefore important considerations. This chapter explores different types of project delivery in government and their associated contexts, and where particular considerations arise in consequence in applying *The Teal Book*.

10.2 Understanding the nature and context of the work

The **nature** of the work is determined, ultimately, by its objectives, in terms of the outcomes to be achieved and the outputs to be delivered to achieve that. Usually this points to the kind of work needed – for example infrastructure development, digital solutions or service transformation – but sometimes this might not be clear until different options have been considered. The nature of the work can also highlight significant additional considerations in terms of scope and phasing, scale, complexity and risk.

The **context** for the work also needs to be considered. Is the work to be delivered within the organisation, to service users locally or nationally, or internationally? Is it likely to be delivered directly, through delivery partners or through other means, for example in the form of a grants programme to be bid for? This too can significantly affect the scale, complexity and risk profile for the work, and even the health, safety and security of those involved in delivering it.

A portfolio can contain similar types of programmes, projects and other related work, or a diverse range. This depends on the nature of the organisation's remit and where the portfolio sits in the project delivery hierarchy (see Chapter 3: Portfolios, programmes and projects).

Categorising the work in a portfolio helps to understand its risk profile, the stakeholders and locations involved, and the resources needed to deliver it.

10.3 Categorising and reporting

Government portfolios often cannot be easily categorised from a cross-government perspective. However, programmes and projects usually fall within the following categories.

Infrastructure and construction programmes and projects to improve and maintain the UK's energy, environment, transport, telecommunications, sewage and water systems, and construct new public buildings such as schools, hospitals and prisons. These high investment works are essential to the nation's economic growth, development and prosperity and are prioritised accordingly across government.

Military capability programmes and projects are vital to the effective operation of the armed forces, delivering the integrated training, personnel, structures, equipment, infrastructure, technology and logistic support needed to maintain national security.

Digital and data programmes and projects implement modern digital and data solutions, to transition from ageing technology, deliver service improvements and efficiencies, and equip government departments for the future.

Transformation and service delivery programmes and projects change ways of working, often harnessing new digital and data technologies to improve public services, to make government more efficient, or both.

International programmes and projects support UK interests overseas. This includes international development work, which follows separate governance and assurance arrangements for UK Official Development Assistance (ODA) work. Other programmes and projects are managed through departmental arrangements and join the Government Major Projects Portfolio or Departmental Major Projects Group if they meet the criteria

- An individual programme or project is likely to fall primarily within one of the above categories but can also involve work relevant to other categories, particularly where the programme or project has a wide scope. To ensure consistency in government analysis and reporting, the National Infrastructure and Service Transformation Authority's advice on categorising new entries in the Government Major Projects Portfolio or Departmental Major Projects Portfolio should be sought as necessary.

Categorisation is about grouping specific types of work, and this can help identify particular considerations for planning and delivery. However, it is not a precise science and should not, of itself, dictate how the work is delivered or the methodologies and expertise needed. These should always be determined by the requirements of the work and can often combine different approaches. For example:

- major infrastructure and construction projects typically involve a heavy focus on engineering and tightly-managed, plan-driven delivery using predictive methods (also known as linear, sequential or waterfall delivery) but often also involve digital and transformation where iterative design and delivery might be used

- digital and transformation programmes typically involve user-driven iterative and incremental delivery using agile approaches, but some technical changes can require a predictive delivery approach to manage them safely

- military projects often combine heavy engineering with advanced digital solutions, and are increasingly developed using change-driven, highly adaptive approaches, given the rapidly evolving technologies involved and the need to adapt within a changing global context

Working from delivery objectives, user needs and requirements helps ensure a wide set of options is considered, and that methods and expertise are tailored to the work (see Part F: Solution delivery).

10.4 Infrastructure and construction

10.4.1 Overview

Infrastructure and construction is the largest category of UK public investment. It includes:

- **economic infrastructure**, such as energy and transport (the 2 largest areas of investment), broadband and communications, electricity and gas transmission, flood and coastal defence, water and sewerage, and research
- **social infrastructure**, such as borders and policing, defence, education, health and social care, housing and regeneration, justice, tax and customs, work and pensions

Infrastructure requires a systemic, long-term view. Planning horizons are often long, and decisions can affect the lives of British people for decades. Infrastructure investment also has an important short-term role, helping support jobs and stimulate the economy. To support strategic infrastructure planning and investment:

- HM Treasury makes strategic decisions on infrastructure policy and spending
- the National Infrastructure and Service Transformation Authority, part of HM Treasury, brings together long-term infrastructure strategy with best practice project delivery as the home of Government Project Delivery, and publishes the *UK Infrastructure pipeline* setting out planned investment across sectors
- the National Wealth Fund provides finance to catalyse private investment to support investment and drive growth

Responsibility for infrastructure and construction policy, funding and delivery is shared between the UK government and the devolved governments, which varies depending on area.

Some areas are reserved to the UK Parliament, such as telecommunications and most of energy policy (including electricity and gas markets, nuclear and offshore oil and gas). Many other areas are devolved, including planning, roads and local transport, housing and building standards, water and sewerage, and most economic development.

Because responsibilities and consenting routes differ by nation and by sector, programmes and projects should confirm at the outset which government(s) hold policy and funding responsibility and which consenting regime applies, especially for cross-border or offshore elements.

Infrastructure delivery can take many forms, from very large-scale single construction projects to multiple small-scale broadband and utilities projects, often rolled out as part of wider programmes. It can be a highly complex and often lengthy undertaking, requiring planning consents and sometimes legislation. It also typically involves working with multiple delivery partners from different sectors, and integration with other local and national infrastructure and services. The National Audit Office has highlighted how infrastructure programmes and projects can underperform against their ambitions, and where improvements in practices, productivity and performance are needed.

To this end, the government has set out its plan for a *10 year strategy* for the UK's social, economic and housing infrastructure to support a flourishing modern economy, drive growth, deliver net zero and support improved public services. Implementation of the strategy will be overseen by the National Infrastructure and Service Transformation Authority.

Where construction work involves the government estate, advice is provided by the Office of Government Property, which is responsible for cross-government property strategy and overseeing work to transform the public estate. Advice is also available through organisational property functions, some of whom have specific sector expertise (defence, prisons and overseas property, for example). The requirements of the *Government Functional Standard for Property* should be followed at all times.

Infrastructure and construction programmes and projects require considerable sector expertise and experience in their design, planning and implementation. Some initial considerations are highlighted below, but further advice and support from the relevant bodies should always be sought early in the life cycle when the requirements are being defined and validated.

10.4.2 Tailoring considerations for infrastructure and construction work

10.4.2.1 Taking a system-wide view of strategy and outcomes

Clear strategic objectives are needed to build support for a proposal. Consider how these contribute to the UK's long-term infrastructure needs, as set out in *UK Infrastructure: A 10 Year Strategy*, and how they can realise the greatest social value. This means considering not only the immediate outputs to be delivered, but how these interact with other local or national infrastructure, and what additional investment might be needed to deliver the strategic objectives. For example, new transport links might support regeneration only if local housing and schools are available to grow communities around them. Well-targeted investment can create new potential for economic growth and enable wider social value beyond the original investment.

10.4.2.2 Taking a realistic view of what it is needed to deliver

Delays and cost over-runs often stem from over-optimism in planning, or early announcements setting unachievable targets. Give priority to building a realistic business case, using probabilistic cost and schedule estimating, supplemented by benchmarking or other techniques as appropriate (see Chapter 16: Planning). Sense-check economic analysis to ensure results are realistic and test assumptions and risk against different scenarios, ensuring that work meets the *Government Functional Standard for Analysis*. Avoid making announcements on specific timescales and costs, where possible, until planning is sufficiently advanced and assured, and always provide risk-based ranges rather than point estimates.

10.4.2.3 Planning for the long term

Some programmes and projects, typically social infrastructure, telecommunications and smaller construction projects, are committed and delivered within government spending review cycles. Others, for example major rail and nuclear energy programmes, can run for decades, spanning multiple parliaments and spending review periods. The need to secure a parliamentary slot for legislation and planning consent can add more time, sometimes years, and increase uncertainty.

Planning therefore needs to take a long-term view and be flexible to accommodate potential constraints and changes in the political, social and legislative agenda. Long life cycles also mean that technology and user requirements are likely to evolve, and cost and benefit assumptions can change significantly because of major shifts in the global economy, the effect of climate change and terrorism threat. Governance and management arrangements might need to evolve to reflect this, and leadership and team succession planned for.

Planning and securing funding over long timescales can be a particular challenge. Early advice should always be sought from HM Treasury and the National Infrastructure and Service Transformation Authority on how best to plan and manage multi-year funding requirements and on the potential use of private sector investment.

10.4.2.4 Taking a strategic approach to the supply chain

Major infrastructure and construction works typically involve multiple suppliers, who in turn appoint multiple sub-contractors, creating a complex multi-layered supply chain. Often this complexity is less visible because a single delivery partner (sometimes called the prime or tier 1 supplier) is appointed, or an arm's length body is created to oversee the work; but it is still there.

Market capacity issues and skills shortages are common factors in sub-optimal performance. Internationally, demand for infrastructure and construction skills is high and markets operate globally. Understanding the requirements of the work, in terms of skills and resources needed, and making a realistic assessment of the capacity of the market to meet them, is critical, as is considering how best to design the commercial arrangements

and procurement strategy needed to secure them. Any relevant *Sustainable procurement: Government Buying Standards* must be used.

Managers of programmes and projects which are dependent on scarce or highly specialised skills might need to consider how best to work with the market to build them for the future. Suppliers are also more willing to invest in skills and technology development where there is a pipeline of future work to bid for, so consider the wider government pipeline in skills planning.

10.4.2.5 Using and promoting modern practices

Modern technology has enabled many advances in infrastructure and construction in recent years, cutting costs and carbon, increasing productivity and improving quality for users. However, these are not always considered in planning or specified in procurement.

Those leading infrastructure and construction work in government should consider how to optimise delivery of the work through use of modern practices and technologies throughout the supply chain, and set clear expectations on this planning and procurement, as required by the *Construction playbook* and guidance on *Modern methods of construction*. See the National Infrastructure and Service Transformation Authority's *Whole life carbon handbook* for guidance on how to maximise whole life carbon reductions throughout the life cycle of infrastructure and construction projects.

Using standardised interoperable components, platform-based approaches creating 'common kits of parts', prefabrication and offsite construction can:

- improve efficiency
- reduce local environmental impact
- support wider economic growth and employment through a more distributed manufacturing base

Digital tools can speed up and improve planning and delivery through the life cycle. Consider using:

- 4D or 5D design and planning software to co-ordinate construction
- artificial intelligence tools to identify and track components
- 'digital twins' to capture asset data from design through to implementation, improving asset management and through-life maintenance.

Use of the *Information management initiative framework* and the government's information management mandate (included in *Transforming infrastructure performance: roadmap to 2030*) is required for government infrastructure and construction work, and should be included in contracts to improve asset information handover, management and interoperability.

10.4.2.6 Planning for integration and entry into service

The scale and complexity of infrastructure projects and programmes makes it essential to plan and prepare carefully for system and service integration and the start of operations. Poorly planned and controlled delivery into service can impact existing services and users, as well as the wider supply chain. *Lessons from transport for the sponsorship of major projects* highlights particular factors for major infrastructure projects to consider, such as:

- having clear accountability for integration
- minimising and managing internal and external dependencies
- planning carefully how to bring solution elements together
- testing that they work together at each stage
- making sure the outcome works for users

10.5 Military capability

10.5.1 Overview

Military capability programmes and projects are among the most complex and strategically important in government, and the second largest category within the Government Major Projects Portfolio. These are critical for the effective operation of the armed forces, delivering the integrated capabilities needed to protect the nation and help it prosper. The Ministry of Defence delivers all military capability programmes and projects, together with others concerned with digital and data, and transformation. Some other security programmes and projects are delivered by the security agencies.

The defence portfolio is determined by the UK government's priorities for security and defence, reviewed as part of each spending review. The most strategically important defence programmes and projects are monitored through the Defence Major Projects Portfolio.

Defence programmes and projects are typically large-scale, spanning multiple years and sometimes decades, and are characterised by fast-moving technological and logistical complexity. Many are defence acquisition programmes, typically involving heavy engineering and large-scale manufacturing, managed through longstanding commercial delivery partners. Others involve significant international considerations and are worked on jointly with international partners. Digital delivery and innovative technologies such as drones and artificial intelligence are also increasingly used, reflecting the rapidly evolving nature of military technology and capability requirements.

Portfolios, programmes and projects are managed through project and programme methodologies aligned to the *Government Functional Standard for Project Delivery*.

However, the need to manage military capability on a platform basis has also led to development of an extended system life cycle model, an example of an extended life cycle (see 14.9.3.1 for the extended life cycle). Known as CADMID/T (concept, assessment, demonstration, manufacture, in service and dispose or terminate), this is shown in Figure 10.1 and considered further in Part F: Solution delivery.

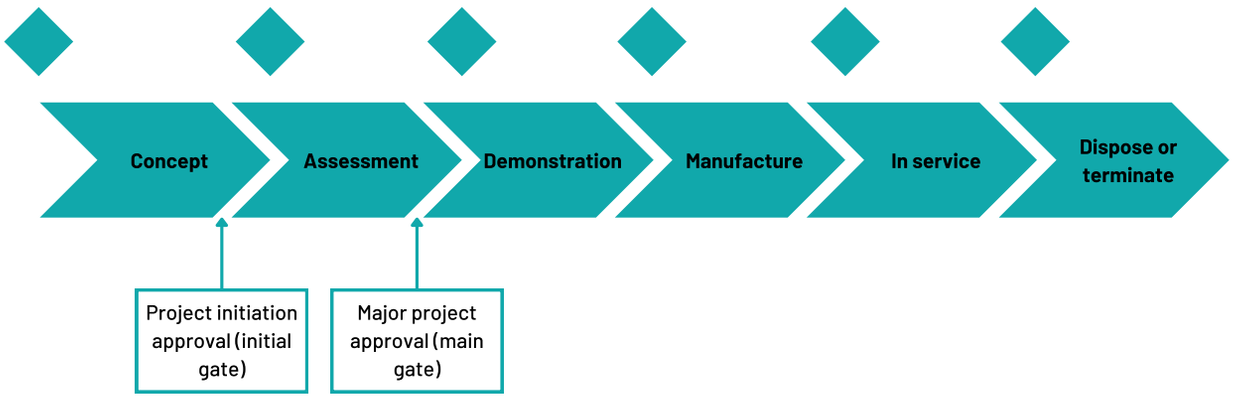


Figure 10.1 The Ministry of Defence's CADMID/T system life cycle aligned to the reference project life cycle decision points

The CADMID/T model is designed to enable all parts of the defence organisation and its delivery partners to work to common goals, share resources, processes and tools, and follow a consistent approach to safety and environmental management. Military capability programmes and projects need to meet key CADMID/T requirements as a condition of investment approval. Further information on this is available from the Ministry of Defence Knowledge in Defence website.

10.5.2 Tailoring considerations for military capability work

10.5.2.1 Building uncertainty into planning

The nature of military capability work can make timescales and costs hard to predict. The impact of global conflict, the need for secrecy that can inhibit sharing of good practice, and the long lead times for defence programmes in a limited supplier market, all add to the challenges. Benefits are also notoriously difficult to estimate as there are no certainties about when capabilities can be used or what their impact will be. Long manufacturing runs also build in scope for iterative improvement and additional features as technology evolves, increasing forecasting challenges.

Using evidence, risk and probability-based estimation and benchmarking (see Chapter 16: Planning) can all help, as can modular development and delivery where possible; but planning also needs to make allowance for the inevitable remaining uncertainties, for example using confidence levels and ranges.

Given the non-discretionary nature of defence, the *Green Book* generally requires military capability business cases to appraise options on the basis of relative cost effectiveness rather than in terms of social value. However, being clear on outputs and outcomes, using a consistent outcome/benefit framework to allow comparison between options, programmes and projects, and couching these in terms of social outcomes where possible, for example, employment and economic benefits, is important, even where impacts are hard to quantify.

10.5.2.2 Planning for integration and interoperability

Military programmes and projects need to plan on an integrated basis for new capability, including all the enabling elements, such as people, training, equipment, doctrine, infrastructure, logistics and security, known collectively as the Defence Lines of Development (DLODs). In addition to each of the individual DLODs, the Ministry of Defence needs to ensure that it can operate with and alongside other nations, partners, allies and international institutions when deemed appropriate. This is known as interoperability. The DLODs, their integration and interoperability should all be critical considerations in planning.

10.5.2.3 Tailoring commercial strategy to the nature of the market

Military capability programmes are often delivered through multi-year contracts with national and international delivery partners, working within a complex and highly specialised supply chain. Commercial strategy is therefore a critical consideration, and effective supplier and contract management a key part of defence delivery.

In planning, consider how to get the best balance of expertise and capability, for example in weighing procurement of bespoke solutions and off-the-shelf options. Engage early, openly, and frequently with commercial partners. Establish a clear view of the supply chain and identify areas of risk, for example multiple demands on a single niche supplier.

Managing sole suppliers is a particular challenge for defence and identifying appropriate levers to manage performance needs particular consideration.

Security is also a key requirement. Security clearance of suppliers can be lengthy, particularly developed vetting, so this should be planned for. Where international partners are involved, check the necessary international agreements are in place to acquire overseas military equipment, and comply with them.

10.5.2.4 Considering resourcing early

In highly specialised environments, securing and retaining the resources needed for the work can be challenging. Geographical location and security clearance requirements can make this even harder. Military posting cycles and personal career choices for civil servants can mean that teams change each 2 to 3 years, leading to lack of continuity and loss of expertise.

This can be a particular challenge during initiation, where work has a mandate to proceed but not the resources to take it forward. The skills, expertise and leadership needed for the first phase of the work, and how to find and fund them, should be considered from the outset. A resourcing manager should be appointed as early as possible to take this forward.

From initiation onwards, the resourcing strategy should be given high priority as part of planning for the next phase of the work, including the resources for recruitment and induction. The resourcing manager should also consider how to manage continuity and knowledge transfer between different phases and as people move into and out of the team.

10.6 Digital and data

10.6.1 Overview

Almost every government programmes and project now involves digital and data, also known as information and communication technologies, particularly where these involve service transformation or business change.

The *Government Functional Standard for Digital* defines digital technologies as electronic tools, systems, devices and resources that generate, store or process data. This includes:

- **hardware**, such as devices, storage and networks
- **software**, such as applications, operating systems and code

Many government programmes and projects involve renewing the government's ageing digital infrastructure and moving to modern digital platforms. These changes often enable wider work to refocus organisations around products, services and outcomes for users.

The default approach for most digital and data work is agile, using iterative or incremental methods. Delivery can also be predictive (waterfall) or combine different methods (hybrid), and should be tailored down to work component level (see 10.6.2).

For example:

- individual projects might use an adapted agile life cycle (see 14.9.3.2) or follow the reference life cycle (see 14.9.3.1)
- more complex endeavours typically follow a programme life cycle (see Chapter 14: Programme and project life cycles)

Government strategy for digital and data is overseen by the Chief Digital Officer in the Government Digital Service.

The *Government Functional Standard for Digital* and the *Service Standard* set expectations for the planning, development, delivery and management of digital, data and technology

activity in government departments and their arm's length bodies, and should be followed at all times.

10.6.2 Tailoring considerations for digital and data work

10.6.2.1 Matching ambition to the realities of the environment

User expectations of modern digital services are high, and business ambitions for transforming technology equally so. However, technology is rarely a greenfield site, and transitioning services from legacy systems to modern digital platforms can be complex and risky. Research shows that the time, cost and effort involved to achieve such changes safely while maintaining business continuity are often underestimated.

This is particularly important where legacy systems are in constant operational use or connected to other critical operational systems which rely on them, as is often the case in government. Changing a complex digital component can introduce risk elsewhere in the system; and any failure within a major government operational system, however brief, affects operations and service users, causing reputational damage and loss of working time and revenue. Understanding current digital, data and technology architectures, and how to make changes effectively and safely, is critical in setting realistic objectives for change.

Resourcing can often be a constraint. Specialist digital, data and technology skills are often in short supply and costly to source externally. The high level of security clearance needed for work on government operational systems increases the challenge and can add significant time to recruiting or procuring suppliers. The ability to source appropriate skills for the work should be an important factor in planning and appraising solution options.

Funding requirements also need particular consideration. While development costs can, and generally should, be capitalised, the use of service-based contracts typically requires resource funding rather than capital, and this can be harder to secure against other operational priorities. Incremental or iterative delivery means running legacy solutions and new platforms and services in parallel for long periods, increasing operating costs until the legacy systems are closed. A good understanding of current and expected future costs, and how both fall across the life cycle, is critical to identify realistic options and inform decisions.

10.6.2.2 Tailoring the delivery approach to a work component level

In digital, data and technology programmes it is important to tailor the approach to the work down to component level, whether within a service, programme or specific product or platform. The *Government Functional Standard for Digital* requires the person leading the work to define and establish an appropriate delivery approach, noting that:

- for most digital, data and technology activity, the default approach should be agile, using a product-centric, user-driven approach, iterative development and incremental

release of minimum viable products to deliver value to users as early as possible

- where appropriate, a predictive (also called linear, sequential, or 'waterfall') delivery approach can be used instead: for example, in large capital digital infrastructure projects where value cannot be released incrementally, or in systems which are safety-critical or have significant dependencies, where a 'test and learn' approach would introduce substantial and unmitigable risk

Different delivery approaches can be used for different components of a wider system (whether managed as a service, programme or platform), but should be defined so components can be integrated at appropriate points, within the risk appetite agreed for the work and relevant architectures. Regardless of delivery approach, rigorous design, control, and planning for implementation and integration are critical for all digital, data and technology work.

10.6.2.3 Tailoring the commercial approach

Contracting for digital, data and technology needs to be tailored to the needs of the work and to include enough flexibility to allow for change and uncertainty. The *Digital, Data and Technology Playbook* sets out government guidance on sourcing and contracting for digital, data and technology programmes and projects. As well as providing further guidance on tailoring, the *Playbook* includes common requirements for all digital, data and technology procurement, including:

- the need to assess procurement proposals against the Cyber assessment framework to understand potential impacts and determine contractual requirements
- open and interoperable data and code requirements to support innovation and enable exchange and sharing of information and data between contracting authorities and suppliers, as well as across government
- information on resolution planning, to help government prepare for risks to critical public services and other work, in the event of national disasters, cyber security incidents or other factors, for example critical supplier insolvency

Any relevant *Sustainable procurement: Government Buying Standards* must be used.

10.6.2.4 Considering data requirements

Information and data management is common to all project delivery. However, the aggregated scale and sensitive nature of data held on government systems raises particular considerations for digital, data and technology work, beyond those set out in Chapter 24: Information and data management, and make it essential to put in place a data management strategy and appropriate plans for data management throughout the work.

Planning should consider, in particular, the implications of the work for data on existing systems, including assessing data quality and completeness and how this is to be migrated

or archived. It should also cover the considerations raised by new data to be generated: what is to be collected, including metadata, how it is to be managed and protected, and who can access it. These considerations are particularly important for personal and secure data, and where aggregated datasets are handled, for example during migration. For more information see Chapter 24: Information and data management and the *Government Functional Standard for Digital*.

10.6.2.5 Planning for resilience

Government digital and data systems support services are relied on by people across the UK 24 hours a day, 365 days a year. The *Service standard* sets out the importance of planning to operate a reliable service, minimising service downtime and testing for quality and reliability. Such considerations should be planned into the design of the solution and the way the work is scheduled, costed and managed, including contingency planning and issue management.

Security is a critical consideration in ensuring resilience and needs to be considered as part of design, development and testing, and scheduled and costed as part of planning, including through the life and disposal of the solution. All government organisations must incorporate effective security practices and meet the *Secure by design* policy when delivering and building digital services and technical infrastructure. Further guidance is provided in the *Service Standard* and in the *Secure by design* guidance. See also Chapter 7, Health, safety and security and Chapter 24, Information and data management.

10.7 Transformation and service delivery

10.7.1 Overview

Transformation and service delivery change make up a significant element of government project delivery work, spanning nearly all departments and agencies.

All programmes and projects involve change, but in categories other than transformation, such change tends to be specific in nature, introducing new solutions within a specific area of an organisation, operation, product or service. Transformation differs in terms of scope, complexity, and impact, and requires a broader and strategic perspective, taking a holistic approach to change. Typically, government transformation involves some or all of the following characteristics, depending on the scale and complexity of the work:

- **Improved outcomes for citizens**: the public interact with government differently in receiving existing or new services, and public servants work differently in providing those services
- **operational environment transformation**: there are changes in operating models, behaviours and/or organisational changes, including changes in the organisational design

- **technology and business process change**: there are significant new digital, data or technology components and/or innovative processes which have widespread impact
- **location change**: there are changes in the workforce estate, either due to moving location, reducing or increasing property or changing the use of space and technology
- **multi-stage delivery**: functionality or outcomes evolve iteratively, with work potentially spanning more than one administration or spending review period

While the benefits of transformation can be substantial, work can be challenging to plan and deliver, involving significant organisational and cultural change, new ways of working and experimenting with innovative technology, often all at the same time. Transformation also requires a strong focus on people and behavioural factors, and the ability to bring together multiple different elements of change over time to deliver lasting outcomes.

10.7.2 Tailoring considerations for transformation and service delivery work

10.7.2.1 Working with risk and uncertainty

The iterative nature of transformation means that, while the outcome should be clear, the steps to get there are often not fully mapped out and can change over time. In consequence, risk and uncertainty are often continuing features of the work, rather than reducing as it progresses. These uncertainties also create practical challenges in planning and securing investment approvals and funding over the life of the work.

A multi-phased approach, which can be developed and costed as funding becomes available, helps to manage these risks and provide reassurance to funders. To enable this while providing the necessary strategic coherence, transformation is often best delivered through a programme structure rather than as a series of individual projects. This also means that a transformation programme typically develops a programme business case, with supporting project business cases as required, as set out in the *Green Book*.

The iterative nature of transformation can also mean that programmes continue to evolve, sometimes far beyond their original scope and purpose. To guard against programme drift, clear outcomes, success criteria and benefits should be identified as part of the original business case, with agreed criteria for evaluation and programme closure which are followed. The business case should also identify future requirements for use and continuous improvement of services, and how a stable funding structure can be established to enable and sustain this following programme closure.

10.7.2.2 Using the 7 Lenses

The *7 Lenses* guidance was developed in government to provide a common language and consistent framework for considering transformation through the life cycle. It sits alongside the *7 Lenses Maturity Matrix*, a tool to help transformation leaders and teams

assess progress, identify which areas need more attention and agree the ambition for the next phase.

Vision

The vision gives clarity on the outcomes of the transformation and setting out the key themes for how the organisation will operate.

Design

The design sets out how the different organisations and their component parts are to be configured and integrated to deliver the vision.

Plan

The plan needs to retain sufficient flexibility to be adapted as the transformation progresses while providing confidence on delivery.

Transformation leadership

Delivering a transformation often means motivating into action a large network of people who are often not under the direct management of the transformation leader.

Collaboration

Collaboration is key to transformation in a multidimensional environment that increasingly cuts across organisational boundaries.

Accountability

Having clear accountability for transformation enables productivity, decision-making and delivery of outcomes.

People

Transformation requires people in the organisation to be engaged and to change their ways of working, making effective communication critical at every stage of the transformation.

10.7.2.3 Recognising the importance of human factors

Transformation typically requires disruption to existing ways of working and this brings risk, instability and often anxiety within the organisation until the changes have been implemented and new working practices have been embedded. Planning for, acknowledging and supporting people through such challenges are critical tasks for leaders and teams working on transformation, requiring close attention to organisation design, culture change and human resource management, as well as stakeholder engagement and communications.

Transformation also affects citizens and service users, external and internal. User-centred design is a critical requirement for transformation, and particularly so where new digital services are being developed. The impact of options on the customer or user experience should be assessed (see Chapter 35: Management of societal and organisational change and Chapter 26: Stakeholder engagement), using customer journeys and scenario planning and ensuring equality, diversity, inclusion and accessibility requirements are met (see Chapter 5: Equality, diversity and inclusion).

The human and behavioural factors involved in transformation mean the skills and leadership qualities required can differ significantly to those required for other programmes and projects. The work can also be challenging emotionally, so supporting team wellbeing is particularly important. Further guidance on leading and managing transformation can be found in *The art of brilliance: a handbook for leaders of transformation programmes*.

10.8 International

10.8.1 Overview

The UK government delivers a wide range of programmes and projects overseas, many led by the Foreign, Commonwealth and Development Office but others led and managed by other government departments. These activities, collectively, play a critical part in delivering the UK's foreign policy aims.

Much of this work is focused on international delivery, aligned to the UK's international development strategy and overseas policy priorities and supporting its international commitments, for example to the *United Nations' Sustainable Development Goals*. International delivery, and the associated funding, falls within 2 categories:

- work falling within the Organisation for Economic Cooperation and Development (OECD) definition of Official Development Assistance (ODA), where funding promotes and specifically targets the economic development and welfare of developing countries
- 'non-ODA' work, where funding is used to support UK foreign policy priorities and strategic objectives, but cannot be used to fund 'ODA-eligible' activities, or in countries which are not 'ODA-eligible'

Other departments also deliver a range of other programmes and projects overseas, Examples include work on energy security and net zero, business and international trade, migration and refugee programmes, and joint military capability and security programmes.

International work is delivered through various implementation routes, including joint working with other countries and international bodies, agreements with large multilateral organisations, accountable grants provided to non-government organisations, and contracts with suppliers. The nature and context for such work varies considerably, and

planning and delivery need to be tailored accordingly, recognising the inherent challenges of operating within or across different countries and cultures, and the specific challenges in some overseas environments.

The *FCDO programme operating framework* sets out how all programmes and projects on the Foreign, Commonwealth and Development Office's departmental accounting baseline should be managed. Other international programmes and projects are managed within the relevant organisation's governance and management framework, and are included in the Government Major Projects Portfolio and Departmental Major Projects Group where appropriate, categorised under the relevant category.

Specific governance requirements apply to all Official Development Assistance programmes, whether managed by the Foreign, Commonwealth and Development Office or not. By agreement, such programmes are not included within the Government Major Projects Portfolio. Instead, the Independent Commission for Aid Impact (ICAI) has oversight of the Official Development Assistance portfolio and independently scrutinises UK aid spending, conducting reviews focused on particular geographical or thematic areas of how government spend on overseas development assistance.

10.8.2 Tailoring considerations for international work

10.8.2.1 Understanding the legal requirements

All international work must be consistent with relevant UK law and follow guidance, including regulatory requirements. International law, including human rights and humanitarian law, and reputational risks to HM Government, must also be considered.

The *International Development Act 2002* provides the main legal basis for the provision of development assistance, with reporting requirements defined in the *International Development (Reporting and Transparency) Act 2006*, and these must be complied with. Policies and programmes must also show how their interventions will impact on gender equality, disability inclusion and other equality considerations. Other critical legislation for international work includes the *Human Rights Act 1998* and the *Terrorism Act 2000*. A wider list of relevant legal considerations is included in the *FCDO programme operating framework*.

All international work must also align with the United Nations' Paris Agreement – an international treaty on climate change – and assess climate and environmental impacts and risks, taking steps to ensure that no environmental harm is done. Any International Climate Finance programmes must also identify and record International Climate Finance spend and results.

10.8.2.2 Tailoring the work to the context

International work should be designed to align with the UK's strategic objectives and priorities, and present a unified view of government policy. It is also critical to ensure that

work sits appropriately within the regional and country context, and takes account of local factors which could increase risk or make the work more challenging to deliver.

The Foreign, Commonwealth and Development Office should be informed of all proposals for international work and can provide appropriate advice. In developing a business case, programmes and projects should consult all key stakeholders, including the relevant thematic, regional and country leads, as appropriate.

Foreign, Commonwealth and Development Office heads of mission within individual countries are responsible for ensuring that all relevant UK spend in their country is reflected in the country plan, and that activities are aligned, complementary and do not contradict established UK policy or duplicate spend. All work to be delivered in the country should be agreed through the country board. The country board is also the forum to resolve any prioritisation or other issues between UK departments.

10.8.2.3 Building risk management into design and delivery

Managing risk is a critical consideration in international work. Risks can arise in many forms: sudden shifts in strategy and context; poor delivery or commercial management; inadequate resourcing or operational support; security, legal, technology, information or property risk; safeguarding, financial and fiduciary risks, for example funding being used for unintended purposes; or major compliance failures. All of these can impact on the delivery and impact of the work, and on the wider credibility and reputation of the UK government. The FCDO has a defined risk appetite for different categories of risk, against which all risk should be managed.

Provision for monitoring, escalation and mitigation, with associated costs, should be factored into business planning, and risk registers used to document and monitor risks, and the effectiveness of mitigating actions, through the life cycle of the work. Consider, in particular:

- **contextual risks**: does the proposed approach align with country policy; what are other donors funding; is there potential for duplication of effort or double counting?
- **delivery risks**: are there cultural differences that might make it harder to engage with beneficiaries and others; has due diligence been conducted on the partners selected to deliver the work; do some delivery partners present more risk than others?
- **safeguarding risks**: what measures are needed to safeguard staff and other people working on programmes and beneficiaries?
- **financial and fiduciary risks**: where might such risks arise in the delivery chain, particularly where work is managed remotely? Consider what can be done at each level, for instance partner reporting, independent verification or targeted assurance.

10.8.2.4 Agreeing how to manage performance

International work can present particular challenges in managing performance, especially where managed remotely. Programme and project managers are responsible for

implementing an appropriate performance monitoring strategy, assessing what is needed for adequate oversight and assurance, how to obtain it, and how it will be used to inform decision-making. The resources and expertise needed, and the ethical standards and risks involved in data collection and use, should also be considered. The programme operating framework suggests a range of helpful tools for use in monitoring performance.

10.8.2.5 Evaluating and learning from experience

Evaluation of outcomes, identifying lessons learned, and communicating and sharing them is a key principle of international work. Quality and rigour are critical: the credibility of an evaluation is a key factor in its use and uptake, and is important for the UK's reputation. The *FCDO evaluation policy* sets out core principles and standards on ethics and quality for international work. Evaluation results should be communicated and shared, and published where possible to provide accountability, maximise learning and meet UK transparency commitments. See also Chapter 2: Policy and evaluation and Chapter 38: Learning from experience.

10.9 Further reading

Infrastructure

- Cabinet Office, *The construction playbook*
- Cabinet Office, *Modern methods of construction*
- Department for Environment, Food and Rural Affairs, *Sustainable procurement: the Government Buying Standards (GBS)*
- Department for Transport and Infrastructure and Projects Authority, *Lessons from transport for the sponsorship of major projects*
- Cabinet Office, *Government Functional Standard GovS 004: Property*
- HM Government, *10 year infrastructure strategy*
- HM Government, *Government functional standard GovS 010: Analysis*
- Infrastructure and Projects Authority, *Transforming Infrastructure Performance: Roadmap to 2030*
- UK BIM Alliance, *Information management initiative framework*

Military capability

- Ministry of Defence, *How defence works*
- Ministry of Defence, *Knowledge in defence (KiD)*

- HM Treasury, *Green Book: UK government guidance on appraisal*

Digital and data

- Cabinet Office, *Digital, data and technology playbook*
- Cabinet Office, *Service Standard*
- Cabinet Office, *Secure by design*
- Cabinet Office, *Government Functional Standard GovS 005: Digital*
- Cabinet Office, *Government Functional Standard GovS 007: Security*
- National Audit Office, *Digital transformation in government*
- National Audit Office, *Improving government data*
- National Cyber Security Council, *Cyber assessment framework*

Transformation

- Infrastructure and Projects Authority, *7 lenses* and the *7 lenses maturity matrix*
- Infrastructure and Projects Authority, *The art of brilliance*
- National Audit Office, *Transformation guidance for audit committees*

International

- Foreign, Commonwealth and Development Office, *Evaluation policy 2025*
- Foreign, Commonwealth and Development Office, *FCDO evaluation strategy 2026 to 2030*
- Foreign, Commonwealth and Development Office, *Programme operating framework (PrOF)*
- UK Parliament, *International Development Act 2002*
- UK Parliament, *International Development (Reporting and Transparency) Act 2006*
- UK Parliament, *Human Rights Act 1998*
- UK Parliament, *Terrorism Act 2000*
- United Nations, *The Paris agreement*

Part C:

Managing portfolios

Chapter 11. The governance and management of portfolios
Chapter 12. Managing a portfolio

Part C: Managing portfolios

The purpose of portfolio management is to provide a structured approach through which an effective balance of organisational change and business as usual can be maintained while remaining within a specified funding envelope and constraints as set out in the portfolio plan.

This part of *The Teal Book* builds on Chapter 4: Governance and management, and focuses on governance and management as applied to portfolios by providing guidance on:

- how a portfolio is governed and managed, including roles and responsibilities, determining scope and other portfolio parameters and ensuring organisational alignment (Chapter 11: The governance and management of portfolios)
- how a portfolio should be overseen, directed and managed through the portfolio management practices (Chapter 12: Managing a portfolio)

While this part describes an approach for governing and managing a portfolio, it cannot be used in isolation. The planning and control practices in Part E and the solution delivery practices in Part F need to be referred to throughout and are an essential aspect of the governance of portfolios.

The practices in Part C: Managing portfolios, Part D: Managing programmes and projects, Part E: Planning and control and Part F: Solution delivery all need to be defined to work together.

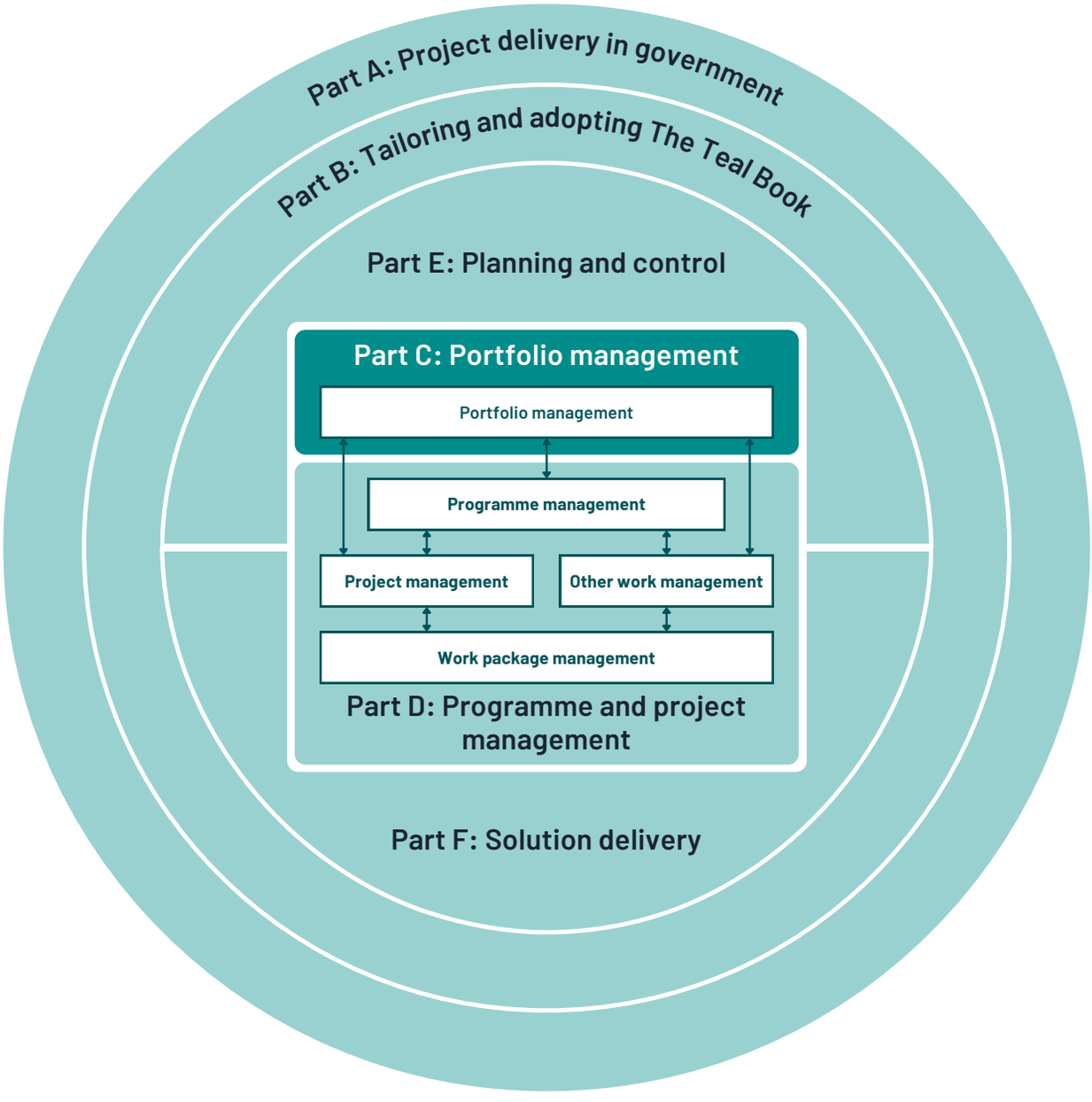


Figure C.1 The structure of The Teal Book

11. The governance and management of portfolios

11.1 The purpose of governing and managing portfolios

The purpose of governing and managing a portfolio is to increase the likelihood of the portfolio's objectives being achieved at an acceptable level of risk and within a specified funding envelope.

11.2 Key points

- A portfolio implements planned change within the sponsoring organisation's business plan.
- Work within a portfolio can include programmes, projects and other related work (including business-as-usual).
- The management of a portfolio is cyclical, mirroring the business planning cycle for the organisation it is part of.
- Good portfolio management is deciding what not to do, as much as deciding what to do and when.
- Decisions should be made in the interests of the whole portfolio and not any single component.

11.3 Why have governance and management of portfolios?

Chapter 4 provides an overview of the aspects of governance and management that apply to all parts of project delivery, regardless of whether the context is a portfolio, programme, project or other related work. This includes an overview of why governance and management are important overall.

For portfolios in particular, governance and management ensure that the portfolio is strategically aligned and remains viable and controlled. This helps the portfolio director optimise the outcomes needed to achieve strategic goals and drive the changes the organisation needs, while balancing them with the capacity of the organisation to deliver and take on those changes.

11.4 What is the governance and management of portfolios?

Characteristics of effective governance and management are described in Chapter 4 and include purpose, knowledge, behaviour, process and structure. All 5 characteristics need to be considered and present in the governance and management framework for a portfolio, or there is a risk that some aspects, such as people's behaviours and attitudes, could be missed.

The governance and management of the portfolio defines how it is to be overseen, directed and managed. Regardless of the scale of the portfolio and its team, each person should be clear on what is expected of them. This is what governance and management provides by defining the processes, methods and tools individuals should be using and how their role relates to other roles. If there is no defined way of working, or if coordination and collaboration across the team are weak, misunderstandings are very likely. This can lead to a loss of focus and threaten the achievement of the portfolio's objectives.

Portfolio management provides the approach needed to manage a collection of programmes, projects and other related work in pursuit of defined strategic goals and vision. As strategic goals are set at the organisational level, effective portfolio governance and management should reflect and be consistent with the business model for the organisation. This should include its structure, for example, whether the organisation has a single governance and management framework or if it is federated across a sponsoring department and/or its arm's length bodies. It is also important that the accounting officer and wider senior leadership are involved in the management of portfolios, endorsing its approach and integration across the organisation.

See *Portfolio guidance, Portfolio management overview* for more information on what portfolio management is, what it is not and the benefits behind a portfolio management approach.

11.5 Who is involved in the governance and management of portfolios?

11.5.1 Overview

Everyone involved in the direction and management of a portfolio has an impact on its governance and management. However:

- the **portfolio director** is accountable for seeing that the portfolio is governed and managed effectively and efficiently
- the **portfolio manager** is accountable, supported by relevant specialists, for defining and establishing the governance and management framework

- a **portfolio office** is usually responsible for supporting the portfolio director and portfolio manager, undertaking part of their roles on their behalf. This is sometimes called the portfolio team

The organisation structure for a portfolio is fundamental to good governance. It is a requirement of the *Government Functional Standard for Project Delivery* that roles are defined and assigned to people with the appropriate seniority, skills and experience. Descriptions of roles should include, but not be limited to, the activities, outputs or outcomes people are responsible for and the person they are accountable to. If a person doesn't know who they are accountable to, they cannot be held to account nor would they know who to take direction from or escalate issues to. Portfolios can operate in a matrix structure with many different teams and governance arrangements involved (see 11.6.7 for organisational governance alignment) so explicit accountability avoids confusion.

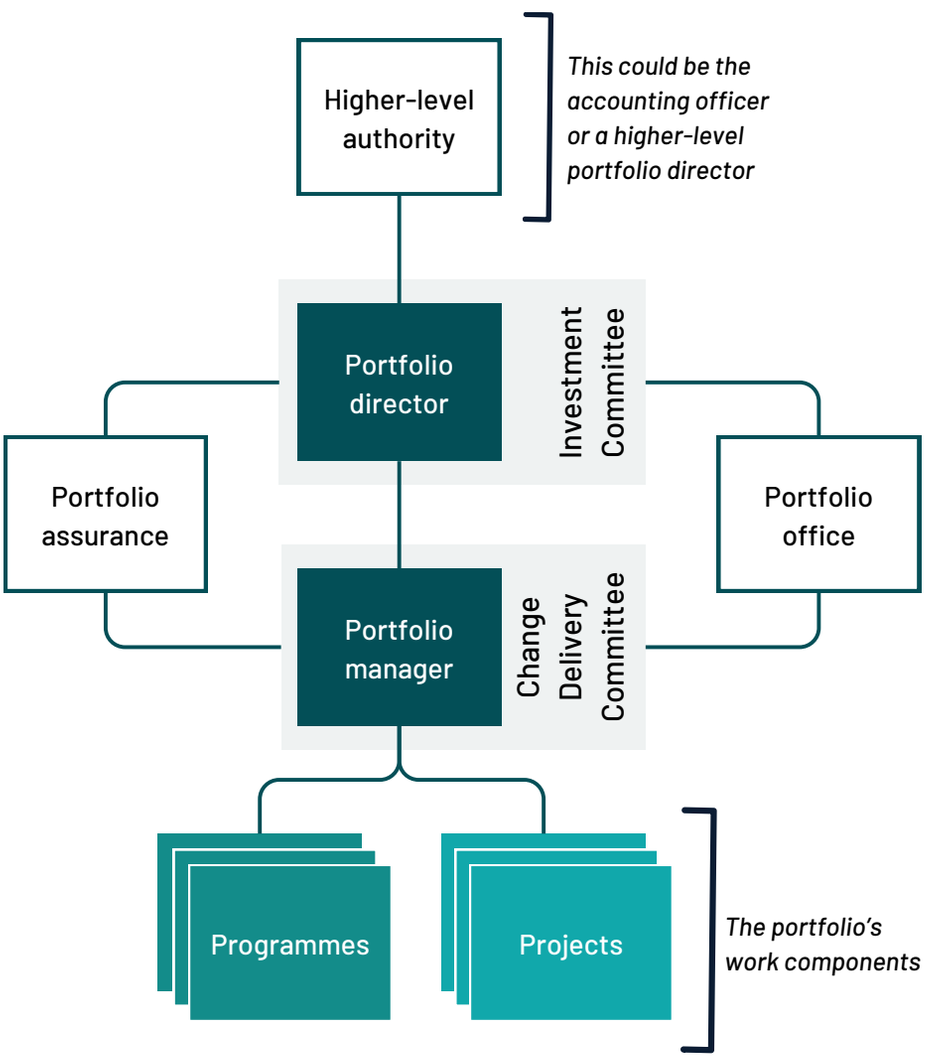


Figure 11.1 Example of a portfolio organisation structure with dual governance bodies

Figure 11.1 shows a possible organisation structure for a portfolio, highlighting the relationship between the different roles. The roles are described more fully in the sections below. These descriptions should be used in conjunction with the *Project delivery capability framework* which includes the professional standards for a range of project delivery jobs operating at different capability levels, covering both leadership and technical skills.

11.5.2 Portfolio director

The **portfolio director** is accountable to a defined higher-level authority for the direction and governance of the portfolio. The higher-level authority could be the **accounting officer**, another senior sponsor, for example a member of the organisation's management board, or a higher-level portfolio director.

The portfolio director provides leadership and direction and owns the portfolio's vision and strategy. Responsibilities include:

- obtaining the relevant management board's approval for the vision and strategy
- optimising the realisation of portfolio benefits at an acceptable level of risk
- approving the portfolio's plan
- promoting a culture focused on cross-organisation and collaborative working which acts in the interests of the organisation as a whole
- ensuring the portfolio evolves to reflect changes in the socio-political environment, policy, strategic objectives, business priorities and emergent risks
- ensuring funding and resources are allocated where needed and capacity and capability are sufficient to meet the needs of the portfolio
- ensuring portfolio management practices are defined, maintained and kept up to date
- securing the investment needed to implement portfolio management and its support systems, tools and environment

The portfolio director should not also be the senior responsible owner for a project or programme within the portfolio they oversee, because of the conflict of interest that this creates.

The role of the portfolio director can be supplemented or supported by a **portfolio board** (see 11.5.4), which can be separate to or integrated with the organisation's investment committee. Due to the wide-ranging and far-reaching nature of the role, they can be accountable for different aspects of their role to different management positions in the organisation. For example, the portfolio director could be accountable to the accounting officer for the vision and strategy; to an organisation's chief project delivery officer (or the senior officer accountable for project delivery in an organisation) for having defined

portfolio management practices and to the chief finance officer for ensuring funding is allocated where needed.

11.5.3 Portfolio manager

The **portfolio manager** is accountable to the portfolio director for planning and managing the portfolio as a whole, ensuring its programmes, projects and other related work deliver the portfolio's objectives.

Responsibilities include monitoring spend against budget, benefits realisation, business and societal change and risk. The portfolio manager is responsible for the day-to-day management of the portfolio, coordinating the effective operation of the portfolio management practices and ensuring the efficient flow of information to decision makers. Responsibilities include:

- drafting the portfolio's vision and strategy in support of the organisation's business plan
- developing and owning the portfolio's plan, including identifying constraints
- preparing regular reports on the portfolio's performance for stakeholders and decision makers
- ensuring the business cases for work components are created on a consistent and reliable basis across the portfolio, using the same assumptions
- ensuring investment appraisals are undertaken
- ensuring contingency provision is sufficient and held at an appropriate level in the project delivery hierarchy
- ensuring dependencies between work components in the portfolio are identified and managed
- leading the development and roll-out of portfolio-level stakeholder management and communications
- keeping the portfolio's governance and management framework up to date, identifying and implementing improvements
- defining and maintaining a benefits framework for the portfolio, and working to optimise their delivery

The role of the portfolio manager can be supported by a **portfolio board**, such as a change delivery committee, a **portfolio office** and relevant specialists. As for the portfolio director, different aspects of the portfolio manager's role can be accountable to different management positions in the organisation.

11.5.4 Portfolio board

For government portfolios, boards can be established that support the portfolio director and portfolio manager in undertaking their responsibilities. The purpose of each board should be clear and set out in terms of reference accessible to the board members and those who interact with them. There are many different models for boards at the portfolio level which usually fit into one of the 2 approaches:

- **the single board approach**, where a single portfolio board supplements and supports both the portfolio director and portfolio manager
- **the dual board approach**, as shown in Figure 11.1, where an investment committee supports the portfolio director in overseeing decisions on investment and the inclusion of initiatives in the portfolio and another portfolio board, usually called a change delivery committee or portfolio progress group, which supports the portfolio manager in overseeing delivery of the portfolio

The design of a board is an important consideration. Achieving the right mix of roles, experience and skills determines its effectiveness. Defining this clearly helps decide on membership and ways of working.

While a board supports the portfolio director or portfolio manager, consider the nature and extent of its decision-making powers. This includes whether decisions require a consensus, majority vote, quorum or other conditions.

A board should not be too large as it is a governing and decision-making body, not a means for stakeholder engagement. The membership should include some that are independent to the delivery of the work to provide a degree of assurance.

Subsidiary boards can be established focused on specific activities, such as change control or architectural or solution integrity.

11.5.5 Portfolio assurance

The portfolio director is accountable for assurance on the portfolio and can be supported by an individual or group who manages this aspect of their work on their behalf (see 11.6.5 on assurance in portfolios). In some cases, an organisational level group could take on this role. For more information on portfolio assurance, see the *Government project delivery assurance framework*.

11.5.6 Portfolio office

Other management and team roles should be defined to suit the needs of the work required, for example those undertaking specialist roles or managing specialist processes, procedures, techniques and outputs. These roles usually form a team called the **portfolio office** that supports the portfolio director and manager in the definition and management of the portfolio.

The exact function and services the portfolio office provides depend on the needs of the organisation, the complexity and scale of the portfolio being managed, and the capability and capacity of the portfolio management function. These functions and services can include:

- ensuring effective and efficient processes for project delivery investment planning and decision-making are defined and embedded
- analysing portfolio work components for contribution to vision and strategy, ongoing viability and benefits to be realised
- allocating resources to work components and resolving conflicts for limited or specialist resources
- identifying and managing dependencies between work components
- identifying and managing the threats and opportunities arising from the aggregate work component risks and the portfolio-level strategic risks
- ensuring the portfolio's work components are prioritised and balanced, providing analysis and advice on content that maximises strategic contribution while considering the organisation's and, where relevant, society's capacity to deliver and absorb change
- monitoring and analysing the performance of the portfolio, escalating delivery issues
- overseeing the allocation of funding and monitoring in-year spend against the portfolio plan

A number of project delivery job roles which could form part of a portfolio office are defined in the *Project delivery capability framework*, for example, the job role of the **portfolio analyst**. However, a portfolio office could also include roles from other government professions depending on the services it provides, for example from the finance, commercial, analyst, people and operational delivery professions.

11.6 Key aspects of governance and management of portfolios

11.6.1 Overview

Every chapter of *The Teal Book* is a part of and relevant to the governance and management of portfolios and Chapter 4 should be referred to, to understand the key aspects of governance and management that apply across all of project delivery. This includes aspects such as behaviours and leadership, the governance and management framework and decision making.

However, viewed top-down from a governance viewpoint, seven aspects are particularly relevant to portfolios:

- governance and management framework
- portfolio plans
- decision-making
- assurance
- behaviour and leadership
- organisational governance alignment
- multi-level portfolios

11.6.2 Governance and management framework for a portfolio

The *Project delivery glossary* defines a governance and management framework as:

> A governance and management framework sets out the authority limits, decision-making roles and rules, degrees of autonomy, assurance needs, reporting structure, accountabilities and roles, together with the appropriate management practices and associated documentation needed to meet this standard.

The *Government Functional Standard for Project Delivery* requires that each portfolio has a defined governance and management framework which should align to, and work with:

- the organisation's project delivery governance and management framework (see Chapter 4: Governance and management)
- other organisational processes and practices, such as those for finance, human resource management, performance reporting, capability and capacity management, risk management, communications and strategic business planning

The governance and management framework for a portfolio should be tailored from the organisational project delivery approach (if any) which, should already be aligned with other organisational processes and practices. In many cases, where an organisation has a central or enterprise-level portfolio, the governance and management framework for the portfolio and the project delivery approach for the programmes and projects could be combined (as they are in *The Teal Book*).

Where organisations have multi-level portfolios (see 11.6.8 on multi-level and multiple portfolios), the governance and management frameworks for each portfolio should be

appropriate for their context but designed to work together. If there is no organisational project delivery approach, *The Teal Book* can be used as a model to build on.

The governance and management framework should be maintained and updated as work proceeds to reflect changes and improvements identified from any lessons learned from using it (see Chapter 38: Learning from experience). The framework therefore needs to be version controlled (see Chapter 22: Change control).

See *Portfolio guidance, Portfolio governance* to find out how to effectively govern a portfolio and align it to organisational governance.

11.6.3 Portfolio plan

A portfolio plan supports the organisation's strategic objectives and is developed on a cyclical basis as part of organisational business planning, for example as part of a spending review or the annual business planning cycle.

It defines and justifies the choice of programmes, projects and other work which, together, are expected to provide the outcomes and benefits at an acceptable level of risk.

The plan should include the portfolio's funding sources, scope including objectives, expected benefits and outcomes, and constraints such as costs, resources, time and risks. Once approved, it should be baselined, with subsequent changes managed through change control until the next planning review (see Chapter 16: Planning and Chapter 22: Change control).

The approval of a portfolio plan does not give the authority to start a new programme or project, or to change existing ones. Each programme or project has to have its own formally approved business case before the work can begin. The business case justifies the work, defines the scope including benefits, and authorises funding and resources (see Part D: Managing programmes and projects).

The relationships between these different levels of approval and authorisation (see Figure 11.2), who makes them and when, should be documented in the portfolio's governance and management framework.

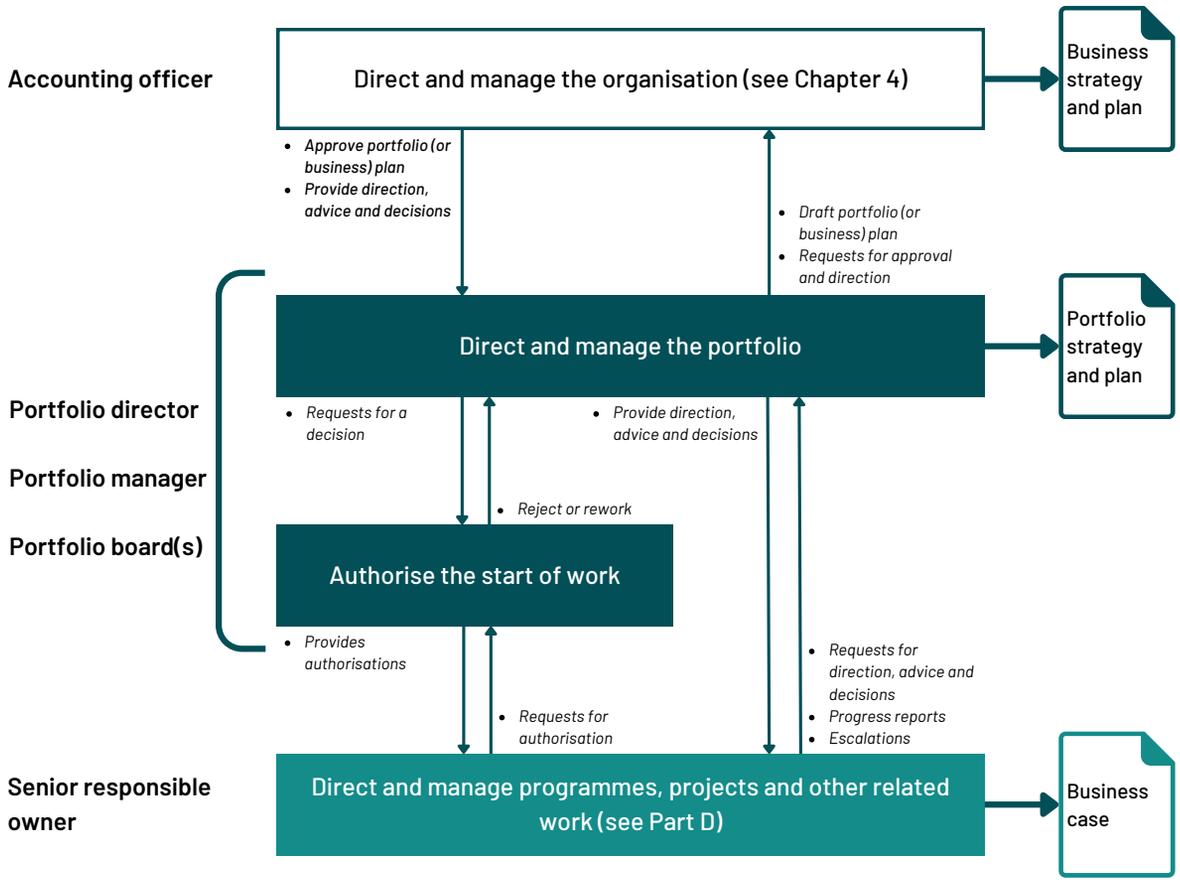


Figure 11.2 A portfolio is governed by a portfolio plan, which is the basis for approving a business case and authorising the start of work

11.6.4 Decision making

Decisions relating to the direction and management of a portfolio should be made in a way that is timely, communicated and in consultation with stakeholders and subject matter experts. The *Government Functional Standard for Project Delivery* requires that the assessment of options is done in accordance with the *Government Functional Standard for Analysis*.

It is important that decision-making rights are defined in the governance and management framework so that everyone managing a component of the portfolio understands who has the authority to make which decisions, on what and when, and who should be consulted. Leaving all the decisions to the portfolio director or board is not an effective approach. Instead, decisions should be delegated to those best placed to make them, while at the same time ensuring those decisions are visible to those in higher authority.

Frequently, decisions related to the management of a portfolio are taken through a portfolio board where decisions require a consensus, majority vote or other arrangement for decision-making (see 11.5.4 on portfolio boards).

Effective systems and processes need to be in place to support decision making so that there is an efficient flow of information to the decision makers. This does not mean setting up separate processes, but ensuring that information and data (see Chapter 24: Information and data management), reporting (see Chapter 18: Reporting) and communication (see Chapter 27: Communications) are built into the working approaches for managing the portfolio.

Decisions which require formal authorisation or approval include:

- approving the portfolio's vision and strategy, including their periodic validation
- approving the portfolio plan
- where appropriate, approving the allocation of funding and/or resources
- authorising the start of work components
- approving the closing of work components
- setting risk appetite and tolerance for the portfolio
- authorising the amendment, rescheduling or termination of existing work components
- initiating corrective and preventative actions

11.6.5 Portfolio assurance

Each portfolio should have a defined and integrated plan for undertaking assurance, known as an integrated assurance and approval plan (IAAP), typically with at least 3 levels (see 4.6.5 on assurance). This should be a part of the portfolio plan (see 11.6.3 on portfolio plan).

The approach to assurance reviews in government is set out in the *Government project delivery assurance framework* which provides a set of assurance reviews that can be used for portfolios, programmes and projects. Portfolios should be reviewed using a portfolio assurance review as set out in *Assurance workbook: portfolios and portfolio management* which looks at aspects such as strategic alignment and definition, performance and risk, management, culture and processes and capability and capacity.

Government Major Projects Portfolio and portfolio reviews

If a portfolio includes programmes or projects in the Government Major Projects Portfolio, periodic portfolio reviews should be arranged. The interval between such assurance reviews should not usually exceed 3 years.

Assurance and approvals are closely related. The *Government Functional Standard for Project Delivery* requires that assurance reviews take place before significant decisions, so that decision makers have an assessment of the status and outlook of the work. Assurance reviews can also be undertaken in response to an issue or to verify delivery.

If not planned properly, assurance reviews can be disruptive. Reviews should be scheduled to minimise disruption. Activities in the wider organisation should also be considered when scheduling reviews, such as spending review and budget planning, strategy developments or launching a target operating model.

11.6.6 Behaviour and leadership

Effective portfolio management depends on a holistic understanding of the portfolio's objectives and how to achieve them. Senior leaders, whether on the portfolio board, part of the team or acting as decision makers, play an important part in delivering the organisation's strategic objectives and in contributing their knowledge of the business.

Senior leaders should act in the interests of the organisation and the portfolio as a whole, not just the part they are responsible for. There can sometimes be a conflict of interest. The creation and sharing of a shared vision can help unify effort and motivate those leading and working on the portfolio's programmes, projects and other related work.

11.6.7 Organisational governance alignment

Portfolios are typically permanent, forming part of an organisation's business as usual capability. This is in contrast to programmes and projects, which are unique and temporary management organisations that end once the outcomes have been delivered and validated. As such, effective portfolio governance means that the governance of the portfolio needs to reflect and integrate with the governance arrangements for the wider organisation. There should be a shared understanding across the entire organisation of how and when portfolio related decisions are made.

A number of other governance bodies and arrangements can exist for specific parts of an organisation's work. For government organisations this can include departmental boards, executive committees, audit and risk committees and performance committees. These bodies should be considered when defining and maintaining the governance and management framework for the portfolio, including the relationship between portfolio management boards and other relevant boards, to maintain clarity on accountability for decision-making.

The successful management of a portfolio relies on the support and contribution of the accounting officer and executive board as well as people in other government functions and professions, not just project delivery professionals. Examples include people with expertise in finance, commercial, human resources, strategy, policy development and legal activities. These functions and professions should be considered when defining the governance and management framework for the portfolio. Information should be shared

regularly between them and the portfolio team as their perspectives can bring greater insight into the status of a portfolio. For example, it is important to keep teams responsible for strategy and policy development involved in the definition of the portfolio's vision and strategy and informed of progress against strategic objectives.

11.6.8 Multi-level and multiple portfolios

Many government organisations need more complex governance arrangements for their portfolios because there are many levels of change through the organisation. For example, Figure 11.3 shows:

- a central portfolio for the sponsoring organisation and a portfolio in each of its arm's length bodies
- a separate portfolio for each each relatively independent purpose, line of business or operational function

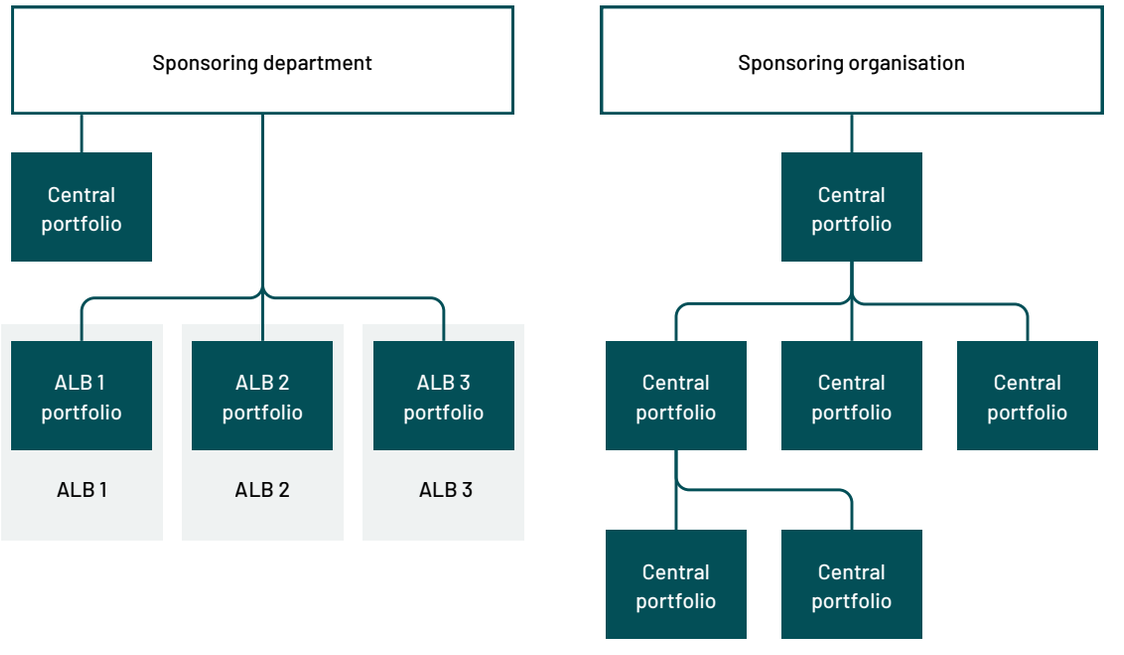


Figure 11.3 Two examples of multi-level and multiple portfolios

In situations such as this, consider having a governance and management framework for portfolio management across the whole organisation where:

- the terminology, roles, accountabilities and decision rights of boards are defined and understood by all
- rules for delegation, reporting and escalation for each portfolio are defined

- mechanisms are in place that allow for all portfolios to be reviewed, usually by the central portfolio, to ensure that investment decisions are optimal for the organisation, not just a single portfolio
- the criteria for including a work component in a specific portfolio are agreed

A programme or project should not be part of more than one portfolio as this causes conflict and confusion over accountabilities, direction and processes. If more than one portfolio has an interest in the same work component, mechanisms should be in place such as agreeing interdependencies or having common board or team members, so that information can be shared and responsibilities for oversight are defined.

Even with a central portfolio, not every programme, project and other related work needs the same level of scrutiny, or needs to sit within the portfolio. Including every work component to understand full alignment and contribution to strategic objectives can quickly become overwhelming for organisations that do not have the maturity or capability for this level of oversight.

There is also a risk that portfolio management turns into an activity focused on collecting data instead of providing the insights needed for effective portfolio management. A tiered portfolio structure can help address this, with scrutiny and reporting requirements tailored to agreed criteria such as criticality, risk, scale and/or complexity.

11.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- Government Project Delivery, *Government project delivery assurance framework*
- HM Government, *Government Functional Standard GovS: 002 Project Delivery*
- HM Government, *Government Functional Standard GovS: 010 Analysis*
- Infrastructure and Projects Authority, *Assurance review toolkit* (collection)
- Infrastructure and Projects Authority, *Assurance workbook: Portfolios and portfolio management*
- Infrastructure and Projects Authority, *Portfolio management in government*

12. Managing a portfolio

12.1 Purpose of portfolio management

The purpose of portfolio management is to provide a structured approach through which an effective balance of organisational change and business as usual can be maintained while remaining within a specified funding envelope and constraints.

12.2 Portfolio management practices

12.2.1 Overview

The *Project delivery glossary* defines **portfolio management**:

> Portfolio management is a co-ordinated collection of strategic practices and decisions that together enable the most effective balance of organisational change and business as usual.

The portfolio management practices described in this chapter provide senior management with the evidence and control to make informed decisions on:

- where and when to invest in new work
- whether existing work continues to be viable or appropriate
- how to optimise delivery, resource usage and benefits realisation

Portfolio management is not the passive collection of data and production of reports, but the active management of everything within it. It provides a means of collaborating across team boundaries, bringing functions, operations and other business teams together in the shared objective of delivering the changes an organisation needs.

Unlike programmes and projects which have a beginning and an end, the management practices of a portfolio are cyclical, with the practices typically falling into 2 groups of ongoing activity. These cycles are normally called portfolio definition and portfolio delivery. This can be seen in Figure 12.1, with the practice of continuously validating the portfolio's objectives and strategy linking the 2 cycles. The activities in these cycles are not sequential; the practices in each can happen at the same time or in a different order depending on the circumstances at any given time. This enables the portfolio manager and their team to adapt continuously to a changing context and environment.

What is important is that everyone involved in managing the portfolio, including relevant stakeholders, is clear on how these practices operate by defining them in the

portfolio's governance and management framework (see Chapter 11: The governance and management of portfolios).

The management practices in this model apply regardless of the approaches, techniques or tools used. When combined with the planning and control (see Part E: Planning and control) and solution delivery practices (see Part F: Solution delivery), the management practices provide a comprehensive integrated approach for directing and managing any government portfolio.

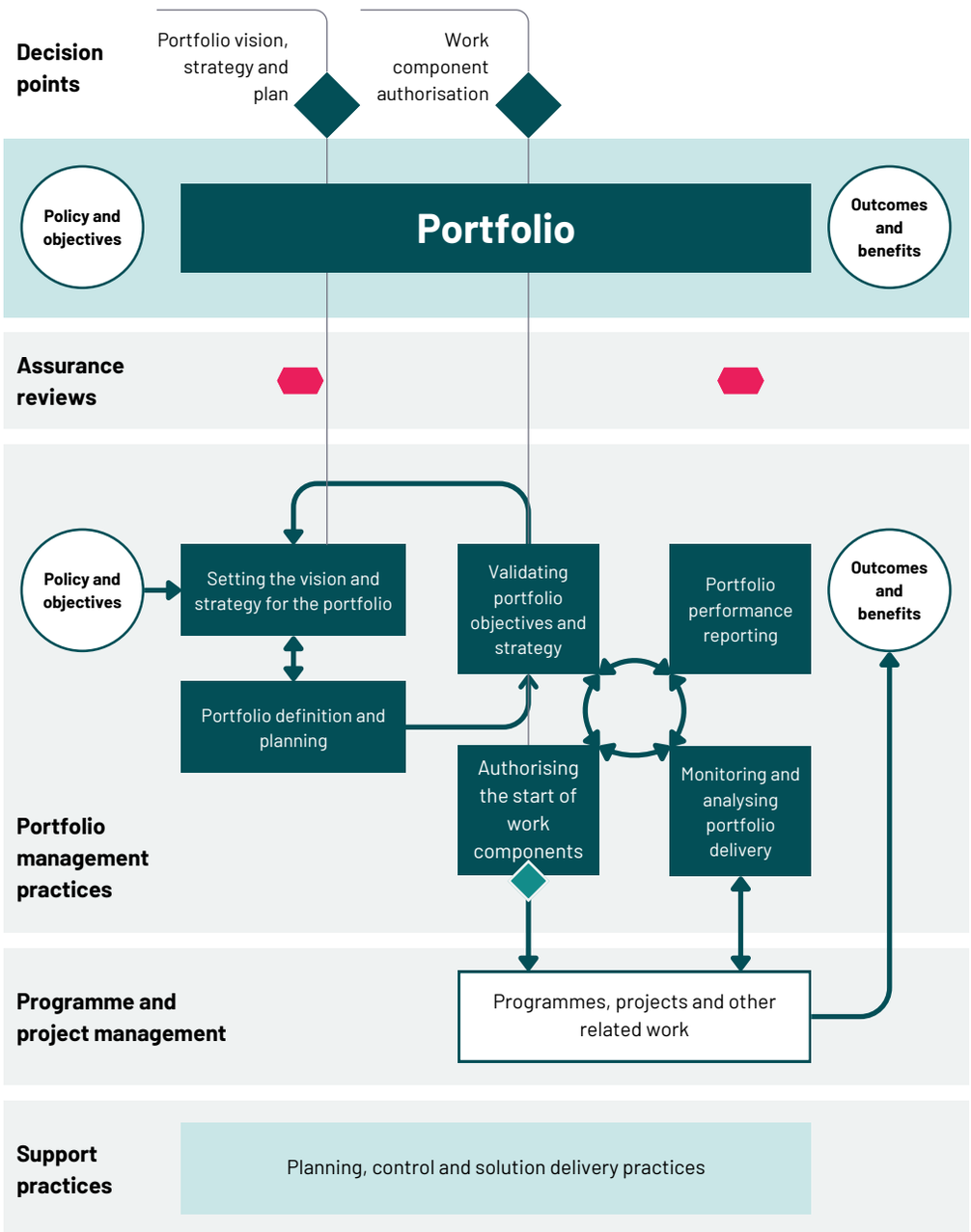


Figure 12.1 Portfolio management as an ongoing and iterative activity, showing decision points and assurance reviews

12.2.2 Setting the vision and strategy

The vision and strategy for a portfolio define the overarching aspirations, objectives and outcomes that inform decisions about how the portfolio is delivered.

Alongside the vision, the *Government Functional Standard for Project Delivery* requires each portfolio to have a defined strategy, describing the objectives and desired delivery outputs and outcomes. The strategy should include:

- the organisational objectives and priorities from the business plan which relate to the portfolio
- the portfolio's long-term strategic objectives
- summary information on the benefits and costs
- outcomes and capabilities to be delivered and how these link to the portfolio's strategic objectives and priorities from the business plan
- success factors and resource and risk information, including setting the risk appetite for the portfolio

At the organisational level, the vision and strategy for the portfolio should be consistent with, and could be the same as, the vision and strategy for the organisation as a whole. It is important that the vision and strategy are aspirational but achievable, and motivate stakeholders to engage in the collective pursuit of the portfolio's objectives.

The portfolio strategy should set the context for defining and planning the portfolio, informing the criteria for investment decisions and the authorisation of work components. This should include the identification of a set of organisation or portfolio specific benefits categories. These help trace how individual programmes and projects contribute to the strategic objectives, and how strategic objectives flow down into the work being delivered (see Chapter 19: Benefits management and Chapter 23: Traceability management).

12.2.3 Definition and planning

The purpose of defining and planning the portfolio is to ensure that the delivery of the portfolio is controlled. Definition and planning should be done in accordance with the governance and management framework with the aim of ensuring:

- investment is aligned to the government's policy and organisational vision and strategy
- benefits to be realised by the portfolio as a whole are optimised
- the portfolio is balanced, including to cover both short-term and long-term strategic objectives

- risks across the portfolio are within the organisation's risk appetite
- the organisation's capability and capacity are optimised
- those impacted by the portfolio's outcomes can absorb the changes
- the use of funding and resources is optimised and the associated risks considered

To do this, the planning and definition of a portfolio is usually broken down into the following steps:

- understanding and categorising the portfolio's current and potential work components
- prioritising the portfolio's work components
- balancing the portfolio
- planning the portfolio

These are described below, and more information, guidance, tools and techniques can be found in *Portfolio guidance: module 2 - scoping the portfolio* and *Portfolio guidance: module 3 - portfolio planning*.

12.2.3.1 Understand and categorise the portfolio's current and potential work components

The first step in defining the portfolio is identifying and understanding the changes needed to deliver the objectives included in the portfolio strategy. This should include the consideration of the programmes, projects and other work already in progress as well as any potential and prioritised work in the pipeline.

This work usually involves the collection of information and data by the portfolio office for each current and potential work component with the aim of providing a clear, consistent and factual view on:

- what is in the current portfolio
- the potential and prioritised components awaiting authorisation
- performance to date
- current benefits realisation
- forecast costs and benefits
- risks to delivery

Once this information is available, it is possible to categorise the work components. This can follow the benefit categories and classifications in the *Green Book* (see Chapter 19, Benefits management), organisational groupings such as strategic objectives, the type of work (for example, infrastructure, digital, transformation), or why it is needed (for instance, legal compliance, policy commitment or desirable service improvement). Frequently, it is useful to have multiple perspectives. Investment criteria should be developed, and consideration should be given to tailoring the criteria to each group. This helps decision-makers understand the portfolio and make better decisions on the optimum use of funding and resources.

12.2.3.2 Prioritise the portfolio's work components

Having understood and categorised the work components, they can be valued or scored and prioritised based on a set of agreed metrics aligned to the investment criteria agreed for the portfolio. As portfolio prioritisation often needs to consider a range of factors, this typically involves the use of multi-criteria analysis. This might combine, for example:

- **social value metrics**, assessing social costs and social benefits, using summary measures of social value such as benefit-cost ratio or return on public sector cost, as set out in the *Green Book*
- **achievability metrics**: assessing aspects such as risk, delivery confidence, consequential impact and complexity
- **attractiveness metrics**: assessing aspects such as contribution to strategic objectives and policy commitments, or in terms of total benefits (monetisable and non-monetisable)

Each current and potential work component can be evaluated against these criteria in a scorecard (see Table 12.1) to produce a set of scores which can be ordered to produce a prioritised list of components which can meet the objectives within the defined constraints. Not all work components are likely to be selected.

For more information on how this can be done see *Portfolio guidance: portfolio planning* and the *Aqua Book*.

Table 12.1 Example weighted prioritisation scorecard to assess an individual work component

Type	Criteria	Weight	Contribution			Score	Total
			Low	Medium	High		
Attractiveness	Criteria 1	25%	0	5	10	10	2.5
	Criteria 2	10%	0	5	10	10	1
	Criteria 3	10%	0	5	10	0	0
Achievability	Criteria 4	25%	0	5	10	10	2.5
	Criteria 5	20%	0	5	10	5	1
	Criteria 6	10%	0	5	10	0	0
Prioritisation score:							**7.0**

12.2.3.3 Balance the portfolio

While producing a list of prioritised work components is useful, this is not where the definition and planning of the portfolio should stop as, on closer inspection, the list created using scoring might produce results that are not desirable. This is the purpose of balancing, asking whether the prioritised list of selected work components actually represents an optimised portfolio when considering aspects such as:

- coverage of strategic objectives
- the scheduling of components to manage available budget or resources over a given period or to enable changes to be spread over time
- risk appetite and aggregate risk levels
- benefits realisation and return on investment
- ability of the market to support delivery
- ability of the organisation or society to absorb the changes
- enabling and regulatory needs

To balance effectively, it is important that such work is not done in isolation but that other functions and areas of the business are involved so that impacts, risks, issues and benefits can be explored and fully understood and communicated to the decision makers. One technique is the production of a portfolio map as shown at Figure 12.2. In this example, financial, achievability and attractiveness scores from the prioritisation of the portfolio

are mapped on a chart. Such a map can be used to support validation discussions with stakeholders. For example, in Figure 12.2:

- the work component listed as G could be work that ensures an organisation is compliant with new regulations and so, even if it is not attractive or achievable, needs to be done. This might involve accepting the risk or prompting action on how the work could be made more attractive or achievable
- the work components labelled as C, D and E are all very attractive to deliver. However, these could all impact the same area of the organisation, reducing the ability for that area to absorb the change. Another possibility is that these are dependent on enabler components that map as less attractive or achievable. In such situations, consideration should be given to the sequencing of these components and therefore when they are authorised to start

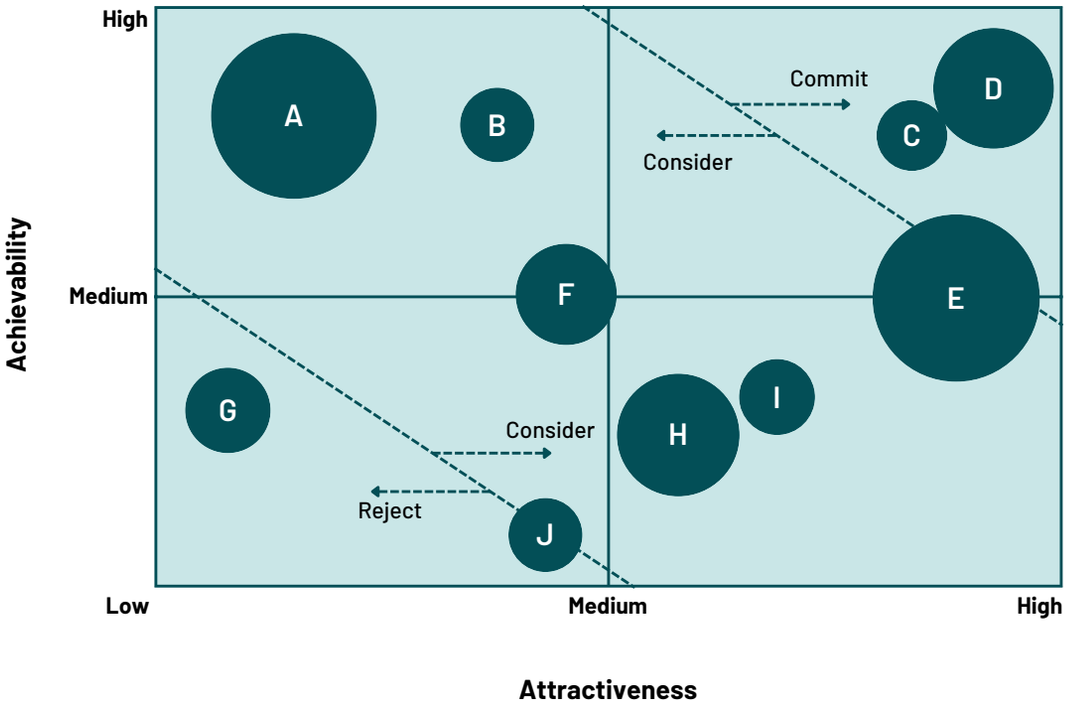


Figure 12.2 An example portfolio map with work components plotted against achievability and attractiveness scores and where the size of the bubble indicates the scale of benefit

12.2.3.4 Plan the portfolio

Planning brings all of the work done during the definition of the portfolio into a single plan. The portfolio plan is an elaboration of the portfolio strategy, providing more detail on how the strategy is to be achieved. The portfolio plan should include:

- the objectives of the portfolio
- the justification for undertaking the plan in qualitative and quantitative terms
- the constituent work components
- a delivery schedule which is usually done on a rolling, annual basis with more detail available for the current year (see Figure 12.3)
- interdependencies between work components or with activities outside the portfolio
- sources of funding
- cost and resource information and allocations
- benefits to be realised and when
- portfolio level and aggregate risk and issue information

The plan should be developed in accordance with the guidance set out in Chapter 16: Planning.

The portfolio plan should be approved and baselined to then be used to track performance against. Changes to the plan should be controlled and approved (see Chapter 22: Change control).

There can be a tendency to try and create a single, detailed Gantt chart mapping out all the activities planned in each work component. Similarly, it can be tempting to try and have sight of all the dependencies within each work component and manage them. Both should be avoided. The management of such a large amount of information by rolling up detailed programme and project plans into a portfolio plan has little value at the portfolio level and duplicates and undermines the work of the programme, project and team managers in scheduling their work. Instead, an appropriate level of schedule needed for the control and management of the portfolio overall should be defined with the portfolio director and relevant boards focused on major decision points and assurance reviews.

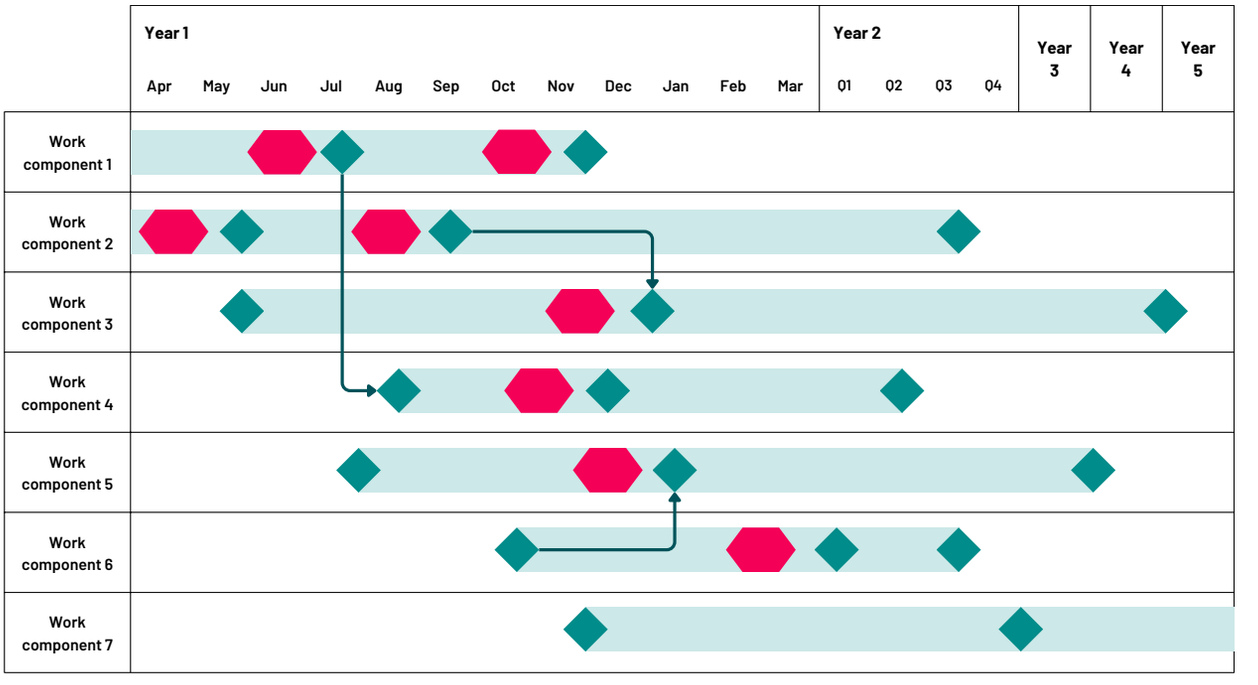


Figure 12.3 A simplified example of a 5-year rolling portfolio schedule showing decision points, assurance activities and dependencies

12.2.4 Validating objectives and strategy

The purpose of validating the portfolio's objectives and strategy is to ensure periodically that they are still current and affordable and the right programmes, projects and other related work are being undertaken.

The portfolio should be validated whenever a new work component is initiated or changed as these decisions can have a major influence on the rest of the existing portfolio's work components. However, the portfolio should be formally validated from time to time (such as quarterly or half-yearly, depending on the volatility of the portfolio) to check it is still serving its purpose and has not drifted off course or if a significant external influence has been omitted. Such formal validation activities should be scheduled in the portfolio plan. The portfolio director, manager and relevant boards should also trigger validation activities outside the schedule whenever changes in the organisation's strategy, plan or environment are identified. If the portfolio's vision and strategy need to be changed, the portfolio's definition and plan should be analysed to understand if it still represents the optimal collection of work components. This might result in current work components being terminated, paused, rescheduled or having their scope revisited and new work components being identified and authorised. Validating the portfolio might sound like a lot of work but it is fundamental to portfolio management and therefore core to those working in the portfolio team.

Before a decision is taken on whether the portfolio's objectives and strategy remain valid, a portfolio assurance review from the *Government project delivery assurance framework* should be considered (see also Chapter 4: Governance and management).

12.2.5 Authorising the start of work

The purpose of authorising the start of work components is to ensure that new work components are identified, defined, prioritised and authorised to start in accordance with the portfolio plan.

Authorising the start of work involves managing the portfolio's potential work components in a structured way, selecting those that are likely to be included and tracking them until they are either authorised as part of the portfolio or rejected, as shown in Figure 12.4.

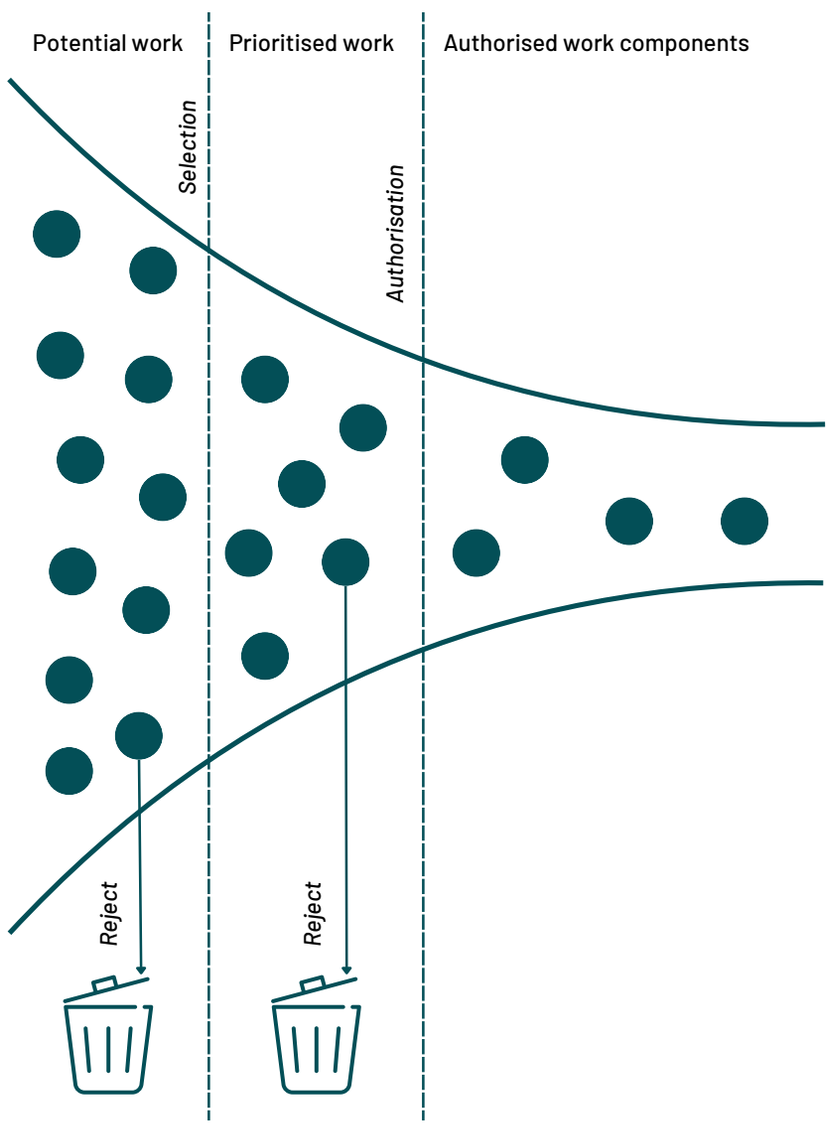


Figure 12.4 Potential, prioritised and authorised work components

Managing the pipeline is concerned with achieving 3 things:

- policy and idea generation while balancing the risk of too many against too few potential work components
- having a controlled entry point to the portfolio and for the authorisation of work
- setting up work components to succeed by being clear about the problem to be solved (or opportunity to be exploited) and devoting sufficient attention to programme and project initiation and development

This can be achieved by having a set of criteria, both for selection as a prioritised work component and for the portfolio itself. Before a work component is considered for authorisation, the portfolio manager should ensure that an impact assessment is conducted of financial, resource and technical capability and availability, and that the programme or project does not duplicate other related work.

Authorised entry into the portfolio should be aligned to the initial decision point for starting the first phase of a programme or project (see Figure 12.5). At this point, the decision is not based on a business case but instead on the approval of the programme or project brief (see Chapter 14: Programme and project life cycles).

This decision is concerned with confirming there is a real policy need or opportunity which needs addressing now and that:

- the envisaged outcome is desirable
- the work can be justified
- risks have been identified and are acceptable or can be mitigated
- the solution is (or if not known, is likely to be) acceptable
- funding and resources are available to complete the work and support any outcomes
- there is an outline plan for the work

This involves reviewing the vision, justification and outcomes for a programme or project together with any strategic assumptions before any funding and resources are committed (see Chapter 15: Managing a programme or project).

At this point, the portfolio director should ensure that an appropriately skilled and experienced senior responsible owner and programme or project manager have been appointed.

Government Major Projects Portfolio and appointing senior responsible owners

Programme or projects in or expected to join the Government Major Projects Portfolio should appoint the senior responsible owner, by letter, jointly from the accounting officer of the sponsoring organisation and the Government Head of Project Delivery (or as delegated to the Government Head of Profession for Project Delivery). The letter should be published on GOV.UK. See *The role of the senior responsible owner* for more information.

Departmental Major Projects Portfolio and appointing senior responsible owners

Programme or projects in or expected to join the Departmental Major Projects Portfolio should appoint the senior responsible owner by letter from the accounting officer of the sponsoring organisation. See *The role of the senior responsible owner* for more information.

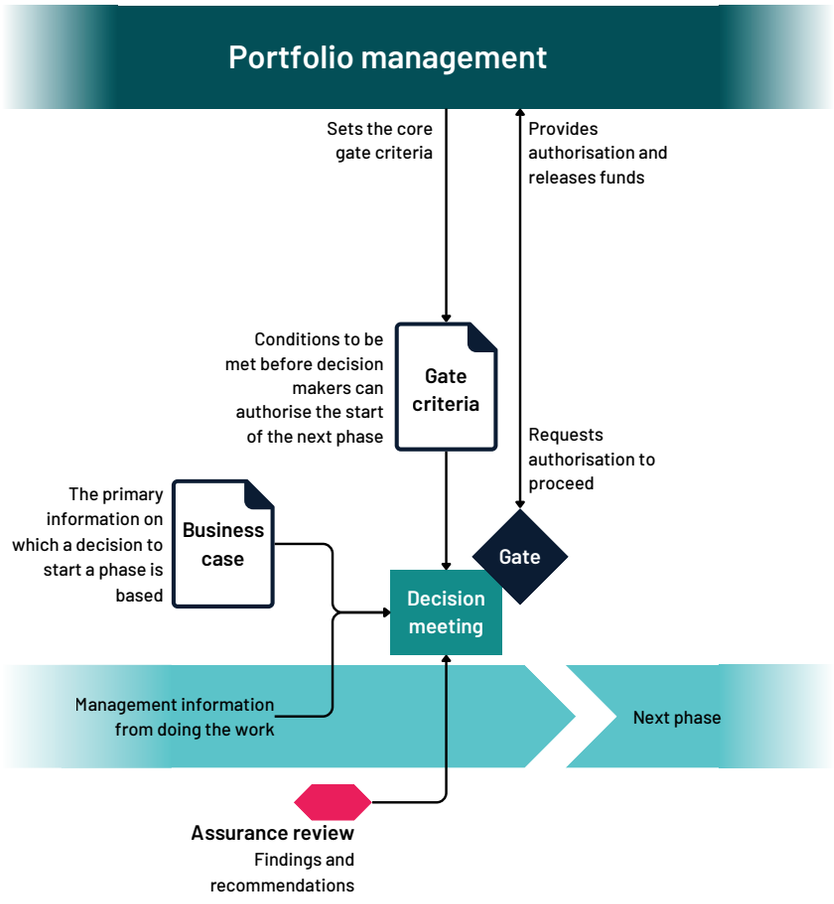


Figure 12.5 Potential interactions between the portfolio and a programme or project at a gate decision point

When authorising the start of work, the portfolio director and any relevant boards should clearly define the tolerances and constraints that the senior responsible owner should operate within. Work should be authorised on a phased basis to contain risk by limiting the amount of expenditure and effort until enough information is available to make a decision on whether the work should continue. As such, the portfolio manager should ensure that each work component has an integrated assurance and approval plan and that this aligns with the decisions expected from the portfolio director and relevant decision-making body (for example, an investment committee).

12.2.6 Monitoring and analysing delivery

The purpose of monitoring and analysing delivery is to ensure that the performance of the portfolio is analysed, understood and corrective or preventative action taken, if needed.

The aspects of the portfolio that should be monitored and analysed include:

- outcomes achieved and benefits realised
- adherence to defined constraints (such as cashflow, cost, schedule and risk)
- delivery of primary outputs
- availability of finances (see Chapter 29: Finance)
- current capacity and capability constraints in the organisation and supply chain (see Chapter 28: Resource management and Chapter 25: Procurement and contract management)
- current levels of risk, including those related to interdependencies (see Chapter 20: Risk management)
- the views and reactions of impacted parties and other stakeholders (see Chapter 26: Stakeholder engagement)

Being able to analyse portfolio delivery requires an understanding of the performance of the work components in the portfolio and those being assessed for inclusion. The portfolio office should get performance data by having direct access to programme or project information systems, or by collecting reports.

Stakeholders should be engaged and their attitudes and influence monitored, with new stakeholders identified and existing stakeholders re-evaluated. New risks and issues should be identified, existing ones managed and the aggregate risk for the portfolio analysed.

Action should be taken to ensure the portfolio meets its objectives in line with its plan and within the defined constraints. This might include additional support or scrutiny, or result in existing work components being identified for amendment, rescheduling or termination or the need for new work components being authorised.

More information on the monitoring and analysis of portfolio delivery can be found in Chapter 17: Controlling and in *Guide: portfolio management* by the Infrastructure and Projects Authority.

12.2.7 Performance reporting

The purpose of performance reporting is to ensure that the performance of the portfolio against the plan is provided to inform decision makers and others who rely on the information to fulfil their roles.

Portfolio performance reports should be drafted and issued in accordance with the guidance in Chapter 18: Reporting. They should include information on aspects such as:

- funding and costs
- outcomes and benefits
- milestones
- risks and issues

Reports should show progress as reflected against the portfolio's baselined plan with analysis and commentary to explain variances and the actions being taken to correct or prevent them. Reports should also include forecasts for future performance.

12.3 Further reading

- HM Government, *Government Functional Standard GovS: 002 Project Delivery*
- Infrastructure and Projects Authority, *Portfolio management in government*
- Government Project Delivery, *The role of the senior responsible owner*
- HM Treasury, *Aqua Book: guidance on producing quality analysis for government*

Part D:

Managing programmes and projects

Chapter 13. The governance and management of programmes and projects

Chapter 14. Programme and project life cycles

Chapter 15. Managing a programme or project

Part D: Managing programmes and projects

The purpose of programme and project management is to provide a structured approach for defining and implementing policy and business strategies to enable the government and its organisations to achieve the outcomes and benefits they need.

This part of *The Teal Book* builds on Chapter 4 and focuses on the governance and management of programmes and projects, by providing guidance on:

- how a programme or project is governed and managed, including the aspects such as roles, behaviours, assurance and decision making (Chapter 13: The governance and management of programmes and projects)
- how programme and project life cycles are essential to good governance by managing risk, underpinning the delivery plan and controlling the work (Chapter 14: Programme and project life cycles)
- how a programme or project should be overseen, directed and managed through the management practices, regardless of the delivery approaches taken (Chapter 15: Managing a programme or project)

A programme or project can be standalone or undertaken in the context of a portfolio or programme. While this part describes an approach for governing and managing a programme or project overall, it cannot be used in isolation. The planning and control practices in Part E and the solution delivery practices in Part F need to be referred to throughout and are an essential aspect of the governance of programmes and projects. The practices in Part C: managing portfolios, Part D: managing programmes and projects, Part E: planning and control and Part F: solution delivery of *The Teal Book* need to be defined to work together and Part B should be applied to tailor the work to suit different contexts and situations.

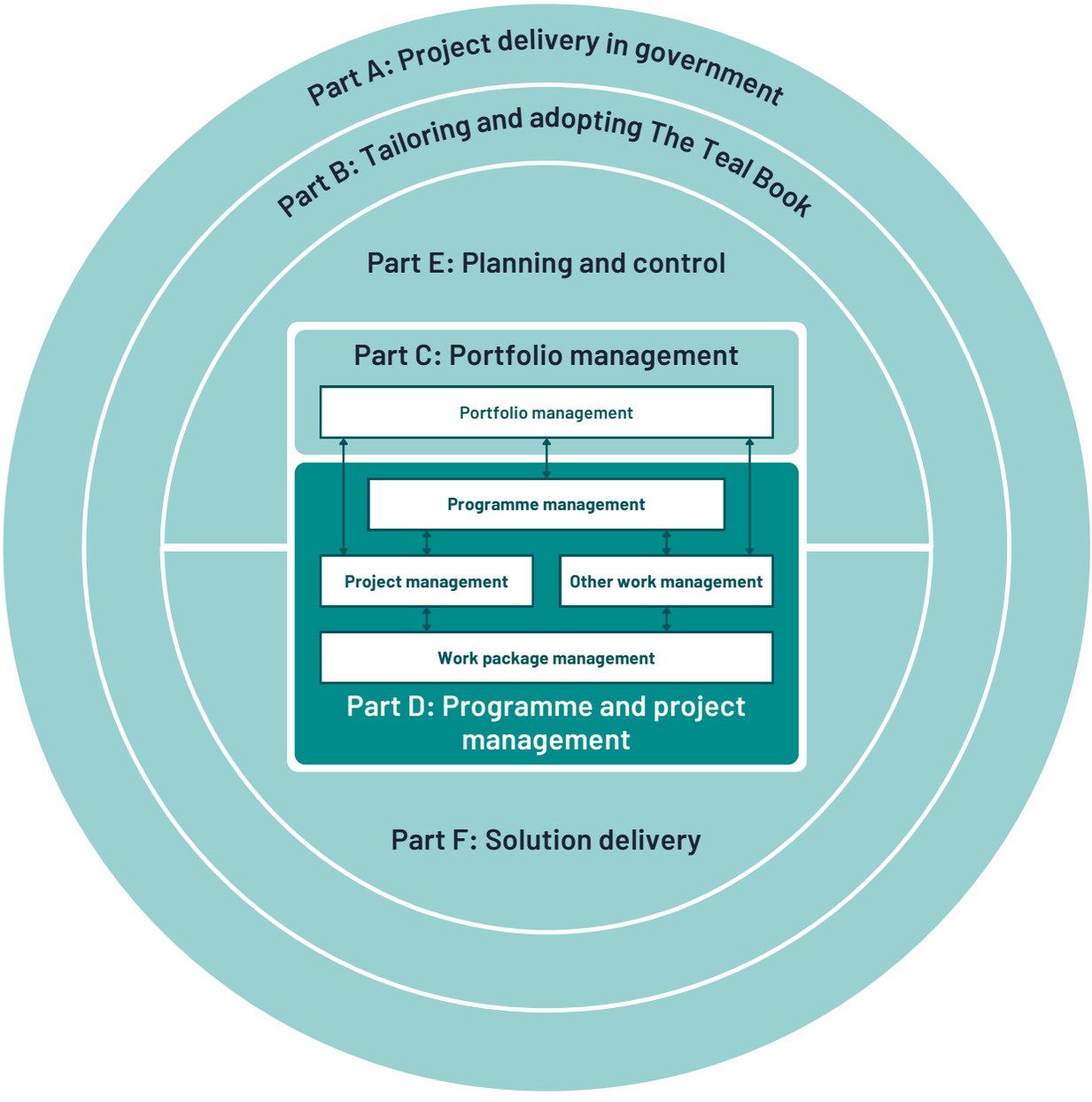


Figure D.1 Programme and project management relies on effective planning, control and solution delivery practices

13. The governance and management of programmes and projects

13.1 The purpose of governing and managing programmes and projects

The purpose of governing and managing programmes and projects is to increase the likelihood of objectives being achieved at an acceptable level of risk.

Chapter 4 describes the overall governance of project delivery. This should be integrated through the sponsoring body (and, where relevant, the delivery body) with the governance and management arrangements of the sponsoring organisation. Without this, a programme or project team can become disconnected from the policy owner or whoever has commissioned the work, whose policies or strategic objectives the work is delivering.

When issues arise that the senior responsible owner cannot resolve, the sponsoring body's leadership may need to step in. Good governance and management practices give those leaders assurance they need that the programme or project is highly likely to achieve its objectives.

13.2 Key points

- A governance and management framework defines how a programme or project is directed, managed and controlled.
- Roles and responsibilities should be clearly defined, including who makes decisions, who is consulted and who needs to be informed.
- The delivery strategy should take into account the type of solution, availability of resources and procurement, verification, validation, integration and transition strategies.
- Programme and project managers are responsible for leading and motivating their teams, not just managing processes and plans.
- Working approaches should be tailored to the context of the work and reflect the multidisciplinary nature of programme and project teams.
- Programmes and projects on the Government and Departmental Major Projects Portfolio have specific requirements.

13.3 Who is involved in governing and managing programmes and projects?

13.3.1 Overview

Everyone involved in the delivery of a programme or project has a responsibility towards and an impact on its governance and management. In particular:

- the **sponsoring body** acts as the higher-level authority for a programme or project, providing oversight and acting as the driving force for the work (see 13.3.2 on the sponsoring body)
- the **senior responsible owner** is accountable to the **Accounting Officer**, for seeing the programme or project is being governed and managed effectively and efficiently (see 13.3.3 on the senior responsible owner). Senior responsible owners of mega, government and departmental major projects also have a personal accountability to Parliament.
- the **programme or project manager** is accountable to the senior responsible owner, supported by relevant specialists, for defining and establishing the governance and management framework (see 13.3.5 on the programme or project manager)
- the **programme or project team** is responsible for using the defined management framework (see 13.3.7 on work package or team manager and 13.3.8 on team members)

The *Government Functional Standard for Project Delivery* requires that roles are defined and assigned to people with appropriate seniority, skills and experience. An organisational structure for a programme or project supports this by making clear how roles relate to each other and where accountability sits.

Role descriptions should include at least the activities, outputs or outcomes each person is responsible for, and who they are accountable to. Without this clarity, people cannot be held to account, or know who to take direction from or escalate issues to. Programmes and projects often operate in a matrix structure, so explicit accountability is particularly important to avoid confusion. Regardless of structure, everyone is ultimately accountable to the senior responsible owner.

Figure 13.1 shows an example organisation structure for a programme and for a project, highlighting the relationship between the different roles. The roles are described more fully in the sections below, and the responsibilities listed are expanded on in more detail in Part E: Planning and control and Part F: Solution delivery. These descriptions should be used alongside the *Project delivery capability framework* which includes the professional standards for a range of project delivery jobs operating at different levels of capability and covers both leadership behaviours and technical skills.

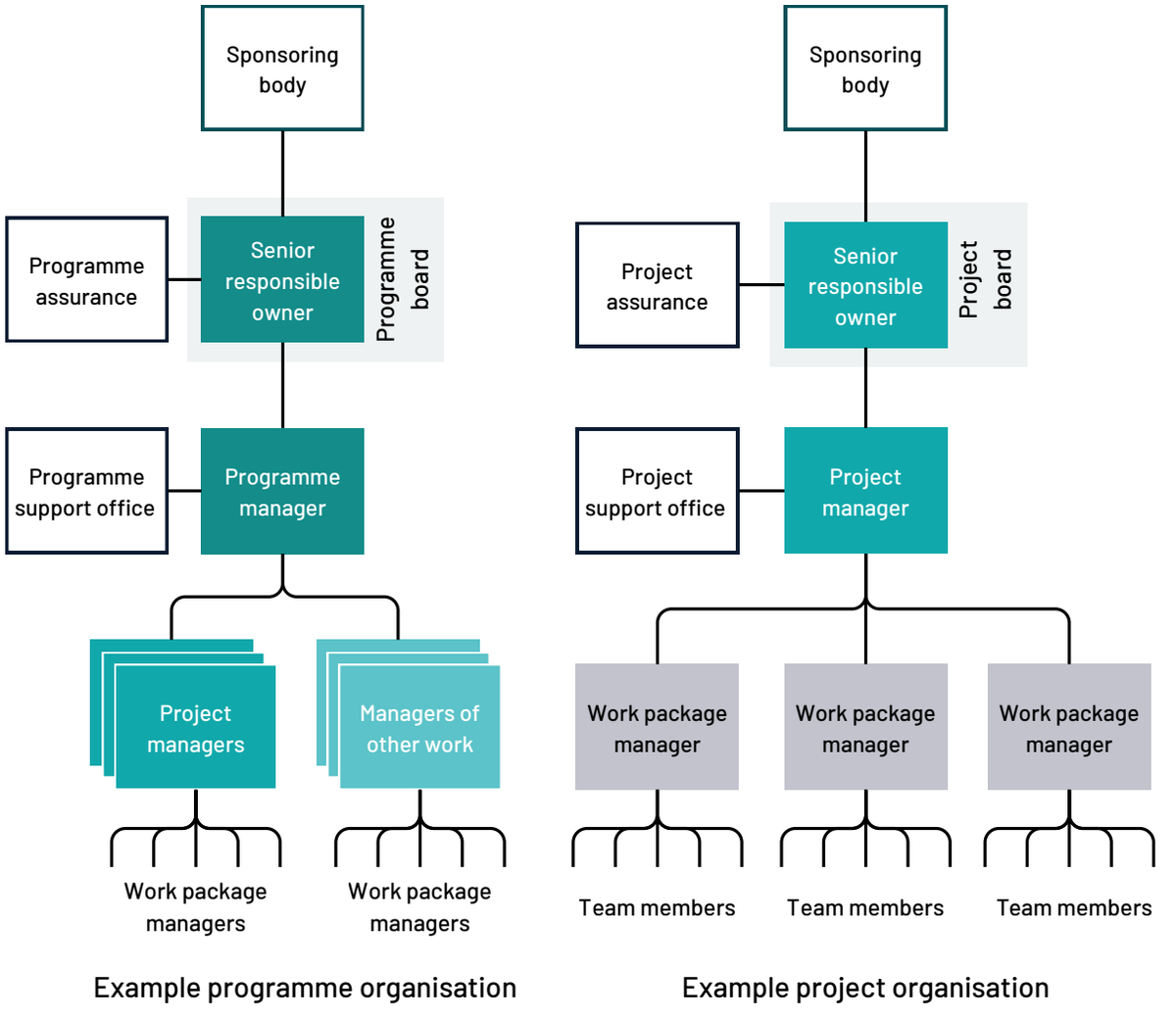


Figure 13.1 Examples of a programme and project organisation structure

13.3.2 The sponsoring body

The **sponsoring body** acts as the higher-level authority for a programme or project, providing oversight and acting as the driving force for the work. Where the work takes place in an arm's length body, this role can be combined with the wider organisational sponsorship responsibilities for the arm's length body (see the *Arm's length body sponsorship code of practice*). The sponsoring body is accountable to a defined higher-level authority, usually the accounting officer of a government department, and through them to ministers and Parliament.

The make-up of a sponsoring body can be an individual, a group or a board and depends on the programme's or project's context. For example, for a programme or standalone project in a portfolio, the sponsoring body could be the portfolio board, or its director; for a portfolio, it could be the senior official overseeing the policy area, or at organisational level, the executive or departmental management board.

Responsibilities usually include:

- providing top-level endorsement for the programme or project's rationale and objectives
- appointing or recommending the appointment of the senior responsible owner
- giving direction to the senior responsible owner and addressing escalated risks and issues
- assessing initial and ongoing viability and fit with the organisation's strategic aims and needs
- ensuring that the organisational environment is supportive of the senior responsible owner and team, enabling them to achieve the programme or project's objectives
- overseeing the work to assure it is being directed and managed effectively and is still viable
- taking key decisions or delegating them, as appropriate, depending on the level of risk and impact
- reviewing the outcome and benefits resulting from the programme or project, once completed
- overseeing the application of organisational constraints, such as policies and standards

See also 15.6 on overseeing a programme or project.

Government and Departmental Major Projects Portfolio and the obligations and expectations of senior responsible owners

Senior responsible owners of programmes and projects in the Government or Departmental Major Projects Portfolios have particular obligations and expectations including on their appointment. See guidance on *The role of the senior responsible owner* for more information.

13.3.3 The senior responsible owner

The **senior responsible owner** is accountable to the sponsoring body for a programme or project meeting its objectives, delivering the required outcomes and realising the required benefits. There should only be one senior responsible owner for a programme or standalone project. Individual projects that form part of a programme should not have their own senior responsible owner, but should fall within the responsibility of the programme senior responsible owner (other than in exceptional circumstances; see below).

Note that the senior responsible owner should not also be the programme or project director or manager for a programme or project they oversee, because of the conflict of interest that this creates.

If the programme or project is jointly sponsored by more than one organisation, there should still only be a single senior responsible owner, but the governance arrangements and board membership and terms of reference document should be defined to reflect the legitimate interests of the participating organisations. For example, certain decisions might require agreement from specific board members, or individual organisations might appoint a senior responsible owner for an organisational project with overall leadership from the senior responsible owner of the programme the project is a part of.

Government and Departmental Major Projects Portfolio and accountability to Parliament

Senior responsible owners of programme and projects in the Government and Departmental Major Projects Portfolio are personally accountable to Parliament as set out in *Managing public money* and guidance on *The role of the senior responsible owner.*

The senior responsible owner is the owner of the business case and the governance and management framework. Their responsibilities include:

- defining and communicating the vision and objectives in line with policy or strategic intent
- ensuring a real policy or business need is being addressed
- assuring ongoing viability, including defining the risk tolerance for the work and ensuring risks are identified and managed (see Chapter 20: Risk management)
- engaging key stakeholders (see Chapter 26: Stakeholder engagement and Chapter 27: Communications)
- providing the team with leadership, decisions and direction (see Chapter 15: Managing a programme or project and Chapter 39: Project delivery team induction and training)
- ensuring the delivered solution meets the needs of the organisation and stakeholders (see Chapter 31: User needs and requirements)

For all but the simplest programmes or projects, the senior responsible owner role should be supported by a programme or project board. The term 'senior responsible owner' is used as standard to designate the accountable leader for a programme or project within government and is associated with specific obligations, particularly for programmes or projects in the Government Major Projects Portfolio. Outside government, the term 'sponsor' is sometimes used instead but its use is often ambiguous and it should not therefore be used for a government programme or project.

The senior responsible owner appoints the programme or project manager and they both have a crucial role together in setting a safe and collaborative environment for each other and their teams.

See also 15.7 on directing a programme or project and *The role of the senior responsible owner.*

13.3.4 Programme and project boards

For government programmes and projects, a **board** is typically established that supports the senior responsible owner in undertaking their responsibilities. The board's purpose should be clear and set out in a terms of reference document, which forms part of the governance and management framework and should be accessible to the team members and those who interact with the board.

The design of the board is a critical consideration. Achieving the right mix of roles, experience and skills determines its effectiveness, and its definition is essential to deciding its membership and ways of working. While the board is there to support the senior responsible owner, a decision should be taken as to whether it is purely advisory, with the final decision being taken by the senior responsible owner as chair, or whether some decisions require a consensus, majority vote, quorum or other arrangement for decision-making.

The board should not be too large as it is a governing body, not a means of stakeholder engagement. The membership should include some people who are independent to the delivery of the work to provide a degree of assurance to the senior responsible owner, for example providing independent functional expertise, representing the interests of users, or a non-executive director to strengthen organisational oversight.

Subsidiary boards may be created focused on specific activities, such as change control or architectural or solution integrity, or for specific periods, for example through transition.

13.3.5 The programme or project manager

The **programme or project manager** is accountable to the senior responsible owner for establishing the governance and management framework and for managing the programme or project on a day-to-day basis to deliver the outputs and outcomes and realise the required benefits. Whilst this role is referred to as a 'programme manager' or 'project manager' in the *Government Functional Standard for Project Delivery* and *The Teal Book*, in larger programmes and projects, the role may be called 'programme director' or 'project director'.

It is the programme or project manager that will be leading the team day-to-day and they play an important part in setting the tone and a culture of resilience, safety and openness for the individuals involved in the work.

Where a project is part of a programme, the project manager might be accountable to the programme manager for the above.

Responsibilities include:

- ensuring the solution is designed and business case and plans prepared
- defining the approach, accountabilities, work scope and targets for the team
- planning and controlling the work and reporting overall progress against the delivery plan
- resolving risks and issues and controlling change
- delivering the required outputs, outcomes and, where relevant, benefits
- monitoring and managing supplier performance
- engaging and communicating with stakeholders

See also Chapter 15: Managing a programme or project.

13.3.6 Support office manager

The management team should be supported in the effective and efficient undertaking of their roles, led by a **support office manager**. Support may be provided by single or multiple physical or virtual teams or offices (permanent and/or temporary), which may be centralised or distributed. Services provided can include:

- providing support to the management practices in Part D: Managing programmes and projects
- providing specialist services on the support practices in Part E: Planning and control and Part F: Solution delivery
- managing assurance activities
- developing, procuring, selecting and managing management support tools and systems
- consolidating and analysing reporting
- monitoring resource usage across the organisation
- coaching and advising staff and providing specialist project delivery advice, for example on risks, benefits, finance and change management
- maintaining standards for recruitment and development of project delivery staff

A support office is often named to reflect the people or entity it is supporting and the scope of its responsibilities: for example, portfolio management office, programme management office, project management office, or 'PMO'. The scope of a support office is very much dependent on the needs of the team members and the complexity and scale of the work. The variation means that it is difficult to define a standard support office, although the definition of the individual services provided can be standardised. For efficiency and consistency, higher-level support offices often provide wider support. For example, a programme support office could provide services to all the projects in the programme, rather than each project having its own support office.

13.3.7 Work package or team manager

The **work package** or **team manager** is accountable to the project manager for the day-to-day management of their assigned work package, delivering the services, products and outcomes allocated to them to an appropriate quality, timescale and at an acceptable cost.

The title for a work package manager usually reflects the role they are undertaking: for example, chief engineer, commercial manager, digital delivery lead, transformation manager, environmental manager or policy lead.

Responsibilities include:

- ensuring the work package is defined and completed to the required quality, on time and to budget, involving stakeholders as appropriate
- ensuring traceability to and from the outputs of their work package
- contributing to and reviewing significant management documentation, ensuring compliance with relevant statutory, security and other requirements
- planning, monitoring, forecasting and reporting overall progress against the work plan
- procuring goods and services required as part of the assigned work package and managing the resultant contracts
- managing the resolution of risks and issues, escalating any they cannot deal with
- controlling changes to their work scope, highlighting approvals required by higher level authorities
- developing, verifying and validating the required outputs using appropriate and proportionate methods and techniques
- keeping the project (or other) manager informed of progress, escalating risks, issues and requesting decisions and direction when needed
- capturing and applying lessons learned
- maintaining records of the work undertaken

A work package or team manager may be accountable to a higher-level team manager when there is a hierarchy of work packages in a project, or accountable to a programme where they are leading other work which is not a project in a programme (see 13.3.9 on the management of other related work in programmes).

In a non-project context a work package manager is accountable to the manager of other related work (see 13.3.9 on the management of other related work in programmes).

See also 15.10 on managing a work package.

13.3.8 Team members

Other management and team roles should be defined to suit the needs of the work required, for example those undertaking specialist roles, or managing the development of specialist outputs. Examples include roles relating to benefits management, agile delivery, service and operations management, business change, communications and various engineering disciplines. The team member is accountable to the work package manager for the production of those deliverables defined in the assigned work package to the required quality, within a defined schedule and cost constraints. This includes:

- contributing to planning the work package
- delivery of required outputs and, where relevant, outcomes
- escalation of risks and issues affecting the work
- proposing change requests
- contributing to the work package report
- identifying improvements to working practices

13.3.9 Management of other related work (programmes only)

Not all work undertaken in an organisation, portfolio or programme needs to be managed as a project but it is, nevertheless, essential to the delivery of outcomes and realisation of benefits. For example, in a programme, related work which is better not managed as a project can include:

- support services, solution architecture, finance and human resources services
- ongoing improvement initiatives using a defined process, such as platform-based upgrades delivered using agile approaches, and techniques such as Six Sigma and Lean
- service delivery or business as usual operations

In practice, other work can be managed as a work package (see 13.3.7 on work package or team manager), with subsidiary work packages if needed, using the same, but tailored planning, control and solution delivery practices.

13.4 Key aspects of governing and managing programmes and projects

13.4.1 Overview

Every chapter in *The Teal Book* is a part of and relevant to the governance and management of programmes and projects. However, viewed from a governance viewpoint, 6 aspects are particularly relevant:

- behaviours and leadership
- the Government Major Projects Portfolio and Departmental Major Projects Portfolio
- the governance and management framework
- assurance
- decision-making
- programme and project life cycles

13.4.2 Behaviour and leadership

Programme and project management is a team undertaking, and effective team working needs appropriate behaviours and working styles. In addition, the *Government Functional Standard for Project Delivery* requires that all public service codes of conduct and ethics are upheld, including those of the associated professions. Project delivery can be challenging and therefore maintaining the right behaviours and creating an environment of psychological safety is critical.

Chapter 4: Governance and management includes a list of desired behaviours.

13.4.3 Government and Departmental Major Projects Portfolio

The purpose of the Government Major Projects Portfolio is to provide visibility to Parliament and British people of the government's most complex, high risk and strategically significant programmes and projects and provide more targeted support from the centre of government.

The purpose of the Departmental Major Projects Portfolio is to provide oversight of programmes and projects that are above delegated authority limits but do not hit the threshold to enter the Government Major Projects Portfolio.

The Government Major Projects Portfolio contains programmes and projects that are:

- critical to delivering one of the government's five missions set through the *Plan for change: milestones for mission-led government*
- have a whole life cost of greater than £1bn
- would benefit most from central support and scrutiny

In exceptional circumstances, programmes and projects may be added where they are of strategic importance, high risk, underpin critical national infrastructure or where National Infrastructure and Service Transformation's involvement is expected to improve delivery.

Work listed in the Government Major Projects Portfolio is called either a:

- **Mega Project**, which are programmes and projects with a whole life cost over £10bn, transformative, cross cutting and non-scalable, and decided by ministers, or a
- government major **project**, which are programmes and projects over £1bn

Work listed in the Departmental Major Projects Portfolio is called a **departmental major project**.

The responsibility for overseeing and reporting on the Government Major Projects Portfolio and Departmental Major Projects Portfolio lies with the National Infrastructure and Service Transformation Authority, with each senior responsible owner providing the information for their own programme or project to support analysis, intervention and government transparency requirements.

Documentation relating to managing major projects can be found in the *Major project management (collection)* and other central guidance on reporting should be followed.

Information on major projects is published annually as *Major projects data – information on the progress of projects in the Government Major Projects Portfolio*, alongside the National Infrastructure and Service Transformation Authority's annual report to Parliament.

Government and Departmental Major Projects Portfolios and additional requirements

Requirements for programmes and projects in the Government or Departmental Major Projects Portfolios are highlighted in a box in the relevant places in *The Teal Book*.

13.4.4 Governance and management framework for programmes and projects

The Project delivery glossary defines a governance and management framework:

> A governance and management framework sets out the authority limits, decision-making roles and rules, degrees of autonomy, assurance needs, reporting structure, accountabilities and roles, together with the appropriate management practices and associated documentation needed to meet this standard.

The *Government Functional Standard for Project Delivery* requires that each programme or project has a defined governance and management framework which should align to, and work with:

- the sponsoring organisation's project delivery governance and management framework (see Chapter 4: Governance and management)
- the portfolio's governance and management framework (see Part C: Managing portfolios)
- other organisational processes and practices, such as those for finance, procurement, human resource management, performance reporting, capability and capacity management, risk management, and communications

In many cases the governance and management framework for an individual programme or project should be tailored from the sponsoring organisation's (and, where relevant, the delivery organisation's) project delivery approach which should already be aligned with other organisational processes and practices. In such a case, the task of the programme or project manager is simplified and documentation requirements reduced considerably.

Where there is no organisational project delivery approach, or for a very large programme which is managed as a separate entity, the governance and management framework needs to be defined in full, conforming to the *Government Functional Standard for Project Delivery*. *The Teal Book* and its supporting documentation should provide a good basis for a suitable structure and for the content.

At the start of a programme or project it might not be obvious whether the work should be managed as a programme or as a project. The most appropriate approach could emerge during the investigative phases. This can result, for example, in the early phases being managed as a project and then transforming into a programme later. Having common planning, control and solution delivery practices makes such changes much easier. See Chapter 3 for more information on the difference between programmes and projects.

The governance and management framework should be maintained and updated as work proceeds to reflect the phase of the work, changes to the scope and plan, and

improvements from any lessons learned from using it (see Chapter 38: Learning from experience). The framework therefore needs to be version controlled (see Chapter 22: Change control; Chapter 23: Traceability management; Chapter 24: Information and data management).

13.4.5 Programme and project assurance

Each programme and project should have a defined and integrated plan for undertaking assurance based on at least 3 levels (see Chapter 4 for an overview of assurance):

- the development and use of the governance and management framework for a programme or project fulfils the requirement for the first level of assurance and supports the second level, being the definition and use of working practices
- the third level, independent assurance, is primarily fulfilled by formal assurance reviews

The National Infrastructure and Service Transformation Authority provides the *Government project delivery assurance toolkit (collection)* which references a set of requirements, guidance and assurance review templates that can be used for portfolios, programmes and projects. The assurance reviews provide decision makers with an assessment of the status and outlook of the work before significant decisions or in response to an issue or to verify delivery. There are different types of review for portfolios, programmes and projects which can be tailored to their current context. Specific assurance reviews also exist for digital projects, called service assessments, that support decision makers when authorising the start of alpha, private beta, public beta and live delivery environments. See the GOV.UK *Service manual* for more on running digital services.

Government and Departmental Major Projects Portfolios and the Integrated assurance strategy

The *Integrated assurance strategy* provides a strategic overview of the assurance regime required for all programmes and projects on the Government and Departmental Major Projects Portfolios within an organisation's portfolio. It provides guidance to teams, with the aim of them all applying a consistent quality standard and approach, which meets organisational, project delivery function, National Infrastructure and Service Transformation Authority and other HM Treasury requirements for assurance planning and implementation. In the absence of a corporate level plan, it is recommended that the manager of a mega or major project should develop their own specific strategy.

Government and Departmental Major Projects Portfolios and Integrated assurance and approvals plan

Programmes and projects in the Government or Departmental Major Projects Portfolios are required to have an agreed *Integrated assurance and approvals plan* by HM Treasury and the National Infrastructure and Service Transformation Authority as part of HM Treasury's *Treasury approval process for programmes and projects*.

While mandatory for government major projects, the use of an integrated assurance and approval plan is also recommended for work not in the Government Major Projects Portfolio. Assurance and approvals are closely related as assurance reviews are required by the *Government Functional Standard for Project Delivery* to be scheduled before significant decisions such as major contractual commitments and the start of a stage of a project or tranche of a programme (see 13.4.6 on decision-making on programmes and projects) to provide decision makers with an assessment of the status and outlook for the work. The time lapse between assurance reviews for the entire programme or project should not usually be scheduled to exceed one year. Assurance reviews may also be undertaken in response to an issue or to verify delivery.

Assurance reviews, if not planned properly, can be disruptive and so the work of internal and external assurance providers should be scheduled to minimise disruption to work. This could be, for example, by combining programme and project reviews, avoiding overlaps with other assurance activities and duplication of effort, whilst remaining rigorous and meeting the needs of stakeholders. For formal assurance reviews, the customer for the review should be clearly identified. Recommendations resulting from the reviews should be documented, agreed and acted on. Disputes should be escalated to next level of management if necessary (see 13.3 on who is involved in governing and managing programmes and projects).

Chapter 14 describes the programme and project life cycles, defining the timing and relationship of assurance reviews with respect to the phases, and the gates and decision points.

13.4.6 Decision-making on programmes and projects

Decisions relating to the delivery of a programme or project should be made in a way that is timely, communicated and in consultation with stakeholders and subject matter experts. The *Government Functional Standard for Project Delivery* also requires that options are assessed in accordance with the Government Functional Standard for Analysis.

It is important that decision-making rights and rules are defined in the governance and management framework so that everyone on the team understands who can make decisions on what and when, who should be consulted and who needs to be informed of the decision. Leaving all decisions with the senior responsible owner is not an effective approach to decision-making. Decisions should be delegated to those members of the

team best placed to make them, while at the same time ensuring those decisions are visible to those in higher authority, and in accordance with the organisation's delegated authority arrangements.

Decisions relating to starting a new programme or project or a new phase should be made in accordance with the sponsoring organisation's authorities as delegated by HM Treasury.

Government and Departmental Major Projects and HM Treasury approvals

Programmes and projects in the Government or Departmental Major Projects Portfolio require HM Treasury approvals preceding decision points. See the *Treasury approval process for projects and programmes* for more information.

Government Major Projects Portfolio and mandatory assurance preceding decision points

Programmes and projects in the Government Major Projects Portfolio are required to have an independent assurance review, under the direction of the National Infrastructure and Service Transformation Authority preceding each decision point supported by Treasury approval process for projects and programmes (see 13.4.4 on governance and management frameworks).

Government Major Projects Portfolio and publishing business cases

Programmes and projects in the Government Major Projects Portfolio must publish business cases within 4 months of the programme or project receiving HM Treasury approval via the *Treasury approval process for projects and programmes*.

Effective systems and processes need to be in place to ensure there is an efficient flow of information to the decision makers. This need not mean setting up separate processes, but ensuring that information, data, reporting and communication are built into the working approaches for managing the programme or project.

Decisions which require formal authorisation or approval include:

- approving vision and strategy
- authorising the initiation of a programme or project
- approving programme and project business cases

- approving planning, solution and management documentation baselines
- setting risk appetite and tolerance
- authorising the start of a new project stage, for example, at a gate or decision point or for a new tranche of a programme
- approving a procurement strategy and selecting suppliers
- approving options for further study
- selecting a solution or element of a solution
- pausing, terminating or closing a programme or project

Chapter 14: Programme and project life cycles describes programme and project life cycles, showing the timing and relationship of decisions with respect to the phases and preceding assurance reviews.

13.4.7 Programme and project life cycles

The *Government Functional Standard for Project Delivery* requires that each programme or project is phased. This phasing is referred to as the life cycle and is fundamental for effective governance of a programme or project by reflecting the risks and limiting the amount of funding released at any one time to that needed for the next phase of work. The way a programme or project is broken down into phases needs to reflect the risks. Generally, the more predictable the work is, the fewer phases are needed. Phasing also provides the basis for the delivery plan. At the highest level, each phase sets out when work is done, costs, resources, when the solution comes into use and outcomes can be recognised, and when benefits are realised.

Chapter 14:Programme and project life cycles explores the features and details of programme and project life cycles.

13.5 Further reading

- Cabinet Office, *Arm's length body sponsorship code of good practice*
- Government Project Delivery, *Project delivery capability framework*
- Government Project Delivery, *The role of the senior responsible owner*
- GOV.UK, *Service Manual*
- HM Government, *GovS: 002 Government Functional Standard for Project Delivery*
- HM Treasury, *Treasury approval process for projects and programmes*

- Infrastructure and Projects Authority, *Major project management* (collection)
- Infrastructure and Projects Authority, *Major projects data – Information on the progress of projects in the Government Major Projects Portfolio* (collection)
- Infrastructure and Projects Authority, *The project set up toolkit* (collection)
- Prime Minister's Office, 10 Downing Street, *Plan for change*

14. Programme and project life cycles

14.1 Purpose of life cycles

The purpose of a life cycle is to provide a phased approach for governing work and to underpin the delivery plan. The *Government Functional Standard for Project Delivery* requires that a life cycle is defined for a programme or project and should include gates, decision points and assurance reviews.

14.2 Key points

- A life cycle defines the phases a programme or project passes through, with decision points, sometimes called gates, controlling the start of the next phase.
- The number of phases should reflect the level of risk and complexity - higher risk or more complex work generally needs more phases.
- Each decision point, or gate, looks forward: the decision to start a new phase should be based on risk and whether the work is justified, affordable and deliverable.
- A life cycle is governed by time.
- A delivery approach represents work within a life cycle phase and is tailored to the needs of the work.
- When defining project life cycle, start from the reference life cycle and tailor it to the context.
- Assurance review findings should support decisions made at decision points or gates.

14.3 Why have a life cycle?

Few programmes or projects are wholly predictable, making it difficult to plan in detail from the outset for the full duration of the work. The need for a programme or project should result from a policy, problem or opportunity statement which needs to be explored. Normally a number of options for meeting the need should be investigated before a preferred solution is selected. Government programmes and projects are also often unique, working on problems that have not been addressed before or in circumstances that are very different. This creates uncertainty. Defining a life cycle helps to contain this uncertainty, and manage risk or complexity, by progressing the work in phases. As each phase progresses, confidence in successful delivery should increase as the start of each phase is justified, using the knowledge gained from the preceding work, and a decision is made on whether to continue or terminate the work. Taking this approach enables:

- release of funding to be limited to what is necessary and affordable for the immediate, approved work, rather than for the entire life of the programme or project
- a progressive approach to planning (see Chapter 16: Planning), where immediate work is planned in more detail than the work in later phases
- a progressive approach to determining the solution and delivering the outcomes (see Part E: Planning and control)
- reaction to changes in the context, better information and understanding, enabling the delivery approach to be tailored as necessary: this is an integral feature of iterative, incremental and adaptive delivery approaches but is also important in optimising delivery using predictive delivery methods

14.4 What is a life cycle?

The Project delivery glossary defines a life cycle as:

> The life cycle provides a phased structure for governing the work and underpinning the delivery plan from start to finish.

A life cycle defines the phases a programme or project needs to pass through if its objectives are to be achieved and the sponsoring body's risks managed. It is the highest-level view of a delivery strategy. A life cycle should include:

- what the important decisions are and when they are to be made
- what work needs to be done and when
- how the various parts of a programme or project fit together
- when assurance activities are to take place

A life cycle should be tailored to suit the circumstances and context of each programme or project. The number of gates, decision points and phases, types of assurance review, delivery approach and form of the business case should be designed to ensure governance and management is appropriate and proportionate.

A life cycle and its phases form the basis for the business case and delivery plan, spanning the period from before work starts until after the programme or project is completed and the sponsoring body is satisfied that the objectives have either been met or are on track to be met.

14.5 Who is involved in developing a life cycle?

The **senior responsible owner** should ensure that a life cycle is in place and that it is effective with uncertainty being driven down as work progresses from investigating ideas and options through to delivery of the outcomes and realising the required benefits.

Designing the right life cycle is a fundamental accountability for the **programme or project manager**, supported by their teams. They need to keep the life cycle under constant review to ensure it is robust, that resilient delivery plans can be developed from it and that it provides visibility, control and confidence in the work.

14.6 Life cycles and delivery approaches

In programme and project delivery, the terms 'life cycle' and 'delivery approach' are frequently thought of as being different ways to describe the same concept when they actually serve different purposes:

- **a life cycle** is concerned with the decisions to invest funding and resources in phases to contain risk and solve a problem or exploit an opportunity. It is the basis for the delivery plan and so is governed by time and cannot be iterative, although the processes and activities within a life cycle phase can be iterative
- **a delivery approach** is concerned with how to develop a specialist outcome, output or product using a defined method or process. As a delivery approach is concerned with the activities within a phase, it should be tailored to the needs of the work, and can follow any appropriate method (for example, predictive, iterative, incremental or adaptive) or use them in combination

Neither the *Government Functional Standard for Project Delivery* nor *The Teal Book* mandates how the development of the outputs and delivery of outcomes should be undertaken. It is for those specialists managing the work to decide the appropriate methods, processes, tools, techniques or applications to be used, so long as they are used in a way which conforms with the requirements of the standard and the guidance in this book.

A phase within a programme or project can include any number of different delivery approaches depending on the types of output or product being created or outcomes being delivered. Understanding the difference between the life cycle and the delivery approach helps avoid misunderstandings and allow for a robust life cycle and appropriate delivery approaches to be defined and used.

14.7 The features of a life cycle

14.7.1 Overview

The main features of a life cycle include:

- the activities before a programme or project is authorised to start to ensure its start is controlled
- a defined starting point for each phase, such as a decision point or gate, with associated justification in the form of a business case
- phases which define periods of time when the work is carried out
- assurance activities to provide the sponsoring body and senior responsible owner with confidence before authorising the start of a phase, or alternatively the information to hold back that decision
- a defined end point and milestones for each phase
- the activities after a programme or project is completed to review whether the solution is working as expected, business changes and outcomes are sustainable and benefits are being realised

14.7.2 Gates and decision points

The Project delivery glossary defines a gate as:

> A decision point, carried out as part of formal governance, at significant points in the life cycle to ensure that the decision to invest as stated in an agreed business case and plans is, and remains, valid.

Gates and decision points in a life cycle look to the future rather than the past and so are concerned with readiness to proceed and authorising the start of a phase, not with completing one. For each gate or decision point it should be clear:

- what justification there is for undertaking the work, usually a form of business case
- what the criteria are for authorising the start of the next phase, taking account of information, experience and lessons from the current and previous phases (where applicable)
- what decisions are needed, who makes them and who should be consulted
- the type of assurance review required to inform decision-making

The relationship between these features and how they relate to a gate or decision point is shown in Figure 14.1.

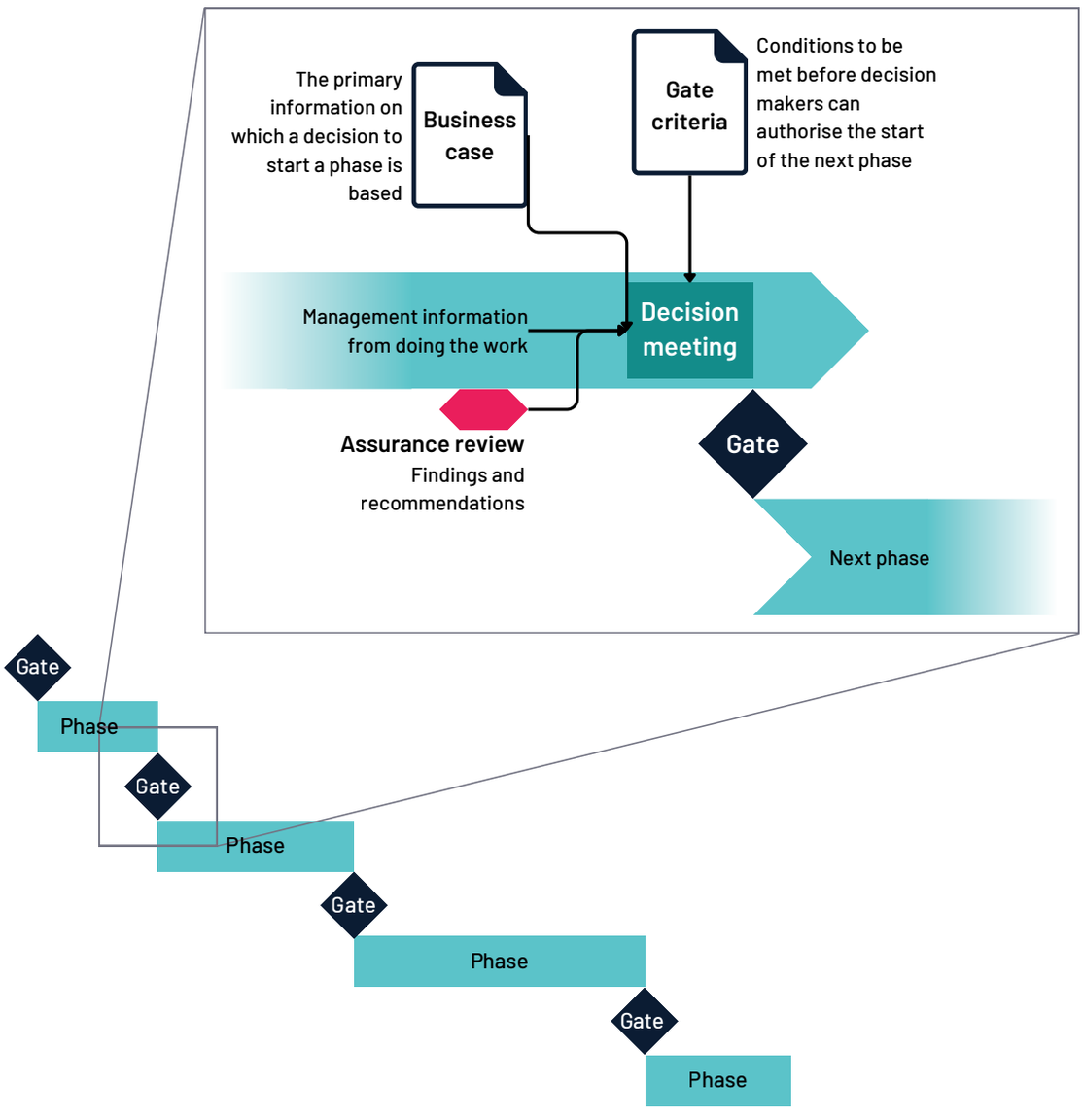


Figure 14.1 The key features of a gate or decision point in a life cycle

The criteria for authorising the start of a phase should include checking that:

- work aligns with policy and strategy and is still needed
- the outcomes have been validated and are still feasible to achieve
- risks have been identified and are manageable or can be mitigated
- the solution is likely to be acceptable or, once developed, is acceptable

- there are funding and resources to complete the work and support the outcomes
- there is a detailed plan for at least the next phase and an outline plan for the rest of the work

It is a mandatory requirement of the *Government Functional Standard for Project Delivery* that a programme, project or other related work is covered by a business case or equivalent document, which is the basis for the decision to invest. Such decisions have to be made in accordance with the organisation's delegated authorities and the *Green Book* and its supporting documentation. The business case should be developed over a number of phases and should be updated to reflect changes and reviewed before every gate or decision point to justify continuing the work.

Some significant decisions might not coincide with the start of a phase but are still vital to maintaining control and managing risk. Examples are those that represent commitments such as the letting of a significant contract part-way through a phase. The aims of these decision points and criteria are similar to those for starting a phase.

If decisions to start stages in projects within a programme align with the decision point to start a tranche in a programme, it can be more effective to make those decisions at the same meeting as the start of a project within a tranche of a programme cannot be authorised if that tranche itself has not been authorised.

14.7.3 Phases

Phases are periods of time when work is undertaken and are applied differently for programmes and projects.

The phases of a programme are called **tranches** and include projects and other related work. The Project delivery glossary defines a tranche as:

> In the context of project delivery, a tranche is a subdivision of a programme designed to enable an incremental approach to delivery of outputs, outcomes and benefits.

The phases of a project are called **stages** and include work packages. The Project delivery glossary defines a stage as:

> In the context of project delivery, a stage is a subdivision of a project life cycle.

A **programme** should have at least one tranche. More tranches are added if, for example, the deployment of new capabilities is phased (incremental release) rather than released at a single point in time. The components of a programme should be defined so that they lead to a significant milestone where a decision is required and ultimately to the outcomes. Each tranche can be run as a sub-programme and a hierarchy of sub-programmes can be used to create a work breakdown structure of a programme. For more information, see 14.8 on the programme life cycle.

A **project** should have at least 2 stages, such as definition and delivery, although all but the simplest projects generally need more stages. During each stage of a project, the full range of work needed to meet the requirements of that stage should be completed. The parcels of work in a stage are called **work packages**, each of which is managed using an appropriate delivery approach. Work in any one stage should normally be limited to what is needed at the next gate to minimise the spending of effort and money until it is necessary. For more information, see 14.9 on the project life cycle.

Phases can overlap, either by design or through slippage. Rarely do the criteria for starting a new phase depend on the completion of every aspect of a previous phase, even in a regulated context.

When designing the phases for a programme or project life cycle, each of the work components should be defined to be as self-contained as possible in pursuit of the outcomes, minimising dependencies on other components. This helps ensure decision-making is as localised as possible and minimises interdependencies between the work components.

14.7.4 Assurance

Assurance activities, such as reviews, should be undertaken to provide confidence that the programme or project is likely to achieve its objectives. These activities are usually done by people not directly associated with the work. Such activities can be at any level in the programme or project and can be built into standard processes, such as for technical assurance, quality assurance and commercial assurance. In addition, higher-level assurance reviews have to be before major decisions, such as the start of a new phase, to give the decision makers additional insight and assurance to inform their decisions. For more on assurance see 13.4.4 on the governance and management framework for programmes and projects.

Government Major Projects Portfolio and mandatory assurance preceding decision points

Programmes and projects in the Government Major Projects Portfolio are required to have an independent assurance review, under the direction of the National Infrastructure and Service Transformation Authority preceding each decision point supported by the *Treasury approval process for projects and programmes* (see 13.4.4 on governance and management frameworks).

14.8 The programme life cycle

The features of a programme life cycle are shown in Figure 14.2 and include:

- pre-programme work, shown in the figure as 'Policy' in a circle to differentiate it from the programme's tranches
- decision points, shown at the beginning of each tranche with the name of the primary justification document, usually a business case
- tranches, which are often not sequential and can overlap
- assurance activities, shown in a different style to gates to avoid confusion and mapped to happen before a decision point
- milestones to show the end of each tranche
- programme completion milestone, shown as an exit gate
- post-programme work, shown in the figure as 'Operations' in a circle to differentiate it from the programme's tranches

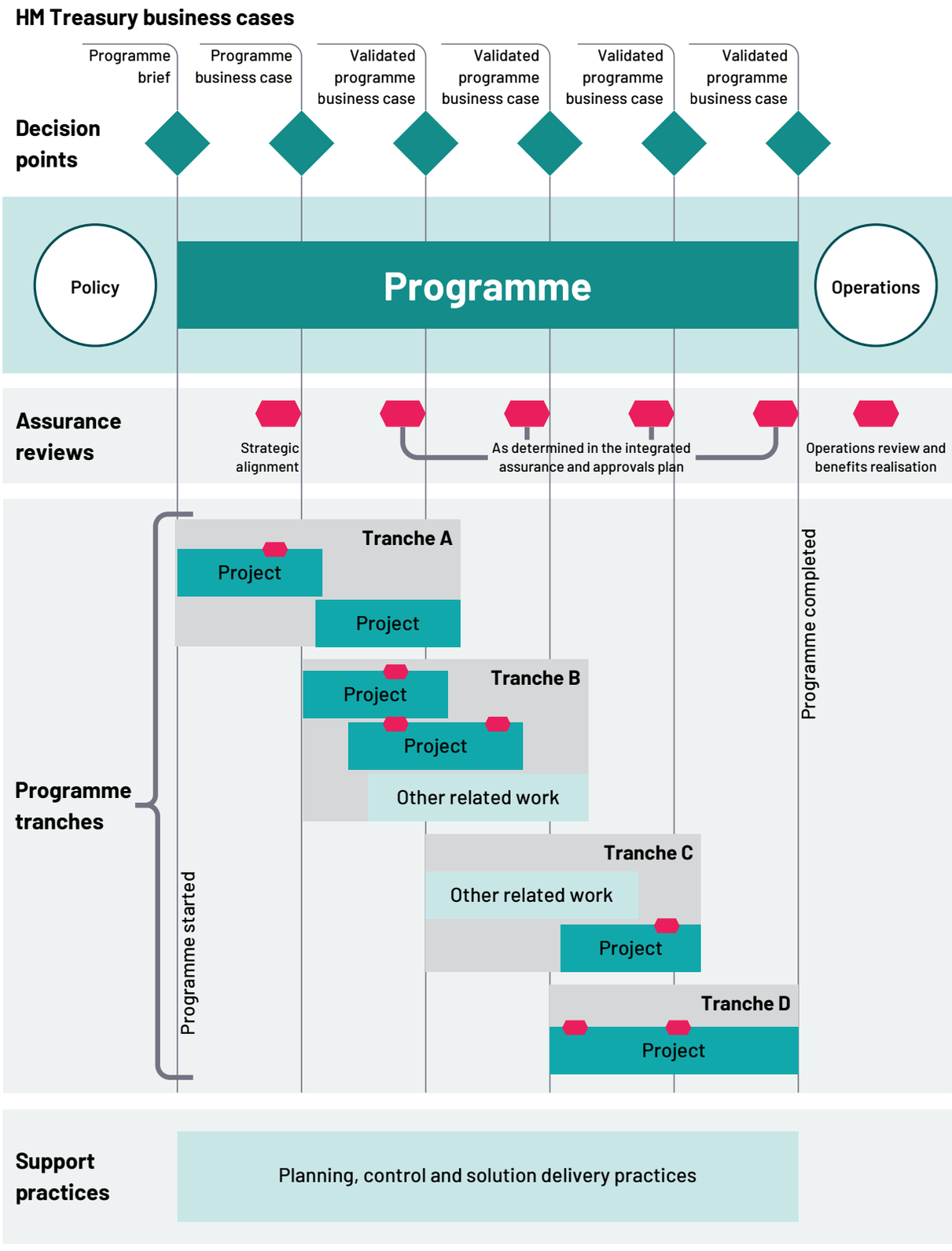


Figure 14.2 Example programme life cycle showing tranches, decision points and assurance reviews

A programme may be phased in one or more tranches and cover the whole life of a solution, not just the development and introduction of a solution (see Part F: Solution delivery). Each tranche comprises work components, including:

- projects which result in an outcome, and which are run in a similar way to standalone projects, except that they are within the scope of, and hence constrained by, a programme
- enabling projects, which result in an output only. The output is then taken on by another work component in the programme, usually a project but sometimes other related work
- other related work, which is any type of work which is not run as a programme or project but is part of the programme

Unlike a project, it is not possible to define a reference programme life cycle as there are too many variations, although sponsoring organisations can develop a framework for repeatable life cycles for the types of programme they frequently undertake.

A programme is created as a matter of choice when it is considered more appropriate to manage the work as a programme rather than a project because of factors such as its scale, complexity, extent, diverse locations or other reasons (see Chapter 3: Portfolios, programmes and projects in government). When work is first started, a project management approach could be considered the most appropriate but later, as the investigations proceed, it might be found that the work is more appropriately run as a programme. The very simplest of programmes can follow the structure and characteristics of a project life cycle but usually differs in the phasing, spans of control, roles and work hierarchy. It could also be that a major piece of work is managed as a project at government level, while a supplier might choose to run it as a programme in order to manage the complexity, extent of work, timing, or interfaces.

The primary decision points for a programme usually relate to the decision to start a tranche and these can be influenced significantly by the decisions relating to each of the projects and other work components in that tranche. Some decisions need to be aligned and their decision-making combined in a single meeting or forum to ensure the full context is understood. This influences who should make each decision and the scope of any prior assurance review.

Unlike in a project life cycle, where the stages need to be defined to take account of the delivery approaches used, the tranches in a programme life cycle are more focused on achieving the overall outcomes and benefits as effectively and efficiently as possible. Due to the scale and complexity of many programmes, the means to achieve this often emerges as work proceeds as neither the phasing nor the components of the programme can always be predicted with confidence beyond the current tranche.

It is important to understand and define the criteria for when the programme comes to an end and to reflect this in the life cycle so that the work can be closed in a controlled manner. When first designing the life cycle, this will be based around when the delivery of

the scope is completed. The life cycle should be revisited if there is a future decision to terminate the work prematurely.

14.9 The project life cycle

14.9.1 The features of a project life cycle

A project comprises **stages**, each of which is preceded by a **gate** when a decision is made on whether to start the stage and commit resources and funding. Each gate (except the first) is preceded by an assurance review to provide the decision makers with relevant advice. Simpler projects have fewer stages (minimum of 2) and higher risk projects can have more stages. The scope can also vary considerably; for example, a project might only include the delivery of outputs when the project is an enabling part of a programme or could be standalone and include trials and an extended period of operation.

The features are shown in the reference project life cycle in Figure 14.3 and include:

- **pre-project work**, shown in the figure as 'Policy' within a circle to differentiate it from the project's stages
- **gates**, the decision points shown at the start of each stage with the name of the primary justification document, usually a specific form of business case; shown as a large diamond
- **stages**, the periods of time when work within the project takes place; shown as arrows
- **milestones**, to show the end of each stage
- **assurance activities**, shown in a different style to gates to avoid confusion and mapped to happen before a decision point; shown as elongated hexagons
- **project completion milestone**, shown as an exit gate
- **post-project work**, shown in the figure as 'Operations' within a circle to differentiate it from the project's stages

In practice, a project's stages may overlap, and the project life cycle might not always be predictable from the outset unless the project is following a well-established pattern. An advantage of a staged approach is that the design of the life cycle can be changed as the project progresses to reflect new information. If the work is turning out to be more complex or risky than expected, more stages can be introduced to contain this. If the project turns out to be simpler, stages could be merged. A project manager, in consultation with their team and the senior responsible owner, may adapt the project life cycle as work proceeds either through change control or when tailoring and preparing the plan for the next phase.

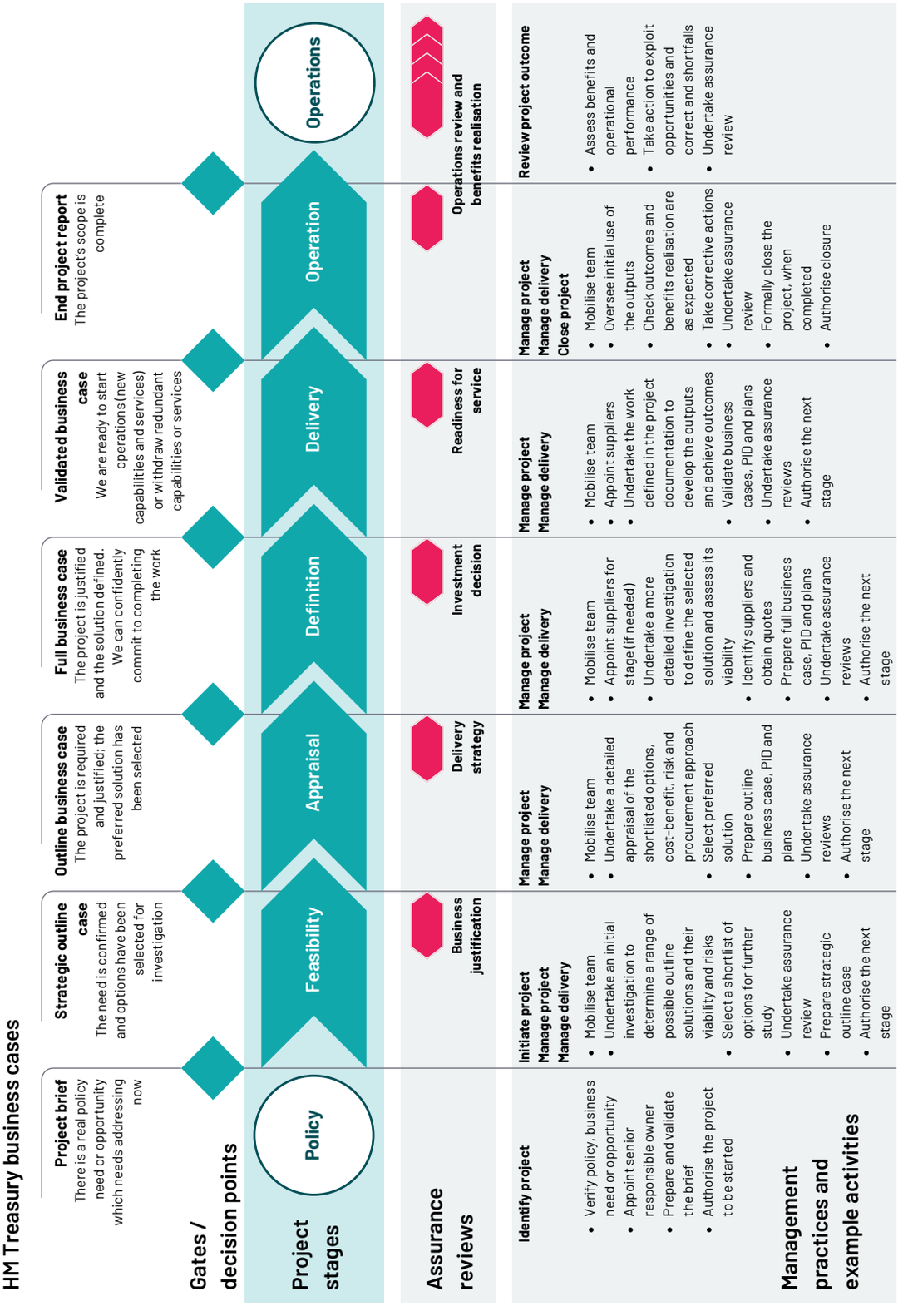


Figure 14.3 The reference project life cycle from the Government Functional Standard for Project Delivery

14.9.2 Using the reference project life cycle

14.9.2.1 Overview

The reference project life cycle in the *Government Functional Standard for Project Delivery* includes the features shown in Figure 14.3 and described above (see 14.7 on the features of a life cycle and 14.9.1 on the features of a project life cycle). These show the gates, gate criteria, stages, assurance reviews and types of business case needed in the appropriate places. The reference project life cycle provides the basic building blocks to enable a project manager to tailor it to suit their assigned project. In some cases, the reference life cycle can be adopted broadly as defined in the standard; however, in many cases it would need adapting to suit the circumstances of the project.

The reference project life cycle has five stages, each preceded by a gate. There is also a gate to mark the completion of the project. The stages are:

- feasibility (assess feasibility)
- appraisal (appraise and select)
- definition (define)
- delivery (deliver)
- operation (operate, embed and close)

Within each stage:

- the **sponsoring body** provides oversight (see 15.6 on overseeing a programme or a project)
- the **senior responsible owner** provides direction (see 15.7 on directing a programme or project)
- the **project manager** manages the project (see 15.9 on managing a programme or a project)
- each **work package manager** manages their assigned work package (see 15.10 on managing a work package)

The reference life cycle in the *Government Functional Standard for Project Delivery* also outlines what activities need to happen before a project is started and after it has been completed. These activities are the responsibility of the sponsoring body (see 13.3.2 on the sponsoring body).

Government Major Projects Portfolio and mandatory assurance, approvals and business cases

The reference project life cycle in the *Government Functional Standard for Project Delivery* shows the mandatory assurance reviews, gates and business case type for major government projects, aligned with requirements in the *Green Book*.

14.9.2.2 Policy / concept: before the project starts

This is when a need or opportunity is first formally recognised when the sponsoring body describes why they want to initiate a project.

The focus is on making sure the objectives of the proposed project are aligned to government policy or the organisation's strategic objectives, or both, and that it meets a recognised need or opportunity that ought to be addressed now. Checks should be made to make sure there is no other work under way which conflicts with or is addressing the same need. The *project set up toolkit* can support this.

Activities before formally authorising the project to start include:

- verifying the policy, business need or opportunity and the associated theory of change where applicable
- appointing the senior responsible owner
- preparing and validating the project brief

Further information and detail can be found at 15.5 on identifying a programme or project.

14.9.2.3 Feasibility stage

At the gate before the start of the feasibility stage, the decision makers should have verified there is a real policy need or opportunity which needs addressing now and, if acceptable, approved the project brief and authorised the start of the feasibility stage.

The focus of the feasibility stage is for the project manager and team to examine the project brief, identifying and assessing a long list of possible solutions and delivery strategies. A feasibility study may be conducted to provide a structured assessment of whether a proposal is likely to be achievable and worthwhile in practice. It tests the practicalities of a proposal before significant time, money and resources are committed. For more information on feasibility studies including how to conduct one refer to *Guide to feasibility studies in programmes and projects*.

Project teams should be prepared to negotiate a modification to the project brief if this adds greater clarity and understanding. There should be constructive challenge of assumptions and a search for a wide range of solutions. Further guidance on generating

options and long-listing are included in Part F: Solution delivery and in the *Green Book*. The project manager should, working with the senior responsible owner and policy makers where appropriate, determine if the intended project is likely to be viable in policy, organisational, commercial, delivery and financial terms. As the early stages of a project are the most influential, the sponsoring body is likely to be involved in the important discussions and decisions and steer the senior responsible owner and team in a preferred direction.

The key activities in the feasibility stage include:

- understanding the user needs and requirements (see Chapter 31: User needs and requirements)
- undertaking an initial investigation to produce and appraise a long list of possible solutions and assess their viability and risks (see Chapter 32: Solution design)
- selecting a short list of options for further study (see Chapter 32: Solution design)
- undertaking the business justification assurance review (see 14.7.4 on assurance)
- preparing and securing approval of the strategic outline case, project initiation documentation and supporting plans (see Chapter 15: Managing a programme or project)
- confirming funding and other authorities are in place to start the appraisal stage

Mega projects and mandatory strategy and delivery plans

Mega projects are required to complete a strategy and delivery plan during feasibility and update it throughout the life cycle, lay it as a Command paper in Parliament and publish it on GOV.UK. See *Strategy and delivery plan guidance: mega projects* on how these should be prepared, approved and published.

Government Major Projects Portfolio and initial feasibility studies

All programmes and projects expecting to join the Government Major Projects Portfolio are required to conduct an initial feasibility study. This should test whether the proposed programme or project is viable before detailed work begins on the programme business case or strategic outline case.

More on this requirement is set out in HM Treasury's Treasury approval process for programmes and projects and in GPD-PN 02/26: GMPP feasibility studies.

14.9.2.4 Appraisal stage

At the gate before the start of the appraisal stage, the decision makers should have verified that there is a continuing need and priority for the work, that a viable short list of options has been identified for further investigation and, if acceptable, approved the strategic outline case and associated documentation and authorised the start of the appraisal stage.

The focus in the appraisal stage is on identifying the preferred solution, checking:

- it meets the policy and organisational needs (see Chapter 31: User needs and requirements and Chapter 34: Verification and validation)
- key stakeholders are engaged and supportive (see Chapter 26: Stakeholder engagement)
- it can be delivered at an acceptable level of risk (see Chapter 20: Risk management)

The project manager and team should elaborate and assess the short-listed options, and from this, recommend a preferred solution. Where appropriate, the policy makers and subject matter experts need to be engaged to help define and analyse the options and select the preferred solution. Further guidance on option appraisal and short-listing is set out in the *Green Book*.

The work in this stage sets the direction for the remainder of the project, together with a viable plan which takes account of known risks.

The key activities in this stage include:

- elaborating user needs, and the process, technical and operational requirements, where appropriate (see Chapter 31: User needs and requirements)
- checking any legal or regulatory requirements
- undertaking a detailed appraisal of the short-listed options, cost-benefit analysis, build-buy options, risk and commercial approach, where appropriate (see Chapter 32: Solution design)
- selecting the preferred solution (see Chapter 32: Solution design)
- conducting early market engagement to identify potential suppliers (see Chapter 25: Procurement and contract management)
- preparing the outline business case and updating the project initiation documentation and supporting plans (See Chapter 15: Managing a programme or project)
- undertaking the delivery strategy assurance review (see 14.7.4 on assurance)
- confirming funding and other authorities are in place to start the definition stage

14.9.2.5 Definition stage

At the gate before the start of the definition stage, the decision makers should have verified that the project is still justified, and confirmed the preferred solution for further definition, and, if acceptable, approved the outline business case and associated documentation, and authorised the start of the definition stage.

The focus in the definition stage is on defining the selected solution in sufficient detail so that its delivery can be confidently committed to, checking it meets the sponsoring body's needs and ensuring relevant stakeholders are engaged and supportive. This includes developing detailed requirements and specifications for the work and finalising a robust plan. Suppliers are invited to tender for solution development, solution delivery, or both, and the preferred bidder is identified, subject to confirmation following full business case approval. By the end of the definition stage, the solution, scope, schedule, costs and benefits should be baselined, and risks better understood, enabling contingency provision to be adjusted as appropriate.

Activities in this stage include:

- appointing suppliers for the current stage, if needed (see Chapter 25: Procurement and contract management)
- undertaking a more detailed investigation to define the selected solution and assess its viability (see Chapter 32: Solution design)
- invite tenders for solution development, solution delivery, or both and select preferred supplier(s) (if needed) (see Chapter 25: Procurement and contract management)
- preparing the full business case and associated project initiation documentation and plans
- undertaking the decision justification assurance review (see 14.7.4 on assurance)
- confirming funding and other authorities are in place to start the delivery stage

14.9.2.6 Delivery stage

At the gate before the start of the delivery stage, the decision makers should have verified that the project is still justified, and that the solution has been defined to the extent that they can commit, with confidence, to completing the project. If acceptable, the decision makers should have approved the full business case and associated documentation and authorised the start of the delivery stage. This is the last gate at which the project can be stopped before substantial financial and reputational commitments are made.

The focus is on delivering the outputs and preparing for the changes which are prerequisite to the outcomes being achieved and benefits realised. The delivery stage is when the bulk of the costs relating to the project are spent. It comprises the completion of outstanding

detailed design, development, creation, and build of the chosen solution together with appropriate verification and validation activities. The required direction has been set by the sponsoring body and the senior responsible owner; it is now up to the project manager and team to deliver the solution and prepare for the associated organisational and societal changes. This stage can take a long time and the societal and business context can change. The full business case needs to be monitored to ensure the project remains viable, especially when issues arise (either internally or from the external environment) which result in a change to the project. During the delivery stage the project team should start making sure those who will operate or use the new solution are prepared and have the resources and capabilities to start initial operations or services in the next stage.

Activities in the delivery stage include:

- appointing suppliers (see Chapter 25: Procurement and contract management)
- undertaking the work defined in the project documentation to develop the outputs and achieve outcomes, including to:
    - develop and integrate the solution (see Chapter 33: Solution development and integration)
    - verify and validate the solution (see Chapter 34: Verification and validation)
    - prepare for organisational and societal change (see Chapter 35: Management of organisational and societal change)
    - transition ready for operation and services (see Chapter 36: Transition into use)
- if necessary, updating the full business case and associated project initiation documentation and plans
- undertaking the readiness for service assurance review (see 14.7.4 on assurance)
- authorising the operation stage to start

14.9.2.7 Operation stage

At the gate before the start of the operation stage, the decision makers should have verified that the outputs are complete enough and people ready so that operations and service can start. They should have also confirmed the full business case is still valid (or, if needed, has been updated) and have authorised the start of the operation stage.

The focus in this stage is to have a period of initial operational working to tune the solution, identify latent issues, ensure the necessary organisational or societal changes happen and that the operational and/or service managers understand and can oversee and use the new solution. Actions should be taken to deal with problems and manage any emerging

stakeholder issues and operational risks or issues. As operations and services start in this stage, the realisation of outcomes and benefits the project was set up to create should start to ramp up. In addition, work is carried out to withdraw redundant capabilities and ensure the environments left by the project team are clear, including the disposal or repurposing of redundant data, systems, equipment and facilities and the reassignment of remaining team members.

The key activities in this stage include:

- complete transition of the solution into use (see Chapter 36: Transition into use)
- complete transition of ownership of benefits, risks, issues and information and data assets
- overseeing initial use of the outputs (see Chapter 37: Use and disposal)
- checking the outcomes and benefits realisation are as expected and evaluation is under way or planned (see Chapter 37: Use and disposal and Chapter 19: Benefits management)
- undertaking the operations and benefits realisation assurance review (see 14.7.4 on assurance)
- formally closing the project, when completed (see 15.11 on closing a programme or project)

14.9.2.8 After the project has been completed

The project is over and the project manager and team should have been stood down. The senior responsible owner's role also ends, other than where the project is part of a programme for which they are also responsible. It is now up to the sponsoring body (for a self-standing project) or the senior responsible owner (for a wider programme) to make sure things stay on track.

The focus should be on whether the outcomes are being sustained so that the benefits continue to be realised. If the benefits fail to meet expectations, the reasons need to be determined so that appropriate action can be taken.

Activities after the project has been completed include:

- reviewing the outcomes
- assessing the benefits
- assessing operational performance

- taking action to exploit opportunities and correct any shortfalls
- undertaking planned evaluations (see Chapter 2: Policy and evaluation) and assurance reviews (see 14.7.4 on assurance)

Further information and detail can be found at 15.12 on reviewing outcomes and benefits.

14.9.3 Examples of project life cycles reflecting different needs

It is a requirement of the *Government Functional Standard for Project Delivery* that a phased approach is taken. While the standard provides a reference life cycle to support this, it does not define the number of phases, their names nor how they should be applied in each case.

Instead, the reference project life cycle provides the basic building blocks to enable a project manager to tailor it to suit their assigned project (see 14.9.2 on using the reference project life cycle). This section provides 2 examples of how the reference life cycle can be tailored to reflect different needs and circumstances.

14.9.3.1 The extended life cycle

Figure 14.4 shows an example of an extended life cycle covering the full extent of operations and the disposal of the outputs at the end. The phases could be managed as a project (in stages) or programme (in tranches) depending on the context of the work. This type of life cycle is sometimes called a product life cycle, system life cycle or asset life cycle. In military capability programmes and projects the CADMID/T model is used (see 10.5.1 for more detail on the life cycle).

14.9.3.2 A project life cycle based on agile delivery

Figure 14.5 shows an example of a project life cycle which uses an agile approach as the primary delivery methodology, based off GOV.UK's *Service manual* agile delivery phases. The number and types of business case, assurance reviews and project stages can differ from project to project to reflect the context, nature and complexity of the work and the need for appropriate and proportionate governance.

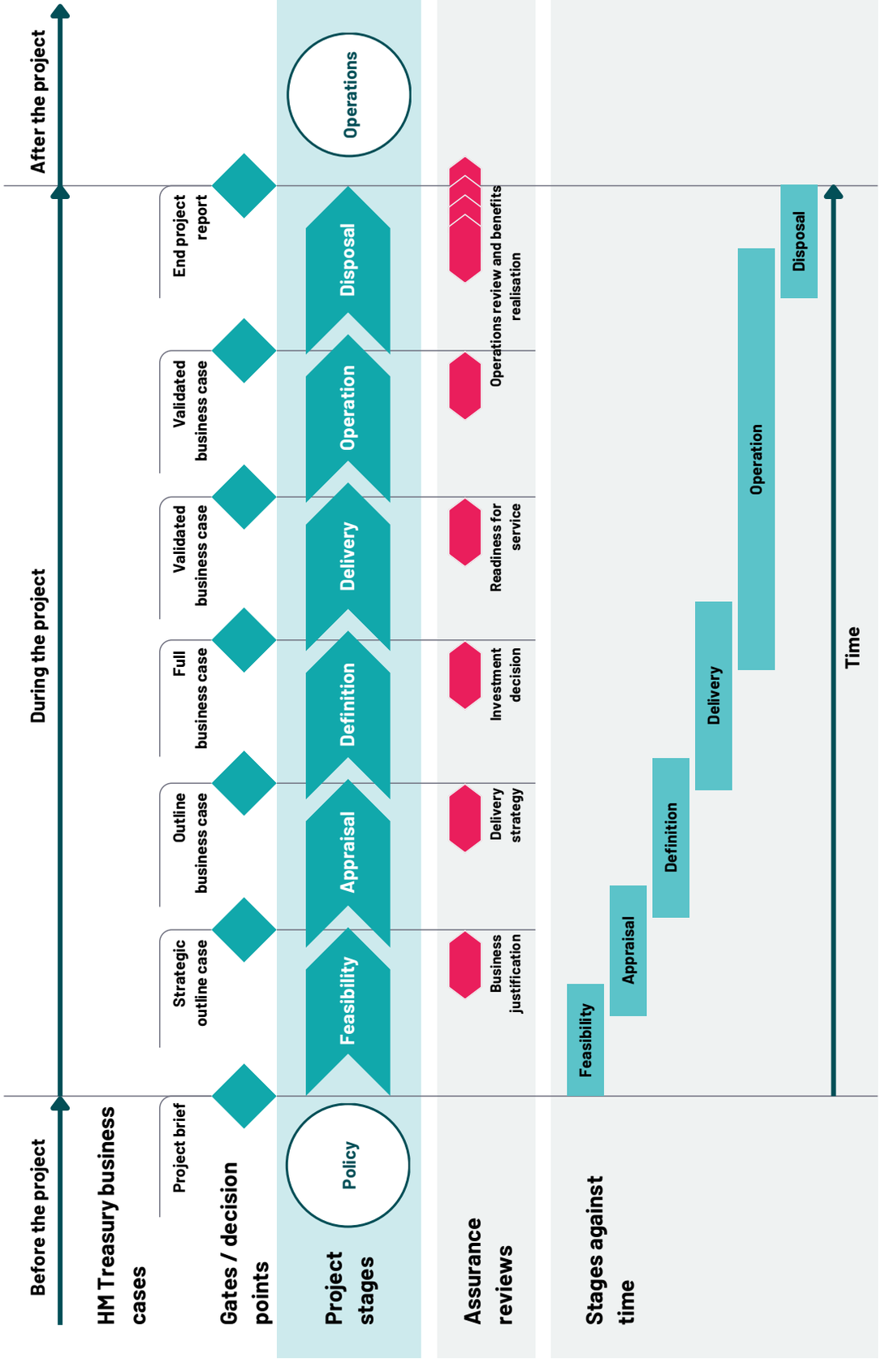


Figure 14.4 Example of an extended life cycle

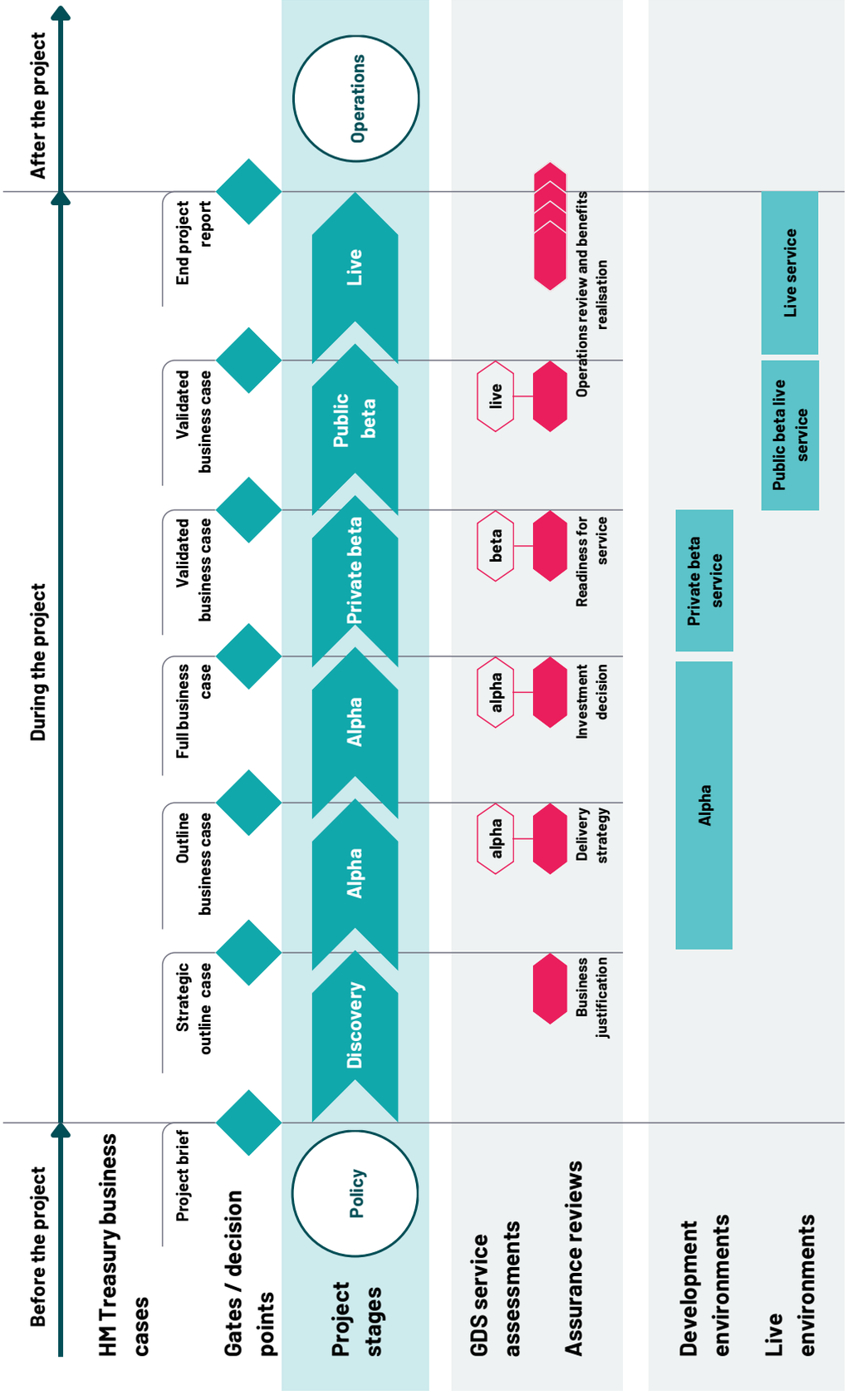


Figure 14.5 Example of an agile delivery life cycle

A project life cycle based on agile delivery might be expected to be inherently cyclical or iterative. A life cycle is the basis for the delivery plan and so is governed by time (see 14.6 on life cycles and delivery approaches). This means that a life cycle itself cannot be iterative, although the processes and activities within a phase can be (see Figure 14.6). These processes and activities are managed through delivery approaches and can follow any method that is appropriate to the work (for example, predictive, iterative, incremental or adaptive).

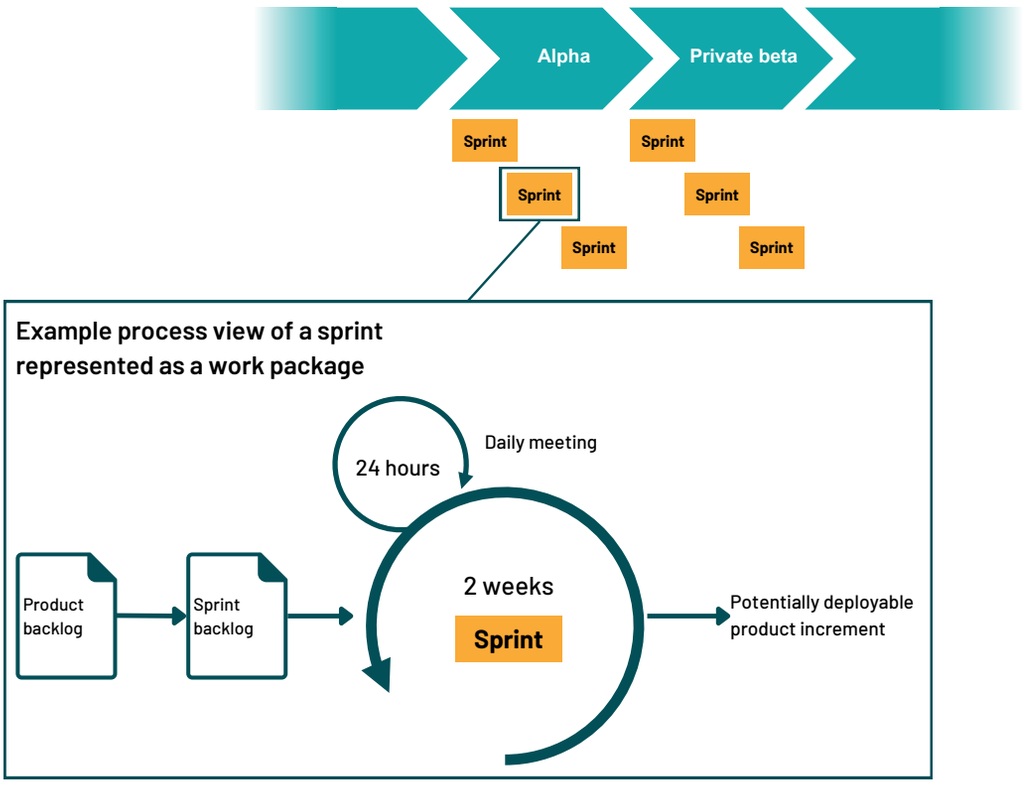


Figure 14.6 Example of a delivery approach within a life cycle

14.10 Further reading

- GOV.UK, *Service manual*
- Government Project Delivery, *Guide to feasibility studies in programmes and projects*
- Government Project Delivery, *Role of the senior responsible owner*
- HM Treasury, *Accounting officer assessments: guidance*
- HM Treasury, *Green Book: UK government guidance on appraisal*
- Infrastructure and Projects Authority, *Project set up toolkit*

15. Managing a programme or project

15.1 Purpose of programme and project management

The purpose of programme and project management is to provide a structured framework for defining and undertaking change and therefore providing a framework for implementing policy and business strategies to enable the government and its organisations to achieve outcomes and benefits of strategic importance.

15.2 Key Points

- Management practices integrate planning, control and solution delivery to provide a holistic view for timely decision making and action to be taken.
- Management practices are used throughout the life cycle, regardless of delivery approach.
- The sponsoring body identifies, oversees and reviews work, the senior responsible owner directs work, the programme or project manager initiates, manages and closes work and team managers manage work packages.
- Programmes use the same management practices as projects but require additional coordination across constituent projects and other work, including funding, tranches, interdependencies, shared resources and overall risk.
- Work should only start and continue when it is authorised and justified by the current business case.

15.3 Overview

Programme and project management includes the planning, delegating, monitoring and control of all aspects of a programme or project and the management and motivation of those involved to achieve the defined scope within the defined constraints, such as cost, time, quality, and risk. A description of a programme and a project is included in Chapter 3: Portfolios, programmes and projects.

This chapter describes the management practices which can be tailored to suit the context of the work being done (see Part B: Tailoring and adopting) and the specific life cycle of the programme or project (see Chapter 14: Programme and project life cycles). These practices, and their relationship to the life cycle and roles, are shown in Figure 15.1 and are summarised and listed in Table 15.1.

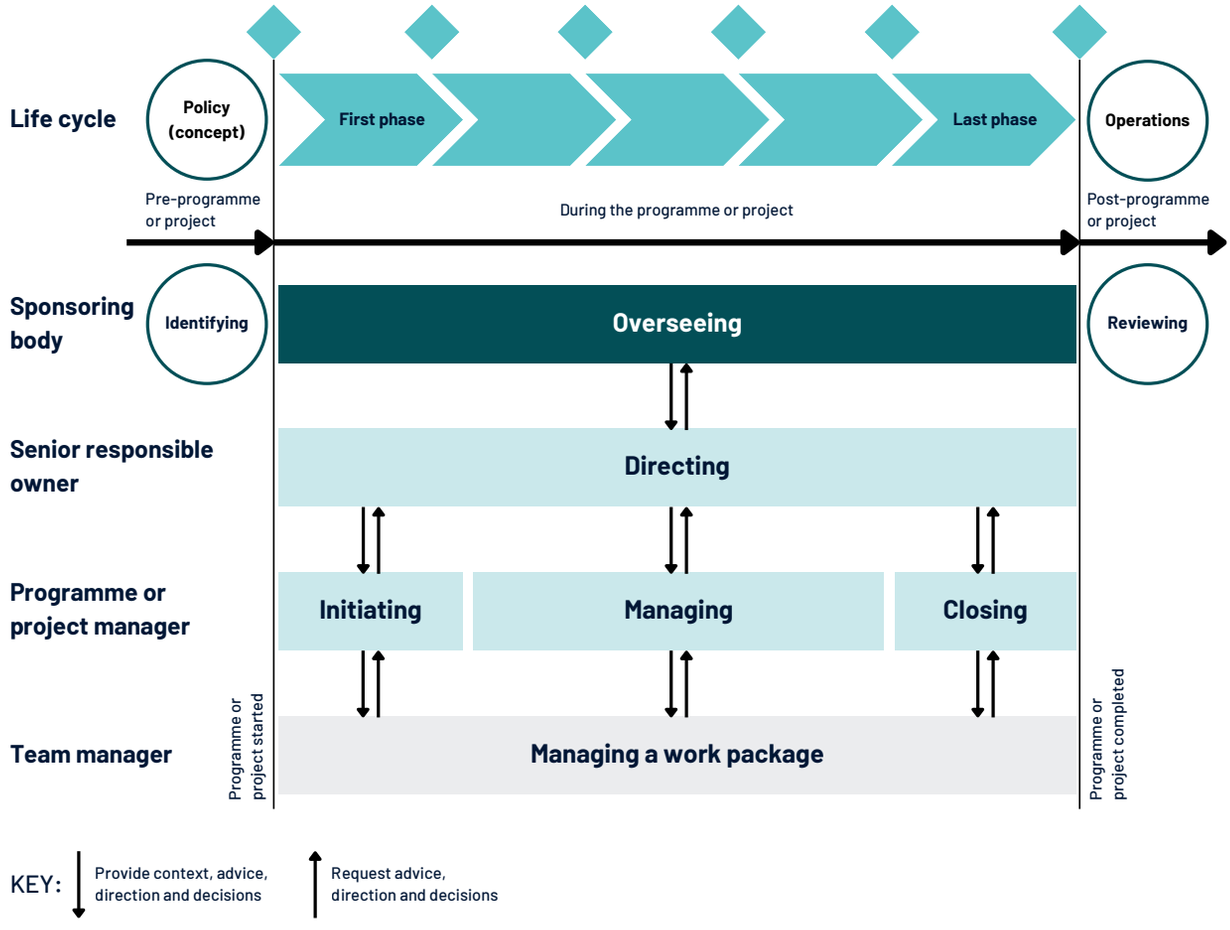


Figure 15.1 Relationship between the management practices, the life cycle and roles

Unlike the phases of a programme or project life cycle described in Chapter 14: Programme and project life cycles, which are time-based, the management practices are iterative and process-based with overseeing, directing, managing the work used concurrently in every phase of the programme or project. The management practices apply regardless of the delivery approach or combination of delivery approaches selected.

The activities in the management practices are when information from the planning and control practices (see Part E: Planning and control) and solution delivery practices (see Part F: Solution delivery) is brought together to provide a holistic view of the status of the work and insights gained so that appropriate direction can be given, and action taken. As such, the management practices provide a comprehensive integrating framework for delivering any government programme or project.

Table 15.1 Relationship between the management practices, the life cycle and roles

Management practice	Accountability	When the practice is used in relation to the life cycle
Identifying: ensuring that the policy or other objective for undertaking the work is defined and likely to be realistic before the first phase of the work is authorised to start.	Sponsoring body	Before the programme or project starts
Overseeing: ensuring that everyone is satisfied that the senior responsible owner can meet the organisation's need and stakeholder's expectations and that risks are at an acceptable level.	Sponsoring body	Throughout the programme or project
Directing: ensuring continuing strategic fit and relevance within the context of the organisational environment.	Senior responsible owner	Throughout the programme or project
Initiating: ensuring a programme or project is set up, defined and planned, and that the team is mobilised and understand the opportunity or need to be addressed.	Programme or project manager	At the beginning of the first phase
Managing: ensuring the appropriate team and facilities are in place, the work is planned, authorised and controlled and initiating and monitoring work packages.	Programme or project manager	Throughout the programme or project
Managing a work package: ensuring reviews are in place to determine the degree of the programme's or project's success.	Work package or team manager	Throughout the programme or project
Closing: ensuring programmes and projects are closed in a controlled way.	Programme or project manager	At the end of the last phase
Reviewing: ensuring outcomes are reviewed and evaluated to determine the degree of the programme's or project's success.	Sponsoring body	Following closure, usually after a period of operation

15.4 Additional considerations for the management of a programme

While the management practices are essentially the same for a programme or a project the differences relate primarily to the programme manager being at least one step

removed from those directly managing the delivery of the solution. A programme manager works through a team of project managers and managers of other related work within the programme's scope. As such a programme manager's focus includes ensuring the parts of the programme are contributing to the programme's overall objectives, focusing on:

- the overall investment and how it is justified in terms of the types of business case and decisions needed
- how the constituent projects and other work are funded
- how each part of the programme contributes to the required outcomes and benefits
- the allocation of work into tranches to realise benefits as soon as practical
- the management of overall risk, including handling of float and/or contingency within agreed tolerances
- the management of interdependencies among the programme's projects and other constituent work
- the efficient use of and sharing of resources

The management of a programme is therefore concerned with how the work is justified, divided up, funded, planned and controlled. The detailed planning, controlling and delivery of work happens within each constituent project or work component.

15.5 Identifying a programme or project

The purpose of identifying a programme or project is to ensure that the policy or other strategic objectives for undertaking the work is understood and likely to be realistic before the first phase of work is authorised to start and funding and resources are committed.

This is when a need or opportunity is first formally recognised, and the sponsoring body describes why they want to initiate a programme or project. The need should be described in terms of the societal or organisational outcomes.

It is a requirement of the *Government Functional Standard for Project Delivery* that the prospective senior responsible owner is appointed at this time. The terms of their appointment should be agreed with the sponsoring body in a letter of appointment (see *The role of the senior responsible owner*, which provides guidance on the role and appointment of senior responsible owners in government). The senior responsible owner should start to identify and work with potential team members and subject matter experts on defining the brief. This should be done in consultation with policy makers to ensure the opportunity or need is analysed and understood, and that deliverability is considered. Ideally, policy makers should become part of the programme or project team.

This work culminates in the first decision point when the sponsoring body commits funding and resources to the programme or project and the work is formally recognised as 'in progress' within the organisation's portfolio.

Identifying a programme or project is the responsibility of the sponsoring body (see Chapter 13: The governance and management of programmes and projects) and includes ensuring that:

- the objectives of the programme or project (the programme or project brief) are understood and documented
- the necessary authorities for initiating the programme or project are in place
- the senior responsible owner, programme or project manager, and key members of the team, including policy makers, required for initiation of the programme or project are appointed
- the first phase of work is planned in outline and that time is not wasted initiating a programme or project based on unreliable assumptions

Government Major Projects Portfolio and risk potential assessments

Programmes and projects joining the Government Major Projects Portfolio must have a risk potential assessment and validated by HM Treasury, National Infrastructure and Service Transformation Authority and where appropriate central function teams.

15.6 Overseeing a programme or project

The purpose of overseeing a programme or project is to ensure that the sponsoring body is satisfied that the programme or project team is able to meet the needs of the organisation, sponsoring body and stakeholders, and that the risks are at an acceptable level.

Overseeing a programme or project is the responsibility of the sponsoring body (see Chapter 13: The governance and management of programmes and projects) and includes ensuring that:

- the programme or project fulfils a real need
- the senior responsible owner has been appointed and has sufficient time and authority to carry out their responsibilities effectively
- the senior responsible owner is kept updated on the wider context, providing guidance and direction as needed or when requested
- they are satisfied with progress and confident that the team is able to achieve the objectives within an acceptable level of risk

- stakeholders' expectations are being managed and likely to be met
- decisions which have been escalated to them or are outside the delegated authority of the senior responsible owner are made in a timely manner

15.7 Directing a programme or project

The purpose of directing a programme or project is to ensure there is a continuing strategic fit and relevance in the prevailing business context.

The *Government Functional Standard for Project Delivery* requires the senior responsible owner (see Chapter 13: The governance and management of programmes and projects):

- to ensure that the solution fulfils government policy and/or meets the needs of the organisation, and that it represents value for money
- to direct a programme or project, and refer any decisions that are above their delegated authority to the sponsoring body or other decision makers as defined in the governance and management framework
- to provide timely direction and decisions on the work as needed
- to review the impact of any changes to policy or objectives that happen during the life of the programme or project and consider whether the work is still justified

This includes ensuring that:

- the programme or project remains justifiable
- assurance reviews and approvals are undertaken at the right time
- corrective and preventative actions are initiated and taken if needed
- there is authority to initiate a programme or project and their phases
- there is authority to close a programme or project

15.8 Initiating a programme or project

The purpose of initiating a programme or project is to ensure that a programme or project is set up and that the team is mobilised and understands the opportunity or need to be addressed.

Initiating a programme or project is the responsibility of the programme or project manager (see Chapter 13: The governance and management of programmes and projects), following authorisation from the relevant decision makers. This includes ensuring that:

- the vision and an initial justification for the decision to invest in the work has been prepared and confirmed by the senior responsible owner
- the team is mobilised for the first phase of work
- success criteria in terms of outcomes and benefits have been defined and confirmed by the senior responsible owner
- significant stakeholders have been identified and confirmed by the senior responsible owner
- a governance and management framework, describing the approach, methods and processes required to manage the work, including the organisation chart and roles, has been prepared
- a delivery strategy and plan, describing the approach, activities, schedule, costs, resources and other constraints needed to achieve the objectives have been prepared
- a workable solution is highly likely to be identified

The initial justification should be defined and documented in a strategic outline case or equivalent as set out in the *Green Book*.

The *Project set up toolkit* should be referred to for assistance with framing the opportunity and understanding the capabilities a project or programme needs to deliver.

Government Major Projects Portfolio and accounting officer assessments

For programmes and projects in the government major projects portfolio, an accounting officer assessment must be produced at decision points. A summary of the assessment should be published (see *Accounting officer assessments: guidance* for more information).

15.9 Managing a programme or project

15.9.1 Overview

The purpose of managing a programme or project is to ensure that work is assigned, monitored and completed in a controlled way such as by managing risks and issues, reporting on progress and taking appropriate corrective and preventative actions when needed. Managing a programme or project is the responsibility of the programme or project manager supported by their team (see Chapter 13: The governance and management of programmes and projects) and includes:

- initiating a new phase
- initiating work within a phase
- monitoring the work
- preparing to start a new phase
- closing a phase

15.9.2 Initiate a new phase

A phase may not be started until the senior responsible owner has given their authority to do so. The programme or project manager should then notify all those concerned and engage and brief the team managers and members, confirming the work plan. The team should review the plan, risk, issues and change registers, closing any which are no longer relevant, agreeing ownership and action for the remaining risks, and adding any new risks or issues which result from the review in light of the current situation. In addition, the team should verify that the list of identified stakeholders and the associated plans for their engagement are still valid.

The programme or project manager should ensure administration, facilities and support office needs are covered.

15.9.3 Initiate work within a phase

The programme or project manager should ensure that work undertaken by the team is started in accordance with the delivery plan:

- for programmes, this entails ensuring projects and other related work within a programme's tranche are started
- for projects, this entails ensuring work packages are started

Initiation of work should be unambiguous in terms of scope and constraints such as time and cost and permitted tolerances. No work should be started unless it is covered by the current business case; this can mean that the business case, together with the associated management documentation and plans, might need to be updated and approved before the work being authorised.

15.9.4 Control the work

The programme or project manager should assess the progress of the work against the delivery plan, analyse any variances, address issues and risks and assess the effectiveness of stakeholder engagement, taking action if needed. Timely analysis of progress data enables the manager to address issues as soon as possible, take advantage of opportunities and pre-empt situations rather than responding after they have assumed unmanageable proportions.

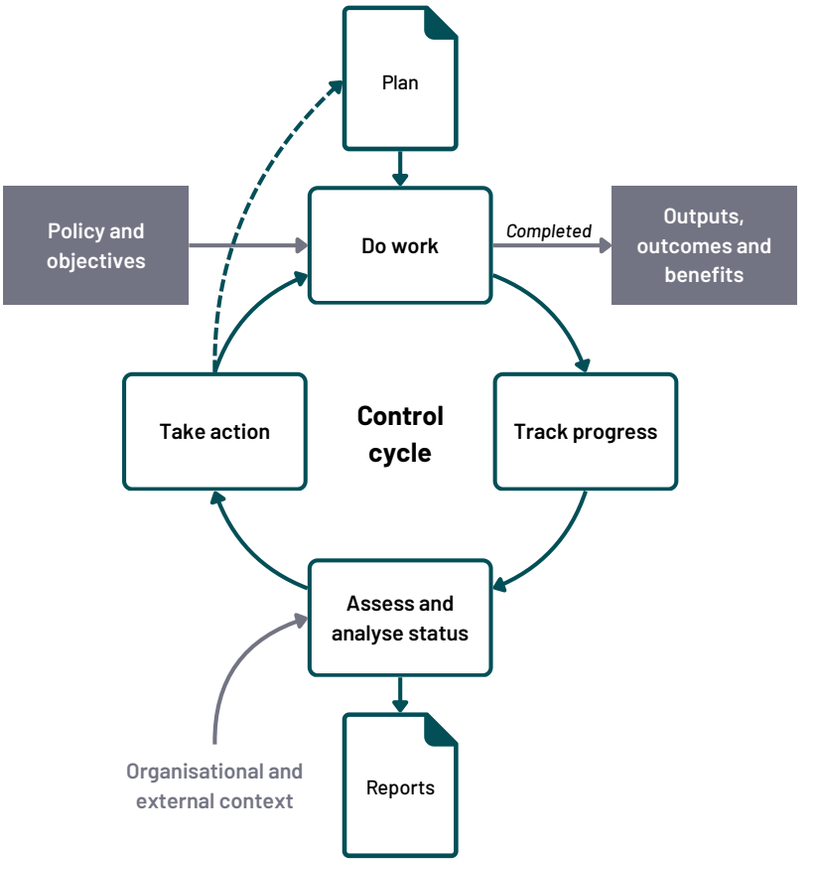


Figure 15.2 The control cycle

Controlling work is a continuous, cyclical activity, as shown in Figure 15.2. In this cycle:

- work is carried out in line with the delivery plan, including developing outputs ready for use and embedding organisational and societal changes to deliver benefits
- progress is assessed on a regular basis against the agreed delivery plan, using the measures and format defined in the governance and management framework - this should cover delivery against the plan and development of the solution, including quality, risks, issues, change requests and stakeholder attitudes
- any variances should be analysed to determine their causes and identify new or changed risks and issues - the ongoing need for and viability of the work should be considered, as work should not continue if it is no longer justified
- corrective and preventative action should be taken, which could include minor instructions, decisions within a manager's tolerances, escalations outside their tolerance for direction, or change requests to the baseline plan, solution or management documentation

A more detailed representation of this cycle is described more fully in Chapter 17: controlling.Good communication among the programme or project manager, team managers and the senior responsible owner is essential. If interaction among the team managers and members is weak, problems can escalate, no matter how much information is available. Effective monitoring and analysis help the team to understand the status of the whole programme or project and the prevailing risks, rather than just see their own part of the work. The programme or project manager therefore needs to keep the team managers briefed on the current context in which the work is being undertaken, especially as this can change if the work is protracted.

Lessons learned from experience by the team, which could be of use to other teams, should be recorded and managed as they arise and not be held back until the end of a phase (see Chapter 38: Learning from experience).

15.9.5 Prepare to start a new phase

With the assistance of team managers or other subject matter experts, the programme or project manager should prepare for starting each phase of the work by:

- preparing or reviewing a detailed plan for the phase, with risks fully articulated and appropriate provision for contingency
- reviewing the governance and management requirements
- confirming that the required funding and resources are available
- confirming, with the senior responsible owner, that the work is still justified and verifying the business case is still viable
- revising the management approach to reflect the work required in the phase
- obtaining authorisation to start the next phase

Government and Departmental Major Projects Portfolios and integrated assurance and approvals plans

Programmes and projects in the Government or Departmental Major Projects Portfolios are required to have an agreed *Integrated assurance and approvals plan* by HM Treasury and the National Infrastructure and Service Transformation Authority as part of HM Treasury's *Treasury approval process for programmes and projects*.

Government Major Projects Portfolio and mandatory assurance preceding decision points

Programmes and projects in the Government Major Projects Portfolio are required to have an independent assurance review, under the direction of the National Infrastructure and Service Transformation Authority preceding each decision point supported by Treasury approval process for projects and programmes (see 13.4.4 on governance and management frameworks).

15.9.6 Close a phase

The programme or project manager should confirm the completion of each phase of the work by:

- verifying that the work has been completed and the outputs and expected outcomes accepted
- confirming as complete, cancelling or suspending contracts, as appropriate
- verifying and reassigning incomplete actions, recording unresolved issues and moving incomplete activities to later phases under change control, if necessary
- releasing or transitioning resources, if no longer required
- archiving information and documentation in accordance with the organisation's information retention policy (see Chapter 24: Information and data management)
- recording lessons learnt to improve future work (see Chapter 38: Learning from experience)

15.9.7 Manage other related work (programmes only)

The purpose of managing related work is to ensure work that is not managed as a project is defined, planned and controlled with the same rigour as for projects.

Managing other related work is the responsibility of the assigned manager (see 13.3.9 on management of other related work for programmes) and includes the same activities as for a project, except that it is not managed in stages. 'Other related work' can reflect any type of work, such as that for operational processes or services or can be advisory or supportive in nature (such as in a support office).

15.10 Managing a work package

The purpose of managing a work package is to define the required outputs and outcomes and then plan, monitor and control their delivery, enabling the overall outcomes of the

project (or other related work which comprises the work package) to be achieved and benefits realised.

Managing a work package is the responsibility of the work package or team manager (see 13.3.7 on work package or team managers) and includes:

- defining and planning the assigned work packages
- monitoring and controlling the work in accordance with the work plan, including the management of resources
- closing the work package once it has been confirmed as completed

Working methods and processes should be defined and tailored for use to reflect the approaches being used and the skills of those undertaking the work. The monitoring and control of a work package follows a very similar line to that described for a programme or project in 15.8.4 on controlling the work, with a defined control cycle, suitably adapted to the work and outputs involved. The work package manager should monitor and control the assigned work against an approved work plan using the practices defined in Part E: Planning and control and Part F: Solution delivery. Preventative and corrective actions should be taken, and change requests made, when necessary, to achieve the assigned objectives.

15.11 Closing a programme or project

The purpose of closing a programme or project is to ensure that it comes to an end in a controlled way, as required by the *Government Functional Standard for Project Delivery*.

Closure can happen when the scope of the programme or project has been delivered or when work is terminated early due, for example, to it no longer being viable or the associated risks being unacceptably high. Authorisation for closure is usually based on a closure report which should include a review of the lessons learned which could benefit future work.

Authority for closure can be given by the sponsoring body, or it may be delegated to the senior responsible owner. Sometimes, authority from the organisation's investment committee is required.

The activities involved in closing a programme or project are normally the responsibility of the programme or project manager (see 13.3.5 on the programme or project manager responsibilties), unless the senior responsible owner determines otherwise. Closure includes ensuring that:

- outputs and outcomes have been delivered
- unfulfilled requirements have been documented with how they are to be addressed

- responsibilities for ongoing risks, issues, actions and benefits tracking have been handed over to, and accepted by, the appropriate authority
- lessons have been recorded and communicated (see Chapter 38: Learning from experience)
- documentation and information have been secured and transferred or archived (see Chapter 24: Information and data management)
- the team has been reassigned and facilities demobilised
- all financial transactions have been properly recorded and accounted for (see Chapter 29: Finance)
- information and data systems, such as contractual and financial) have been reconciled and closed

15.12 Reviewing outcomes and benefits

Reviewing outcomes and benefits determines the degree of the programme's or project's success. These reviews are called the 'operations review and benefits realisation' assurance review. In addition to this assurance review, it is required, for some programmes and projects, that a wider, more extensive formal evaluation is undertaken in accordance with the *Magenta Book* (see Chapter 2: Policy and evaluation).

After a programme or project is closed, the sponsoring body should ensure that planned assurance reviews and evaluations are undertaken to assess the extent to which benefits realisation and operational performance are meeting, and are likely to continue to meet, the objectives and expectations stated in the business case. Such reviews also play an important part in evaluation.

Reviewing the outcome of a programme or project is the responsibility of the sponsoring body (see 13.3.2 on the sponsoring body) and includes determining, based on the latest approved business case and supporting documentation, whether:

- the planned benefits were realised
- the predicted costs were as planned
- the outcomes are a reality and are being sustained
- the operational systems, processes and structures are effective
- the solution meets the needs, both for users and citizens
- final evaluation is under way or planned (see Chapter 2: Policy and evaluation)

A final report on performance against the business case should be completed including recalculating the social costs and social benefits, drawing on the information listed above.

Lessons identified during the review should be recorded and communicated where they can be of benefit for undertaking future work or result in improved working practices (see Chapter 38: Learning from experience).

An assurance review or evaluation should be undertaken when enough time has elapsed to assess the benefits of the programme or project and the use and operation of the outputs. The review should focus primarily on outcomes and benefits, but if these fall short of business case projections, for example because a solution is faulty or circumstances have changed, the reasons for this should also be considered. This might require the former senior responsible owner, programme or project manager or relevant senior team managers to be consulted.

15.13 Further reading

- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Treasury, *Accounting officer assessments*
- HM Treasury, *Green Book*: UK government guidance on appraisal
- HM Treasury, *Magenta Book: central Government guidance on evaluation*
- Infrastructure and Projects Authority, *Best practice in benchmarking*
- Infrastructure and Projects Authority, *Cost estimating guidance*
- Infrastructure and Projects Authority, *Guide to implementing integrated assurance*
- Infrastructure and Projects Authority, *Principles for project success*
- Infrastructure and Projects Authority, *Risk potential assessment form*
- Infrastructure and Projects Authority, *Project set up toolkit*

Part E:

Planning and control

Chapter 16. Planning
Chapter 17. Controlling
Chapter 18. Reporting
Chapter 19. Benefits management
Chapter 20. Risk management
Chapter 21. Issue management
Chapter 22. Change control
Chapter 23. Traceability management
Chapter 24. Information and data management
Chapter 25. Procurement and contract management
Chapter 26. Stakeholder engagement
Chapter 27. Communications
Chapter 28. Resource management
Chapter 29. Finance

Part E: Planning and control

The purpose of planning and control is to ensure work is planned and controlled, with corrective and preventative action being taken when needed, so that the objectives of the portfolio, programme or project can be achieved.

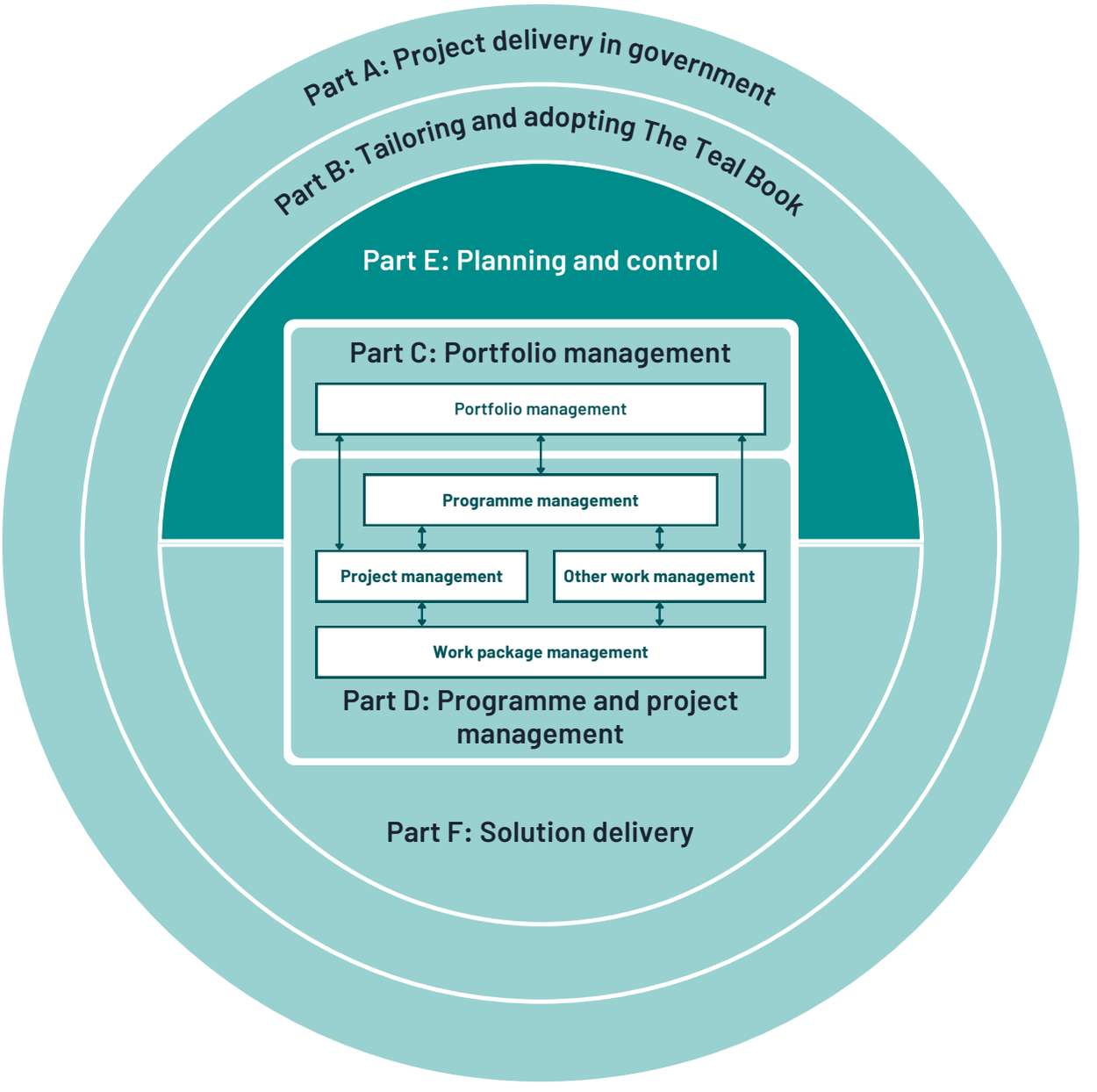


Figure E.1 Planning and control practices in relation to the structure of The Teal Book

The planning and control practices should be defined to be mutually consistent as the outputs from one are often the inputs to another. Most planning and control practices provide information for controlling and reporting, the primary information flows for which are shown in Figure E.2. The primary relationships among the practices are also shown in Figure E.2. For example, a risk can become an issue if it materialises, and an issue can trigger a change request to keep the work viable. More detail on the interfaces among practices is included in each practice section. The planning and control practices apply throughout the life of a portfolio, programme or project and should work seamlessly with the solution delivery practices.

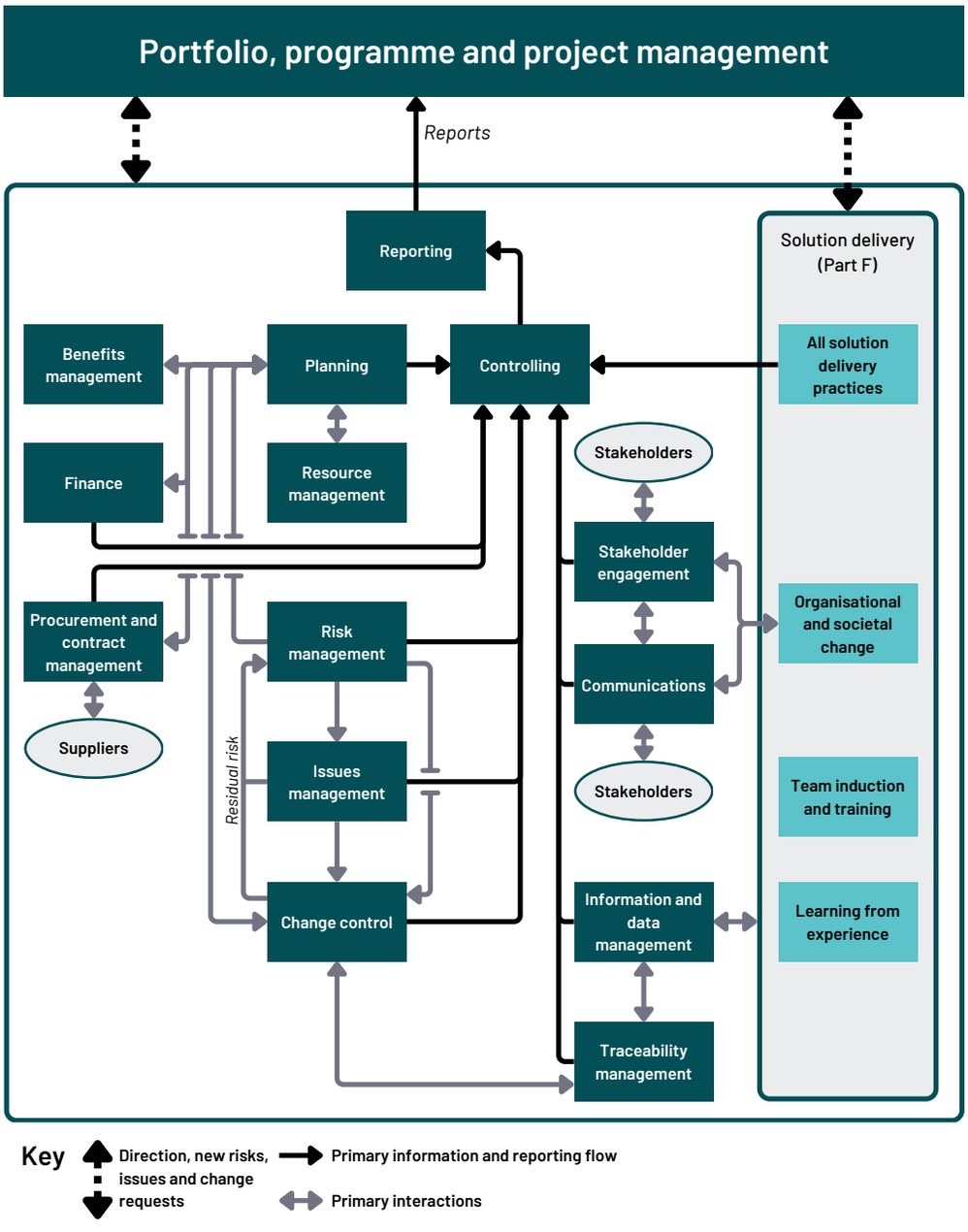


Figure E.2 Primary interactions between the planning and control practices in the context of management and the solution delivery practices

16. Planning

16.1 Purpose of planning

The purpose of planning is to ensure that the outputs, outcomes and benefits of a portfolio, programme or project can be delivered within defined constraints, such as timeschedule, cost and risk, to achieve the agreed objectives.

16.2 Key points

- Planning identifies what needs to be done, when, by who and at what cost, and provides the baseline against which progress is tracked and performance measured
- Time spent on planning in the early phases ensures that work meets business objectives and delivers social value.
- An integrated plan brings together scope, schedule, resources, costs and benefits into a single view, providing the evidence needed for decisions on investment.
- Portfolio plans are developed on a cyclical basis and aligned to organisational planning cycles.
- Programme and project planning is progressive, starting as soon as the work is initiated and adding detail as understanding grows and is used to manage the work through development to delivery of outputs, outcomes and benefits.
- Planning is collaborative, led by the portfolio, programme or project manager with specialist input and consultation.

16.3 Why plan?

Planning helps to understand what activities and deliverables are needed to achieve the objectives of a portfolio, programme or project, and how best to do so. Planning:

- ensures that the outputs, outcomes and benefits of a portfolio, programme or project can be delivered within defined constraints such as time, cost and risk, to achieve the agreed objectives
- enables the necessary funding, resourcing and other requirements for the work to be arranged
- provides a defined baseline for maintaining control and tracking performance

Time spent on planning in the early phases of work, sometimes known as 'front end loading', helps portfolios, programmes and projects meet their objectives and deliver social value (see Figure 16.1).

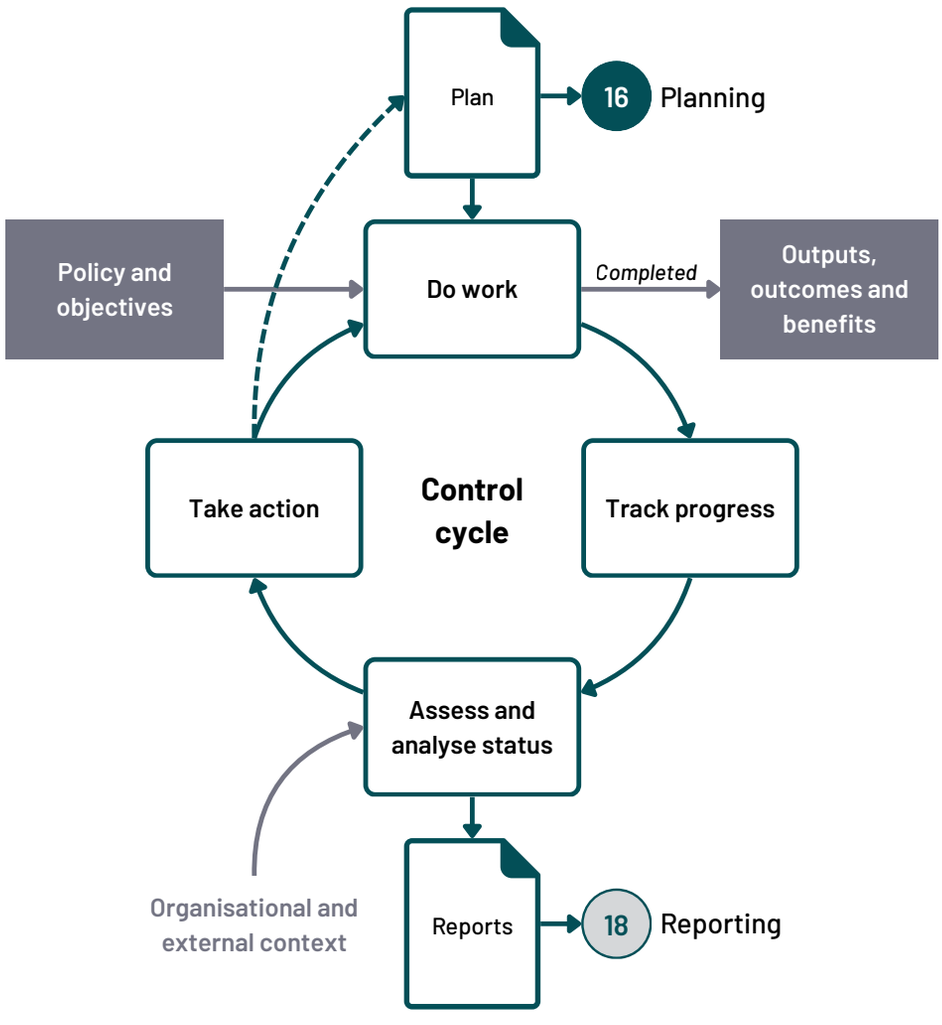


Figure 16.1 Planning as the basis for controlling and reporting on work

16.4 What is planning?

A plan sets out how objectives, outcomes and outputs are to be delivered within defined constraints, in accordance with the strategy agreed for the portfolio, programme or project. A plan provides the basis for decision-making on investment and approvals, for example a programme or project business case or a portfolio investment bid.

Planning identifies the considerations for delivery so that these can be managed in an integrated way through the life cycle, as a plan for the portfolio, programme or project. This approach is often known as integrated or consolidated planning.

A **portfolio plan** (also known as a delivery plan) supports the organisation's strategic objectives and is developed on a cyclical basis as part of organisational business planning, for example as part of a spending review or the annual business planning cycle. Once approved, the portfolio plan is baselined, with subsequent changes managed through change control until the next planning review (see Chapter 22: Change control).

A **programme or project plan** (also known as a delivery plan) is developed on a progressive basis from initiation onwards and covers both the development and delivery of the work through the life cycle. The plan should provide a robust basis for decisions on investment to be taken at the appropriate point in the life cycle. This does not mean work needs to be planned in detail from end to end, as this is often not feasible, for example in large multi-phase programmes, or inappropriate, for example in agile delivery. The plan for a current phase should be in enough detail to enable decisions to be made and progress to be tracked. Plans for later phases can be in outline, with governance and approvals tailored accordingly.

Once the full business case is approved, the programme or project plan is baselined, with subsequent changes managed through change control until the work is completed. Detailed plans for individual projects or work packages (known as work plans) can be developed iteratively, within the constraints and tolerances agreed for the business case and overall delivery plan.

A plan should include the proposed scope of the work to be delivered to achieve the objectives, particularly:

- **outputs and outcomes**, what is to be delivered, by who and when by?
- **benefits**, what benefits are to be realised, by who and when by?

A plan should also include the anticipated constraints, particularly:

- **time**, how long should the work take to develop and to deliver?
- **resources**, what people, facilities and equipment are needed to undertake the work?
- **cost**, what funding is needed, when and where from?
- **risk, assumptions and dependencies**, what are they, how might they affect the plan and how can they be managed?
- **issues**, what are they, how do they affect the plan and how can they be managed?
- **quality**, how well do features and characteristics of an output bear on its ability to show that it meets expectations or stated needs, requirements or specification?

A plan should not only cover the work needed to deliver, build or develop the outputs, but should build on the delivery strategy and cover aspects such as:

- **approvals and assurance**, what is required, from whom and when? (see Chapter 4: Governance and management)
- **procurement**, if commercial arrangements needed to deliver or operate the solution, what procuring activities are needed including timescales? (see Chapter 25: Procurement and contract management)
- **stakeholder engagement**, how stakeholders will be identified and engaged throughout (see Chapter 26: Stakeholder engagement)
- **communications**, the information that will be shared with stakeholders and how (see Chapter 27: Communications)
- **verification and validation**, how the solution will be checked against the specification and confirmed as fit for purpose (see Chapter 34: Verification and validation)
- **change and transition into use**, the activities needed to embed change and move the solution into use (see Chapter 35: Management of organisational and societal change, and Chapter 36: Transition into use)
- **use and disposal**, additional planning needed for operating and retiring the solution, for example, ongoing product and service management, asset management and disposal (see Chapter 37: Use and disposal)

16.5 Who manages planning in project delivery?

Planning is a specialist competence within project delivery and requires careful management and tight control. Accountability and responsibility for planning activities should be clearly defined from the outset within the governance and management framework and reviewed as planning develops.

At portfolio level, the **portfolio director** is the ultimate owner of the portfolio plan, alongside the portfolio's vision and strategy. The portfolio manager is accountable to the portfolio director for planning and managing the portfolio as a whole, ensuring that its work components are sufficient to meet the portfolio's objectives.

In a programme or project, the **senior responsible owner** is the ultimate owner of the delivery plan, alongside the business case. The **programme or project manager** is accountable to the senior responsible owner for planning the work needed to deliver the business case, and for monitoring and controlling the plan on an ongoing basis. **Work package** or **team managers** are accountable to the project manager or a higher level work package or team manager for planning the work needed to deliver the work plan for the work package and for managing the plan on an ongoing basis.

Depending on the scale of the work, there could be a dedicated **planner** or **planning team**, reporting to the programme or project manager or to a dedicated **planning manager**, with responsibility for developing and maintaining the integrated plan. Work package managers

and others, for example finance and human resource managers, commercial specialists and economists should also contribute to planning.

More detail on planning roles and competences can be found in the *Project delivery capability framework*.

16.6 How to plan

16.6.1 What to consider

16.6.1.1 Tailoring the approach

The approach to planning and the detail needed to monitor and control (see Chapter 17: Controlling) effectively should be tailored to suit the nature of the work being planned. Large portfolios, programmes and projects, particularly with dispersed planning teams, need to have more developed procedures, tools and support than simpler ones.

Often work packages are planned by suppliers. It is unlikely that those working at a higher level would have direct access to a supplier's planning systems and so it is important to specify what data is needed, how it is to be delivered, how often it is updated and how current it should be, so that the relevant information can be considered when planning, monitoring and controlling the delivery plan.

Planning often includes multiple documents developed over time, sometimes in different formats and at different levels of detail. Their format and relationship should reflect the nature of the work and enable them to be managed as an integrated product or set of products.

16.6.1.2 Planning portfolios: cyclical planning

Portfolio planning is usually cyclical, aligned to a spending review or the annual planning cycle.

Portfolio planning rarely starts from scratch, unless it is an entirely new portfolio. Typically, a portfolio plan is built up from existing programme and project plans, making provision for risk and contingency on a cross-portfolio basis.

Plans are assessed in terms of what they are required to deliver against organisational strategic objectives and also against agreed or expected constraints, for example time, cost and resources and risk. When shortfalls are identified against objectives, or constraints exceeded, changes are proposed, either to reduce or increase planned activity, usually involving some form of formal prioritisation exercise.

Portfolio plans cover a range of activities. They are developed only to the level of detail needed to support decisions on priorities and monitor portfolio performance. This includes decisions to intervene, for example if a programme or project goes out of agreed

tolerances, such as on cost, schedule, risk, resource use or benefits.

Once approved, the portfolio plan is baselined.

The Project delivery glossary defines a **baseline** as:

> A reference basis for comparison against which performance is monitored and controlled.

Subsequent changes are managed through change control until the next planning review.

Plans should be kept updated as detailed planning progresses at programme and project level. They should also be reviewed when there is new information or assumptions change. Portfolio plans should be reviewed regularly, at least annually and sometimes quarterly. This may be aligned to the fiscal cycle and the organisation's financial management cycles.

For more information on portfolio planning see Part C: Managing portfolios.

16.6.1.3 Planning programmes and projects: progressive planning

Planning programmes and projects is more linear because of the need to deliver policy-driven outputs and outcomes within spending cycles. Programme and project plans should be developed progressively through the early phases of the work. Decisions need to be made on how best to organise the work into phases and the delivery approach to be adopted in each phase (for example, predictive, iterative, incremental, adaptive, or combined), so that planning is structured accordingly.

See Chapter 10: Tailoring to the nature and context of the work and Chapter 14: Programme and project life cycles.

In the early phases, a delivery plan might be based on uncertain information. It should reflect this uncertainty, for example by using probability-based estimates for time, cost, resourcing and benefits. These are best expressed as ranges, with appropriate provision for risk. As delivery options are explored, activities, costs and resource needs are identified, and decisions made, planning can become more detailed.

Even when plans firm up, planning is rarely exact and needs to provide for known and emerging threats and opportunities. This might mean setting agreed tolerances within the plan or building in float to protect critical milestones. Where a high degree of uncertainty or volatility is expected, phasing and incremental delivery can help manage this while keeping the work moving forward (see Chapter 14: Programme and project life cycles).

Plans should be based on robust, evidence-based estimates, fully aligned to the schedule, and factoring in risk, contingency and optimism bias. This should be in line with the *Green Book*, *Cost estimating guidance* and *Best practice in benchmarking.*

Once approved, a plan should be baselined, with subsequent changes managed through change control (see 16.6.3.8 on approving, baselining and maintaining the plan).

Further information is also set out in Chapter 19: Benefits management and Chapter 29: Finance.

16.6.1.4 Taking account of risk

Understanding risk is an integral part of planning, as the aim is not only to produce an achievable plan but one which adequately considers risk appetite and optimises risk. A range of risk-based planning and estimation tools and techniques can be used (see Chapter 20: Risk management) and further information available in the *Green Book*, *Orange Book* and in the *Cost estimating guidance*.

A strategy for managing risks on an individual and aggregate level should be developed. This strategy should be considered within the delivery strategy and plan (see Chapter 20: Risk management). These choices need to adequately factor in and adjust for the risks associated with significant decisions, for example around procurement, verification, integration, transition into use, organisational and societal change and validation (see the relevant chapters in Part E: Planning and control and Part F: Solution delivery).

16.6.1.5 Ensuring traceability

Planning should provide a clear line of sight from the objectives of a portfolio, programme or project through to outcomes and outputs, and the solution chosen to deliver them. Planning documentation should be traceable to the parts of the solution, and from there to outputs and outcomes. Once approved, the plan should be managed under change control so that it is clear what each work package is delivering, who is accountable, where any work is delivered externally, for example as part of a contract package, and what (if any) contract package the work is included in.

For more information see Chapter 23: Traceability management.

16.6.2 Preparing for planning

16.6.2.1 Define the planning framework

Before starting to plan, it is important to define the planning approach to be used. This should match the nature, scale and complexity of the portfolio, programme or project, and the expected delivery approach, for example predictive or iterative delivery.

Planning in government should also take account of central government and organisational requirements, particularly in relation to spending reviews, annual business planning and investment. The *Green Book* and its supporting guidance set out requirements for investment appraisal and business case development which apply to all programmes and projects involving significant central government expenditure. Planning should also follow

guidance on analysis and evaluation set out in *Government Functional Standard for Analysis*, and in the *Aqua Book* and the *Magenta Book*.

In defining the planning approach, it is also important to consider how planning is organised: what planning activities are needed and when, who carries them out, and how the integrated plan and other planning products are to be structured, managed and stored.

A range of planning tools are available to support planning, ranging from widely available project delivery planning software to specialised integrated planning, scheduling and cost management solutions. Planning can be resource-intensive, and planning tools can therefore be useful, particularly in large scale and complex work, for example in major infrastructure and defence projects.

16.6.2.2 Choose the level of the plan

Planning is often conducted at different levels, starting with the high-level plan, and then developing more detailed work plans for different work packages, with activities repeated at different levels. Typically, the levels are:

- **level 1**, an end-to-end 'executive summary' view on a single page
- **level 2**, a more detailed 'management summary', broken down into major work components, and used for higher level management reporting
- **level 3**, a view of activities at work component level, used to co-ordinate and manage activities within and across work packages, typically bringing together detailed views of delivery through work plans (**level 4**), and in large or complex projects supported by level 5 plans to manage technical delivery

Portfolio plans also follow this approach but are rarely developed below level 3, relying on the more detailed programmes and projects plans: see Part C: Managing portfolios.

16.6.2.3 Consider requirements for consultation, assurance and approval

Planning is a collaborative activity and involves input from a range of people within the team and beyond it, including stakeholders, suppliers and others who may need to be consulted or informed. Internal and/or external assurance of plans, and scrutiny as part of investment or business case approvals, are also normally required.

Identifying formal consultation and other statutory planning requirements early is critical, as they need to be factored into planning and can impact significantly on time, costs, resources and risk profile, particularly if consultation or planning approvals are potentially contentious. Requirements vary but typical examples are:

- **projects involving building, engineering or changes in land use** might need formal planning permission under national or local statutory planning requirements

- **major infrastructure projects** might require statutory legislation, preceded by regulatory impact assessment and public consultation, to secure parliamentary approval to proceed
- **programmes and projects involving significant organisational or business change** can require formal consultation with employees and representative bodies

Regulatory and other formal impact assessment, and associated consultation requirements, should have been considered as part of initial policy development, together with obligations arising from the public sector equality duty (see Chapter 2: Policy and evaluation). However, further impact assessment and formal consultation might be needed as plans develop or as a condition of approval. Planners should therefore check what has been carried out previously, what else is needed and ensure that all requirements have been met or are included in plans. Further information on impact assessment is set out in the *Green Book*.

Assurance and approval requirements should be set out in an integrated assurance and approval plan (IAAP), to enable the planning, co-ordination and provision of assurance activities and approval points throughout the life cycle (see 13.4.5 on programme and project assurance).

Government and Departmental Major Projects Portfolios and integrated assurance and approvals plans

Programmes and projects in the Government or Departmental Major Projects Portfolios are required to have an agreed *Integrated assurance and approvals plan* by HM Treasury and the National Infrastructure and Service Transformation Authority as part of HM Treasury's *Treasury approval process for programmes and projects*.

16.6.3 Key planning activities

16.6.3.1 Overview

Planning involves a series of related activities, as shown in Figure 16.2 and considered below. These may be sequential or iterative, depending on the nature of the portfolio, programme or project.

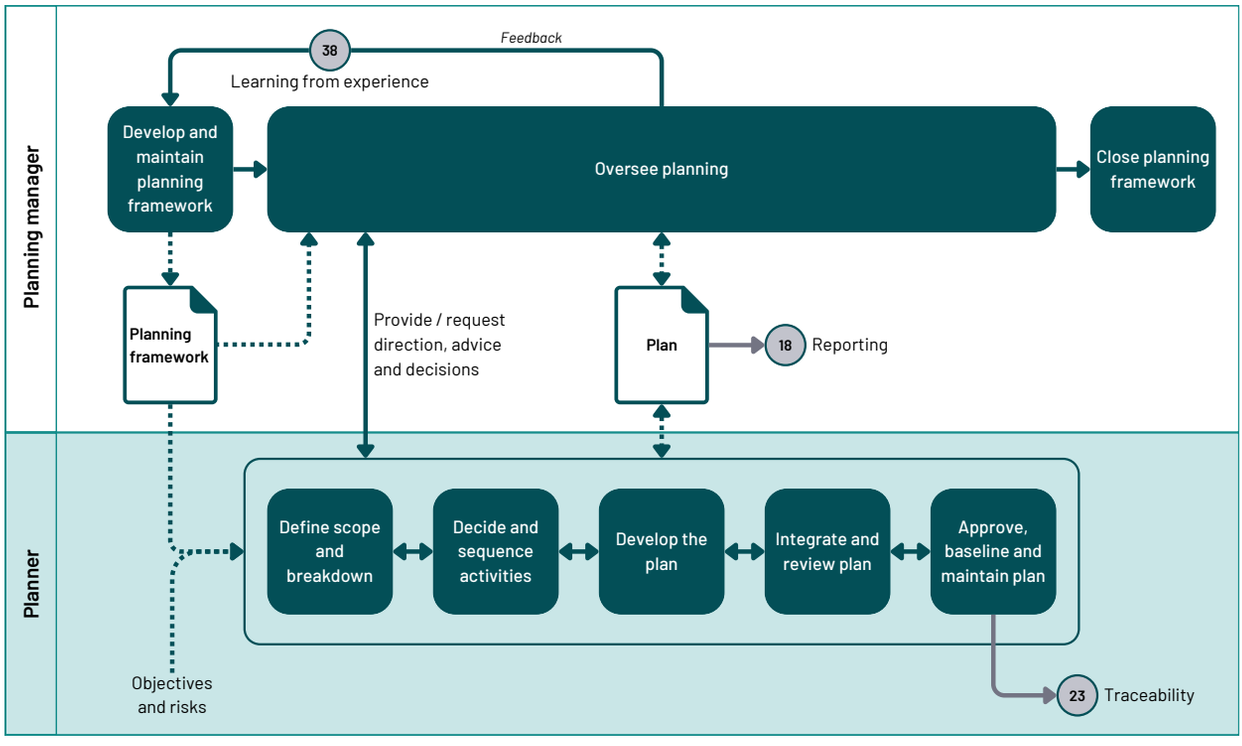


Figure 16.2 Overview of key planning activities and their primary relationships

16.6.3.2 Develop and maintain the planning framework

The approach to planning should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 16.6.2.1 on preparing to plan. The framework should be maintained to address relevant feedback from its use.

16.6.3.3 Oversee planning

The planning manager oversees the development of the plan which should normally comprise the activities below. They should maintain an overall view of planning, its wider context and prevailing risks and issues, and ensure that it reflects current reality and both current and emerging risks. They should also ensure that the various elements of the plan are mutually consistent and that the plan reflects both the higher and lower-level plans. For example, a project plan should reflect the work plans for each work package and also those for the portfolio or programme to which it contributes.

It is important to recognise, however, that the planning framework needs to be monitored to make sure it remains effective and appropriate as the work proceeds.

16.6.3.4 Define the scope and break it down into components

Planning should start from the objectives of the portfolio, programme or project. These can be expressed as a combination of benefits, outcomes and outputs, which together provide the basis for defining the scope. Understanding why a change or solution is needed, what the expected outcome is, who is expected to benefit and who else could be impacted is a core part of initial policy development. This should be the starting point for ensuring that the solution developed meets the objectives and that an achievable and realistic plan to deliver it is developed.

Understanding the context for the work, and what impact this could have on funding, timing and risk appetite, is critical in clarifying the constraints around the work in terms of resources, cost, schedule and risk. It also informs other elements of planning, for instance in identifying user needs and requirements (Chapter 31: User needs and requirements), developing stakeholder engagement and communications plans (Chapter 26: Stakeholder engagement and Chapter 27: Communications), and procurement (Chapter 25: Procurement and contract management).

Once the scope is understood, a **work breakdown structure** should be defined in broad terms initially, showing how each work component contributes to overall scope. It is then developed progressively, as activities are planned in more detail.

Accountability is defined for each component of the work breakdown structure so that work can be allocated. Expected duration, cost and resource requirements are added for each component, providing the starting point for schedule, cost and resource planning. From this, other breakdown structures can also be developed to provide different perspectives for planning, such as cost, resource,solution hierarchies (sometimes called a system hierarchy or product breakdown structure), epics and user stories. Whatever breakdown structures are used they should be traceable to the elements of the solution and so to the overall scope to be delivered (see Chapter 23: Traceability management).

A robust work breakdown structure, aligned to resource, time and cost estimates and delivery schedules, is essential for controlling cost and understanding performance. The structure should be retained and stored appropriately, both for review purposes and for potential future use in planning and managing similar work, thus saving significant cost and effort.

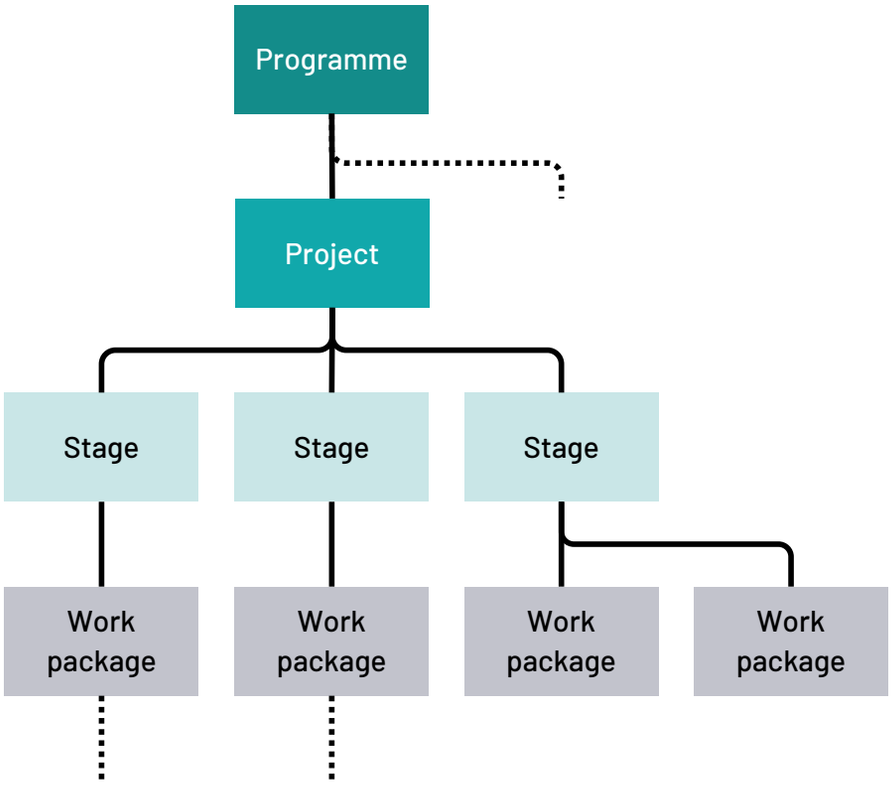


Figure 16.3 A typical work breakdown structure

16.6.3.5 Decide and sequence work activities

Once the work breakdown structure has been broadly defined, the specific activities required to deliver each work component are planned in more detail and added, enabling initial estimates of duration, cost and resource requirements to be refined. Dependencies between work components and activities, and with external factors (for example in different projects within a programme), risks and assumptions are also identified.

Work activities are then organised into a logical and manageable sequence of work packages, often shown in a network or precedence diagram, providing the basis for building the schedule and other elements of the integrated plan.

The organisation of work activities should be determined by the needs of the work and the associated constraints, and can be managed in different ways. For example:

- work activities can be organised sequentially, showing a sequence of activities based on an identified **critical path**, showing the shortest time to complete the work
- work activities can be organised by resources, an approach known as **critical chain**, showing how the available resources can be used to best effect

- work can also be organised on an iterative basis, using **time-boxing or fixed periods of activity (sprints)**, which can be sequential or in parallel, to develop the work within the overall constraints agreed

Ultimately, however, all work activities, however organised, are brought together into a consolidated view to provide the basis for developing the plan.

16.6.3.6 Develop the plan

Overview

Once the work activities have been identified, the different elements of the plan can be developed, usually starting with the schedule, and then adding estimates of resources and costs to deliver the work and other considerations, aligned to the schedule.

Develop the schedule

The schedule is developed from the proposed organisation and sequencing of activities and their estimated duration. It shows how long the overall scope of work and the activities within it are expected to take, and so whether delivery is feasible within identified schedule constraints. It also identifies when assurance and approvals are likely to be needed. Once approved, the schedule is baselined to become a critical control for managing the work, tracking progress and assessing performance.

A schedule should be shown in terms of public sector planning timescales, showing activities within or across financial years, usually broken down into shorter periods (quarters, months, weeks or days), depending on the work and granularity of planning.

In the early phases of developing the schedule, the schedule is high level and usually developed on a deterministic ('bottom up') basis, without considering risk and uncertainty. Benchmarking can also be used to provide a 'top down' view. At this point, however, timescales should be given as ranges rather than point estimates. As the schedule develops, probabilistic analysis should also be conducted, for example Monte Carlo or curve analysis, in order to test and refine the schedule.

By the time a plan is ready to be approved, the overall schedule should be robust and evidence-based. The plan should include critical milestones and, where appropriate, the critical path, critical chain, time-boxing or sprints proposed for delivery. It should also make appropriate provision for risk and contingency, and align fully to cost and resource plans.

More detailed activity schedules may be developed within each work package to manage and control delivery, but these should always be traceable back to, and within the tolerances agreed for, the approved and baselined schedule.

Identify the resources needed

The people capability and other resources required to carry out the work should be identified. Capability requirements should be estimated for each work activity, both in terms of competency (professional skills, both type and level) and capacity (how many people are needed). Other resource requirements to consider can include equipment, facilities or other considerations.

Resource planning should develop progressively, moving from initial estimates to granular planning linked to each work activity within the schedule. This is often conducted as part of wider organisational design planning for the work, which determines the organisational structures for delivering the work, including how resources can best be sourced, for example internally or using consultancy or an external delivery partner.

As for other elements of planning, resource plans need to be granular enough to enable work to be costed for the business case and to support the current phase or work; future phases can be planned in outline only. However, it is still important to consider likely needs over the life cycle and how best to resource them efficiently, even where delivery is planned to be iterative.

Planning should also consider how resources can be balanced and optimised across work activities (sometimes known as resource levelling), to avoid peaks and gaps in activities which mean people or other resources are over-stretched or under-used at different points through the life cycle. This could mean changing the sequencing of activities in the schedule, which is why schedule and resource planning need to be closely aligned. Planning should also identify when activities are completed and resources are no longer needed, so that they can be reallocated or moved on in an appropriate and considerate way.

Resource requirements can be estimated in hours or days, but should be set out on a full-time equivalent (FTE) basis, in work days aligned to the schedule, with costs per FTE identified so that they can be costed accordingly. When ready for approval, the integrated plan should include a robust, evidence-based resource plan, fully aligned to the schedule (sometimes referred to as a resource-loaded schedule), and making provision for risk and contingency.

See also Chapter 28: Resource management.

Determine benefits and costs

Determining benefits and costs is the final element of planning, informing investment approvals, evidencing social value and affordability, and organisational financial planning.

The total benefits arising from the work should be identified by work component, showing when they arise across the life cycle (including those arising during delivery).

The total costs for the work should be determined, broken down by work component, and allocated across the schedule to show when funding is needed.

Both benefits and costs should be presented by financial year, broken down as appropriate, and identified in terms of public sector expenditure funding categories and types of social cost and benefit. This is particularly important for any cash releasing benefits.

Categories for public sector expenditure funding are set by HMT's Budgeting framework, described in *Consolidated budgeting guidance* to support management of finance (see Chapter 29: Finance). Categories for social costs and benefits are set by the *Green Book*.

As for other planning, estimation of benefits and costs is progressive as planning becomes more detailed, and the time of approval should be based on robust, evidence-based estimates, fully aligned to the schedule, and factoring in risk, contingency and optimism bias in line with requirements set out in the *Green Book, Cost estimating guidance* and *Best practice in benchmarking* (see also Chapter 19: Benefits management and Chapter 29: Finance).

Develop other plan elements

While schedule, resourcing and cost are the most critical elements of planning, most work involves other elements of planning, for example, on procurement, communications and stakeholder management, covered elsewhere in Part E: Planning and control. These should follow the same principles as for other elements of planning, be fully aligned to the schedule and integrated with other planning elements as part of the overall plan ready for approval and baselining.

16.6.3.7 Integrate and review the plan

All elements of the plan, particularly the work breakdown structure, schedule, resource, cost and benefits plans, should be brought together and reviewed to ensure:

- all elements of the plan are fully aligned and integrated, evidence-based and robust
- achieving the objectives is viable within the constraints and risk appetite agreed

The review of the plan may be alongside or separate to the review of the investment case before submission for approval, and can involve wider internal or external assurance, particularly for larger and more complex work.

16.6.3.8 Approve, baseline and maintain the plan

Once the plan has been found acceptable to the reviewers, it should be submitted for approval to the appropriate higher-level decision makers. This is normally done in parallel with, or after, approval of the business case, as the plan cannot be baselined until business case approval has been given. If the plan does not appear sufficiently robust or viable to enable delivery of the business case, it should be reconsidered and either changes made to make it viable or a decision taken not to proceed.

Once approved, all elements of the plan are baselined and put into change control, with subsequent changes subject to strict change control and traceability requirements to ensure all parts of the plan remain in step. This should include supply chain plans where relevant.

Progress against the plan should be monitored and controlled (see Chapter 17: Controlling) and reported (see Chapter 18: Reporting). Plans should be reviewed and updated, taking account of progress and any changes in assumptions or estimates, especially before significant decision points, such as gates.

16.6.3.9 Close the planning framework

Once the programme or project has been completed, the planning framework should be closed and information archived in accordance with the sponsoring organisation's information retention policy.

16.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Treasury, *Aqua Book: guidance on producing quality analysis*
- HM Treasury, *Consolidated budgeting guidance: 2025-26*
- HM Treasury, *Green Book: UK government guidance on appraisal*
- HM Treasury, *Magenta Book: central Government guidance on evaluation*
- HM Treasury, *Orange Book: management of risk – principles and concepts*
- Infrastructure and Projects Authority, *Best practice in benchmarking*
- Infrastructure and Projects Authority, *Cost estimating guidance*

17. Controlling

17.1 Purpose of controlling the work

The purpose of controlling the work is to ensure that the outcomes are delivered and benefits realised within the constraints defined in the portfolio plan (for portfolios), business case (for programmes and projects) or work plan (for a work package).

17.2 Key points

- Collect the data needed to monitor and control the portfolio, programme or project, focus on information that is known to be useful.
- Don't forget to monitor what is happening external to the work; outside influences and changes in context need tracking alongside internal progress.
- Act on variances and deviations and change the plan if necessary.
- Verify the information used to track progress.
- Apply controls proportionately depending on the project delivery hierarchy.

17.3 Why control the work?

Work needs to be controlled; otherwise, the sponsoring body and, where relevant, the delivery body, the portfolio director and senior responsible owner cannot have confidence that their objectives are likely to be met, in terms of outcomes delivered and benefits realised.

Controlling work ensures:

- outcomes and benefits can be achieved
- funding is appropriately allocated and used
- the proposed solution can be delivered and is likely to fulfil its purpose
- stakeholders are being engaged effectively
- issues are addressed to keep the work on plan
- resources are used efficiently
- threats to the objectives are addressed
- opportunities are exploited, where appropriate

Control needs not only to be exercised in practice. It also needs be demonstrated, as part of accountability for use of public funding. *Managing public money* says 'acting within the authority of the minister(s) to whom they are responsible, the accounting officer shall ensure that the organisation, and any arm's length bodies it sponsors, operates effectively and to a high standard of probity'. This includes the management of an organisation's portfolios, programmes and projects.

In project delivery 'effective operation and probity' includes complying with the functional standards and developing and using a compliant governance and management framework. 'Controlling' is central to making sure that work is progressing as planned and that problems are addressed without undue delay. Defined working approaches, coupled with good control, are an essential aspect of assurance (see Chapter 4: Governance and management).

17.4 What is controlling?

The Project delivery glossary defines **control** as:

> Any action taken by management, the board and other parties to manage risk and increase the likelihood that established objectives and goals will be achieved.

Controlling is about taking preventative and corrective action to rectify identified variances to the plan and deviations from expected behaviour, and to respond to changes in the context of the work. Good control relies on the effective tracking of progress and monitoring outside influences in the wider organisation and beyond. Controlling is the activity where information produced in every practice in Part E: Planning and control and Part F: Solution delivery is collated, assessed and analysed at every level in the project delivery work breakdown hierarchy (see Figure E.2 Primary interactions between planning and control practices in the context of management and solution delivery practices).

Control should also be forward-looking, with the aim of prompting action to keep the work on course to meet the defined objectives, addressing issues, taking advantage of opportunities and reducing the impact of threats, whilst verifying what has already happened.

Central to controlling is the concept of tolerance. The Project delivery glossary defines **tolerance** as:

> The agreed deviation above and below a plan's baseline without escalation to the next level of management.

Figure 17.1 shows the control cycle which can be applied at every level in the project delivery hierarchy and to every practice in *The Teal Book*. Work is undertaken in accordance with the plan using the delivery approaches defined in the governance and

management framework. Progress is tracked using appropriate measures. The progress information is assessed and analysed and, if appropriate, collated into reports which may be periodic or by exception. Action is then taken to address any variances or problems which have been identified.

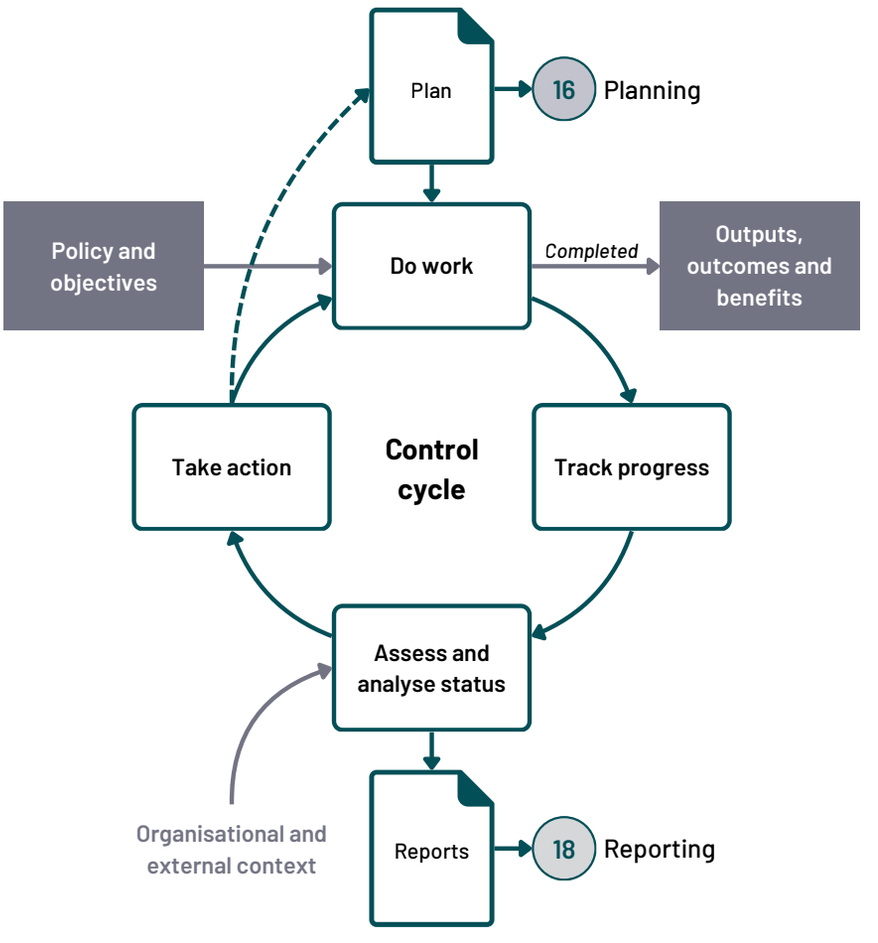


Figure 17.1 The control cycle

The frequency of the cycle should be both informal, with managers reacting to day-to-day circumstances, and also formal, for example synchronised with the reporting cycle. The further up the project delivery hierarchy, the more holistic and wide ranging the analysis should be. For example, when used at programme or portfolio level the additional perspectives needed can include:

- outside influences
- interdependencies among work components
- robustness of operation when the solution is being used

17.5 Who controls the work?

The **portfolio director**, for a portfolio, and the **senior responsible owner**, for a programme or project, is accountable for ensuring an effective control framework is in place and being used.

The **portfolio manager** has accountability for controlling work in a portfolio and the **programme or project manager** for a programme or project, respectively. A **work package manager** controls the work in their assigned work package. Controlling is a fundamental aspect of those roles (for descriptions of the roles, see Chapter 11: The governance and management of portfolios and Chapter 13: The governance and management of programmes and projects).

A single person cannot control everything that needs controlling except on the smallest work item. The work therefore often needs dividing up between work package managers and members of a support office in order to have adequate coverage.

Each level of the project delivery hierarchy should be controlled by its **controlling manager**: for example, a project manager controls a project. They are accountable to the **next higher-level controlling manager**, such as a programme manager, who oversees the lower level controlling manager, and controls their own work. Similarly, that higher-level controlling manager is accountable to the next higher-level controlling manager and so on, up the project delivery hierarchy.

17.6 How to control the work

17.6.1 What to consider when controlling the work

17.6.1.1 Understanding the appropriate control regime

Not all activities need the same level of control as, even with a large team, there is often not enough time or management resource to watch everything all the time, and it is not an efficient use of resources. It is therefore important to focus on those activities which are most important, and/or which present the greatest threat to achieving the objectives, such as:

- stakeholders' attitudes
- the delivery of the outputs within cost, schedule and quality constraints agreed
- the likelihood of the outcomes and benefits being realised

On a practical level this often means focusing on:

- activities on the critical path or in the critical chain
- deliverables expected from other teams or organisations

- work which is about to start soon
- activities which cost a lot, or take a long time
- activities which are difficult to measure progress on
- activities which have a degree of uncertainty in terms of deliverables, schedule or cost

The focus can change as the work moves through its phases or when identified risks need watching with greater vigilance.

17.6.1.2 Building the plan to facilitate control

Having an achievable and logical plan is fundamental to effective control (see Figure 17.1). If the plan does not make sense in terms of logic and realism, controlling the work can be impossible. It is also important that the plan is baselined, otherwise terms such as late, early or over budget have no meaning. This does not necessarily mean the plan has to be highly detailed. The plan only needs to be detailed enough for measures of achievement to have real meaning.

17.6.1.3 Learning how to recognise the important information

Team members can be drawn from many business areas, from the contingent work force or from suppliers. They might have different ways of working in their 'home' business areas. They might also use different terminology. Whilst having a good governance and management framework and induction on using it helps, the level of experience of team members can vary. The practices in *The Teal Book* are in separate chapters, but in day-to-day work they are often inseparable; and information does not always come with a label attached, especially if people use different terms. For example, an issue might not be introduced as an 'issue' in a conversation, email or report; it might be a sentence in an email, a line in a spreadsheet or a verbal comment made in passing. It is often up to the manager to recognise and synthesise the information, make sense of it and treat it accordingly.

17.6.1.4 Recognising instability

Progress information should not only be looked at solely in relation to its 'date' but also in relation to trends, including in the supply chain. This is particularly important in complex programmes and projects where multiple suppliers are involved. Is progress accelerating or slowing? Are costs escalating? Are the attitudes of stakeholders swinging away or becoming more positive? Such trends can prompt risks or issues to be raised and action taken. Similarly, the data might have no pattern and yet be outside expected or acceptable limits. This can represent instability, which again needs addressing. In the early phases, one of the more important indicators is how stable the user needs and requirements are. Regardless of the delivery approach taken, user needs and requirements need to have reached a degree of stability before follow-on activities can be started with confidence; for example, when producing a high-level design or signing a contract.

17.6.1.5 Choosing an appropriate control cycle

The choice of frequency for the formal control cycle is often tied to the reporting cycle (see Chapter 18: Reporting), but it does not have to be. For example, a report from one level of the project delivery hierarchy to another could be monthly, but the manager could hold weekly progress meetings with the team. The frequency can be different for every component in the hierarchy, with faster-moving or riskier work needing a shorter control cycle. Some delivery approaches define the frequency; for example, the Scrum method has a daily frequency in the form of a 'daily stand-up'. Generally, the further down the hierarchy, the more frequent the control cycle. At a limit, if information on work is captured as it happens and available 'live', such as in finance systems, the requisite information (or part of it) can be drawn on as and when needed. It can also be continuously analysed using automated routines, such as in some software testing approaches. Greater use of reliable artificial intelligence applications is likely to prompt faster, real-time analysis of available data and lead to the use of the control cycle on a continuous basis, with exceptions being flagged when relevant.

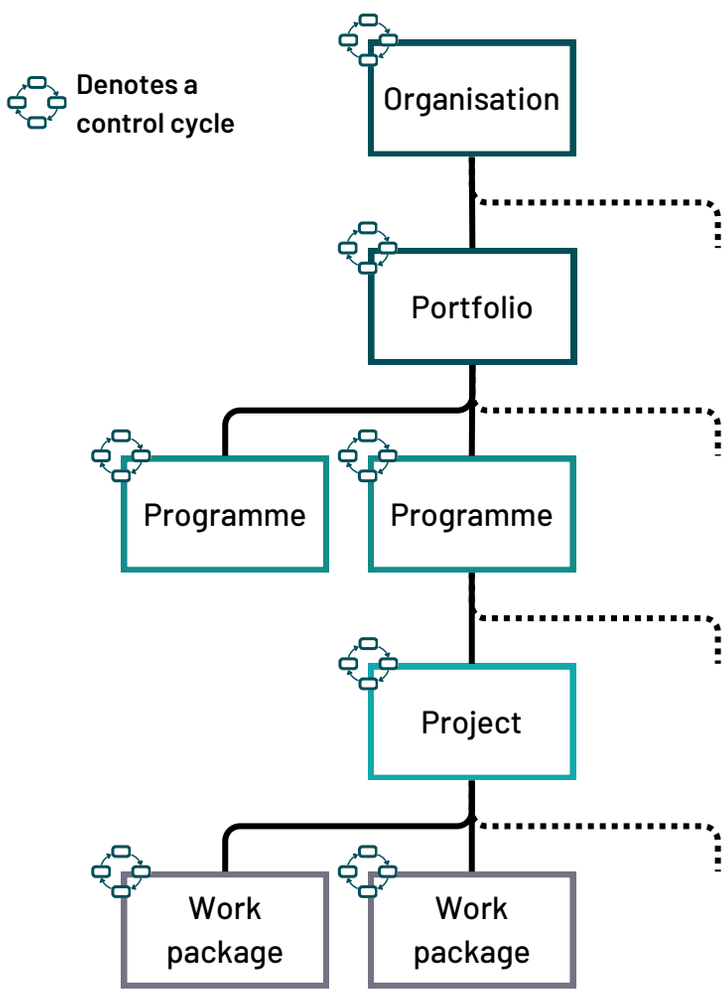


Figure 17.2 The control cycle can be different for each work component

17.6.1.6 Choosing methods to assess and analyse the status of the work

The assessment and analysis of the work can range from very simple to extensive (as in formal evaluations, see Chapter 2: Policy and evaluation). The methods used need to reflect the work being done as well as why the information is needed. The overall aim, however, is to choose methods that highlight variances from plans and deviations from expected behaviour. Presentation is therefore important as poorly analysed and presented information can hide real problems. For example, if costs are less than planned for a particular date it doesn't necessarily mean the work is behind schedule. Figure 17.3 shows an example of a method known as earned value management, combining views of schedule, cost and scope to show that while an underspend is partially due to work being late, the work is also costing less than planned. If the work is going exactly to plan, the planned, actual and earned value lines would coincide.

Graphical presentation, such as in Figure 17.3, is a good way to show trends. Figure 17.4 shows more examples relating to schedule. The burn-down chart is often used, notably in software development to track how many function points are left to be completed as opposed to the number which were planned to have been completed at a point in time. The units can be for any measure, such as miles of fibre rollout, volume of concrete, percentage of activities digitised or user satisfaction. The Gantt chart shows milestones and activities plotted against time. In this case a comparison between the planned dates and actual/forecast dates is immediately apparent. This example shows the gates and stage in the reference project life cycle but can be used at any level of detail in the project delivery work breakdown hierarchy, from portfolio to activity within a work package.

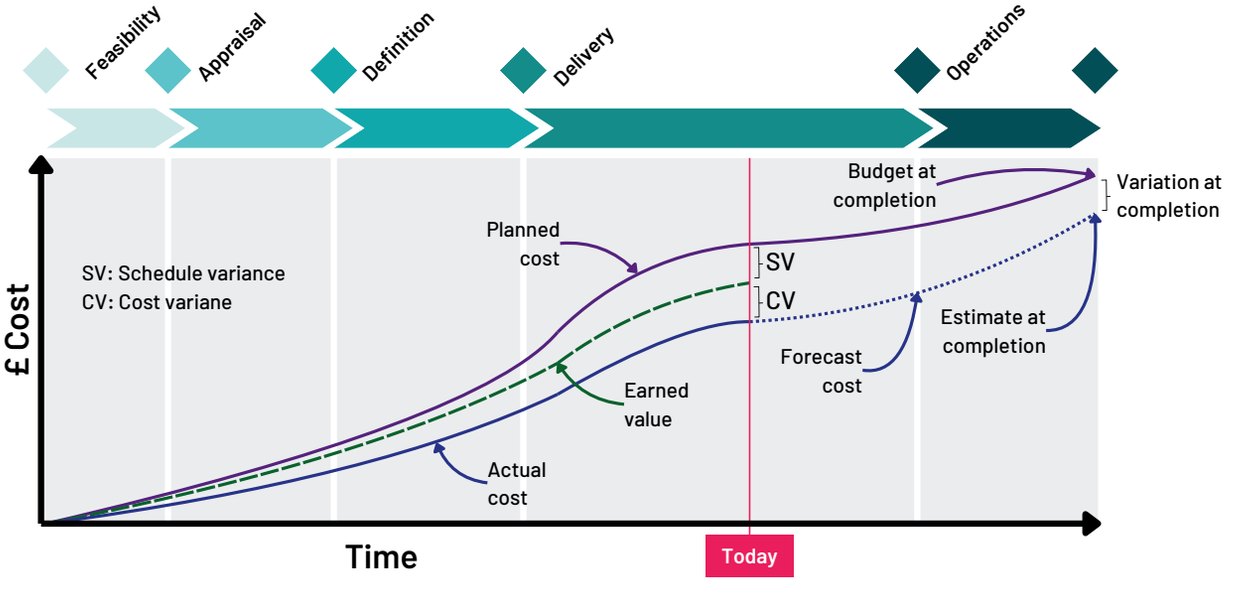


Figure 17.3 Example of earned value management used on a project

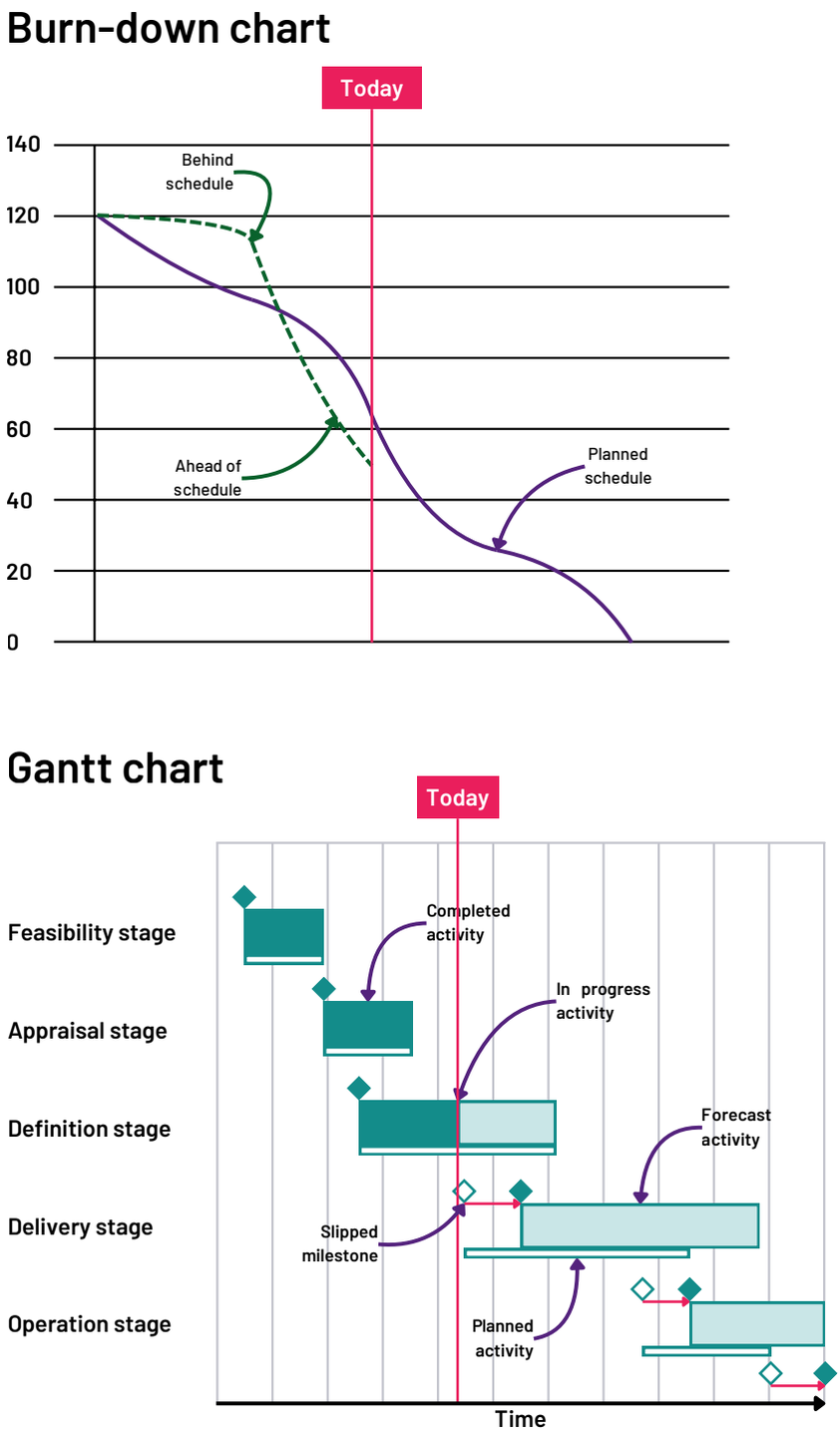


Figure 17.4 Examples of graphical representation

Further information on methods to support assessment and analysis is provided in guidance for infrastructure projects on earned value management and project control.

17.6.1.7 Verifying the information

Check. Does the information presented make sense? Has it changed since the last report? When was it actually updated? Don't just rely on the formal information channels. Talk to people, listen to people. Gauge whether what they say really reflects what is being reported. Look at physical progress to see if it reflects the information provided. Be visible and available for people to talk to informally; don't wait for them to come to you.

17.6.2 Preparing to control the work

17.6.2.1 Define the control framework

Before starting to control the work, it is important to define the approach to be used. This should match the nature, scale and complexity of the portfolio, programme or project, and the expected delivery approach.

Controlling in government should also take account of central government and organisational requirements, particularly in relation to spending reviews, annual business planning, and department specific HM Treasury delegated limits and with the wider approach to functional controls set out in the department's memorandum of understanding with HM Treasury. The *Green Book* and its supporting guidance set out requirements for investment appraisal and business case development which apply to all programmes and projects involving central government expenditure.

In defining the approach to controlling, it is also important to consider how control is organised: what activities are needed and when, who carries them out, and how the outputs of these activities and other control products are to be structured, managed and stored (see 17.6.2 on preparing to control the work for more detail) explore this.

17.6.2.2 Determine what needs to be controlled

Not everything needs to be fully controlled, all the time. Decide, based on the current life cycle phase, type of activities being worked on and the prevailing risks, what needs to be controlled and therefore the information that needs to be gathered. This can change through the life cycle. For example, in programme or project requirements are likely to be more prominent at the start but activities in later phases, such as data migration or embedding organisational changes, would not need monitoring until later. The control information should result directly from doing the work wherever possible, as this improves accuracy and reduces additional work for the team. Do not collect information on the basis that it might be useful; focus on information that is known to be useful.

17.6.2.3 Understand who needs the control information and why

Information provided by work package managers needs to be collated at project level by the project manager and passed up the project delivery hierarchy to programme, portfolio and up to organisational levels. It is therefore necessary to understand not only the issues

facing those providing the information needed for effective control at one level in the hierarchy, but also what information the managers need at the higher levels.

17.6.2.4 Decide what measurement units to use

Having understood who needs information and why, choose the appropriate units for measuring the progress and status of the work. Make sure the units are explicit. For example, costs measured as cashflow are different to those measured for statutory financial reporting. The units should relate directly to the work where possible. However, proxy measures might need to be used if direct measures cost too much, take too long to collect, or are burdensome. Timely information is necessary if prompt action is to be taken. Tracking measures should be the same as used for planning to ensure they are comparable. Take care not to choose measures to micro-manage the lower-level managers; this can be demotivating and lead to management burn-out.

17.6.2.5 Determine the frequency of the control cycle

Having understood what needs controlling, determine how frequently the progress and status information needs to be collected for analysis. Continuously? Daily? Weekly? This can change through the life cycle of the work as well as by component in the project delivery hierarchy (see 17.6.1.5 on choosing an appropriate control cycle and Figure 17.2). For portfolios, the information needed, and frequency is likely to be more stable as it is drawing on information from its work components. It is also more likely to be based on financial years rather than the life cycle, as in the case of a programme or project.

17.6.2.6 Decide how to present the progress and status data

It is important to spot variances from the plan and deviations from expected performance early so that corrective or preventative action can be taken. Choose the way progress and status information is presented which makes it easy to identify the problem areas. Often the same presentation can be used for both monitoring and reporting, although monitoring data can sometimes need simplifying for reporting purposes.

17.6.3 Key activities in controlling the work

17.6.3.1 Overview

The activities for controlling are summarised in Figure 17.5. These are iterative, with similar activities repeated through the project delivery hierarchy, and can be applied to every practice in *The Teal Book*.

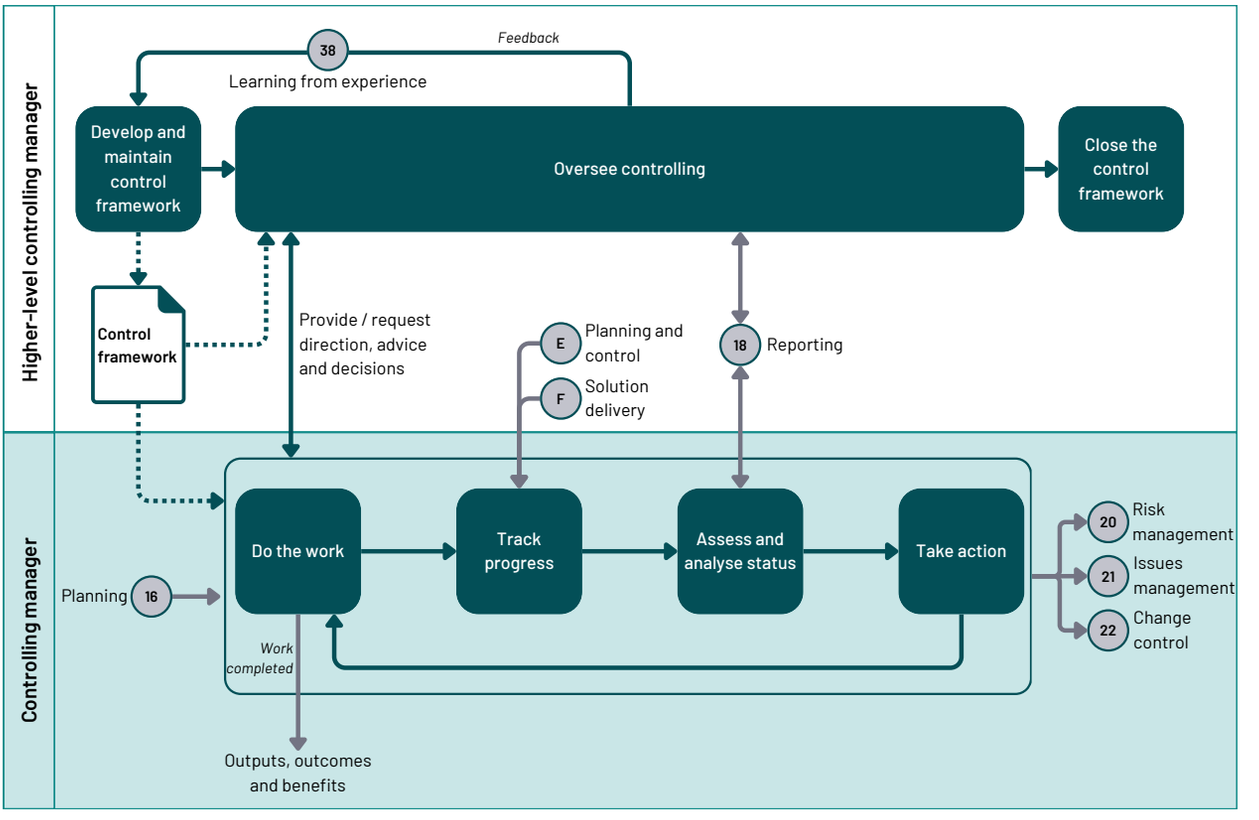


Figure 17.5 Overview of the key controlling activities and their primary relationships

17.6.3.2 Develop and maintain the control framework

The approach to controlling the work should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in section 17.6.2 on preparing to control the work.

The framework should be maintained to address relevant feedback from its use. It is not important whether the higher-level controlling manager or the controlling manager develops the framework as long as the arrangements are appropriate and proportionate to the work being undertaken.

17.6.3.3 Oversee controlling

The higher-level controlling manager should ensure they are receiving the information they need, whether informally, as reports or by drawing them off management information systems when needed. They are likely to be dealing with information relating to a large number of work components and should make sure that the information is consistent and usable. They should look for overall trends both with individual work components but also across work components.

It is essential to maintain an overall view of how effective the control activities are at reflecting the progress being made on the work.

17.6.3.4 Do the work

Work should be undertaken in accordance with the plans and using the delivery approaches and controls defined in the governance and management framework.

17.6.3.5 Track progress

The progress of the work should be tracked using the measures and frequencies prescribed in the control framework, ensuring that the information is timely and reflects observable progress where physically apparent. Information should be drawn on from each practice and verified to ensure it is sufficient for a reliable view to be taken regarding the current status of the work.

17.6.3.6 Assess and analyse status

The status of the work should be assessed and analysed, using the defined approaches. Material variances and deviations, and inconsistencies in information should be noted together with understanding the reasons for them, for example using root cause analysis techniques. Update the risk and issues register, as necessary. This information can be used to populate formal reports (see Chapter 18: Reporting). The *Magenta Book*, the *Government Functional Standard for Analysis* and the *Aqua Book* include or refer to a range of analysis methods for different situations.

17.6.3.7 Take action

After gaining an understanding of the situation, decide what action, if any, needs to be taken. This can include responding to a risk or issue or submitting a change request. Informal actions can also be taken and noted, say on an action list for the work component.

17.6.3.8 Close the control framework

Once the control framework is no longer needed it should be closed. For a portfolio, this is unlikely unless the portfolio ceases to service its purpose. Closure of the framework can be progressive throughout a programme or project as each work component comes to an end.

17.7 Further reading

- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 010: Analysis*
- HM Treasury, *Aqua Book: guidance on producing quality analysis*
- HM Treasury, *Magenta Book: central government guidance on evaluation*

18. Reporting

18.1 Purpose of reporting

The purpose of reporting is to ensure the management team(s) and interested parties are aware of the current status and outlook of the work relative to the baselined plan, particularly with respect to the likelihood of achieving the objectives. Reports can also act as a prompt for requesting advice, direction and decisions and for prompting preventative and corrective action to be taken.

18.2 Key points

- Reports should be timely, realistic and meet the needs of the recipients.
- Do not forget to report on what is happening external to the work.
- Check the information that's been provided is correct.
- Make requests for advice, direction and decisions explicit.
- As a recipient of a report, do not ask for what you don't need.

18.3 Why report on the work?

The portfolio director and senior responsible owner have prime accountability for their portfolio, programme or project, respectively. Reporting is a vital aspect of assurance, when they are routinely kept up to date on the status and outlook of the work they are directing. Their boards have similar needs.

Just as a portfolio director and a senior responsible owner need to understand what is happening in order to fulfil their duties, so each team below them relies on the work of others if they are to perform their own roles effectively; they need to be aware of anything which could potentially disrupt or enhance their work.

A good reporting framework can:

- **improve decision-making**, data-driven reports with clear insights into progress, highlighting areas that are on track and those facing challenges enable managers to make adjustments to increase the likelihood of meeting their objectives
- **emphasise accountability**, as each manager needs to justify their achievements and progress against and towards their commitments

- **promote alignment**, by keeping everyone informed, from team members to senior management; this shared understanding helps to ensure everyone is aligned with goals and priorities
- **help resolve issues**, as often an issue can be resolved by a different team to one which appears to 'own the problem'
- **encourage learning**, by providing valuable insights to improve working methods

18.4 What is reporting?

Reporting is how information flows among portfolio, programme, project and work package teams. It focuses on the status of work, analysis of variances and forecasts of future performance.

Reporting is different from communications (see Chapter 27: Communications) and stakeholder engagemement (see Chapter 26: Stakeholder engagement). Reporting focuses on providing the status of the work while stakeholder engagement focuses on ensuring the needs and concerns of stakeholders are addressed appropriately and communication on ensuring interactions with stakeholders are effective.

Good reporting relies on good control (see Chapter 17: Controlling). A report should be derived from the analysis and insight gained from controlling the work. Reporting should not replace direct conversations, meetings and other interactions needed to manage teams and control the work.

Figure 18.1 shows reporting in the context of the control cycle and can be applied at every level in the project delivery hierarchy. Work should be carried out in accordance with the plan, using the delivery approaches defined in the governance and management framework, with progress tracked using appropriate measures.



Figure 18.1 Reporting in the context of the control cycle

The progress information is assessed and analysed and, where appropriate, collated into reports which, as shown in Figure 18.2, may be:

- actively sent by the reporting manager to the recipients, whether periodically or by exception
- drawn by the recipients on demand from a data repository

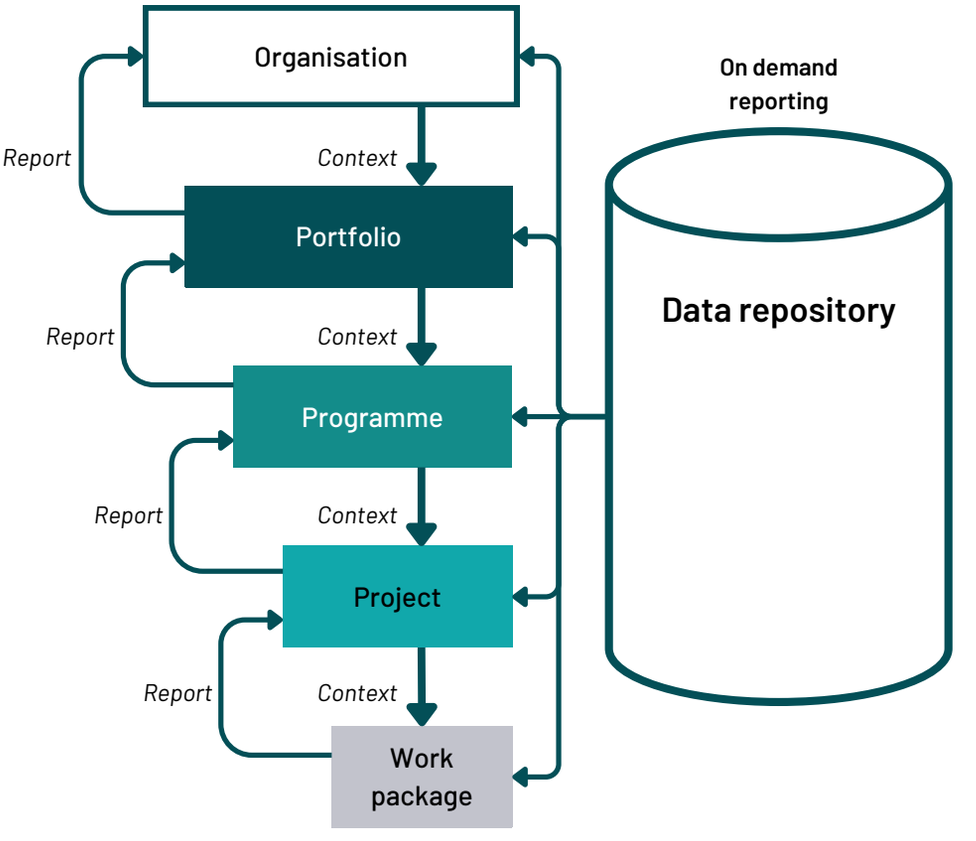


Figure 18.2 Example of active and on-demand reporting in the project delivery hierarchy

Action should then be taken to address any variances or problems. For this reason, reporting should be forward-looking. The aim is to prompt action to keep work on course to meet the defined objectives, while taking advantage of opportunities and reducing the impact of threats.

Reports should meet the needs of those receiving them. Each report format should be designed with the recipients in mind. Those needs differ across the project delivery hierarchy as each manager at each level focuses on their overall objectives. Lower levels tend to focus on the detail of specific deliverables, outputs and outcomes. Middle and higher levels focus more on the interdependencies and the achievement of outcomes and benefits. The higher up the hierarchy, the more outcome- and benefit-focused, holistic and wide ranging the reporting should be.

The frequency of the active reporting cycle should be both informal with managers reacting to day-to-day circumstances and also formal, usually with defined time periods, usually synchronised with the control cycle and often feeding into wider organisational reporting.

18.5 Who reports to whom?

18.5.1 Overview

So that those involved in the work can understand the part they play in the team effort to meet the overall objectives, reporting, as shown in Figure 18.3, as an example for a project, needs to be:

- upward in the project delivery hierarchy to the next higher level (see 18.5.2 on upward reporting)
- laterally across the project delivery hierarchy to other teams (see 18.5.3 on lateral reporting)
- down the project delivery hierarchy, for example reporting to the manager's own team (see 18.5.4 on downward reporting)

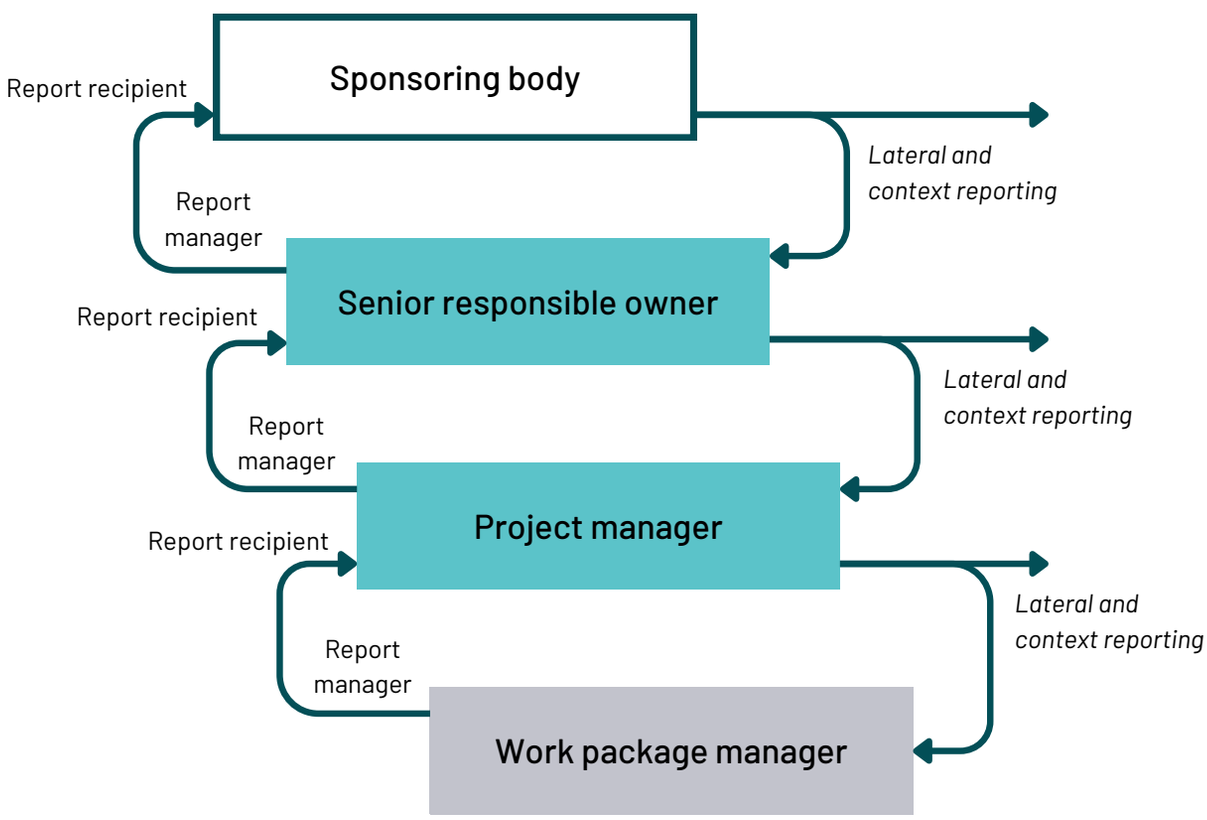


Figure 18.3 Example of project reporting up, across and down the project delivery hierarchy

18.5.2 Upward reporting

Every project delivery management role has a reporting responsibility upwards through the project delivery hierarchy. This is what most people think of when 'reports' are mentioned. It tends to be the most formal aspect of reporting.

The **portfolio director** has overall accountability for reporting the status of a portfolio to the wider organisation and, where necessary, external bodies such as regulators. This report is usually the responsibility of the **portfolio manager** on their behalf, with the draft of that report fulfilling most of the portfolio director's information needs; additional information can be included in a supplementary report, if necessary.

A similar approach can be taken for programme and project reporting. The **senior responsible owner** has overall accountability for reporting to the next higher level (such as to programme or portfolio level) with the report generally drafted, on their behalf, by the **programme manager**, **project manager** or **manager of other related work**, as appropriate.

A **work package manager** should report on their work to the respective project manager or manager of other work.

18.5.3 Lateral reporting

While each manager at each level receives reports from the leads at the next lower level, such information does not generally fulfil all their needs. Managers also need to be aware of deliverables they are relying on from other teams and understand the risks and issues other teams are facing. The formality of this reporting tends to rely on the proximity of the teams. If closely located or meeting frequently, such reporting can be less formal.

18.5.4 Downward reporting

Likewise, each manager needs to understand, from the next higher level, the context of the work they are managing, if they are to make reliable decisions and not accidentally cross the decisions of others. This requires each reporting manager to keep their peers and their team members informed. This reporting tends to be less formal and can be, for example, a standing item at team meetings.

18.5.5 Authoring and support

In many cases a single person is not able to collate all the information needed and so the above roles can be supported by people from a **support office**. Support office staff often have a responsibility for some aspect of controlling the work and so have direct access to the information needed. As reporting can be designed to work in many ways, it is convenient to think in terms of a **reporting manager**, for example, a project manager for a project and a **report author**, who drafts the report on their behalf. A manager who drafts their own report is also the report author.

18.6 How to report on the work

18.6.1 What to consider when reporting on the work

18.6.1.1 Active and on-demand reporting

As described in 18.4 on what is reporting, reporting can be active, when a manager sends a report to someone, or it can be on-demand, when a manager draws the information they need from a data repository.

The advantage of active reporting is that the reporting manager can explicitly raise the points they believe the recipients need. The disadvantage is that it can take time for reports to pass up through the project delivery hierarchy and therefore the information can become out of date. When working in a matrix, focus on coaching people to write good reports: repeated editing of reports as they pass up the line increases the work and time spent on reporting activities, and can introduce delays and inaccuracies.

The advantage of on-demand reporting is that it is instantaneous, but it does rely on the repository being relatively up-to-date and on the recipient wanting to, and being able to, extract what they need. Each set of information needs to be time-stamped so the recipient knows how current the information is. Where it fulfils the need, on-demand reporting avoids having a formal reporting cycle and removes the time lag associated with reporting up the delivery hierarchy. Chapter 24: Information and data management gives more detail on information management.

In practice, reporting is likely to be a mix of active reporting and on-demand reporting. For example, a periodic report could highlight the few risks that the manager wants to draw attention to, which might not necessarily be the most important overall. Hyperlinks could however be provided to enable the recipient of the report to access a live risk register with the full details on all the current risks (see Figure 18.4).

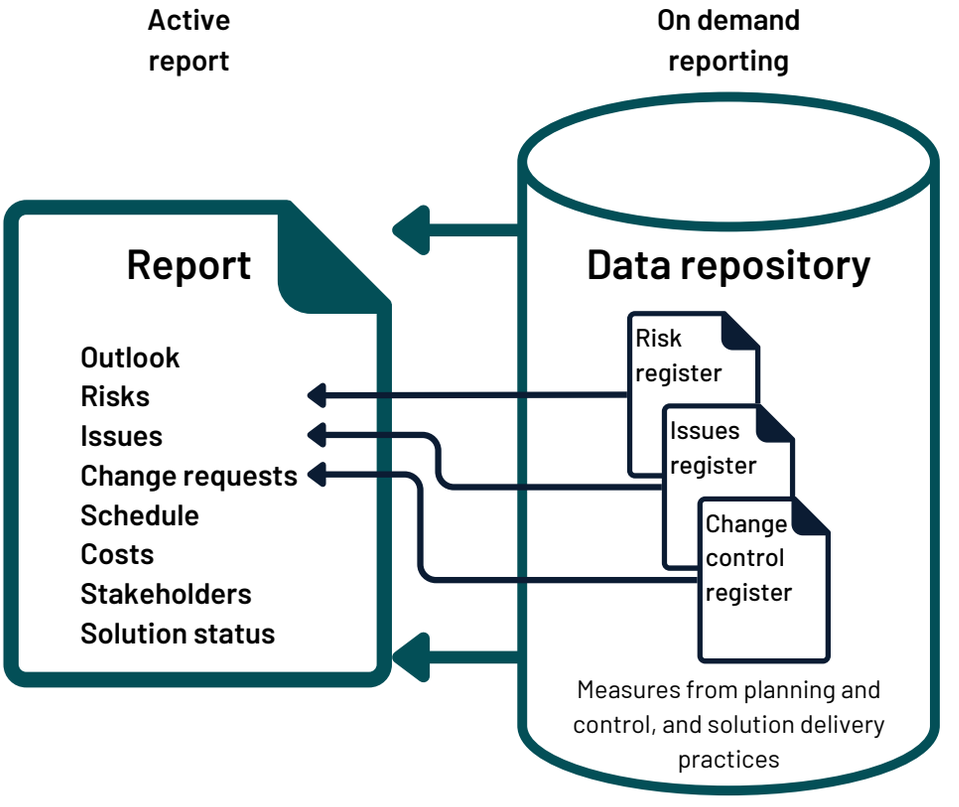


Figure 18.4 Example of live data being accessible from a periodic report

18.6.1.2 Highlighting the important information and action needed

Reporting brings together information gathered from every practice in *The Teal Book* and while large volumes of information are sometimes needed to control the work, a report need only highlight the information which is important to the recipient at that point in time.

Bear in mind that the recipient might receive multiple reports; keeping reports focused and to the point helps ensure requests for advice, direction or decision are identified and information is acted on, as well as making best use of time, both in preparing and reading reports. The reporting manager should agree, as part of defining the report, how the recipient would prefer specific requests highlighted. For example, by including such requests:

- in the first section of the report
- in a covering email
- in a separate email(s) with a specific subject prefix, such as 'Decision request', 'Request for direction', or 'Request for advice'
- as a standing agenda item in meetings

18.6.1.3 Recognising uncertainty

Forecasts, particularly those which extend far into the future, are uncertain and people are often reluctant to commit to a date or cost which, for example, they know is uncertain. In some cases, they might insert a margin of informal contingency which is invisible to the report recipient. If this is done at every level, this can lead to dates being pessimistic and costs being bloated, and even threaten the viability of the business case for the work. It is better to have reports on benefits, time, costs or resources reported as either ranges or with probabilities or confidence markers so the recipient of the report knows the extent to which they can rely on the information provided.

18.6.2 Preparing for reporting

18.6.2.1 Understand who needs a report and why

Information provided by a work package manager should be gathered with that from other work packages and collated at project level by the project manager. The same need for collation exists through the project delivery hierarchy to programme, portfolio and up to organisational level. It is therefore necessary to understand not only the issues facing those providing the information needed for effective control, but also the needs of those, at a higher level, who require the information.

Particular reports might have to be provided, for example, for government major projects and grants reporting. This can be less frequent, for example quarterly or annually, but needs to be carefully managed to ensure that reporting meets data requirements and, where relevant, is appropriate for release into the public domain.

Government and Departmental Major Projects Portfolio and reporting

It is a requirement of the *Government Functional Standard for Project Delivery* that programmes and projects in the Government or Departmental Major Projects Portfolios report annually, with quarterly updates in a format defined by the National Infrastructure and Service Transformation Authority and in accordance with the government's transparency policy. See *How to publish central government transparency data* for more information.

18.6.2.2 Define the reporting framework

Having understood who needs a report and why, a reporting framework should be defined which can provide the information recipients need, when they need it. This can be through active reporting or on-demand reporting or a mix of both (see 18.5 on who reports to whom).

The reporting framework should define who reviews and approves a report:

- for regular reporting done by the manager themselves, this can be self-approval, and therefore avoid unnecessary delays
- when a report is drafted on behalf of the reporting manager, the reporting manager should agree with the author how and when the report needs to be approved by them

Having a report reviewed by multiple parties should be avoided if possible as this adds delays. It is better to coach people to provide information that is usable and foster trust among the team. It should be noted, though, that some reports require a fuller review, for example where important or sensitive decisions depend on the information, or where it is to be published.

18.6.2.3 Determine the content of each report

A report should be timely, factual and realistic, highlighting where the work is heading and confirming progress to date. The content of each report can change through the life cycle as the needs and focus of the work change. In every instance, recipients should consider why they need the information, and the reporting manager or author should consider why they are providing it.

Each report should state the period or date the information relates to and the date on which the report was produced, or if drawn on-demand, the date it was created with date stamps for the constituent data. The form of a report should be appropriate and proportionate to the work being reported on and the roles being reported to.

The rules for triggering exception reports should be defined, based on margins (tolerances) applied to the particular constraint being reported on. An exception report should contain a statement of the actual or forecast exception, a description of the planned recovery action and an estimate of the threat to the work plan in terms of benefits, schedule, cost and risk.

Reports for programmes and projects

Reporting for a programme, project, phase or work package should be tailored to the level of the report. Data should normally cover the current month, current financial year and life of the work. A typical programme or project level report should cover at least the following.

Purpose

The purpose of the report and what is asked of the recipients. This includes whether the report is for information only, or whether any decisions, direction, advice or support are needed (see 18.6 on how to report on the work).

Achievability

An assessment as to whether the agreed scope and objectives are still achievable as defined in the plan, and the current confidence in delivery, usually known as the delivery confidence assessment (DCA).

Schedule

An assessment of progress to date and the estimated completion date against the schedule. This should be consistent with the progress of deliverables and is typically shown in graphical form. Any forecast start or finish dates that are later than planned should be shown separately, as slippage may affect the completion date (see 17.6.1.6 on choosing methods to assess and analyse the status of the work).

Costs

An assessment of spend to date and forecast costs against the plan for the month, year and life of the work. These should be shown by category of expenditure and should identify any cash releasing benefit impacting on the financial baseline where relevant (see 29.6.3.7 on reporting on financial status).

Resources

An assessment of resources in place against the plan. This should identify internal and external resources by category, and any current or forecast vacancies (see 28.6.1.4 on ensuring accurate resource monitoring).

Risks and issues

An overview of current risks and issues. This should include any changes in the status of identified threats, together with any newly identified threats, opportunities or issues. An overall risk rating and exposure, in monetary or schedule terms, might also be provided (see 20.6.3.7 on monitoring and reporting risks and 21.6.3.7 on monitoring and reporting issues).

Change control

A summary of significant change requests and their current status, showing how far each has progressed through the change control cycle (see 22.6.3 for key activities in controlling change).

Quality

Where relevant, an assessment of the quality of outputs or outcomes in delivery or delivered. This might include testing data, user feedback or other measures of quality agreed for the solution, and should identify any concerns and action needed to address them (see 30.6 on how to manage quality).

Benefits

An assessment of benefits forecast and delivered to date against the plan. These should be shown by the relevant category of benefit; cash releasing benefits can be included (see costs above) but care should be taken to highlight where these are also included as cash costs in financial reporting, to avoid double-counting (see 19.6.2.1 on understanding the objectives and desired outcomes).

Reports for portfolios

Reports for portfolios can be similar but are more likely to reflect the sponsoring organisation's reporting on their business plan and to include information on:

- overall portfolio costs, benefits, risk and performance against organisational objectives
- interdependencies among the portfolio's work components
- where relevant, performance of operations and services when solutions delivered are being used

18.6.2.4 Choose an appropriate reporting cycle

The choice of frequency for a formal reporting cycle is often tied to the control cycle (see Chapter 17), but it does not have to be. For example, a report from one level of the project delivery hierarchy to another could be monthly, but the manager could hold weekly control meetings with the team. The frequency can be different for every component in the project delivery hierarchy. The faster moving or riskier the work, the higher the frequency of reporting. At a limit, if information on work is captured as it happens and available 'live', such as in finance systems, the requisite information (or part of it) can be drawn on as and when needed. It can also be continuously analysed using automated routines, such as in some software testing approaches. Greater use of reliable artificial intelligence applications is likely to prompt faster, real-time reporting on a continuous basis with exceptions being flagged where relevant.

18.6.2.5 Decide how to present the reports

Consistency of layout and terminology helps make reports easily and quickly understood. Most project management software includes reporting formats that can be tailored. Using the same base template across an organisation helps both authors and recipients use reports effectively. Otherwise, the common choice is to use office tools to create the reports and base each report type on a reusable template.

Information for lateral and downward reporting can be similar but often needs to be specifically targeted. For example, a project manager might share their report to the senior responsible owner with their work package managers and include a commentary covering the points they see as important to the team members. Aim to reduce the number of reports that need to be drafted or generated whist still fulfilling the needs to the recipients.

For on-demand reporting, the reporting systems needs to be designed so that it is easy for users to access the information they need to create their own reports, for example by being able to:

- select the type of information they need
- filter the selected information
- sort the information in a way that suits them
- choose a specific report template or style

Advances in artificial intelligence can mean that information can be accessed from the designated information repositories using natural questions, and this is likely to support wider use of on-demand reporting in future.

18.6.3 Key reporting activities

18.6.3.1 Overview

The activities for reporting are summarised in Figure 18.5 and are iterative, with similar activities repeated through the project delivery hierarchy.

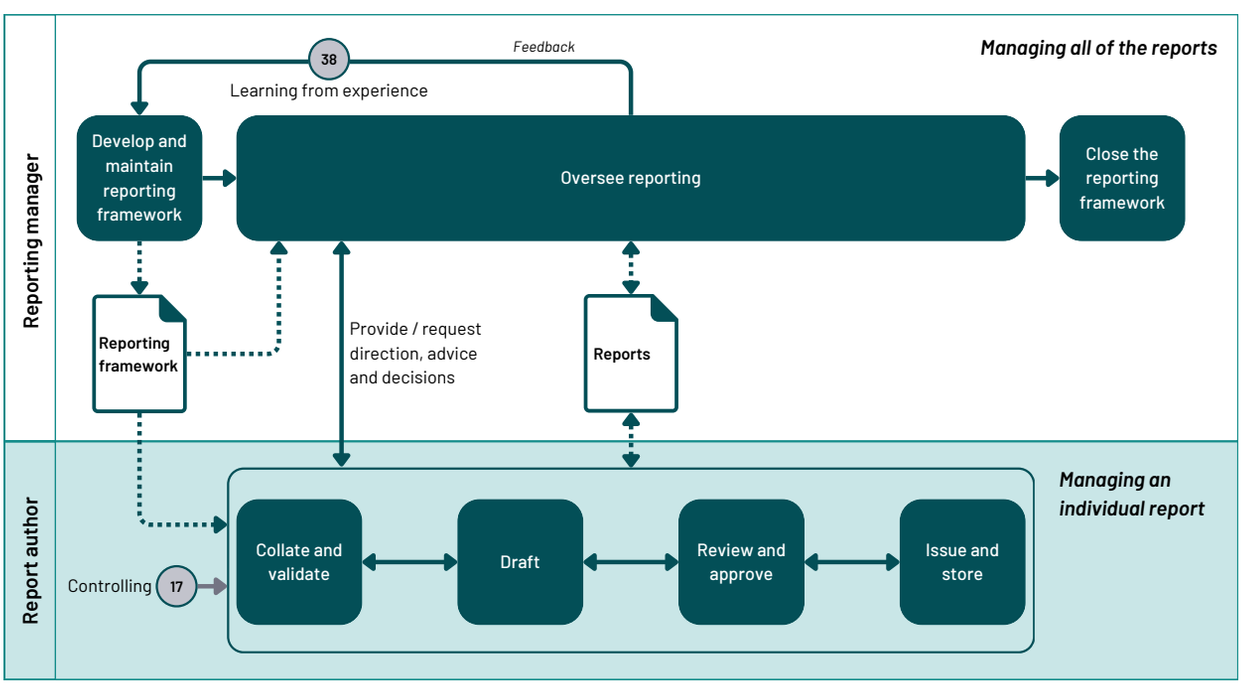


Figure 18.5 Overview of key reporting activities with primary relationships

18.6.3.2 Develop and maintain the reporting framework

The governance and management framework should define what reports are needed and at what frequency to meet the needs of the recipients, contractual obligations (if any) and the level of information necessary to control the work at each level in the project delivery hierarchy. This forms part of the overall governance and management framework for the

work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 18.6.2 on preparing for reporting. The framework should be maintained to address relevant feedback from its use.

The reporting approach and methods should be planned and documented early in the life cycle of the work. Reporting needs should be defined, including but not limited to the content, author, recipients, frequency, confidentiality and format of each report needed.

18.6.3.3 Oversee reporting

Those accountable at each level in the project delivery hierarchy should ensure they are receiving the information they need, either as reports or by drawing it from the data repositories. They should focus on confirming that appropriate and reliable information is being passed from one level to another, particularly ensuring the information is consistent and usable. An important aspect of oversight is to watch for trends, which should have been highlighted as part of controlling the work (see Chapter 17: Controlling) and which indicate the objectives are likely to be met or that action needs to be taken to ensure they are met.

Reporting should be monitored and adjusted to maintain alignment with the needs and requirements of the recipients of the reports as well as the prevailing risk. When a report is no longer relevant or does not meet the needs of the recipient, action should be taken to see the report is no longer sent or that the recipients' new needs are met.

18.6.3.4 Collate and validate the information for the report

The information needed for a report should be collated by the report author and validated, bearing in mind that some information is necessarily uncertain, and should be noted as such. Strictly, validating the information is part of 'controlling' the work so if, as is often the case, the same person is drafting the report and controlling the work, this would be done as a matter of course. However, with large, dispersed teams, multiple layers of reporting can mean that vital information is distorted or lost. In such cases, it is important to shorten reporting chains where possible and also to use informal channels to test and provide context for formal reporting (see 17.6.1.7 on verifying the information). Aspects relevant to the report's recipients should be noted, and variances and problems understood.

18.6.3.5 Draft the report

The report author should draft the report, in the prescribed format, drawing on the collated and validated information. The report should make clear what is fact, what is opinion, what is uncertain and include requests and recommendations where relevant. Care should be taken to ensure that the content reflects the security levels of those handling or receiving the report and that the report is labelled accordingly.

18.6.3.6 Review and approve the report

If not approving the report themselves, the report author should ensure those who need to review the report do so in a timely manner ready for it to be approved.

18.6.3.7 Issue the report and store it

Reports should be issued to recipients in a timely manner in accordance with the defined governance and management framework. Where relevant, the distribution of reports should comply with any confidentiality or security requirements. Reports should be stored in the assigned repository in accordance with the organisation's data retention policy.

18.6.3.8 Close the reporting framework

Once the reporting framework is no longer needed it should be closed. For a programme, project or work package, this is when the work has been completed. For a portfolio, this is unlikely until the portfolio ceases to serve its purpose. The stopping of individual reports can be progressive throughout a programme or project as and when each is no longer needed by the recipients.

18.7 Further reading

- Cabinet Office and Government Digital Service, *How to publish central government transparency data*

19. Benefits management

19.1 Purpose of benefits management

The purpose of managing benefits is to ensure that the measurable value and other positive impacts of work are identified, planned and tracked so that they are realised in practice.

19.2 Key points

- Benefits management provides a structured way to identify, plan, track and verify the positive impacts of public investment across portfolios, programmes and projects.
- Realistic benefits appraisal supports effective decision-making on investment.
- A systematic approach to benefits management through the life cycle achieves the greatest value.
- Benefits can be realised throughout the work, not only during solution use.
- Benefits management should continue until benefits are verified as being realised in line with the expectations agreed at investment approval.

19.3 Why manage benefits?

Benefits management runs through the life cycle to ensure that benefits are identified, valued, planned, realised and reviewed. This helps deliver the outcomes that support government objectives and maximises the social value generated.

Benefits management also provides a consistent framework and established set of practices and tools for use across government, supporting alignment between benefits and planned outputs, outcomes and objectives through the life cycle, as seen in Figure 19.1.

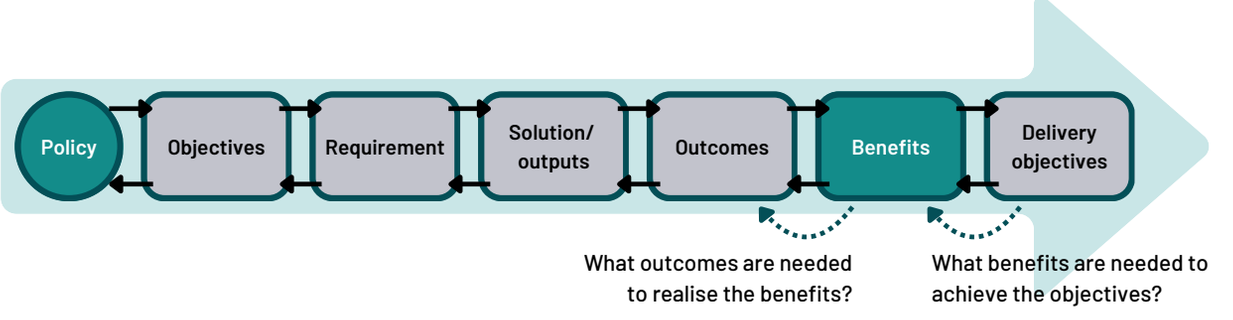


Figure 19.1 Mapping benefits to objectives and outcomes within the policy to delivery chain

19.4 What is benefits management?

Benefits management is a set of activities aimed at ensuring benefits are realised in practice.

The *Project delivery glossary* defines a **benefit**:

> In the context of project delivery, a benefit is the measurable value or other positive impact resulting from an outcome perceived as an advantage by one or more stakeholders, and which contributes towards one or more objective(s).

Benefits are weighed against costs to understand the value and impact of a proposed change, and then to track what has been delivered and help evaluate outcomes.

These activities can be applied at portfolio, programme, project or work package level, and are most effective when applied consistently across an organisation and embedded as part of the governance and management framework.

Benefits management maintains the link between outcomes, benefits and objectives, as shown in Figure 19.1.

Managing benefits requires a systematic approach and an agreed framework which should form part of the governance and management framework for the work. Benefits management activities typically include the use of standardised **benefits mapping and analysis techniques** to identify and appraise benefits, recording benefits in a **benefits register**, supported by more detailed **benefits profiles**, and the development of a **benefits realisation plan** which is then used as the basis for managing realisation and review through the life cycle.

The focus of benefits management in portfolios differs from that in programmes or projects.

In a **portfolio**, the focus is on strategic benefits. This means identifying how different parts of the portfolio contribute and prioritising them to support investment decisions as part of planning cycles. Once decisions are made, the focus shifts to reviewing progress, with intervention only to address significant shortfalls or portfolio-wide concerns. Planning and realising specific programme or project benefits is usually delegated.

In a **programme** or **project**, the focus is on identifying and then realising the specific benefits agreed for the work. Benefits identification plays a core part in business case development and appraisal, and a requirement for investment approval. Once approved, the plan for benefits is baselined as constraints for delivery. The focus then shifts to more detailed planning and delivering the changes needed to realise them, and evidencing their realisation.

19.5 Who manages benefits?

Anyone undertaking a project delivery role in government should understand the importance of benefits and how they are managed. There should be clear accountability for benefits management and realisation, set out in the governance and management framework for the work.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is ultimately accountable for delivering the outcomes and realising the expected benefits. They own the benefits management framework and oversee benefits realisation through the life cycle, including, where necessary, ensuring continuing accountability for benefits realisation following closure.

The **portfolio**, **programme** or **project manager** is accountable for developing and managing the benefits management framework and overseeing activities to identify, plan and realise benefits.

Depending on the scale and complexity of the work, there could be a **dedicated benefits manager** or **support officer** with the responsibility for benefits management activities on behalf of the portfolio, programme or project manager. For large work packages, the **work package manager** can undertake the role for their own work package.

Once identified, each benefit is assigned a **benefit owner**. This is a named individual who confirms the benefit's identification and value, agrees the plan in the business case, and then takes responsibility for realising and reporting on it. They need appropriate position, authority or expertise to be able to take on this responsibility.

Often, future benefit owners can be readily identified, for example a product owner or senior operational manager within the organisation where the benefits are to be realised. If there is no identified benefit owner, for example because future organisational arrangements are not yet in place, benefits ownership should be agreed on an interim basis and then transferred at the appropriate point. To keep benefits management effective, care should be taken to avoid allocating too many benefits to one owner. As the solution transitions into use, it is also critical to ensure clarity on benefits ownership, realisation and management of reporting requirements in operations, particularly after project or programme closure.

Benefits can be complex to identify and measure. Where necessary, professional analysts should be consulted, for example in economics, statistics, social or operational research. More information on analysis and evaluation is set out in the *Aqua Book* and the *Magenta Book*, and more detail on the types of analyst can be found in the *Government analysis Function career framework*.

More detail on the benefits management competency and how this relates to individual project delivery roles can be found in the *Project delivery capability framework*.

19.6 How to manage benefits?

19.6.1 What to consider when managing benefits

19.6.1.1 Linking benefits to objectives and outcomes

As shown in Figure 19.1, benefits are the link between how the outcomes and objectives agreed for the work are delivered in terms of specific positive impacts, and how those benefits link to specific outcomes and outputs delivered by the solution.

It should be possible to trace from any objective down to the benefits that deliver it, and from any benefit back up to the objective it supports, known as two-way traceability. This can be achieved by developing a **benefits map** showing the relationship between objectives, requirements, solution/outputs, outcomes and benefits. Mapping should start from objectives and add detail progressively as benefits are identified, solution options are defined, and solutions are chosen. Once approved, traceability management should be used to maintain alignment between the benefits map and other products.

Where policy proposals have been developed using a specific theory of change (see Chapter 2: Policy and evaluation), this should provide the initial basis for considering objectives and outcomes, and how these might map to benefits. In government, benefits, like costs, are viewed from the perspective of UK society as a whole in making decisions on investment. This means that, while it is important to understand different stakeholder perspectives, outcomes and benefits should be framed primarily in terms of how they deliver social value through the delivery of government objectives, as defined in the *Green Book*.

Various tools are available to aid benefits mapping, for example benefits tree analysis and logic models. See the Government Project Delivery *Benefits management in government* collection for templates.

19.6.1.2 Identifying and categorising benefits

Benefits can take many forms and are not always straightforward to identify. Starting from the proposed objectives and outcomes, and exploring what these mean in practice with different groups of stakeholders, should help identify the primary benefits to be included in planning and investment appraisal. However, benefits can be identified at any point in the life cycle, and some might emerge unexpectedly when delivering the work or operating the solution. Emergent benefits are managed as issues (see Chapter 21: Issue management).

The *Green Book* sets out how to categorise and assess different kinds of benefit consistently in terms of social value, viewed from the perspective of UK society as a whole. This guidance should be followed for all investment appraisal, review and evaluation.

Changes delivered by a project or programme can have positive or negative impacts.

Positive impacts are called social benefits. Negative impacts are called social costs.

Social benefits and social costs are either:

- monetisable, which can be expressed in financial terms
- unmonetisable, which cannot be expressed in financial terms

Monetisable social benefits and social costs can be either:

- cash, affecting the income or spending of a public body
- non-cash, which does not affect the income or spending of a public body, for example, changes in greenhouse gas emissions

Unmonetisable benefits and costs can be either:

- quantitative, which can be expressed in numbers
- qualitative

Each social cost or social benefit can typically be attributed to one of 5 groups:

- the public body that is developing the proposal
- other public bodies
- households and individuals
- businesses
- other non-government organisations such as charities

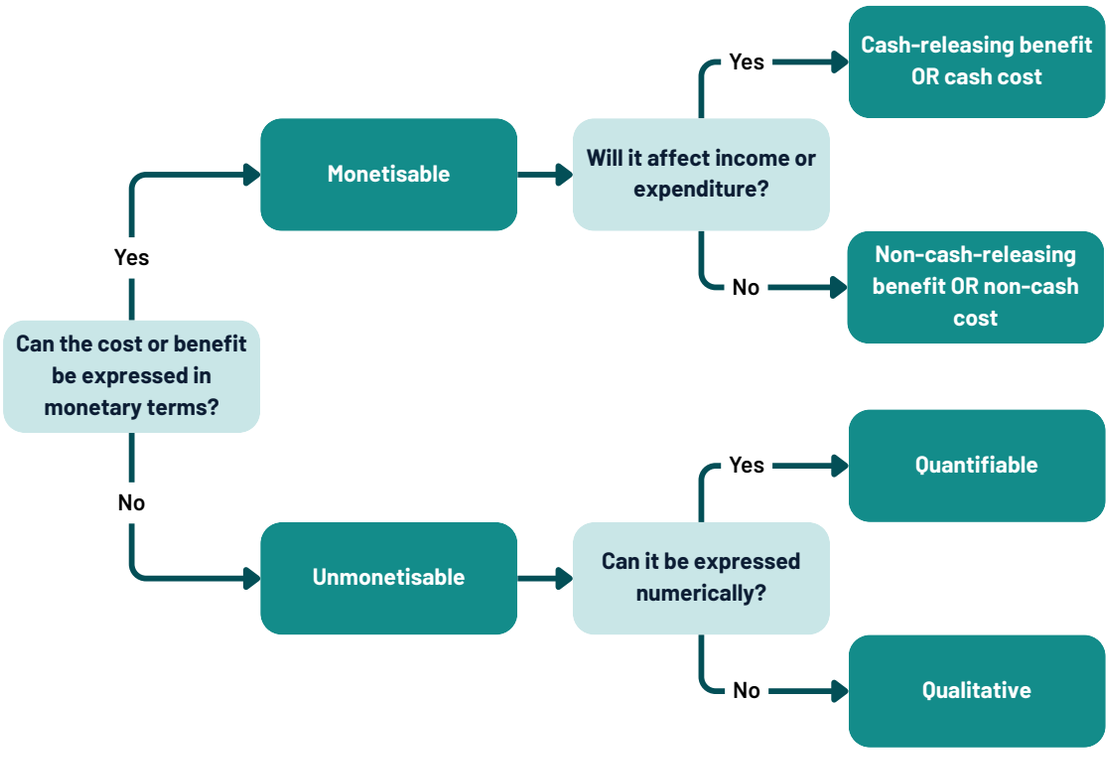


Figure 19.2 A decision tree for classifying social benefits and social costs

19.6.1.3 Assessing and prioritising benefits

Investment appraisal and prioritisation is based on social value, the net sum of benefits and costs to society of a proposal.

In programmes and projects, the *Green Book* sets out how to assess social benefits and social costs for this purpose, providing a consistent and transparent basis for assessing the social value of an intervention.

Investment analysis assesses the benefits and costs for each option under consideration. Options are then prioritised to identify a preferred solution that meets the objectives of the work at an acceptable level of risk.

In a portfolio, investment analysis assesses and prioritises programmes, projects and other related work to identify the optimal balance of work to meet its objectives and social value.

In either case, prioritisation is rarely a simple matter of ranking. For example, an option:

- a higher cost intervention may deliver more benefit and a higher net social value, but might not be affordable

- a lower cost intervention may deliver less social benefit, but make an important contribution to a strategic objective

This is why it is important to quantify benefits where possible and include unquantified benefits in investment appraisal.

Effective prioritisation depends on robust estimation. Benefits can be over-estimated or prove harder to achieve than expected. Care should be taken to ensure that benefits are realistic and achievable, with dependencies identified, particularly if these incur cost.

Benefits assessment is typically progressive and iterative. Uncertainty should be reflected in how benefits are presented and reduced as options and assumptions become more defined.

If benefits are hard to quantify, or there is significant uncertainty, priority should be given to those likely to be decisive in determining the differences between options.

The same disciplines used for accurate cost estimation (see Chapter 16: Planning) should be applied equally to benefits. These include:

- use of evidence and benchmarking
- sensitivity and scenario analysis
- probabilistic estimation
- use of confidence factors and ranges

19.6.1.4 Setting the time horizon for benefits realisation

The period over which benefits are to be realised affects how they are valued for investment appraisal and then for managing their realisation. Planning should cover the whole life of the solution, including its use and disposal.

Programmes and projects

Some benefits can often be realised during the work itself. This is particularly the case in iterative and incremental work, where solution components are developed and transitioned into use on a progressive basis. Even where work is predictive and highly linear, however, benefits can often be generated by the work itself, for example, in terms of community involvement, digital or industry innovation, archaeological work or environmental interventions.

Even when realised over a limited period, transient benefits should be identified and included in planning, and managed in the same way as other benefits, with the value generated recorded when they conclude.

Most benefits are usually only realised when the solution is fully in place, and accrue as the solution is used over time. The *Green Book* sets out standard time horizons for benefits realisation for different types of asset or service. These should be used for investment planning unless agreed otherwise with HM Treasury, and maintained through realisation and review.

Portfolios

Portfolio planning typically aligns to spending review and annual business planning cycles, with benefits identified and tracked over the relevant cycle. Realistic scheduling is needed, for example, benefits profiled with common dependencies to the end of a spending cycle carry cumulative slippage risk. Appropriate provision for risk and uncertainty particularly supports effective benefits management in portfolios.

19.6.1.5 Controlling changes to benefits assumptions

Benefits and their social value can be highly impacted by socio-economic changes and shifts in service demand and people's behaviours. These are often hard to plan for but should be considered in identifying and assessing benefits as part of investment appraisal and decision-making. Modelling and sensitivity analysis should be used to identify possible scenarios and assess the robustness of benefits assumptions against them. Probabilistic estimation helps establish the range of benefits assumptions and set realistic benefits targets. Critical dependencies and risks should also be identified and factored into the analysis.

Where uncertainty is high, an incremental or modular approach to development and implementation can help maximise benefits and social value. Work delivering a wider range of benefits is also less likely to be vulnerable to sudden shifts in stakeholder behaviour.

If significant changes arise which mean that benefits assumptions are no longer valid, the impact should be assessed and managed through change control. If changes mean that work is no longer likely to realise sufficient benefits to justify continued investment, the work should be terminated. See also Chapter 22: Change Control.

19.6.1.6 Linking benefits management and evaluation

Benefits management and evaluation are complementary practices with a shared focus on assessing the impacts of a portfolio, programme or project and whether its planned outcomes and objectives have been met.

Some benefits are difficult to measure directly. Wider economic, environmental and social benefits are difficult to assess because it can be hard to separate the effect of changes from other external factors, such as transport overcrowding, which can be hard to measure in isolation.

Evaluation can help by providing a counterfactual view, a comparison of what happened against what would have happened without the intervention, which draws on the theory of change for the work (see Chapter 2: Policy and evaluation).

Equally, evaluation can draw on benefits assessment, realisation and review data as supporting evidence for an evaluation. Benefits and evaluation teams should work together throughout the life cycle so that benefits data informs evaluation, and evaluation findings strengthen benefits management.

19.6.2 Preparing to manage benefits

19.6.2.1 Understand the aims of the work

All proposals for change should have a clear rationale and objectives, together with a supporting theory of change, as set out in the *Green Book*. These should normally be set out as part of the policy proposal or initial brief for the work and are the starting point in preparing to manage benefits.

If these things are not clear, it's important to clarify these as soon as possible with the policy owner or whoever has commissioned the work.

Even where the brief is clear, it is still important to check stakeholder expectations on outcomes and benefits. For example, is the work expected to deliver the whole of an objective or to contribute to it alongside other work? Is there a shared view across stakeholders, or are there different expectations and perspectives on what a successful outcome would be that may need to be balanced?

Where multiple interventions contribute to a wider objective or outcome, for example in a portfolio or programme, it is also important to understand how other work contributes and when, including any dependencies between them. How those benefits are to be framed and managed also needs to fit into this wider picture so that the benefits management framework can be designed to support efficient management and reporting. Exploring these questions at the outset, before work on benefits management begins, can save time and avoid misunderstandings.

19.6.2.2 Establish the benefits management framework

The benefits management framework describes how benefits management is to be conducted through the life cycle. The framework should be tailored to the nature, scale and complexity of the work, and should be compatible with any relevant frameworks at organisation, portfolio or programme level, and with requirements in the *Green Book* on benefits in business case development and investment appraisal. The benefits management framework should include:

- accountability and responsibility for benefits management and realisation, ownership and approval
- arrangements for identification, assessment, planning, management, monitoring and reporting, and for review and evaluation

- how benefits are to be identified, categorised and, wherever possible, quantified (see 19.6.3.5 on identifying and categorising a benefit)
- the data needed for overseeing benefits management and realisation, and how it is to be collected, recorded, and stored, including any specific software or tools to be used in doing so (see Chapter 24: Information and data management)

19.6.3 Key activities in managing benefits

19.6.3.1 Overview

Benefits management is a critical part of controlling a portfolio, programme or project. It needs a systematic approach, sustained through the life cycle, to enable and optimise delivery of outcomes, benefits and objectives. The key activities required for effective benefits management are shown in Figure 19.3, and can be sequential or iterative, depending on the nature of the work.

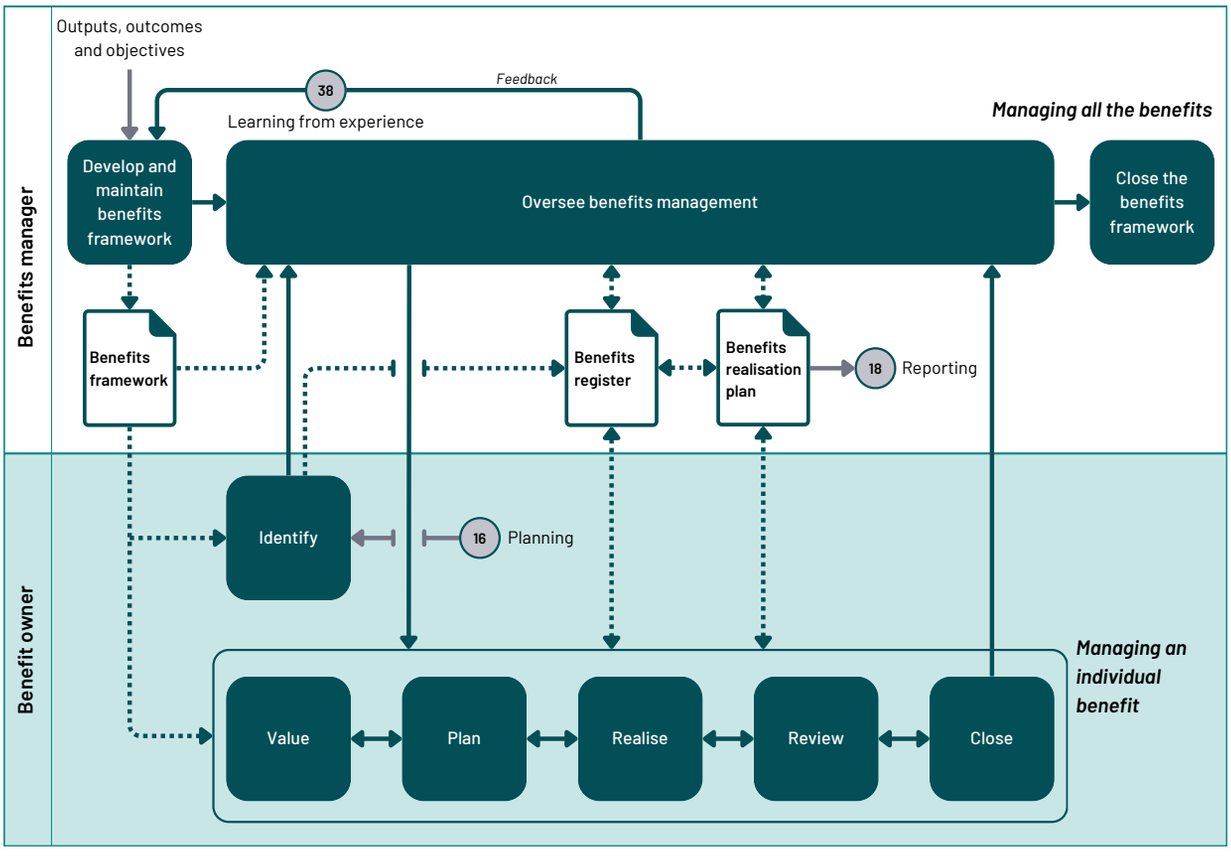


Figure 19.3 Key activities in benefits management and their primary relationships

19.6.3.2 Understand objectives

Benefits management starts with activities to ensure that there is a shared view of the objectives of the change, why it is needed or desirable, and the outcomes expected.

This normally involves the benefits manager working with stakeholders to understand:

- the policy concept and reasons (drivers) for the proposed change
- the objectives and outcomes for the work
- what success would look like
- what positive impacts might result from the changes and who might benefit

This can be set out as a simple logic map showing how these elements link together, providing the basis for developing the benefits management framework (see 19.6.3.4 on overseeing benefits management) and identifying benefits (see 19.6.3.5 on identifying and categorising benefits).

A template benefits management framework is available in the *Benefits management in government* collection.

19.6.3.3 Develop and maintain the benefits management framework

The approach to benefits management should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 19.6.2.2 on establishing the benefits management framework and should be agreed at the start of the work in line with the organisational framework. The framework should be maintained to address relevant feedback from its use.

19.6.3.4 Oversee benefits management

The focus for the benefits manager is to bring together the information and reports from the individual benefits owners and assess how they contribute to the achievement of the objectives, report on them (as appropriate) and, when necessary, take preventative or corrective action.

The benefits manager should ensure that benefits management is carried out in accordance with the benefits management framework and fulfils its purpose. This includes overseeing:

- benefits identification, including management of the benefits register
- benefits planning and prioritisation as part of investment appraisal

- benefits realisation activities, including identification and handover to benefits owners
- ensuring benefits reporting and review, including interaction with evaluation work

The benefits management framework should be kept under review, taking account of any changes in the context and nature of the work, to ensure that it remains effective through the life cycle or (in the case of a portfolio) in preparing for the next planning cycle.

19.6.3.5 Identify and categorise a benefit

Benefits should be identified as early as possible, ideally starting as part of initial policy formulation, and considered further during work on feasibility. Identification should start from the objectives, drivers and outcomes for the work, and what this might look like in terms of critical success factors and potential benefits. These are explored further with stakeholders to identify and define a fuller range of benefits, set out as a **benefits map**. Identification can also occur from identifying social value delivered from contracts over and above the core deliverables in compliance with the *Public Services (Social Value) Act 2012* (see Chapter 25: Procurement and contract management for more information).

Various techniques can be used for this, including formal and informal workshops, user research and various benefits mapping techniques. More information on this is set out in Government Project Delivery's *Practitioner workbook for benefits management in government*. Wherever possible, benefits should be described at a level of detail where they can be managed effectively and assigned to a single owner.

Each benefit should be categorised. For business case purposes, this should follow the classifications in the *Green Book*, for example as monetisable and cash-releasing or not, or as non-monetisable, either quantitative or qualitative. Benefits can also be categorised in other ways for organisational planning, analysis and reporting, for example using strategic objectives or themes relevant to the organisation.

Each benefit should be captured in the **benefits register**, with its categorisation, proposed measure and potential benefit owner. The current performance level for each benefit should be established before work starts, and captured on the benefits register, providing the baseline for measuring benefits realisation. Other information can be added progressively to the benefits register, which should be kept updated as decisions on solution options are taken, benefits targets are set and benefits ownership assigned.

A template benefits map and benefits register is available in the *Benefits management in government* collection.

19.6.3.6 Value and appraise a benefit

Benefits appraisal requires each benefit to be valued, using monetisable terms if possible and other measures where not (see section 19.6.1.3 on assessing and prioritising benefits). The value of a benefit should be calculated for the expected realisation period, using the

measures identified, to forecast the scale of the impact of the benefit. A forecast should be developed with, and agreed by, each benefits owner, with measures, baselines, targets and timescales, assumptions, dependencies and risks documented alongside, creating a **benefit profile** for each benefit.

In a portfolio, the appraisal of a benefit is usually conducted as part of cyclical investment planning and prioritisation, and is typically high level, drawing on benefits forecasts provided by programme and project teams. If the appraisal is for spending review purposes, HM Treasury issues guidance on the approach to social benefit appraisal and the methods to be used. For annual planning cycles, benefits appraisal should be tailored to organisational objectives, for example to prioritise certain categories of benefit within the portfolio.

In a programme or project, benefits appraisal is focused primarily on shortlisted options to support identification of a preferred option for the solution (as supposed to longlisting which assess feasibility against critical success factors). As such, it forms an important part of the economic case in the outline business case or programme business case, and should be closely integrated with wider planning and business case development.

For business case appraisal, social benefits should be presented for each shortlisted option, alongside the related social costs, so that the social value of each option can be appraised as part of the economic case, as set out in the *Green Book*. Carbon emissions and other environmental impacts, for example biodiversity, should be clearly shown in line with statutory and other government requirements (see Chapter 6: Environment and sustainability). Cash-releasing benefits should be also included in the financial case as negative financial costs. Assumptions, dependencies and risks should also be identified.

Benefits estimates and assumptions should be kept under review to ensure that they remain current. Forecasts and targets should be reconfirmed or adjusted before submitting a full business case or an updated programme business case. Once approval has been given, these provide the baseline for tracking benefits realisation and for evaluation.

19.6.3.7 Plan for realisation of a benefit

Once decisions on investment have been taken, the plan for realising each benefit should be developed. The benefits owner should be reconfirmed at the start of planning for realisation and should be involved in developing the plan. This should be documented progressively in a **benefit realisation plan** which should form part of the overall plan for the work (see Chapter 16: Planning).

The benefits realisation plan should set out the planned realisation profile for each benefit, identifying the work component(s) and change activities needed to enable this, and when these are scheduled to take place. It should also show the expected trajectory from baseline to target and key benefit realisation milestones, and include the baseline,

measures, assumptions, dependencies and risks for each benefit. Intermediate benefits should also be identified, to ensure that these are given the attention needed, as dependencies for longer term benefits.

19.6.3.8 Realise the benefit

Benefits realisation activities for each benefit should be scheduled in line with the benefits realisation plan and are typically integrated as part of implementation, business change and operational activities as the solution transitions into use. Activities should be owned and overseen by the relevant benefit owners, who are also responsible for reporting on progress through the designated benefits manager or reporting manager. Communication and engagement of affected stakeholders is also critical for effective benefits realisation and should be given particular attention (see Chapter 35: Management of organisational and societal change).

The realisation of a benefit can take place during development and implementation of the solution but usually also requires continuing action when the solution is in operational use, for instance to embed change, grow user numbers, manage employee changes, close obsolete systems or facilities, or dispose of surplus estate. Provision for this should be included in planning, and care taken to ensure that benefits ownership, realisation and reporting responsibilities are fully handed over as part of transition, if not earlier, before the work itself closes.

Progress on realising each benefit should be monitored and reported against agreed metrics at agreed frequency, depending on the nature of the benefit, how quickly it accrues and how easy it is to measure. This should be integrated as part of wider benefits management and reporting wherever possible, ideally at organisational and portfolio level. If a benefit forecast is not being met, the reasons for this should be analysed and action taken to address them. The benefits register, maps and profiles should be maintained and updated throughout realisation, as primary information sources for monitoring, reporting and review.

19.6.3.9 Review the benefit

Review is concerned with understanding the extent to which a benefit is being realised and the impact that is having on the achievement of the objectives. Such reviews can also contribute to policy evaluation and learning from experience to improve future delivery.

In a portfolio, periodic review of benefits should be part of the portfolio management cycle and should inform cyclical planning.

In a programme or project, progress on the realisation of each benefit should be reviewed before programme or project closure to inform the closure report. This review is typically conducted as part of the operational and benefits assurance review (see *Assurance of benefits realisation in major projects*).

Further reviews can be undertaken after closure and arrangements should be agreed with the sponsoring body as to what is required, when and by whom. This can be through:

- additional assurance reviews
- as part of evaluation (see Chapter 2: Policy and evaluation)
- a formal post-implementation review (PIR), if required (see the supplementary guide to the *Magenta Book*)

19.6.3.10 Close the benefit

A benefit should be closed by agreement between the benefits manager and benefit owner once it has been realised sufficiently to demonstrate that continued monitoring is no longer needed. Note that a benefit is not closed simply because the associated work is completed. A benefit often needs to be monitored through the life of the solution, sometimes over long periods as part of agreed evaluation requirements. Some benefits can therefore remain open throughout the life of the solution or service through to disposal, and arrangements for this should be agreed and maintained by the sponsoring organisation.

When a benefit is closed, the benefits register should be updated to record the actual benefits realised, the basis for closure, date and who made the decision. Closed benefits should be kept on the register, together with this information, as it is important for maintaining traceability (see Chapter 23) and for longer term review, evaluation and audit purposes.

19.6.3.11 Close the benefits management framework

Once benefits no longer need managing, the benefits register should be closed. The benefits management framework should be merged into the management framework for use of the solution or closed. Information and data should be retained in accordance with the delivery and sponsoring body's information retention policy.

19.7 Further reading

- Government Analysis Profession, *Analysis Career Framework*
- Government Project Delivery, *Practitioner workbook for benefits management in government*
- HM Treasury, *Aqua Book: guidance on producing quality analysis*
- HM Treasury, *Green Book: appraisal and evaluation in central government*
- HM Treasury, *Magenta Book: central government guidance on evaluation*

- HM Treasury, *Magenta Book Supplementary Guide: guidance for conducting regulatory post-implementation reviews*
- UK Parliament, *Public Services (Social Value) Act 2012*

20. Risk management

20.1 Purpose of risk management

The purpose of risk management is to ensure the objectives of a portfolio, programme or project are more likely to be achieved. It considers complexity, uncertainty, unexpected events and threats and opportunities from undertaking the work, using the solution, and from the external environment.

20.2 Key points

- Risk management in project delivery means identifying, assessing and responding to threats and opportunities throughout the life cycle.
- A risk management framework should define the appetite, tolerance, matrix, response categories and risk register.
- Create an environment where people are encouraged to identify risks and feel safe to raise them.
- Design the working approaches, life cycle, plan and procurement strategy to reflect the risks.
- Never stop looking for risks, from both internal and external sources.

20.3 Why manage risks?

Risk is a natural part of project delivery. Portfolios, programmes and projects deliver change, and change can introduce uncertainty and complexity that threaten objectives.

This includes:

- benefits not being realised
- unexpected side effect appearing
- scope becoming unachievable
- costs and schedules overrunning

Uncertainty can also open opportunities that could be missed if not considered in advance.

20.4 What is risk management?

Risk management comprises the identification, assessment and response to a risk which either threatens the success of the work or represents an opportunity to be exploited. The aim of risk management is ensuring the objectives are likely to be achieved.

Risks can be managed within the current scope of a portfolio, programme or project or might require a change to keep the work viable. In some cases, the response to a risk can lead to a change in the delivery strategy or plan. If a threat is unacceptably high, it can lead to the work being terminated.

Risk management is a continual activity that should be performed throughout the life of a portfolio, programme or project, and should be integrated with the wider organisational approach to risk management and to health, safety and security (see Chapter 7: Health, safety and security).

The *Project delivery glossary* defines **risk** as:

> Risk is the effect of uncertainty on objectives.

It relates to an uncertain event which, if it occurs, has an impact on the achievement of an objective.

Risks can be positive or negative:

- a **threat** is a risk that could have a negative impact on objectives
- an **opportunity** is a risk that could have a positive impact on objectives

A risk combines the **probability** of an event happening, with the scale of its **impact**. This is often presented in a **risk matrix**.

A risk can be described using 3 characteristics:

- **cause**, events or situations that are not risks in themselves but act as sources and drivers for potential risks, and can be internal or external to the portfolio, programme or project
- **risk**, the threat or opportunity that, if it happens, will have an impact on objectives
- **impact**, describing the effect of the risk on the objectives, if the event occurs

Risk causes can be specific, such as a severe storm, or variable over time, such as inflation or commodity prices. If a risk relates to a variable, assumptions should be documented and the trigger point for action agreed.

Risk responses require action to be taken to manage the risk in line with the risk appetite. For threats, this can range from removing or mitigating the root cause, reducing the impact and/or reducing the likelihood of it happening. For an opportunity, similar actions can be taken to exploit the situation. Responses often combine a mix of approaches. A risk response can lead to changing the plan or putting in a **risk control**. For example, sprinkler systems are a 'risk control' used in buildings to limit fire damage and loss of life, with ongoing checking to ensure they work.

Risk, like time and cost (see Chapter 16: Planning) is a constraint within which the work should be completed within each manager's defined **risk tolerance**. If this tolerance is exceeded, it triggers escalation, for example, reporting the situation to a more senior manager for a decision or action. Typically, there are tolerances for the overall portfolio, programme or project, for significant work packages or individual risks.

Monte Carlo analysis and probability-based modelling and estimation can be used to quantify aggregate risks, usually as part of developing a portfolio plan or business case (see the *Green Book* and *Guidance on cost estimation*).

Some areas of risk, for example external events, can be beyond the power or capability of the portfolio director or senior responsible owner to control or influence. They should still be considered when planning and justifying the work.

20.5 Who manages risk in project delivery?

People in a project delivery role need an awareness of risk management practices, including how to identify and monitor risks systematically, deciding how to respond to those risks and implementing the planned responses.

The **portfolio director**, in a portfolio, or the **senior responsible owner**, in a programme or project, has overall accountability for the effective management of risk through the life cycle. They are responsible for ensuring a robust risk management framework is in place, that it works effectively and enables a good understanding of the impact of risks on the objectives, portfolio plan (for a portfolio) or business case (for a programme or project) and on the overall viability of the work. When a portfolio plan or a business case is approved and work authorised, the portfolio director or senior responsible owner should ensure that this is done in full knowledge and understanding of the associated risks, and that these are then managed appropriately through the life cycle.

The **portfolio manager** or **programme or project manager** is responsible for designing and implementing the respective risk management framework and for ensuring that the portfolio director or senior responsible owner understands the overall risk profile. The framework should include arrangements for managing and where necessary escalating risks in line with agreed risk tolerances, and the portfolio, programme or project manager should ensure that these arrangements work effectively through the life cycle.

Depending on the scale and complexity of the work, there could be a dedicated **risk manager** or **support office manager** with the responsibility for managing risk on behalf of the portfolio, programme or project manager. If a dedicated risk manager is not necessary, the portfolio, programme or project manager, as appropriate, should undertake the role. For large work packages, the **work package manager** normally undertakes the role for their own work package but can be supported by a risk manager or support office manager.

In general, any person with a legitimate interest may raise a risk and is known as the identifier. In practice a risk normally originates from the sponsoring body or the delivery team itself, including suppliers. Risks can be identified in advance, for example in planning workshops, or during the course of the work when a person recognises the threat or opportunity.

Each risk should have a **risk owner**, who is a named individual responsible for planning, implementing and monitoring the response. The risk owner can be supported by people helping plan, implement or monitor the response. A risk owner needs to be someone who can manage a given risk either due to their position, authority, or technical or other experience. For risk management to be effective, care should be taken to avoid allocating a large number of risks to a single owner. As the nature and magnitude of risks can change when more information becomes available, the ownership of a risk may be reassigned to a more appropriate person, with a suitable handover and supporting information.

More detail on the risk and issue technical competency and how this relates to each project delivery role can be found in the *Project delivery capability framework*.

20.6 How to manage risk

20.6.1 What to consider when managing risk

20.6.1.1 Ensuring risk management is focused on objectives

Risk management should not be limited to cost and time. It should cover all aspects of the plan (see Chapter 16: Planning), such as:

- how user requirements are defined and collected
- how solutions are designed and built
- whether initiatives deliver their intended outcomes and benefits

20.6.1.2 Building risk into the delivery strategy and plan

The delivery strategy and plan need to be designed to consider risks throughout the development, creation, use and disposal of a solution, such as the approach to procurement and the techniques and methods used to design and build or develop the solution. For example, iterative approaches or piloting are often used if requirements are not sufficiently understood initially.

Risk is an integral part of planning where the aim is not only to produce an achievable plan but one which can be delivered at an acceptable level of risk.

Contingency for the realisation of threats and their impact on time should be placed in the plan (see Chapter 16: Planning) so that slippage is unlikely to have a disproportionate impact on the delivery of outcomes and the achievement of objectives. Techniques that can help decide on where to put contingency (also called buffers) include:

- **critical path analysis**, where those activities with the least float can be identified
- **critical chain analysis**, which determines what the constraining resources are
- **simulation**, such as Monte Carlo to identify those activities most prone to slippage

Contingency for the cost of risks occurring should be considered in a **risk budget**, a contingent part of a portfolio's, programme's or project's overall budget (see Chapter 29: Finance). It is allocated to fund responses to threats and opportunities. The risk budget should be set and managed to reflect the context, scale and complexity of the work. To develop a risk budget:

- assess each risk for impact on constraints, such as benefits, outcomes, costs, risk response costs and likelihood of occurrence
- aggregate the costs incurred if the risk materialises, weighted by probability, to arrive at a total value
- determine, from previous similar work (if any), a percentage to allow for unknown risks

Simulation can also be used to determine those activities prone to overspends and the amount of contingency to be held.

20.6.1.3 Considering risk when assessing options

Different options carry different levels of risk. It is important to evaluate and balance risks against the social costs and social benefits for each option.

Investment decisions need to be taken in phases to take account of changes in the risk profile. This is why programmes are undertaken in tranches and projects in stages.

Risk is also fundamental to how portfolios are constituted, prioritised and rebalanced in line with overall risk levels and risk appetite.

Information on assessing options is included in the *Government Functional Standard on Analysis* and its supporting documentation, such as the *Aqua Book*.

20.6.1.4 Being open and collaborative

Openness and collaboration are important for effective risk management. Visibility of current, emerging and closed risks can prompt the identification of related risks, and collaboration among the team members can lead to new perspectives on risks and creative responses.

Risk information should always be open and accessible to the core team. Care should be taken when sharing it more widely. This is for safety and security reasons, to avoid potential vulnerabilities being exploited by malicious actors, and to ensure risk information is presented in context and communicated appropriately (see Chapter 26: Stakeholder engagement).

20.6.2 Preparing to manage risk

20.6.2.1 Understand the nature and context of the work

When managing risk, the context in which the work is undertaken and the solution operated needs to be understood. This helps aspects such as:

- keep risk management appropriate and proportionate to the scale and complexity of the work
- prompt the identification of relevant legal requirements and industry regulations
- what solution is appropriate, for example novel or proven
- how to engage stakeholders or suppliers
- how to design and test the solution
- how to manage integration and transition to operations

The starting point for most people, when developing their risk management framework, is identifying the sponsoring body's or organisation's risk appetite and risk management policies and procedures. The *Orange Book* outlines the principles of good risk management across government departments and their arm's length bodies. Typically:

- a portfolio's risk management framework should be derived from the risk management policies and procedures of the sponsoring organisation
- a programme's risk management framework should be derived from that for the portfolio it is part of
- a project's risk management framework should be derived from the programme it is part of, or, when not part of a programme, from the portfolio it is part of

Risk appetite is the level of risk that an organisation, or part of it, is willing to accept in pursuit of strategic objectives.

The sponsoring body, portfolio director or senior responsible owner and associated boards need to understand the risk appetite at the outset. This influences the design of the risk management framework.

Government Major Projects Portfolio and Risk potential assessments

Programmes and projects joining the Government Major Projects Portfolio must have a *Risk potential assessment* and validated by HM Treasury, National Infrastructure and Service Transformation Authority and where appropriate central function teams. The completion of the assessment supports the understanding of the strategic risk potential.

20.6.2.2 Develop the risk management framework

Risks should be managed using an agreed and documented management framework which describes how risk management is to be done in the respective portfolio, programme or project. This information can be recorded in a single document or as a separate document that focuses only on risk. Different terms are used for these plans, including risk strategy, risk management strategy, risk plan and risk management plan.

When developing the framework, the risk appetite of the sponsoring organisation and the risk profile of the work itself should be considered, taking account of potential scale, complexity and other factors which can drive risk, such as sensitive policy or new technology. This should be used to agree the tolerances set.

The risk management framework should be developed when a portfolio, programme or project is initially set up and should be maintained or enhanced as work proceeds through its various life cycle phases to ensure it remains effective. It should be part of the overall governance and management framework (see Chapter 4: Governance and management) and include:

- roles and responsibilities of those involved
- the activities each role carries out
- the processes, procedures and techniques to be used.

The important products include the **risk matrix** (see 20.6.2.3 on defining the risk matrix), **risk response categories** (see 20.6.2.4 on deciding the risk response categories) and **risk register** (see 20.6.2.5 on preparing the risk register).

The risk management framework should be appropriate to the context and nature of the work and can change as work proceeds to reflect the type of solution proposed, its complexity and external influences. For example, the framework might require specialist approaches such as sensitivity analysis, simulation and scenario modelling (such as the Monte Carlo).

The risk management framework should include how time and cost contingency is to be managed and how their tolerances are set at different management levels, for example at a portfolio, programme, project or work package.

20.6.2.3 Define the risk matrix

A risk matrix is a tool for understanding how risks compare. It shows the relative position of each risk in terms of the likelihood of the risk occurring and the impact on objectives if it does occur.

Figure 20.1 is a simplified example of a risk matrix showing threats, with risks plotted on it. The size of each plotted risk can represent factors such as the cost of treating the risk or impact on benefits. Risk ratings in each segment should be chosen to enable comparison when tabulated in a risk register. An equivalent risk matrix can be made for opportunities.

Tailoring the risk matrix

Different parts of the work can have different risk matrices, showing different perspectives. For example, what is perceived as a high risk by a work package manager, although valid, might not appear so at a programme board level.

The impact dimension of the risk matrix may be qualitative or quantitative, for example to help understand cost, benefit or time risks and their potential cumulative effect on the work. The likelihood dimension can use a score or percentage probability.

Scales do not need to be linear. Non-linear scales reduce the tendency to plot risks at a middle point.

The risk matrix needs to be tailored to suit the work. For example, what is considered critical in the context of a nuclear power solution might be different to what is considered critical when changing business processes in a government organisation.

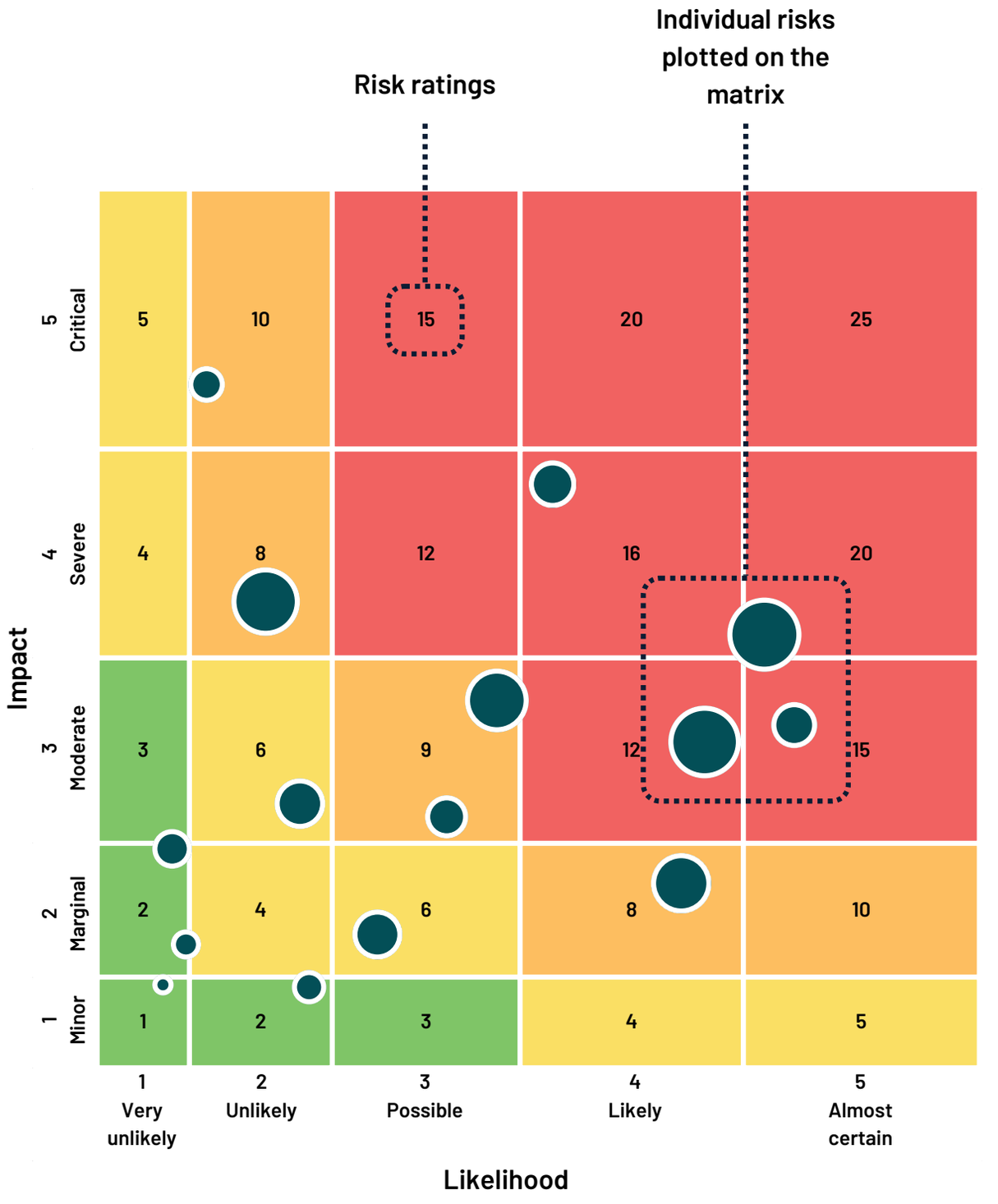


Figure 20.1 A simplified example of a risk matrix

20.6.2.4 Decide the risk response categories

The most commonly used risk response options are described in Table 20.1.

Table 20.1 Examples of risk responses

Response	Risk type	Description
Avoid	Threat	Avoiding the threat by removing or preventing the risk, often done by removing or working around the cause of the risk.
Treat	Threat	Treating the risk by: • putting controls in place to reduce the probability or impact of the threat • developing a response plan to limit the impact of the risk, if it materialises
Transfer	Threat	Transferring the threat by relocating the impact of the threat or the entirety of the threat to another project or party.
Accept	Threat	Tolerating the threat by accepting the impact of the threat if it materialises.
Share	Threat or opportunity	Sharing the threat or opportunity by transferring part of the impact to one or more projects or parties.
Exploit	Opportunity	Exploiting the opportunity by implementing actions to remove uncertainty and ensuring the opportunity happens.
Enhance	Opportunity	Enhancing the opportunity by implementing control actions to increase the probability or impact of an opportunity.
Reject	Opportunity	Accepting the probability and impact of the opportunity with a deliberate decision to take no further actions to enhance or exploit the opportunity.

20.6.2.5 Prepare the risk register

As part of the risk management framework, it is important to capture and maintain information on identified risks at both an aggregate and individual level. This is done through a risk register and includes details such as:

- a unique identification code
- the date the risk was raised
- name of person or body who identified the risk
- a description of the risk in terms of cause, event and impact (see 20.4 on what is risk management)
- category, for example, the type of risk
- the name of the risk owner
- velocity of the risk (how quickly the risk would affect objectives if it occurs
- scores for the risk's likelihood and impact (see 20.6.2.3 on defining the risk matrix)
- current risk rating
- target risk rating
- risk response categories and actions (see 20.6.2.4 on deciding the risk response categories)
- residual likelihood, impact and rating of the risk after responses have been applied

Proprietary or organisational tools usually prescribe similar data to provide consistency and collation of risks.

20.6.3 Key activities in managing risk

20.6.3.1 Overview

Risk management comprises a set of behaviours and activities undertaken throughout the life of a portfolio, programme or project, as shown in Figure 20.2. The activities are iterative and involve:

- identifying risks
- assessing risks
- responding to risks
- monitoring and reporting on risks

This applies to individual risks and as an aggregated risk profile.

Good and frequent communication among the team members also supports effective risk management. Working collaboratively tends to surface more risks than working in isolation and promotes more creative and cost-effective responses.

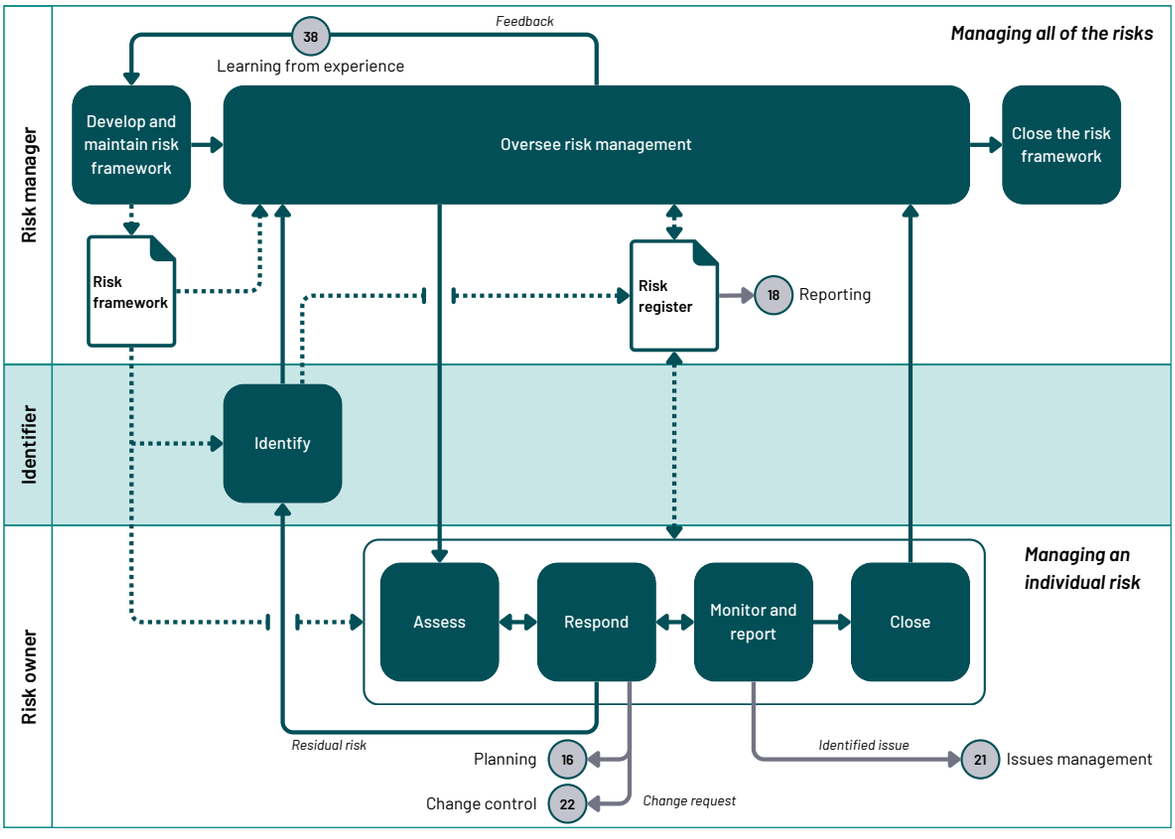


Figure 20.2 Overview of key risk management activities and their primary relationships

20.6.3.2 Develop and maintain the risk management framework

The approach to risk management should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management).

See 20.6.2.2 for detail on developing the risk management framework. The framework should be maintained to address relevant feedback from its use.

20.6.3.3 Oversee risk management

This activity looks at risks in aggregate to gain an overall view of the risks being faced and their impact on the objectives. This could result in consolidating or splitting risks if necessary, or the reassignment of owners. The activity can also include the provision of support to risk owners, if needed.

Looking at the risks in aggregate supports:

- making sure each risk has a named owner
- understanding whether the overall level of risks threatens the viability of the work

- assessing by categories, such as the type of risk, event, cause or impact and being able to provide risk responses that can respond to multiple risks at once
- patterns emerging among individual risks which could be symptoms of an overarching, more significant risk

If it becomes a possibility that work may no longer be viable, the work should be considered for an immediate review, significant revision and possible termination. See *Resetting major programmes* for guidance on steps to take when a significant revision is needed for large programmes and projects.

Aggregate risk should be reported on the risk register and managed through the steps in 20.6.3.4 on identifying a risk to 20.6.3.8 on closing the risk.

Throughout the life cycle of a portfolio, programme or project, risks need to be reported on regularly so that the portfolio director or senior responsible owner and their respective boards have an up-to-date understanding of the aggregate risk and significant individual risks which need their attention. Risk managers and owners need to understand the tolerances set for them and either report or escalate risks to the appropriate person or body if that tolerance has, or is likely to be, exceeded. Reporting needs to be kept under review to ensure that people are receiving the information they need when they need it.

The context and nature of the work may change throughout the life cycle. Therefore, the risk management framework should be under continuous review to ensure it remains effective.

20.6.3.4 Identify a risk

A risk can be identified using various structured and unstructured techniques.

Reviewing lessons from similar portfolios, programmes and projects helps identify the nature of threats and opportunities that have affected comparable work. As well as lessons captured by the organisation, the National Infrastructure and Service Transformation Authority and the National Audit Office who regularly produce reports and case studies from across government.

When planning, critically assess what could go wrong at each phase and the impact that might have. Focus on known areas of risk, such as systems integration and data migration, as well as risks specific to the work being undertaken.

For each output that makes up the overall solution, assess what could malfunction in operation, including health and safety aspects, and what impact that could have.

Brainstorming and facilitated workshop techniques can bring together the views of stakeholders and the wider team. A facilitated risk workshop is particularly useful at the beginning of a project and at the beginning of each stage. They can also be used periodically throughout the life cycle.

Breakdown structures can also enable teams to examine the environment in a structured way and identify sources of risk. PESTLE, which prompts consideration of political, economic, social, technological, legal and environmental factors, is commonly used alongside product breakdown structure and the project life cycle.

Sensitivity analysis can be used to identify the variables which have significant impact on outcomes and benefits. Whilst structured scenario planning and simulation can be used explore different plausible futures, test plans and assumptions, and show the impact on time, cost, benefits and overall risk exposure.

Use risk checklist prompts to help identify sources of risk, such as:

- **Risk potential assessment form**, used to assess the strategic risk potential of government programmes, projects and emerging policy that is likely to be delivered through a programme or project
- **Project routemap: risk management module**, which sets out a range of considerations for identifying risks across projects
- **Bad omens: signs your transformation programme will struggle and how to avoid it**, which sets out the 8 fundamental challenges faced by transformation programmes as prompts for risk identification

Assumptions also need to be considered. Assumptions are made when an unknown event or measure is taken as true or certain to happen for the purposes of planning, but without full supporting evidence. Significant assumptions should be treated as risks.

Assumptions are structured in a slightly different way:

- **the assumption**, describe what has been assumed
- **the impact**, describe the impact of the assumption on the project if it is proven to be false

When a risk is identified, the risk manager should verify it as a risk and assign a risk owner. Each risk should be described at an appropriate level of detail (for example, work package or project level) where it can be assigned to, monitored, and managed by a single owner.

20.6.3.5 Assess the individual risk

The risk owner should validate the information the identifier provided about the risk and then investigate it further. A range of approaches (qualitative and quantitative) should be considered for assessing a risk. When assessing an individual risk, the risk owner and relevant stakeholders should seek to understand aspects such as:

- **probability**, how likely a threat or opportunity is to happen
- **impact**, the effect of a threat or opportunity on the objectives if they were to happen

- **velocity**, how quickly the risk would have an impact on objectives should it occur
- **changes in impact**, how the effect might change should the risk happen at a time that is different from what is expected

This information should be recorded and updated in the risk register (see 20.6.2.5 on preparing the risk register).

20.6.3.6 Respond to the risk

When deciding how to respond to a risk, it is important that the response is proportionate and represents value for money, balancing the cost of the response against the probability and impact of the risk occurring and the resulting likely loss or benefit. Responses to a risk, if approved, need to be built into the plan for the work, and might require contingency provision in the budget or buffers for time. See 20.6.2.4 for examples of risk response categories.

Responses do not always fully eliminate the impact or probability of a risk, and there is often some **residual risk**.

The *Project delivery glossary* defines residual risk as:

> The risk remaining after the risk response has been applied.

Each response should be recorded in the risk register and assessed to understand the residual risk and whether the reduction is acceptable or if more action is needed to bring it within tolerance. The impact of a risk response on other risks in the register also needs to be understood as sometimes responding to one risk can affect other risks.

The impact of a risk response on the definition of the plan, solution design and management documentation needs to be considered. If any changes are required to these, this could require a formal change request to be initiated (see Chapter 22: Change control).

Once a risk response and set of actions have been approved, these need to be implemented. The risk owner should assign actions to one or more named individuals, known as the action owner(s) to undertake this work.

20.6.3.7 Monitor and report on the risk

A risk should be monitored to verify the effectiveness of the risk responses and risk controls. The risk status should be reported to those who need to know as part of formal risk reporting and escalated sooner to the relevant manager if urgent action is needed. Preventative or corrective action is needed if a risk response or risk control is not having the desired effect: this could also require the plan to be updated (see Chapter 16: Planning). A significant change to the plan would require a change request to be initiated (see Chapter 22: Change control).

As a result of monitoring, risk responses might need to be changed. This could be because the initial response had insufficient effect or because the risk itself has evolved. For example, an initial response to reduce the impact of a threat might bring the risk within tolerance and so the response is to accept it.

If a risk happens then it becomes an issue and needs to be managed as such (see Chapter 21: Issue management). The relationship between risk management, issue management and change control is shown in Figure 21.1.

The risk register is a primary source of management information used in reporting (see Chapter 18: Reporting) and should be updated on an ongoing basis, so it reflects the current understanding of the prevailing threat or opportunity.

20.6.3.8 Close the risk

A risk should be closed if it has been avoided successfully, its proximity has passed or a risk control is no longer needed. It should also be closed if the risk has happened and is being managed as an issue (see Chapter 21: Issue management). Risks should be closed through an agreed procedure such as from an appropriate manager in the team.

A closed risk should be kept on the risk register, identifying when and why it was closed and by whom, as this information is important for maintaining traceability (see Chapter 23: Traceability management) and when conducting lessons learned reviews (see Chapter 38: Learning from experience). A risk may be reopened if it re-emerges.

20.6.3.9 Close the risk management framework

Once the work has been completed and risk management is no longer needed, the risk management framework should be merged into the management framework for the solution or closed, transferring open risks to an ongoing risk owner if necessary, and retaining information and data in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

20.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 010: Analysis*
- HM Treasury, *Aqua Book: guidance on producing quality analysis*
- HM Treasury, *Green Book: UK government guidance on appraisal*
- HM Treasury, *Orange Book: management of risk – principles and concepts*

- Infrastructure and Projects Authority, *Bad omens: signs your transformation programme will struggle and how to avoid it*
- Infrastructure and Projects Authority, *Infrastructure guide: risk management*
- Infrastructure and Projects Authority, *Project routemap: risk module*
- Infrastructure and Projects Authority, *Resetting major programmes*
- Infrastructure and Projects Authority, *Risk potential assessment form*
- National Audit Office, *The DECA: understanding challenges in delivering project objectives*

21. Issue management

21.1 Purpose of issue management

The purpose of issue management is to ensure that the objectives of a portfolio, programme or project are more likely to be achieved when unplanned events occur that threaten or enhance the likelihood of success.

21.2 Key points

- Create an environment where issues are raised openly and promptly.
- Never ignore an issue. Respond to issues by either accepting their impact or implementing corrective actions.
- Manage issues at the individual and aggregate level, using the experience of the whole team to identify patterns, common root causes and opportunities for preventative action.
- Maintain an issue register to ensure that the information is used appropriately.

21.3 Why manage issues?

Issues are inherent to project delivery. Like risk, portfolios, programmes and projects deliver change, and plans will not always hold. Unless such deviations from the plan are addressed, the objectives for the work might not be met.

21.4 What is issue management?

Issue management comprises the identification, assessment and handling of any event which either threatens the success of the work or represents an opportunity to be exploited.

The *Project delivery glossary* defines an issue as:

> An issue is a relevant event that has happened, was not planned and requires management action. It could be a problem, benefit, query, concern, change request or risk that has occurred.

An issue can originate within or outside the work. Issues are often related to problems and concerns but an issue can also reflect a query. An issue can result from a risk that has occurred (see Chapter 20: Risk management) and arise at any time during a portfolio, programme or project life cycle.

Issues need to be managed to reduce the negative impact on objectives, or answer and resolve queries and concerns. Issue management should be aimed at ensuring the objectives are likely to be achieved. In some cases, an issue can result in the work being unviable, leading to significant revision or even termination. See *Resetting major programmes* for guidance on steps to take when a significant revision is needed for large programmes and projects.

Issues can either be managed within the current baseline of a project, programme or portfolio, or might require a change to keep it viable. In government, project delivery issues can have many causes, including:

- a change in government policy
- unidentified costs or benefits
- unforeseen side-effects
- capacity and capability constraints
- difficulty in collecting necessary information and data
- negative reaction and behaviours from stakeholders
- failure to comply with statutory requirements, such as the public sector equality duty, leading to legal challenge or judicial review
- unforeseen external events, for example COVID-19

The approach to issue management is part of the governance and management framework. It closely connects with both risk management and change control as shown in Figure 21.1.

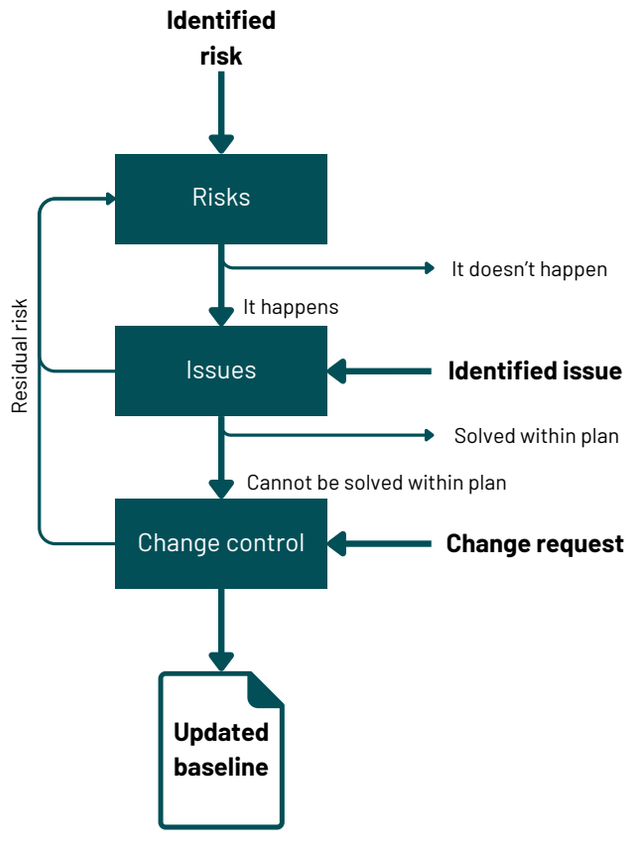


Figure 21.1 How risks become issues and lead to change control

The monitoring of issues is typically supported by an issue register which records the characteristics and assessment of the issue such as its category, the inherent, residual and target impact, the response type and plan, related risks and issues, and status.

An issue should be described at a level of detail where it can be managed effectively (such as at work package or project level) and where it can be assigned to a single owner. An issue has 3 elements:

- **cause**, the specific factors that led to the event, query or concern
- **event, query or concern**, what has happened, or been raised
- **impact**, describing the effect of the issue on the objectives

It is helpful to describe an issue in a way which includes all 3 elements; for example:

'There is an issue that [event, query or concern], caused by [cause], has resulted in [effect].'

21.5 Who manages issues?

People undertaking a project delivery role need an awareness of how to identify and monitor issues, decide how to respond to those issues and implement the planned responses.

Accountability and responsibility for issue management should be clearly defined within the governance and management framework and reviewed on a regular basis, to avoid duplication or gaps. Typically, accountability follows the hierarchy in the work breakdown structure.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for issue management. They own the issue management framework, ensuring that it is effective for understanding the impacts of issues on their objectives, portfolio plan or business case (for a programme or project) and on overall viability, and that issues are identified and addressed.

The **portfolio manager** or **programme or project manager**, as appropriate, is accountable for developing and managing the issue management framework, including its processes, tools and techniques, and for ensuring actions agreed to address issues are taken. They also assess issues in aggregate to determine if there are any common root causes or similarities.

In general, any person with a legitimate interest may raise an issue and is known as the **identifier**. In practice an issue normally originates from the sponsoring body or the team itself, including suppliers. It can also originate from a risk owner when they require a change to respond to a risk.

Depending on the scale of the work, there could be a dedicated **issues manager** or project support officer with the responsibility for managing issues on behalf of the portfolio, programme or project manager. If a dedicated issue manager is not necessary, the portfolio, programme or project manager, as appropriate, should undertake the role. For large work packages, the work package manager normally undertakes the role for their own work package.

Each issue is assigned to an **issue owner**, who is a named individual responsible for planning, implementing, and monitoring the response. The issue owner can be supported by people assisting on implementation or monitoring. An issue owner needs to be someone who can manage a given issue either due to their position, authority or technical or other experience. To keep issue management effective, care should be taken to not allocate too many issues to one owner at one time. As an issue can evolve as more information becomes available, the ownership of an issue can be reassigned to a more appropriate person if necessary.

More detail on the risk and issue technical competency and how this relates to each project delivery role can be found in the *Project delivery capability framework*.

21.6 How to manage issues

21.6.1 What to consider when managing issues

21.6.1.1 Managing issues at an appropriate level

Issues should be managed at an appropriate level (portfolio, programme, project or work package) based on the source and extent of the impact. The more complex the issue, the more detailed the assessment of impact and cause needs to be. This supports proportional responses to issues.

21.6.1.2 Aligning the framework with the risk management framework

Where possible it is helpful to align risk and issue management frameworks, for example, using common techniques and tools for identification and assessment, and consistent metrics to monitor and report. This supports efficiency and helps track the relationship between risks that are causes of issues, and residual risks which result when responding to an issue.

The risk appetite, described within the risk management framework, supports the design of the issue management framework. The risk appetite influences the threshold levels of issue exposure, called **issue tolerances**. These tolerances can be set at a portfolio, programme, project, work package level, for individual issues, or across issues of a common type in aggregate. These, when exceeded, should trigger some form of response, such as escalation to a higher-level decision maker to decide a response or raise a change request. The triggers for escalation should be described in the issue management framework.

21.6.1.3 Understanding the root cause of an issue

When first identified, the issue might only represent a symptom. A single cause could result in many symptoms which might be identified in different areas of the work and have already been identified as seemingly unrelated issues. There might also be unidentified issues relating to the same cause. By identifying the root cause all these issues can be addressed together. The issues manager should identify related issues, reallocate ownership or redefine the issues, or all, to ensure a single-issue owner to oversee the response, even if multiple teams are working on resolving different aspects of it.

21.6.1.4 Being open and collaborative

Openness and collaboration on open and closed issues help promote wider understanding of issues across the work and their typical sources. It also helps build confidence that problems can be overcome and opportunities exploited, as well as being a check when a similar issue resurfaces later. The record of issues should be open to the core team, but care should be taken in sharing issues more widely, both to protect safety and security, and to ensure that information is presented in context and communicated appropriately (see Chapter 26: Stakeholder engagement).

21.6.2 Preparing to manage issues

21.6.2.1 Understand the context and nature of the work

Take a strategic view of likely requirements for issue management. This can be by developing an understanding of the context and nature of the work, including its scale, complexity and risk profile, as well as its objectives and desired outcomes.

21.6.2.2 Understand the wider governance and management framework

Issue management does not operate in isolation. Consider how it connects to risk management and change control, and how issues will be escalated and reported between different levels of the project delivery hierarchy. This consistency of escalation routes, within and across levels, should be defined before issue management begins.

21.6.2.3 Determine the data and detail required to manage and report on issues

The data and detail needed in the issues register to manage issues effectively varies depending on the needs of the individual portfolio, programme, or project. Simple portfolios, programmes and projects need less information and data. Different aspects of the work might require different information to other aspects. It is also important to consider the context as often information from one piece of work can be collated for reporting with other work within the same portfolio, programme or project, for example where there are common issues.

Unless the choice of data, level of detail and categorisation are compatible, aggregated reporting can become meaningless. On the other hand, sufficient information should be recorded to enable decisions and action to be taken. The choice of tools and the experience of the team can also influence the information to be gathered and held.

21.6.2.4 Identify relevant regulations

There are often legal, regulatory or policy requirements which require the formal reporting of certain types of issue. Such reporting needs to be built into the issue management framework. Examples of legislation covering reportable incidents are the *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013*, and the *UK General Data Protection Regulation* (GDPR) which sets requirements on personal data breaches (see Chapter 24: Information and data management).

Part B: Tailoring and adopting *The Teal Book* can also help with this as it sets the context for project delivery in different sectors.

21.6.3 Key activities in managing issue management

21.6.3.1 Overview

Issue management requires a systemic approach to identifying, assessing, responding, monitoring, reporting, and closing individual issues through the life cycle. It also requires a framework to govern and manage these activities.

These related activities are shown in Figure 21.2. These may be sequential or iterative, depending on the nature of the portfolio, programme or project.

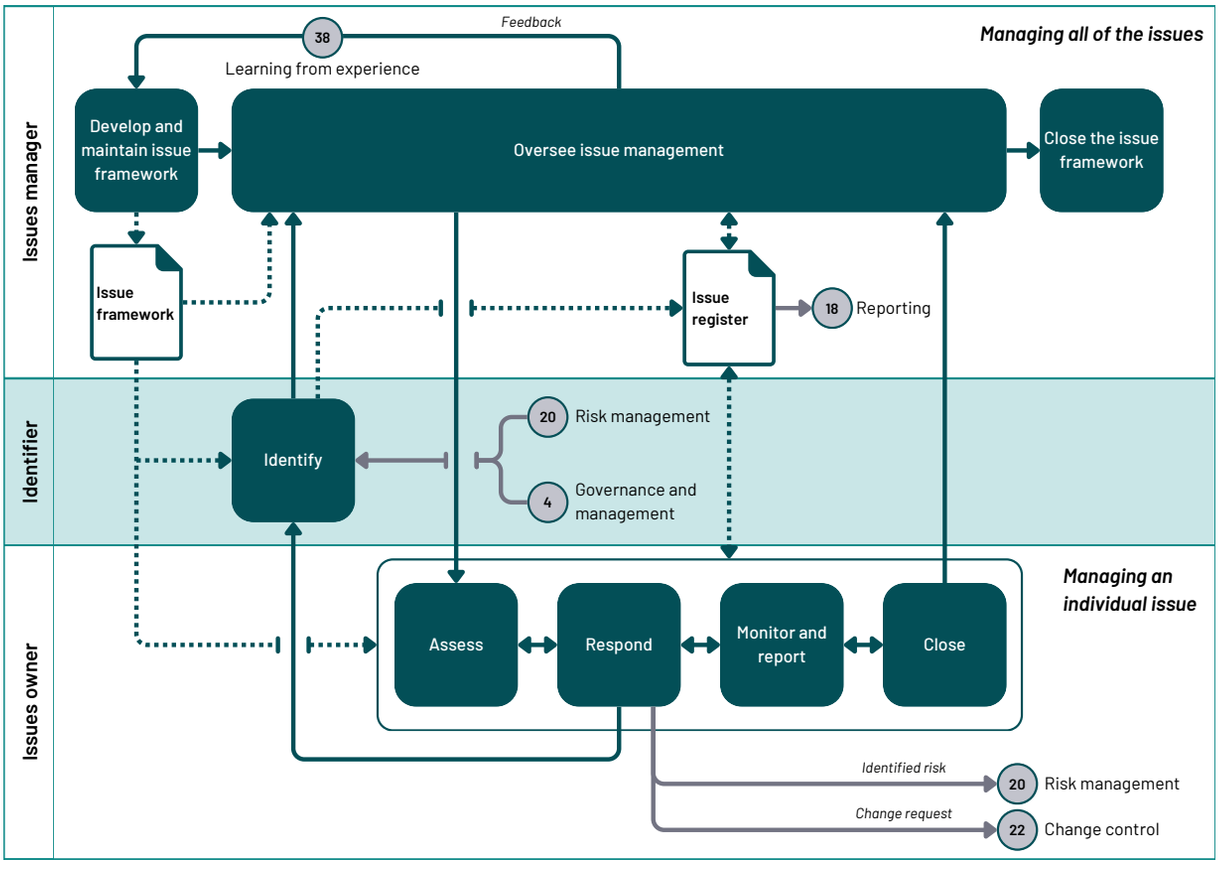


Figure 21.2 Overview of issue management activities and their primary relationships

21.6.3.2 Develop and maintain issue management framework

The approach to issue management should be defined including any processes, methods, tools and techniques to be used (see 21.6.2 on preparing to manage issues). This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The issue management framework should be developed at the start of the life cycle and maintained to address relevant feedback from its use.

21.6.3.3 Oversee issue management

This activity looks at issues in aggregate to gain an overall view of the challenges and opportunities being faced and their impact on the objectives. This could result in consolidating or splitting issues if necessary, or the reassignment of owners (see 21.6.1.3 on understanding the root cause of an issue). The activity can also include the provision of support to issue owners, if needed.

Looking at the issues in aggregate supports:

- making sure each issue has a named owner
- understanding whether the overall level of issues threatens the viability of the work
- identifying patterns that point to a common cause, so preventative action can be taken
- identifying corrective actions that can resolve multiple related issues at once

Throughout the life cycle of a portfolio, programme or project, issues need to be reported on regularly so that the portfolio director, senior responsible owner and their respective boards have an up-to-date understanding of issues such as problems or concerns being faced and significant individual issues which need their attention.

The context and nature of the work may change throughout the life cycle. Therefore, the issue management framework should be under continuous review to ensure it remains effective. For example, early in the project life cycle the issue thresholds for escalation might be lower than during the delivery stage.

21.6.3.4 Identify an issue

An issue is identified when it is first recognised and formally registered. The raising of an issue could be formal or informal, such as a risk occurring, a submission of a query or concern from a member of the team or stakeholder. Once recognised, the issue should be verified and recorded in the issues register.

21.6.3.5 Assess the individual issue

The issue should be assessed by the issue owner to understand its cause and the impact it has on the objectives if not resolved. If the cause is not fully understood there is a risk that the impact could be incorrectly determined and the wrong actions might be taken. The issue should be classified in accordance with the pre-defined categories in the management framework. When assessing an individual issue, the issue owner and relevant stakeholders should seek to understand aspects such as:

- **cause**, the specific factors that led to the event, query, concern or change to be identified
- **event, query, concern, change request**, what has happened, or been raised

- **impact**, describing the effect of the issue on the objectives

Various techniques can be used to determine the root cause to the likely impact. Guidance can be found in the *Government Functional Standard for Analysis* and in the *Aqua Book*.

This information should be recorded and updated in the issue register.

21.6.3.6 Respond to the issue

Once an issue has been assessed, the response should be determined and noted in the issue register. The response can range from doing nothing, by accepting the impact, to taking corrective action such as making changes to the work within current tolerances or seeking agreement to a change outside existing tolerances. In the case of a major issue which cannot be resolved, the issue should be escalated to the appropriate level for a decision on possible termination of the work.

The response actions should be proportionate to the impact and be value for money. The impact of an issue response on the definition of the plan, solution design and management documentation needs to be considered. If any changes are required to these, this could require a formal change request to be initiated (see Chapter 22: Change control).

The issue owner should assign actions to one or more named individuals, known as the action owner(s), to undertake this work.

21.6.3.7 Monitor and report the issue

The actions taken in response to the issue should be monitored to check they are effective. Those who need to know about the issue should be kept informed. As a result of monitoring, the responses can be changed. This could be because the initial response had insufficient effect or because more information on the issue itself is available.

The issues register is a primary source of management information used in reporting (see Chapter 18: Reporting) and should be updated on an ongoing basis to reflect the current understanding of the issue, its impact and the response actions.

21.6.3.8 Close the issue

An issue should be closed once it no longer needs monitoring and the response actions have been completed. There should be an agreed procedure for closing issues, for example seeking approval from the appropriate decision-making body in the team, as determined in the governance and management framework.

Closed issues should be kept on the register, stating when and why they were closed and by whom as this information is important for managing aggregated issues, identifying likely sources of risks (see Chapter 20: Risk management), for maintaining traceability (see Chapter 23: Traceability management), and when conducting lessons learned reviews (see Chapter 38: Learning from experience).

21.6.3.9 Close the issue management framework

Once the work has been completed and issue management is no longer needed, the management framework should be merged into the management framework for the solution or closed, retaining information and data in accordance with the delivery and sponsoring body's information retention policy.

21.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- HM Government, *Government Functional Standard for Analysis*
- HM Treasury, *Aqua Book: Guidance on producing quality analysis*
- Infrastructure and Projects Authority, *Resetting major programmes*
- Office for Equality and Opportunity, *Public Sector Equality Duty: guidance for public authorities*
- UK Parliament, *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013*
- UK Parliament, *UK General Data Protection Regulation* (GDPR)

22. Change control

22.1 Purpose of change control

The purpose of change control is to ensure only beneficial or necessary changes to a baseline are implemented.

22.2 Key points

- Changes are inevitable in project delivery but should only be implemented through a structured change control process that protects the baseline against scope creep.
- Identify which aspects of the work should be subject to change control.
- Introduce change control progressively as plans are baselined.
- Every change request should be assessed through an impact assessment that considers its effects before a decision is made to approve, reject of defer it.
- Each change request should be recorded in a change control register.

22.3 Why control change?

Changes are inevitable in project delivery. Without a structured process to control them, unmanaged changes can cause scope creep, where extra requirements are added in an uncontrolled way, leading to constraints being breached against the baseline, such as time and cost.

Change control exists to prevent this. It makes sure that every proposed change to scope and constraints is assessed for impact on the plan, solution design and management documentation baselines, prioritised against the objectives of the work and either approved or rejected through a clear decision.

It keeps baselines aligned and makes sure that relevant stakeholders and team members are aware of what is being proposed and implemented.

22.4 What is change control?

Change control is the set of activities to control requests to change the baseline of a portfolio, programme or project so that only beneficial or necessary changes are approved and implemented. The approach forms part of the governance and management framework.

An approved change request means that the change is integrated into baselined plans,

solution and management documentation, ensuring that the impacts of the change are fully factored into other parts of the work.

Change control is distinct from management of organisational and societal change, which is to prepare, equip and support organisations and individuals (for example, users, citizens) to change their approach and, where appropriate, behaviours and to embed the required changes delivered as a result of the work, as described in Chapter 35: Management of organisational and societal change.

Change requests can originate from any stakeholder, including policy makers, executive management, end users, suppliers or team members. They are typically from:

- a threat that is above tolerance
- an opportunity that could be exploited
- an issue that cannot be resolved within the current constraints

In government change requests often come from:

- a change in government or organisational policy affecting the objectives
- a change in the risk appetite
- changes in environmental factors
- changes identified from continuous improvement activities
- problems or faults identified with the solution

In programmes and projects, a frequent period for changes to the baseline is in readiness for a submission of an updated business case.

A change request is usually captured on a form which records the information needed for the change control register. The register records the characteristics of each change request, including categories, description, impact, related risks and issues, and status. The status indicates progression through the activities, typically:

- requested
- assessed
- approved
- deferred
- implemented
- closed

As a change request progresses through its journey, additional information can be added to the register such as an impact assessment covering the implications of the change on the plan, solution, management documentation and configurable items.

Change control has a direct relationship, as shown in Figure 22.1, with traceability management which ensures the relationships between the different components (or elements) of a solution and the associated management documentation are understood (see Chapter 23: Traceability management) and information and data management which ensures information and its underlying data (physical or electronic) is available and reliable for undertaking work and making decisions (see Chapter 24: Information and data management).

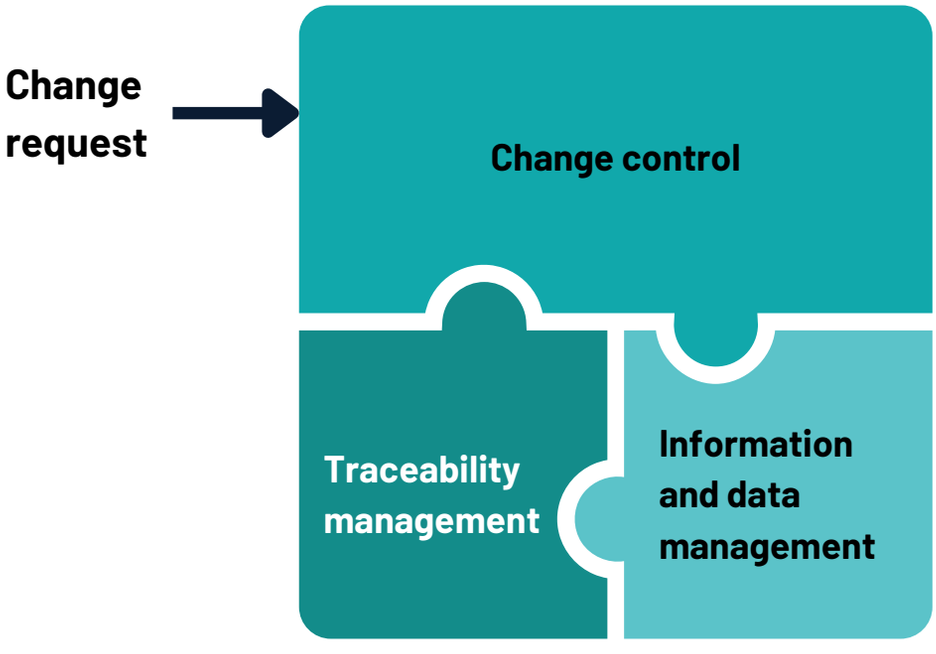


Figure 22.1 The close relationship and interfaces of change control, traceability and information and data management

Decisions on changes to the baselined plan and solution depend on the allowable tolerance set for the manager responsible for that part of the plan or solution. Where a change exceeds tolerance, but is considered necessary or beneficial, the change request should be escalated to the appropriate level. Decisions on change requests can be to:

- approve (with or without conditions) and authorise the change to be implemented
- approve but defer implementation
- reject with or without a need for more information

If a proposed change is rejected because it exceeds approved baselines, then:

- further work can be initiated to consider if the change can be made more acceptable or accommodated through trade-offs without impacting the baseline overall
- a decision sought on whether work can be replanned and baselines reset to enable the change to proceed, which normally requires escalation to a more senior decision-maker or governance body (including, potentially, the relevant investment approvals body where a change would impact on the approved business case)

22.5 Who controls changes?

People undertaking a project delivery role require at least an awareness of how to request changes. Accountability and responsibility for change control should be clearly defined within the governance and management framework and reviewed on a regular basis, to avoid duplication or gaps. Typically, accountability follows the hierarchy in the work breakdown structure.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for change control and is the ultimate owner of changes. They own the change control framework ensuring that it is effective for understanding changes and impacts of changes on the baseline such as outputs, outcomes, benefits, defined constraints and objectives.

The **portfolio manager** or **programme or project manager**, as appropriate, is accountable for developing and managing the change control framework, including its processes, tools and techniques.

Depending on the scale of the work, there could be a dedicated **change control manager** or **support office manager** with the responsibility for overseeing changes on behalf of the portfolio, programme or project manager. They may exercise these functions through a dedicated **change control board**, which they or the portfolio, programme or project manager may chair, usually as a sub-board reporting to the portfolio, programme or project board. If a dedicated change control manager is not necessary, the portfolio, programme or project manager, as appropriate, should undertake the role. For work packages, the work package manager often undertakes the role for their own work package.

In general, any person with a legitimate interest may raise a change request and is known as the **identifier**. In practice a change request often comes from the sponsoring body or the team itself, including suppliers. It can also originate from a risk owner or an issue owner when they require a change in order to respond to a risk or resolve an issue, or from users, when for example circumstances or requirements change.

Each change is assigned to a **change owner**, who is a named individual responsible for assessing, planning, implementing, and closing a change request. The change owner can be supported by people to assess and implement the change. A change owner needs to be someone who can manage a given change either due to their position, authority, technical

or other experience. To keep change control effective, care should be taken not to allocate too many changes to one owner. As the characteristics of a change become clearer during assessment, the ownership of a change can be reassigned to a more appropriate person if necessary.

More detail on the change control competency and how this relates to each project delivery role can be found in the *Project delivery capability framework*.

22.6 How to control change

22.6.1 What to consider when controlling change

22.6.1.1 Identifying the right decision-makers at the right level

Decisions on change requests should be made by those who have the authority to do so, within their assigned tolerances and who own the affected configuration items. If the impact of the change request goes beyond their authority, then either a higher level of decision-maker is needed or agreement sought from the impacted owner. The change control manager normally coordinates such escalations, often working with a change control board which oversees the change control process. The change control manager and board view changes in the aggregate, channelling, and prioritising change requests. If the change impacts another portfolio, programme or project, the decision maker should have accountability for balancing the competing needs of the work. Under such circumstances, decisions are often made at an organisational level, for example a portfolio board or investment committee.

To ensure effective decision-making, a tiered system of delegation should be defined and established in the change control framework (see 22.6.3.2 on developing the change control framework). Portfolio, programme and project managers should have permissible tolerances within which they can approve changes without escalation. There are normally several levels for review and authorisation of changes depending on the level of impact of a change, for example, impact on baselined plans, approved business case or wider impacts on other projects, programmes or portfolios.

The need for escalation and the complexity of assessing some changes can make the assessment of change requests seem lengthy. This can be mitigated through good traceability management practices, delegation and separation of the work into streams which are focused on objectives, thereby making decisions possible at a lower level without compromising other work. Nevertheless, timescales for assessments need to be realistic or the quality of information for decision makers could suffer.

22.6.1.2 Assessing changes to an appropriate level of detail

The data needed to manage change requests effectively can be held in a change control register. The detail needed can vary depending on the individual portfolio, programme, or project's needs. Enough information should be recorded to enable decisions to be made and action taken. The choice of tools and the experience of the team can also influence what needs to be collected and held.

22.6.1.3 Using change windows for solution design changes

Assessing and approving changes to the solution design can be managed more effectively if changes are grouped for implementation during specific periods. This is often the approach used for software changes. This period is called a 'change window' and it helps assess the aggregated impact of changes, which can then be implemented more efficiently. The use of change windows can help reinforce discipline around change control.

22.6.1.4 Being open and collaborative

The record of changes should be open to the core team so they are aware of what is proposed and can take a view on whether their work could be affected. Such openness can help identify undiscovered problems and promote collaboration within the team. A view on all the changes can also show how stable the work is, with multiple changes indicating that the solution and plans are volatile and that risks need managing. This can also serve as a source of lessons for improving future working practices. Progression in the register also shows achievement in the disciplined control of change.

22.6.2 Preparing to control changes

22.6.2.1 Understand the wider governance and management framework

Understand the wider governance and management framework for the sponsoring organisation, portfolio, programme or project, as appropriate. Within this, understand how change control, issue management and risk management work together (see Figure 21.1) and, importantly, how decisions for changes can be escalated from one level in the project delivery hierarchy to another. All the planning and control practices need to work together both within a level and across levels. Consider how change requests are to be reported, so that there is consistency within and across those levels.

Change control is also important in:

- traceability management, as it includes the management of configuration items and baselines (see Chapter 23: Traceability management)
- planning, as it is essential for implementing a change (see Chapter 16: Planning)

22.6.2.2 Understand the nature and context of the work

Develop an understanding of the context and nature of the work, such as understanding its complexity and scale, objectives, desired outcomes and interdependencies with other programmes, projects and work. This informs the choice about which aspects of the work should be subject to change control and who should have authority for decisions.

The more complicated or complex the work is, the harder it is to control change efficiently and effectively and the change control process and tools need to be chosen to reflect this.

22.6.2.3 Choose the appropriate tools and processes

Once the scale and complexity of the work is known, appropriate tools and processes can be defined, together with the resources needed to use them. For simple solutions or when the work is outsourced or contracted out, the data can be handled through spreadsheets. For more complicated solutions, specialist tools are needed to manage the volume of data and relationships and make it available to those who need it when they need it. The processes need to interface with the traceability management processes and are usually dependent on the same tool.

22.6.3 Key activities in controlling change

22.6.3.1 Overview

Change control requires a systemic approach to identifying, assessing, planning, making a decision on, implementing, and closing changes through the life cycle. It also requires a defined framework to govern and manage these activities, overseeing change control and closing the change control environment.

These related activities are shown in Figure 22.2. These may be sequential or iterative, depending on the nature of the portfolio, programme or project.

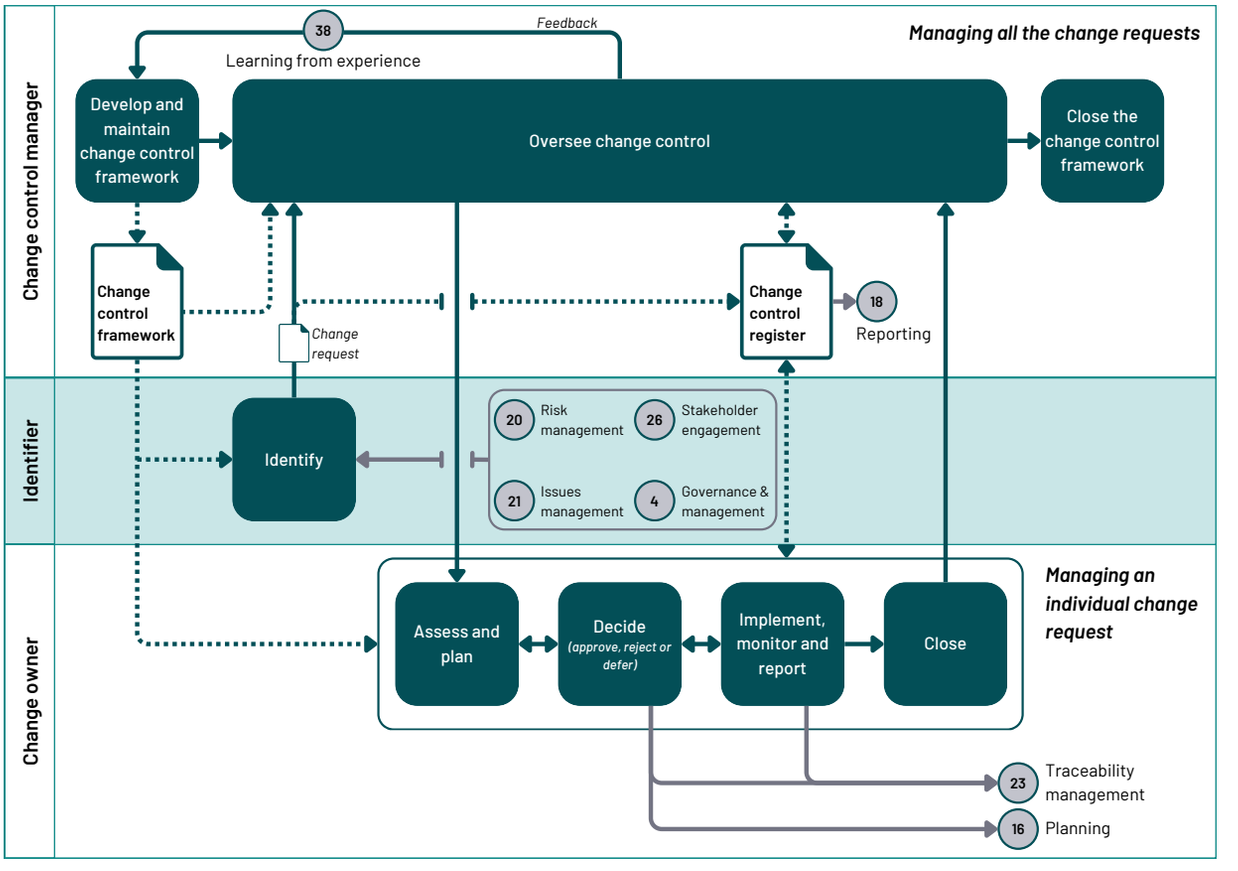


Figure 22.2 Overview of the key activities in change control and their primary relationships

22.6.3.2 Develop and maintain the change control framework

The approach to change control should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important considerations of this activity are discussed in more detail in section 22.6.2. The framework should be maintained to address relevant feedback from its use.

22.6.3.3 Oversee change control

Change requests can come from different sources and can relate to the same part of the work. It is therefore often not desirable to consider each of them in isolation nor, if approved, implement them immediately, as this can be inefficient or lead to contradictory requests being implemented. An important part of overseeing change control is to identify where change requests are better managed as a bundle (in aggregate), merged or redefined. Having good traceability makes this task easier.

A systemic view also ensures that the change control continues to fulfil its purpose and meets the needs of the work. This also includes the maintenance of the control framework, and providing periodic reports on changes and trends (see Chapter 18: Reporting).

The context and nature of the work could change throughout the life cycle. Therefore, the change control framework should be under continuous review to ensure it remains effective.

22.6.3.4 Identify a change

Identifying a change is when a change is proposed and a change request is put forward, formally registered and verified.

A change request can originate from any stakeholder, including ministers, policy makers, executive management, end users, suppliers, or team members. Alternatively, a change might result from responding to a threat that is above tolerance, an opportunity that could be exploited or an issue that cannot be resolved within the current constraints.

Once put forward, the change request should be registered and an owner assigned by the change control manager.

22.6.3.5 Assess and plan the change

The change request should be assessed and validated to understand its impact on baselines for the plan, solution and the management documentation, interdependent work and whether it is necessary or desirable. Where necessary, supporting information or evidence can be sought. If the impact is not fully understood, decisions may be based on incorrect assumptions.

The change request should be classified in accordance with the pre-defined categorisations in the control framework. The assessment of a change request can either be simple or detailed, depending on the nature of the change. A preliminary simple assessment can help determine if a more detailed or impact assessment is needed.

There are different techniques that can be used to evaluate the possible options (which should include doing nothing) and their impacts. The *Government Functional Standard for Analysis* and the *Aqua Book* provide useful guidance on how to carry out such assessments.

The proposed change should be planned in draft (see Chapter 16: Planning), with an understanding of how to incorporate it into the wider work and implement it. Residual risks should be recorded and addressed. Those undertaking the assessment should make a recommendation on what course of action should be taken and why. Once the assessment and plan are ready for a decision, the change control register should be updated.

22.6.3.6 Decide on the change

After assessing a change request, a decision should be made on whether to approve, reject or defer the change.

The decision should be backed by the impact assessment, supported by evidence where possible, including possible implementation options and taking account of the associated risks.

Where a change is necessary but cannot be accommodated within existing baselines, a decision to replan or reset baselines may need to be sought through agreed governance. If inability to make the change threatens the viability of the work overall then this should be escalated through governance, such as to the portfolio director or senior responsible owner.

The change control register should be updated with the status and the change control manager, change owner, relevant team members and stakeholders notified.

22.6.3.7 Implement, monitor and report on the change

If a proposed change is approved, the change should be implemented in accordance with the plan, and the change control register updated. Relevant configuration items such as baselines, documentation, and deliverables should be updated (see Chapter 23: Traceability management).

Actions taken to implement the change should be monitored and reported to ensure that the change is being carried out effectively, and those who need to know about the change and its progress in implementation are informed, such as impacted team managers and stakeholders. Monitoring also enables changes to be made to the plan if any issues or additional risks are identified.

The change register should be updated to reflect the current understanding of the change as well as its impact and implementation.

22.6.3.8 Close the change request

A change request should be closed once the change has been confirmed as being implemented or rejected. The change control register should be updated.

Closed changes should be kept on the register, stating when and by whom as this information can be useful for identifying likely sources of risks when conducting lessons learned reviews (see Chapter 38: Learning from experience) and for maintaining traceability (see Chapter 23: Traceability management).

22.6.3.9 Close the change control management framework

Once the work has been completed and change control is no longer needed, the change control manager should close the management framework, retaining information and data in accordance with the delivery and sponsoring body's information retention policy (see Chapter 24: Information and data management).

22.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- HM Government, *Government Functional Standard GovS 010: Analysis*
- HM Treasury, *Aqua Book: guidance on producing quality analysis*

23. Traceability management

23.1 Purpose of traceability management

The purpose of managing traceability is to ensure the relationships between the different components (or elements) of a solution and the associated management documentation are understood throughout the life cycle, such that, at any point in time:

- change control can be applied effectively
- the makeup of a solution and parts is defined and reproducible

In some sectors, traceability management can be known as configuration management or parts management.

23.2 Key points

- Traceability management is how you maintain control and determine the impact of change requests.
- Choose which deliverables need managing as configurable items; not everything needs to be traceable.
- Group related deliverables to keep the traceability workload proportionate.
- Define and maintain baselines for the plan, solution and the management documentation.
- Ensure suppliers manage traceability for their allocated work within the traceability management framework.

23.3 Why manage traceability?

Changes to requirements, designs, plans and management frameworks are inevitable when a solution is being developed and when in use. Unless the versions of, and relationships among, every element of the solution and its related management documentation are known, it is difficult to determine the impact of any but the simplest proposed change.

Traceability also ensures that a solution, or any part of it, can be reproduced at different points in the life cycle. This is particularly important in software development and manufacturing.

Without effective traceability management, teams risk:

- duplicating or losing information
- working on the same component at the same time
- being unable to reproduce a design or verification scenario
- changing elements that should be locked
- working to different or incompatible documentation

By managing traceability effectively, change control is simplified and verification, integration and validation are more reliable.

23.4 What is traceability management?

23.4.1 Solution delivery, planning and control and contracts

Project delivery is made up of 2 fundamental types of work for which traceability needs to be managed:

- the design and development of the solution in its interim and final states, including the components of the solution itself as well as the associated design documentation and integration, verification, validation, and transition strategies and plans
- the planning and control of the related portfolio, programme or project, for example through the portfolio plan, business case and other plans

This work helps ensure the integrity of the solution so that all of the components come together as planned and the output or outcome is delivered as scoped (see Part F: Solution delivery). It also ensures contracts are properly specified and contractual documentation is maintained where suppliers are delivering some or all of the solution (see Chapter 25: Procurement and contract management).

23.4.2 How traceability connects the solution with management documentation

The relationship between a solution's components can span many levels. A single change can ripple across these relationships, which is why maintaining traceability matters to inform better decision making.

Consider a change request raised to amend a user need. This could require the system specification to be changed, resulting in a modified high-level design and consequent changes to the impacted component of the solution's design. If that element is already in place this could require rework. If that element is within a supplier's contract, the

agreement might have to be changed by formal variation. This work could cost more and take longer, which could affect the viability of the programme or project to deliver the business case.

Traceability also underpins verification. Tests run on part of the solution are not valid unless they are reproducible through a defined baseline, which records the version, environment and conditions for the verification.

Figure 23.1 shows a simplified traceability scenario, to illustrate the above points. It also shows how traceability can highlight missing parts in the plan or contracts. In the figure, work package 'x' is not covered in any contract and component 'z' has no work associated with it. There should be traceability from the higher-level to the lower-level components and back that comprise a solution as well as among different components.

The *Project delivery glossary* defines two-way traceability as:

> The ability to trace both forward and backward (for example, from requirement to an element of the solution and from the solution element back to requirement). It can also be applied in other areas, such as to output-outcome-benefits mapping, and solution-plan mapping.

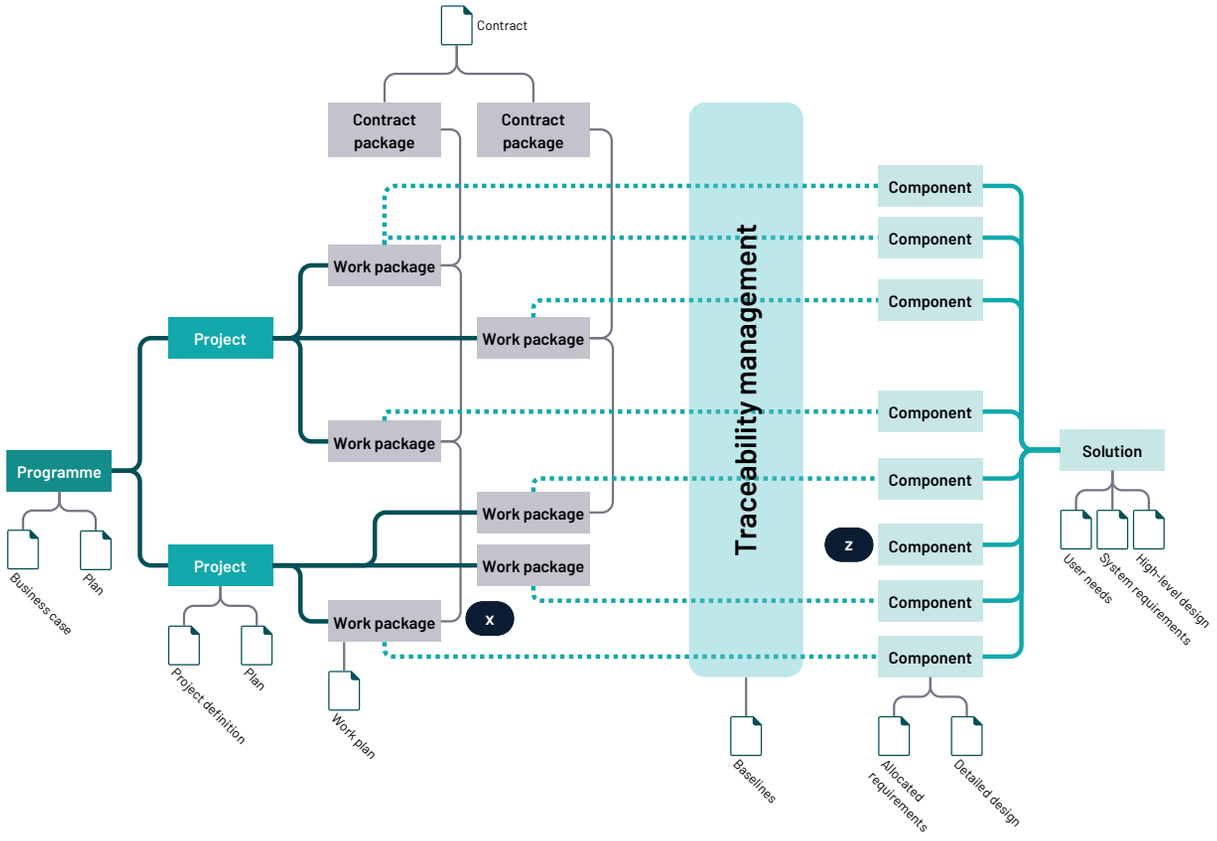


Figure 23.1 Example of a simplified traceability scenario

23.4.3 Traceability in benefits mapping

Benefits mapping uses traceability to connect objectives to benefits, tracing a path through the requirements, deliverables (solution components), outputs (parts of a solution), the solution and outcomes. The benefits map (see Figure 23.2) is a high-level view of overall traceability, ensuring the scope of the work and resulting benefits meet a policy need or the organisation's strategic objectives, rather than controlling the components of the solution and its management documentation.

Chapter 19: Benefits management covers how to develop a benefits map.

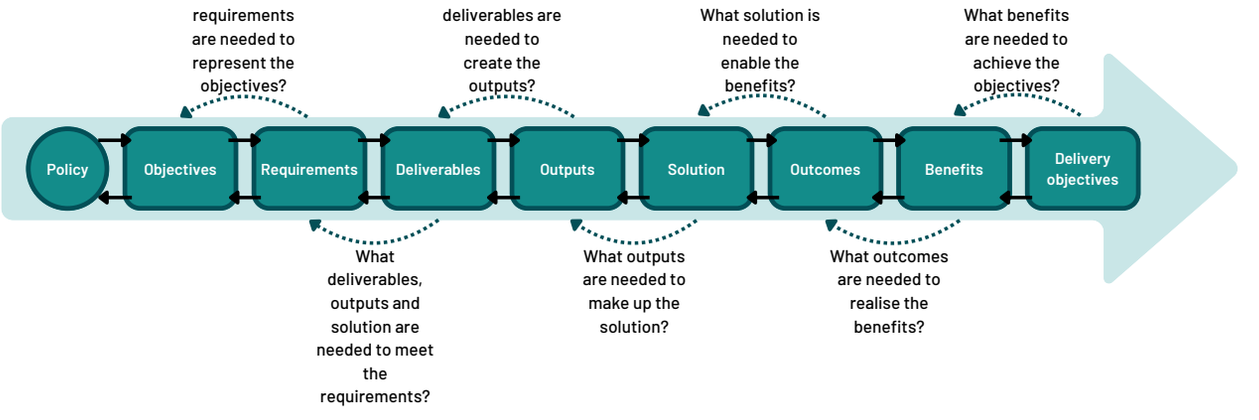


Figure 23.2 Example of high-level benefits mapping and traceability through the policy to delivery chain

23.5 Who manages traceability?

The **portfolio director** and **senior responsible owner** are accountable for ensuring there is effective traceability management for their respective portfolio, programmes and projects.

The **programme or project manager** is directly accountable for ensuring traceability among the various management documents and data sets, including the business case, plans and associated baselines. Whilst not directly responsible for traceability among the components of the solution, the programme or project manager is accountable for seeing that it is done properly. If not done properly, there would be no evidential basis for decision-making and the programme or project should be considered out of control.

If a solution crosses organisational, programme or project boundaries, the solution architecture and configuration need to be held by a nominated team. This can be under a **portfolio manager** if the solution is contained within that portfolio.

The **specialist team** who owns the solution is accountable for traceability throughout the life of the solution from determining the user needs through design, development,

verification and validation, transition and into use. Once in use the respective versions, status, relationships and baselines should be maintained until disposed of. If, however, use and disposal is within the scope of a portfolio, programme or project, the portfolio, programme or project manager has overall accountability for making sure it is done. Change of ownership for the solution usually passes from a development team to the ongoing owners as a part of transition (see Chapter 36: Transition into use).

If the solution or part of it is being undertaken by a **supplier**, the respective contract should state the obligations regarding traceability and include the amount of information the supplier is required to disclose and the rights of the **sponsoring organisation** to review or audit the work and records. In some cases, management and design systems need to be interoperable to enable the rapid exchange of data and information.

For large or complicated solutions, traceability is managed and undertaken by **specialist traceability managers**, usually in a support office. The role and job titles vary, usually known as a configuration manager.

23.6 How to manage traceability

23.6.1 What to consider when managing traceability

23.6.1.1 Managing traceability, change control and information and data

Traceability is closely related to change control, and information and data management and should be managed together, as shown in Figure 23.3.

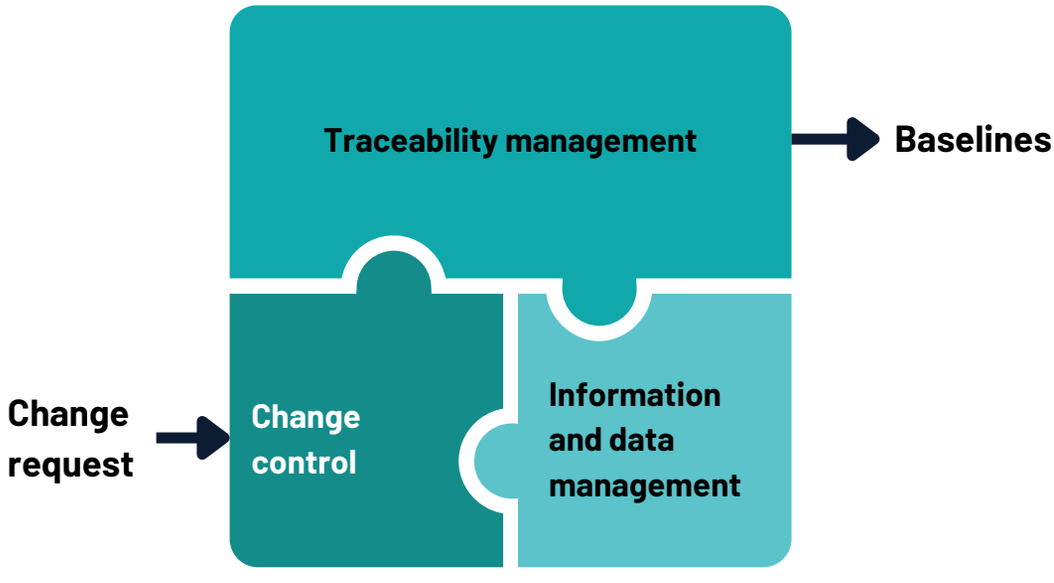


Figure 23.3 Traceability, change control and information and data should be managed together

Effective change management depends on understanding how user needs, requirements, design, the as-built solution and related contracts connect. A change in any of these can affect the others.

Change control and traceability are therefore closely related. Some disciplines treat them together under the term 'configuration management', using a unified management tool.

Those working on or responsible for a solution should be confident they are working with the correct versions of documentation and interfacing with the right versions of the solution's parts.

Where a solution involves physical components, the interface is usually visible. However, where these are not visible (for example, where components are performed off-site and integrated later, or where parts of the solution are digital or involve transformation in working practices or behavioural change), those working on those components need to know exactly what they are interfacing with and how.

Formal documentation and, where appropriate, drawings are usually held in repositories, uniquely referenced and version controlled. Traceability is used to group specific versions of the data and information to define a baseline against which work is done.

23.6.1.2 Defining the baselines

The *Project delivery glossary* defines a baseline as:

> A reference basis for comparison against which performance is monitored and controlled.

A baseline groups together separate but related information. In project delivery, baselines typically apply to management documentation, plans and sets of data related to the solution.

For example, a baseline might bring together the version of the business case that matches the approved project plan, and the parts of the plan (such as time, cost, benefits) that make up an integrated plan.

The less integrated the documentation, the more important it is to trace the relationships between different parts. For example, a change to a plan should not be approved if it no longer fits within the constraints of the approved business case. In that case, the business case would also need to be revised and approved. Planning and control baselines include those related to the planning constraints, such as benefits, time and cost baselines.

For solution delivery, a baseline brings together the related and mutually compatible parts of a solution. Solution baselines are common in digital solutions but apply in all types of work.

Baselines are typically produced at critical points in the life cycle and build on each other as work progresses. All are subject to formal change control.

In a programme and project, a baseline with an appropriate horizon should be set as soon as work to initiate has been completed. It is then typically updated in readiness for and forms part of business cases. Where a change to the baseline plan or management documentation is approved, the change will likely have an effect on the business case which will need to be approved as part the change approval.

Different development methodologies use different names for baselines, but typical solution baselines relate to:

- the business and user requirements baseline
- the system requirements baseline
- the high-level design baseline
- the detailed design baseline
- the as-built baseline

Baselines are also taken before formal verification and validation activities, especially leading up to and during integration. It is important to specify what each supplier (whether internal or external) is accountable for and recorded in an 'allocated baseline'.

23.6.1.3 Planning reviews of the solution

In many disciplines the first time a baseline is created it is preceded by a formal review of the solution to validate that solution. These reviews are primarily focused on the adequacy of the solution to meet the objectives and the adequacy of the associated management frameworks. The names of such reviews usually match the name of the baseline that is being reviewed (for example, a system requirement review looks at the requirements baseline).

For a large or complex solution such reviews can take many days of specialist work. The scope and timing of these reviews should be coordinated to inform the formal assurance reviews and decision points (also known as gates), before starting a new phase of work (see Chapter 4: Governance and management).

23.6.1.4 Being aware of decisions which nullify previous approvals

In some cases, an approved part of a solution needs changing, for example to resolve an issue in another part to rectify a newly discovered defect. As soon as that part is changed, the previous approval is nullified, and that part of the solution would need to be verified again.

Similarly, when a new component is introduced it is often necessary to verify the existing parts of the solution again along with the new component in case it has introduced problems elsewhere. This can happen in both digital solutions (where it is called regression testing) and physical solutions. A physical example is where sightlines from the train driver

to signals on a platform were approved but later obscured when passenger signage was hung. It can also happen in transformation work, for example, where a decision to delay one service change prevents rollout of other service changes dependent on it.

23.6.2 Preparing to manage traceability

23.6.2.1 Choose which deliverables need to be traceable and how they are structured

Preparation for traceability management should start as part of initiating the portfolio, programme or project. Not everything needs to be traceable. Actions, meeting minutes and risk and issues registers are ongoing lists to prompt action and only need to be dated.

The items that need to be traceable are the deliverables that need to be approved. This includes management documentation (such as plans and the business case) and the documentation and information relating to the solution itself. Each deliverable that requires approval is often called a traceability or configuration item and should be uniquely identified with its version and status.

Choosing the right level of deliverable for traceability management helps make sure the workload is proportionate. It is often simpler to cluster related deliverables and manage them as a single item. Verification of the individual deliverables making up the item would still be carried out by those managing that work, but would not appear in the traceability records until the whole group is verified.

Traceability items can be structured in groups, as in a product breakdown structure, a hierarchical list of all the deliverables that make up a solution. As each deliverable is verified, successful completion represents a milestone on the schedule plan, thereby tying the plan to each deliverable.

Suppliers are responsible for ensuring traceability is managed for their allocated work or parts of the solution. The outputs, products and deliverables should also be traceable and verifiable items within the traceability management framework.

23.6.2.2 Choose the appropriate tools and processes

Once the scale and complexity of the work is known, appropriate tools and processes can be defined, together with the resources to use them. For simple solutions or when the work is outsourced or contracted out, the data can be handled through spreadsheets. For more complicated solutions, specialist tools are needed to manage the volume of data and relationships and make it available to those who need it when they need it. The processes and tools need to be able to work with the change control and information management processes and tools and are often dependent on the tool chosen.

23.6.3 Key activities in managing traceability

23.6.3.1 Overview

Traceability comprises the activities summarised in Figure 23.4 and needed throughout the solution's life cycle. There are many variants of these activities, often designed for specific types of output or relating to proprietary digital traceability management systems.

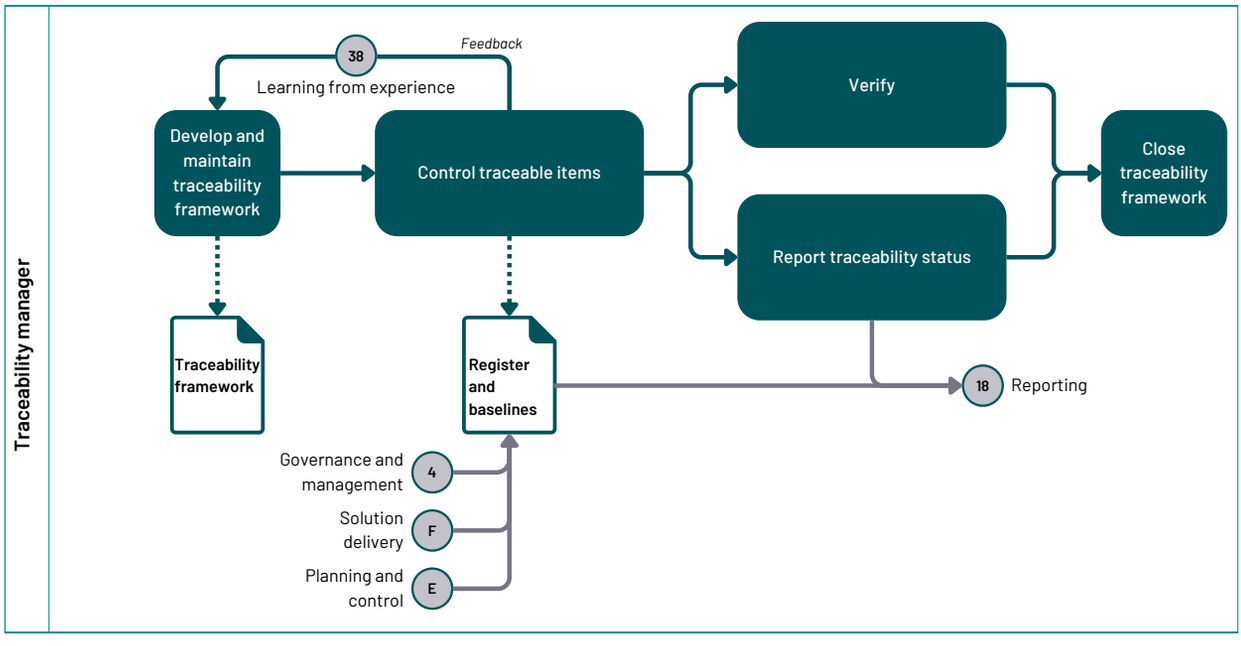


Figure 23.4 Overview of the key traceability management activities and their primary relationships

23.6.3.2 Develop and maintain the traceability management framework

The approach to managing traceability should be defined, including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4). The important aspects of this activity are discussed in more detail in 23.6.2.1 on choosing which deliverables need to be traceable. The management framework should be monitored to make sure it remains effective and appropriate as the work proceeds and address relevant feedback from its use.

23.6.3.3 Identify items to be traced

The components of the solution and management documentation which need to be traced should be identified and the links defined. If models and interim solutions are needed, these should also be included.

Items are normally organised in a hierarchy based on either the solution hierarchy or the management documentation hierarchy. Each item should have a unique identifier, with traceability running both ways between higher and lower levels of the hierarchy and across the elements at the same level.

23.6.3.4 Define the traceability baselines needed

Baselines should be defined which represent a specific point in time and show achievement through the solution's life cycle. These can be derived from the development, verification, validation, integration and transition strategies. Each baseline should include the traceability items that comprise it and the two-way relationships among them.

23.6.3.5 Control traceable items

When formal changes to items are approved, the relevant version, status and relationships should be updated. This is managed through change control; see Chapter 22: Change control.

23.6.3.6 Report traceability status

The status of each baseline and its constituent items, and its relationship to other items, should be available to those who need them to undertake their work. Regular reports can be run to give an overview of progress, for example showing the number of items in each status within the relevant baseline (see Chapter 18: Reporting).

23.6.3.7 Audit traceability

Auditing verifies the actual traceability items against their expected status at any given moment and verifies that the processes being used conform to the management framework. If the data held becomes dated or is incorrect it can have serious consequences for the completion of the work and, in some cases, lead to contract disputes.

23.6.3.8 Close the traceability management framework

Once the solution has been fully disposed of, the information should be archived in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management) and the management framework closed.

24. Information and data management

24.1 Purpose of information and data management

The purpose of managing information and data in project delivery is to ensure information and its underlying data (digital or physical) is available and reliable for undertaking work and making decisions.

24.2 Key points

- Information and data should be managed in line with the government's principles on transparency, accountability and fairness.
- A disciplined approach to managing and using information and data is critical to maintaining control over the work.
- Information, data and knowledge assets should have an identified owner.
- Data protection and cyber security require particular attention.
- Information and data relating to the design and development of the solution should be transferred to the in-life owner for future management and use.

24.3 Why manage information and data?

Portfolios, programmes and project teams rely on accurate and timely information and data to support everything they do, from planning and controlling the work, delivering solutions, and optimising their use and disposal. In doing so, they generate large volumes of information and data, often used for multiple purposes, which can become overwhelming if not managed appropriately.

Effective information and data management ensures that the necessary information and data is captured, organised, and controlled efficiently, in accordance with legal and government requirements, so that it can be used to control the work and make informed decisions. It also ensures that information and data are managed as valuable assets and handled appropriately, including in how the data is protected, stored and made available for use.

Government organisations often hold and access large volumes of public data, including the personal data of citizens, employees and others. Managing such data responsibly, effectively and securely is a fundamental requirement for all public organisations for which the government has specific policy responsibility, and for any parts covered by law and regulations.

24.4 What is information and data management?

Information and data management is the oversight, direction and management of people, processes and technologies that support the creation, use and disposal of information and data. Its aim is to ensure that information and data is understandable, reliable, secure, but accessible to those who need it, and, where necessary, interoperable to be shared and used across different systems and organisations. It covers the management of all relevant information and data needed to complete the work, not just individual items.

Information in project delivery typically means physical and digital documentation relating to the work and its solution. This includes requirements, plans, business cases and contracts, drawings and designs, reports, reviews and audits, employee and stakeholder information, and communications.

Data in project delivery typically means facts and statistics collected for reference or analysis. This can range widely, from policy modelling, planning estimates, spend and resource figures, to employee, stakeholder and user datasets, performance reports, building information modelling and digital twins.

Information and data management also includes the management of personal data and can also include knowledge asset management.

Personal data means information relating to natural persons who can be identified or who are identifiable, directly from the information in question, or who can be indirectly identified from that information in combination with other information. Personal data can also include special categories of personal data or criminal conviction and offences data which are considered to be more sensitive and require particular care in handling.

Knowledge asset management ensures that potentially valuable **knowledge assets** created during or as a result of the work are identified, protected and where appropriate exploited for public benefit.

The *Project delivery glossary* defines a knowledge asset as:

> A piece of knowledge viewed as an asset to the person or organisation which possesses it.

Examples include inventions, designs, data and information, software and source code, expertise and other intellectual resources. The *Rose Book: knowledge asset management in government* provides further guidance on this.

24.5 Who is responsible for information and data management?

Within an organisation, the **accounting officer** has overall accountability for information and data management as part of the organisation's governance and management framework.

The *Government Functional Standard for Digital* requires appointment of a senior officer accountable for data in each government organisation, known as the **chief data officer**, who is usually accountable to the senior officer overseeing the organisation's digital portfolio. The chief data officer is responsible for overseeing the organisational governance and management framework for information and data, including ensuring compliance with relevant data and security requirements, developing and implementing the data and information strategy and plan, and assigning roles and responsibilities for the ownership and management of data assets, including accountability for data quality and remediation of issues. This accountability applies to the portfolios, programmes and projects the organisation is involved in.

The **portfolio director** for a portfolio, or the **senior responsible owner** for a programme or project, is accountable for overseeing information and data management within the governance and management framework for information and data established by the chief data officer of the government organisations involved. In delivering on this accountability, they are sometimes referred to as a **data owner**.

The **portfolio, programme or project manager** is responsible for day-to-day management of information and data, acting as the **information manager**. Typically, the role is delegated to a person in a support office who works with individual information owners (sometimes referred to as information asset owners). This role could be held by an administrator or, in some cases, by a knowledge and information management professional.

The **information owner**, sometimes known as a **data steward**, is responsible for handling new and existing individual sources of information and data. Pre-existing data and information should already have an assigned information owner who should be consulted on its use and handling. Where a new asset is created, an information asset owner should be identified to oversee its management.

Depending on the nature of the work, and arrangements in the wider organisation, a **data protection officer** could also be appointed to advise on the handling of data protection obligations, for example data protection impact assessments and subject access requests.

24.6 How to manage information and data

24.6.1 What to consider when managing information and data

24.6.1.1 Organising information and data

Overview

Portfolios, programmes and projects generate a large volume of information and data, held in digital or physical form as documents or as collections of data. These need to be organised to create an **information repository** for the work, establishing and maintaining a clear picture of:

- what information and data are held in relation to the work
- who is the information owner for each item
- how and where they are held
- who has access to them, and under what conditions
- the handling arrangements for specific pieces of information or data

Information repository

Most information and data in project delivery is held as documents, either created or received by the team. Establishing an information repository where documents and other materials can be stored and managed is an important early task. For smaller or simpler work, this can be done by creating a dedicated area on the organisation's electronic file system. For larger or more complex work, specialist document or information management software may be needed.

The repository and the material it contains should be established, maintained and managed in line with government data standards (see 24.6.1.4 on meeting data management standards) and cyber security requirements (see 24.6.1.5 on protecting information and data security). This includes ensuring that access to material in the repository is controlled appropriately through the life cycle, to ensure that:

- people can access the information and data they need
- sensitive and personal data is protected in line with legal and government requirements, with access limited to those with a legitimate business need and withdrawn when no longer needed
- document versions are controlled so that they cannot be changed once approved or baselined in that version

A simple repository is typically structured according to the work breakdown structure. For larger portfolios, programmes and projects, repositories where content can be manipulated using meta data are more efficient and less prone to errors. Specialist systems can control versions and access, record ownership and log changes, including who makes changes and who accesses the information. Physical storage should also be considered, including ensuring continuing access to essential material if digital systems are unavailable. Where the work forms part of a wider portfolio or programme, a consistent approach should be used and, where appropriate, a common repository.

The life cycle for information and data

A disciplined approach to the creation or collection, management and retention or disposal of each information and data asset held is important. This avoids confusion over different versions of a document and ensures effective change control and traceability (see Chapter 22: Change control and Chapter 23: Traceability management). Information can either be created within the team as part of the work or received from outside the team. A clear and simple procedure should be established covering both, to ensure correct storage and handling.

24.6.1.2 Keeping management records

Minutes of meetings

Minutes should be recorded for all formal meetings relating to the governance and management of the work and held alongside the documents and data submitted to and considered at the meeting. The minutes should not repeat information in the supporting papers but should include:

- the date and time of the meeting and who attended, both name and role
- the agenda, matters considered and the key points made in discussion
- the chair's summing up on each matter considered
- the decisions taken
- the actions to be taken, by when, by whom and who needs to be informed when the action is complete

Minutes should be written up promptly by the meeting secretary and circulated to those present for comment before approval by the chair and then retained as the approved record of the meeting. Decisions and actions should be logged separately and cross-referenced, for example in a decision or action register, and monitored through to completion.

Information registers

Many types of information and data is added to, updated, used and closed as part of controlling the work (see 24.4 on what is information and data management). These include:

- risks
- issues
- change requests
- lessons learned
- actions
- decisions

Such information can be held in proprietary or bespoke project delivery management systems or, for smaller work, in spreadsheets. Spreadsheets can work well, but have a risk. Unless they are stored in a formal document management system, there may be no record of who changed what and when, so measures need to be taken to manage updates through version control.

Decisions and actions

Decisions and actions support the management of work and provide traceability. They can also serve as evidence in the event of a commercial, legal or other dispute.

Decisions and actions can sometimes be agreed outside formal meetings, for example where urgent action is needed. These should be recorded in the decision or action register with the reasons for taking them and discussed at the next formal meeting, being recorded in the minutes.

The decision register should include:

- a unique reference
- a description of the decision
- who made the decision
- date the decision is required by or was made
- status, such as pending, made, deferred or cancelled, which can be used to filter the register

An action register should include:

- a unique reference
- a description of the action
- who agreed to take the action
- date the action is to be completed by
- who is the recipient of the action
- a cross-reference to the source of the action (for example to a decision, risk, issue or meeting)
- status, such as not started, in progress, completed, cancelled, which can be used to filter the register

24.6.1.3 Understanding legal and regulatory requirements

In government, information and data management must be carried out in line with the government's legal obligations and other requirements, for example to protect national security (see Chapter 7: Health, safety and security).

Specific legal requirements apply in respect of government transparency and the protection of, and access to, personal data held by public authorities.

The *Public Records Act 1958* (as amended by the *Public Records Act 1967*) provides for the selection, retention and transfer to the National Archives of information and data constituting public records.

The *Freedom of Information Act 2000* provides for the release of recorded information (including drafts, emails and recordings) held by public authorities on written request, subject to specific exemptions and provisions on cost.

The *Data Protection Act 2018*, which implements the *General Data Protection Regulation* (GDPR) provides specific data protection principles governing the way personal data is used, maintained and protected.

Personal data is a legally defined category of data which requires particular care in handling, in line with the Data Protection Act 2018.

Where personal data is to be shared, this needs to be done in a fair and transparent way, ensuring that there is a lawful basis for sharing the data and that it is processed securely. A data protection impact assessment should be conducted, and a written data sharing agreement put in place. Further guidance is provided in *Data sharing: a code of practice* from the Information Commissioner's Office.

Information should be published where appropriate, in line with the government's transparency commitments. Where it is unclear whether data should be released, the organisation's chief data officer should be consulted. More information is provided in the *Guide to managing an FOI request* and other guidance published by the Information Commissioner's Office.

Where information or data is considered suitable for publication, it should be quality assured, anonymised and made available with appropriate documentation including details on its quality. Open data published by public authorities should be released in consistent and accessible formats, to improve its utility, as set out in the *Service standard*.

Where specified, publication of data and analysis should be done through approved routes. For example, publication of official statistics should follow the protocols set out in the *Code of practice for statistics*, which provides the framework to ensure that statistics are trustworthy, good quality and valuable.

24.6.1.4 Meeting data management standards

The *Data ethics framework* sets out expectations for responsible data use across the public sector. It is based on the principles of transparency, accountability and fairness.

Portfolio, programme and project teams often generate or collect large volumes of information and data. How information and data is collected, stored and managed affects both how well it can be used and shared, and how well it is protected.

The *Programme and project data* standard sets the expectation for the creation of programme and project data across government. This helps organisations create consistent and high-quality data.

Where new data is to be collected or generated, planning ahead ensures that its collection is designed appropriately and meets the relevant standards.

As a minimum, the information manager should:

- start from understanding why the team needs specific information and data
- keep an original copy of data as it is received
- ensure compliance with the *Programme and project data standard*
- ensure the data is backed up
- ensure the data includes appropriate metadata, for example information about the characteristics of the data and how it should be handled
- keep an audit trail of changes throughout the life cycle of data

- ensure data can be rolled back to an 'as-received' state if necessary
- actively manage, review and improve data quality

The *Government Functional Standard for Digital* and the *Service standard* set out the core principles and standards for data management, and the *Government Functional Standard for Analysis* and the *Aqua Book* set out standards for data use in analysis, and these should be followed where such activities are part of the scope of the work. Detailed guidance on data quality is provided in the *Government data quality framework* and in the *Data ethics framework* and other guidance published by the Government Digital Service.

Data standards for the collection and retention of major project data are set by the National Infrastructure and Service Transformation Authority and should be observed.

Specific data standards also apply in certain fields.

Infrastructure and construction work should use the *Information management initiative framework*, formerly the *UK Building Information Management (UK BIM) Framework*, which standardises the approach to generating and classifying data, data security and data exchange across construction, supporting adoption of the 'digital twin' approach.

Health and social care work should consult the NHS *data standards directory* for guidance on data standards for health and social care in England.

24.6.1.5 Protecting information and data security

The purpose of cyber security is to ensure the security of data and information. To operate effectively, the government needs to maintain the confidentiality, integrity and availability of its information, systems and infrastructure, and the services it provides. All organisations handling government data and information are required to meet government standards, as set out in the *Government Functional Standard for Security and Government Functional Standard for Digital* (see Chapter 7, Health, safety and security). In particular, there is a responsibility to:

- protect systems that store or process sensitive information or deliver operational services from exploitation of vulnerabilities
- provide a statement of assurance for all project delivery work to show evidence of assessing information and cyber risks, and of the controls put in place to manage them
- provide organisational boards assessing risk with information to be able to identify programmes or projects with high information and cyber security risks
- provide clear information and cyber security guidance and standards for new work

Cyber security also comprises the protection of end-user devices and emails, digital services and cyber threats from, for example, identity theft, breaches of access and intellectual property theft.

Everyone involved in managing information and data should be aware of the importance of cyber security and of following security requirements, including:

- ensuring access to classified, sensitive or critical information and data is only provided to identified, authenticated and authorised users or systems, and where necessary seeking advice on applying proportionate risk responses
- classifying information assets according to the Government Security Classification Policy and following the appropriate handling, storage, sharing, and destruction of information based on its marking
- induction and training for employees and people employed under contract on appropriate information security measures, including when working remotely
- roles and responsibilities in the information handling chain, including how to report data security breaches and cyber security risks and incidents

Further guidance is provided in the *Government Functional Standard for Security*, the *Cyber security standard* and on the UK Government Security and National Cyber Security Centre websites. Additional considerations apply to the handling and sharing of data with international partners, and further advice should be sought.

24.6.1.6 Managing knowledge assets

Knowledge assets are valuable public assets which support the effective delivery of public services which need to be managed to ensure that this value is maximised and not lost or underused.

All public sector organisations should have a strategy in place to support the effective management of knowledge assets, including how to identify, protect and support their exploitation where appropriate.

Portfolios, programmes and projects can often create new knowledge assets as part of their work. These can have considerable value and impact beyond their original purpose, whether social, economic, financial or in combination. Making best use of knowledge assets is part of maximising the benefits realised as a result of the work, in line with the principles of *Managing public money*.

The *Rose Book* explains the different types of knowledge asset to consider, including information and data assets, and the relevant intellectual property rights and other methods of protection associated with them, such as database rights, copyright and Crown copyright, and the law on confidence, contract and trade secrets. The *Rose Book* provides guidance on identifying, protecting and exploiting knowledge assets and where to find further help in doing so.

24.6.2 Preparing to manage information and data

24.6.2.1 Overview

Preparation for managing information and data should start as early as possible in the life cycle. This includes identifying the requirements for information and data management, and determining the tools and processes to be used.

24.6.2.2 Identify the requirements for information and data management

The management of information and data must meet legal and government standards and align with the relevant organisational controls. Specific central government data standards apply in reporting on work in the Government Major Projects Portfolio, and these should be observed. Further information is available from the National Infrastructure and Service Transformation Authority.

Requirements can vary significantly depending on the nature, scale and complexity of the work, and the types of information and data involved. For example:

- sensitive military work involves highly classified information using secure platforms and demands high standards of control over access to documents and data handling
- work to transform digital services typically involves use of open data standards but can present significant risks in handling personal data and the potential for cyber attacks
- infrastructure and construction work generates information in multiple digital and physical formats, from documents, plans, maps, artefacts, video footage, models and simulations, as well as large bodies of technical data, some highly sensitive

Understanding the likely requirements of the work at the start determines the approach, processes and tools needed and informs the design of an appropriate information and data repository.

24.6.2.3 Determine the tools and facilities needed

The tools and facilities used should be appropriate to the needs of the work. This usually means using existing organisational electronic document management platforms and standard data management and visualisation tools, but sometimes additional software or storage is needed, for example for specialised requirements. Physical storage needs should also be considered and identified.

When deciding what tools and facilities are needed, consider:

- what users need in terms of functionality and usability
- the likely scale, complexity and duration of the requirement
- the security, access and permission requirements
- the storage capacity and bandwidth requirements
- the need for application programming interfaces (APIs) to allow data to be moved between applications
- the potential for scalability or reuse
- the opportunities for automation, for example of repetitive rule-based processes
- the cost, resources and timescales to set up the functionality, including training and support
- requirements for data back up and retrieval, and to support business continuity

Where new functionality or facilities are under consideration, the organisation's digital, data and security functions should be consulted and involved.

24.6.3 Key activities in managing information and data

24.6.3.1 Overview

Managing information and data comprises the activities summarised in Figure 24.1 and is needed throughout the life of the work.

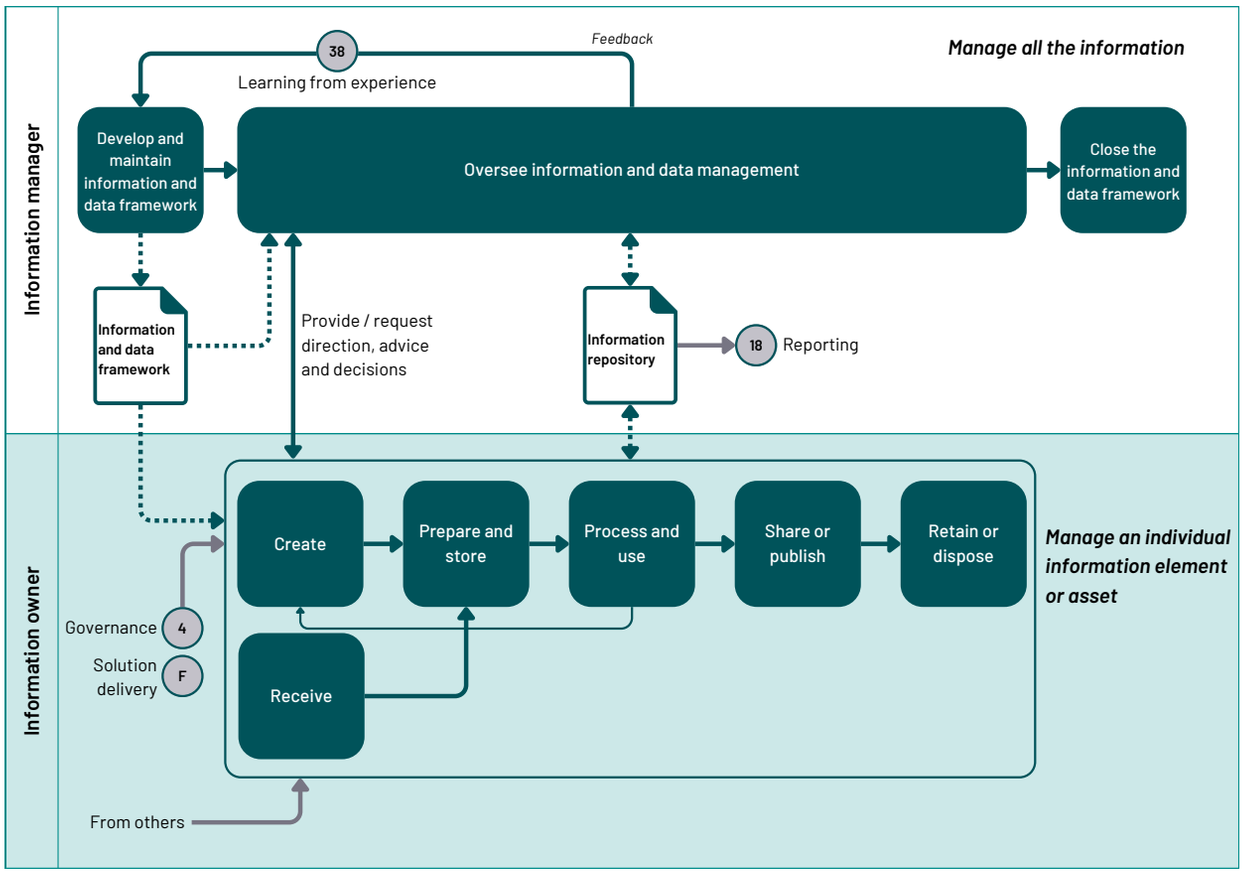


Figure 24.1 An overview of the key information and data management activities and their primary relationships

24.6.3.2 Develop and maintain the information and data management framework

The information management framework forms part of the overall governance and management framework for the work. The development should start with the requirements identified in preparation and set out how information and data are to be managed through the life cycle of the work. It includes:

- the nature and expected extent of the information and data to be managed, including any new knowledge assets created
- any requirements for handling, including relevant legal, government and organisational requirements, and for ensuring traceability
- arrangements for organisation, classification, handling, storage, review, transfer or disposal
- arrangements for assigning and managing information, data and knowledge asset ownership

- procedures for recording critical information, for example meetings, decisions and actions
- cyber security and business continuity, including handling of exceptions and incidents

Back up and contingency arrangements should be considered, particularly where access is needed for business continuity.

The information management framework should be updated as and when needed, to keep it fit for purpose.

24.6.3.3 Oversee information and data management

Overseeing includes:

- being satisfied that the information and data being used in the work is being adequately managed both collectively and at individual information and data elements or asset levels
- legal obligations and government standards on information and data management are being met
- information and data is being managed securely, and shared and distributed appropriately
- resolving escalations for risks, issues or incidents relating to information and data
- ensuring that procedures and tools are used appropriately and that arrangements for managing information and data remain fit for purpose as the work progresses, prompting updates to the framework, if needed

24.6.3.4 Create information or data

Information or data created within the team should have an identified owner, usually the person creating it or for whom it is being created (for example, the senior responsible owner for a business case).

The team should use standard templates where possible, incorporating details about the creation and status of the information (known as metadata). For documents, this should include as a minimum:

- the document name and reference number, as appropriate
- the document classification in accordance with the government security classification guidance (for example SECRET), included as a header on every page (see 24.6.1.5 on protecting information and data security)
- the status of the document (for example, draft, for review, approved, withdrawn)

- who issued the document, the date of issue and version number, using major and minor version numbering (for example, major version 1.0 and 2.0, minor versions 1.1 and 1.2) to support traceability
- the page number (or sheet number in a worksheet) and total number of pages (for example 4 of 37), shown on each page

Typically, a document should be:

- **defined** in terms of its purpose, content, review panel, approver(s) and acceptance criteria (this is often referred to as a product description)
- **drafted** by the author until ready for review
- **reviewed** by informed and competent people against the acceptance criteria, and where necessary, iteratively updated and reissued as a draft for review, until ready for approval
- **approved**, or returned for update until it can be approved
- **stored** and **distributed**
- **withdrawn** when no longer needed and held in accordance with the retention policy
- **disposed** of once the retention period has lapsed

Other information and data created, for example user data, survey data or web-scraped data, should be handled in line with data standards (see 24.6.1.4 on meeting data management standards). The quality of the data can be improved at source by validation rules and capturing appropriate metadata. For further guidance on data collection and validation, see the *Government data quality framework*.

24.6.3.5 Receive the information or data

Information and data received from outside the team should be registered on receipt, identified by date, originator and title, with the original or equivalent classification (if applicable) and other existing metadata retained.

Where data and information is received from outside, or generated from multiple sources, it can be less obvious who the information owner should be and a decision needs to be taken by the information manager to assign ownership, usually for particular types or bodies of information. The information or data should be checked for completeness, security and sensitivity considerations, and a decision made on who it needs to be distributed to.

Ensure that handling requirements are clearly indicated, so that team members understand what needs formal handling or particular care and what can be treated informally.

24.6.3.6 Prepare and store the information or data

Once information or data has been created or received, validated and assigned an owner, it should be prepared for storage. The information owner should check that its status, security classification and provenance is clear, decide where, and in what format the information should be stored, and who should be able to access it, so that appropriate access controls can be applied in storing the material.

Where sensitive information and data is involved, for example, user data or survey responses, the data might need to be anonymised, to reduce risk or to enable the data to be used more easily.

Checks for duplication and issues of consistency should also occur.

Information and data should then be stored by, or with the agreement of, the information owner.

All documents relating to the work should be stored in the main information repository, other than where security or data handling requirements require material to be stored elsewhere, for example in a more highly classified environment, in other organisational data repositories, or in physical storage. The appropriate access controls and traceability management should be applied.

24.6.3.7 Process and use the information or data

The reliability of the information and data should be checked and made available so it can be used appropriately in undertaking the work and making decisions. This can involve exploration, analysis, and further processing using specialised tools and software, with information and data feeding directly into the work and solution (for example, 4D or 5D design, planning software, and digital twins) as well as supporting the production of the business case, plans and reports, statistical outputs and performance information.

The information owner should ensure that appropriate standards and practices are followed in processing and/or using information and data. This includes ensuring that known issues with quality or reliability are understood and that the information or data is used appropriately. Where necessary, a risk assessment should be carried out on whether to use the data and if so, how to respond for known risks.

Any information or data that is subject to change should be regularly monitored for its data quality to ensure it continues to be fit for purpose.

24.6.3.8 Share or publish the information or data

Consideration should be given on how and with whom information and data should be shared to support the conduct of the work, decision-making and communications. Sharing of information and data must meet the government's legal obligations (see 24.6.1.3 on meeting legal and regulatory requirements) and security requirements (see 24.6.1.5 on protecting information and data security), as set out in the information management framework.

24.6.3.9 Retain or dispose of the information or data

Information and data should be retained in accordance with the organisation's data retention policy and legal requirements. Where information and data is not transferred to the service owner or operator at the end of the work, the information owner should determine, from the policy, whether it should be retained or archived elsewhere within the sponsoring organisation, or destroyed.

Specific legal requirements apply to the retention of public records, including their retention by the organisation and eventual transfer, where appropriate, to the National Archives. Legal requirements also apply to the retention of contractual records, typically at least 6 years. For further information see the *Code of practice on the management of records*. Where necessary, the chief data officer within the sponsoring organisation should be consulted.

Where superseded by a newer version, the information or data should be withdrawn and clearly marked as such. It is, however, important to ensure withdrawn versions are retained so that they can be referred to if necessary in future, including for traceability, control and audit purposes or possible legal disputes.

Where information or data relates to the design, development and implementation of the solution, it is essential that this is retained and, where possible, handed over to the future service owner or operator, to support use and disposal of the solution in future. Specific requirements apply in building information modelling and digital twin approaches, and these should be followed.

Where information and data are to be archived, the information owner should ensure that material is held in an appropriate format so that its integrity is maintained, and any relevant metadata or contextual information can be retained alongside.

24.6.3.10 Close the information and data management framework

When the work is completed, the information manager should ensure that information and data held in relation to the work has been reviewed and:

- handed over as part of the transition of the work into use
- transferred to an appropriate repository for use or retention in the sponsoring organisation
- archived in line with requirements for retention of public records, or
- destroyed

The information and data management framework and repository should then be closed.

24.7 Further reading

- Cabinet Office, *Government security classification policy*
- Government Data Quality Hub, *The government data quality framework*
- Government Digital Service, *Data ethics framework*
- Department for Digital, Culture, Media and Sport, *Code of Practice on the management of records issued under section 46 of the Freedom of Information Act 2000*
- HM Government, *Functional Standard GovS 005: Digital*
- HM Government, *Functional Standard GovS:007: Security*
- HM Government, *Functional Standard GovS:010: Analysis*
- HM Government, *Service standard*
- HM Treasury, *Managing public money*
- HM Treasury, *Rose Book: knowledge asset management in government*
- HM Treasury, *Aqua Book: guidance on producing quality analysis for government*
- Information Commissioner's Office, *Data sharing: a code of practice*
- Information Commissioner's Office, *UK GDPR guidance and resources*
- Information Commissioner's Office, *Guide to managing an FOI request*
- NHS, *Data standards directory*
- Nima, *Information Management initiative framework*
- Office of National Statistics, *Code of practice for statistics*
- UK Parliament, *Data Protection Act 2018*
- UK Parliament, *Freedom of Information Act 2000*
- UK Parliament, *Public Records Act 1958* and *Public Records Act 1967*

25. Procurement and contract management

25.1 Purpose of procurement and contract management

The purpose of procurement and contract management in project delivery is to ensure that the products and services bought as part of resourcing the work or developing the outputs represent value for money and can be delivered within an acceptable level of risk.

25.2 Key points

- Procurement and contract management must secure value for money when buying goods, works and services, in compliance with the *Government Functional Standard for Commercial* and in procurement policy notes.
- Identify procurement needs early, appoint commercial specialists, and engage with the supply market in time for suppliers to understand the requirements and prepare competitive offers.
- Manage contract performance through proportionate key performance indicators, and ensure reporting is accurate and timely.
- Raise likely issues early with the senior responsible owner, commercial specialists and any other relevant stakeholders so that under-performance can be managed and disputes resolved.

25.3 Why procure and manage contracts?

Government portfolios, programmes and projects are wide-ranging, covering areas such as infrastructure, complex software development, responding to humanitarian crises and transforming public services.

It is not possible or desirable for government organisations to maintain the permanent capability and capacity needed to deliver all this work. Procurement is the right approach when the supply market is better placed to provide the goods, works or services needed, helping to achieve better value for money and mitigate risk through external support.

Once contracts are awarded, managing them effectively is what ensures suppliers deliver the intended outcomes and benefits.

25.4 What is procurement and contract management?

Procurement and contract management are the activities that enable the portfolio, programme or project manager to secure value for money when buying goods, works and services in the delivery of government policy.

Procurement and contract management activities include:

- defining the requirements to meet the needs of the portfolio, programme or project
- procuring those goods, works and services from the supply market
- managing the subsequent contracts and suppliers to maximise benefits to the organisation

Where a solution is primarily delivered through a single procurement, these activities align to the reference project life cycle from the *Government Functional Standard for Project Delivery* (see Figure 25.1) with:

- definition work, resulting in a route to market being selected, being undertaken across the feasibility and appraisal stages
- procurement work, including invitation to tender and selecting the preferred supplier, being undertaken during the definition stage
- award of the contract and its management being undertaken across the delivery and operations stages

Programmes and projects might also have a number of procurements and contracts throughout the life cycle, providing different resources and developing different outputs that all contribute to the overall outcome.

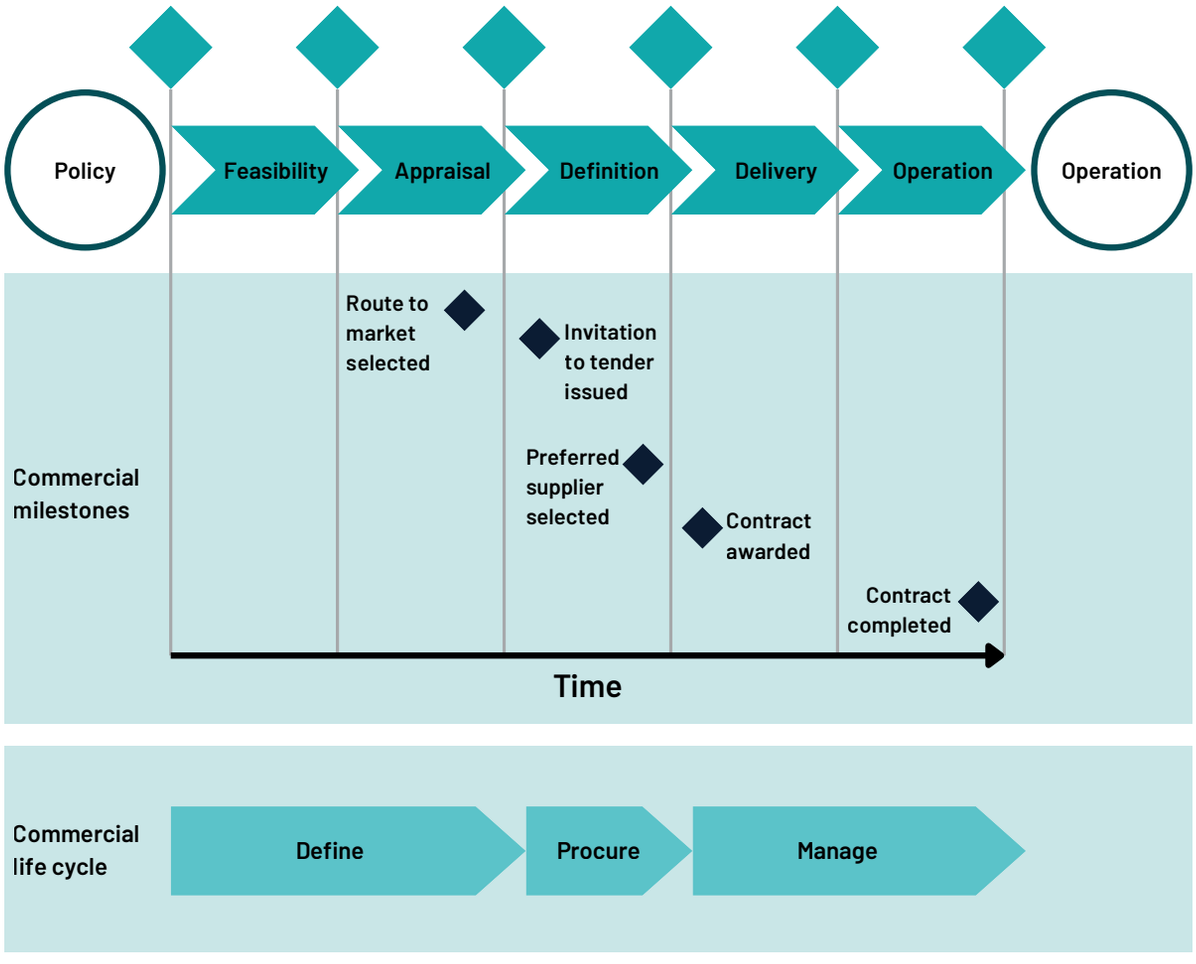


Figure 25.1 Alignment of the commercial and project life cycles where the main solution of the project is being delivered through a contract (from the *Government Functional Standard for Commercial*)

25.5 Who procures and manages contracts?

25.5.1 Overview

Everyone working in government project delivery has a responsibility to ensure that public resources are managed and used efficiently, effectively and in line with legal requirements, government policy and standards. This includes the need to procure services and work in a way which is transparent, meets requirements and is value for money.

Most project delivery requires the involvement of qualified commercial professionals. These could be working within the immediate team, sponsoring organisation or other organisations, such as the Government Commercial Function, or public buying organisations.

Accountability and responsibility for commercial management should be defined within the governance and management framework and reviewed on a regular basis.

It is important to understand how commercial roles work in relation to project delivery in government. The key roles are set out below, with more information available in the *Government Functional Standard for Commercial* and in the *People standards for the commercial profession*.

25.5.2 Commercial roles in government

Commercial management in government takes place within a formal framework of accountabilities set out in the *Government Functional Standard for Commercial*.

Commercial directors and their teams work to the commercial strategy agreed for their department, supported by a number of central government commercial teams. Their activities are co-ordinated by the Government Chief Commercial Officer.

These central commercial teams offer specialist support for departments:

- **complex transactions** supports departments with complex procurements, negotiations with suppliers and on all cross-government disputes
- **markets and suppliers** provides supplier, market and sector intelligence to departments
- **commercial continuous Improvements** offers guidance, support, standards and controls on good commercial practice
- **commercial capability** is a programme set up to develop the commercial capability of colleagues across government

25.5.3 Commercial roles in project delivery

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for ensuring effective commercial management, including owning the commercial management framework and plan. They ensure work is undertaken to determine if there is a need to procure services and work from the supply chain.

The **portfolio, programme or project manager**, as appropriate, is accountable for ensuring development and implementation of the commercial management framework and commercial plan, and ongoing commercial control, reporting and accounting activities. This work is normally led by a professionally qualified **commercial practitioner**, **lead or specialist** and supported by a commercial team, usually based within a support office.

Once the commercial agreement has been signed, the contract is managed by a **contract manager**. A contract manager should ideally be involved during the procurement and who fulfils this role will depend on the nature or complexity of the contract. For example, the

contract manager could be fulfilled by a **work package manager** or, for complex contracts, could be fulfilled by a **commercial practitioner**.

More detail on professional commercial roles is set out in the Government Commercial Function's *People standards for the commercial profession*.

25.6 How to procure and manage contracts

25.6.1 What to consider when procuring and managing contracts

25.6.1.1 Complying with the Procurement Act 2023

The *Procurement Act 2023* (and relevant regulations made under the Act) applies to contracting authorities in England, Wales and Northern Ireland and to contracting authorities with reserved functions carrying out procurement in Scotland. See *Guidance: Contracting authority definition* and *Guidance: Devolved contracting authorities*.

Some devolved Welsh and transferred Northern Ireland procurements are exempt from a small number of requirements of the *Procurement Act 2023*. These exemptions can be found in the *Procurement Act 2023 knowledge drop for contracting authorities: Wales* and *Procurement Act 2023 knowledge drop for contracting authorities: Northern Ireland*. Scotland maintains its own procurement legislation which also applies to devolved Scottish authorities.

Which contracts are covered?

Generally, the provisions in the *Procurement Act 2023* must be applied to a 'covered procurement'. A covered procurement is the award, entry into and management of a public contract. A public contract is a contract of a particular type that is above the relevant threshold (for goods, services and works) and which is not an exempted contract.

However, some rules in the *Procurement Act 2023* must be applied to procurements not caught by the definition of 'covered procurement' and that is why there is a wider definition of 'procurement' (the award, entry into and management of a contract), which means any procurement. This allows some limited rules for contracts not caught under the definition of 'covered procurement', such as below-threshold procurements; this is to ensure certain treaty obligations are complied with.

How to stay compliant

Contracting authorities should ensure they are familiar with the obligations set out in the *Procurement Act 2023* as soon as they become aware they have to carry out a procurement. For example, this would include informative processes like pre-market engagement where they would need to have regard to the procurement objectives in choosing how and who to engage with. Also, when drafting the contract scope, award criteria and KPIs,

consideration needs to be given to things like the *National Procurement Policy Statement* or the *Wales Procurement Policy Statement. Procurement Act 2023 - Guidance documents collection* can help.

Portfolio, programme and project teams should continue to engage with professionally qualified commercial practitioners, leads or specialists from their organisation's commercial team as soon as the potential need to procure has been identified. This will help to ensure that the requirements of the Procurement Act 2023, as well as other regulations, policies and procedures, are taken into account at the earliest opportunity.

Those with accountability for the appropriate procurement and management of contracts, such as portfolio directors and senior responsible owners, should make themselves familiar with *The Procurement Act 2023: A short guide for senior leaders*. For members of portfolio, programme or project teams who are not commercial practitioners but have regular interactions with procurement should make themselves familiar with *The official transforming public procurement knowledge drops* and the supporting *TPP Knowledge Drop supporting factsheets*.

25.6.1.2 Ensuring consistency with organisational systems and processes

Procurement and contract management needs to integrate with the wider commercial management arrangements in the sponsoring organisation within which it sits. This is particularly the case at portfolio level, where a portfolio can cover the whole of an organisation's procurement activities and associated investment and resource spend.

Commercial management arrangements should be consistent with the sponsoring organisation's processes and use their commercial management and accounting systems wherever possible. The commercial processes should be designed and operated to ensure consistency with the organisational commercial hierarchy and in capturing data across the organisation's portfolios, programmes and projects.

25.6.1.3 Complying with procurement policy

Government Commercial Agency publishes the *Public procurement policy* which sets out the directives, regulations, policies and guidance relating to the procurement of supplies, services and works for the public sector.

The commercial polices reflecting the government's priorities are set out in Procurement policy notes and come with supporting guidance for implementation. Procurement policy notes detail the actions to be taken by contracting authorities when undertaking public sector procurement and so are implemented into the parent organisation's commercial management arrangements. An example of a note is PPN 002: Taking account of social value in the award of contracts, which supports compliance with the Public Services (Social Value) Act 2012. See 19.6.3.5 on its role in supporting identifying and categorising a benefit.

The Department for Environment, Food and Rural Affairs also publish mandatory *Government Buying Standards* for buying goods and services to support procurement of

more sustainable and efficient products and engage with your suppliers to understand and reduce the impacts of their supply chains.

25.6.1.4 Working with suppliers and accessing the market

Commercial relationships with third-party suppliers can vary depending on the complexity and duration of the relationship. Project delivery teams, working with commercial specialists, should develop an understanding of how best to work with and access the market and suppliers.

Simple transactional commercial relationships might be suitable when the requirements are well understood and with limited risks. In these circumstances, it is often possible to procure from a pre-existing framework, catalogue or dynamic purchasing system, often administered by public buying organisations such as:

- frameworks are available to public sector organisations to procure goods, works and services with pre-determined terms, conditions and prices
- catalogues contain a pre-determined list of typically low-cost items that can be purchased with limited commercial specialist input
- dynamic purchasing systems are similar to frameworks, but the list of available suppliers changes

For complex or high-risk requirements, it is necessary to establish a bespoke contract, through an open competition, with a third-party supplier or suppliers. The attributes of complex requirements in the context of procurement and contracts include:

- first generation outsourcing
- significant transformation of service delivery obtaining services with limited competition or where government is the only customer
- any service obtained by a contract that is considered novel or contentious

Advice should be sought from commercial specialists where a procurement involves complex or high-risk requirements to understand how the market should be engaged and how to approach the procurement.

25.6.1.5 Assuring commercial activities

Project delivery teams should have a defined and established approach to commercial assurance which is integrated into the wider assurance and approvals framework for the portfolio, programme or project. Assurance activities focused on commercial activities and decisions should be proportionate to the complexity, risk and value of the procurement and contract.

In relation to the assurance of commercial activities, consideration should be given to:

- industry security so as to protect government from threats related to suppliers having access to classified, or vulnerable to compromise, information, assets and estates
- commercial spend controls which, when applicable, should involve consulting with the Cabinet Office and HM Treasury to facilitate commercial assurance activity and ministerial approvals
- counter fraud and serious and organised economic crime, both of which are a significant risk to the UK public sector, have far-reaching financial and reputational consequences and can pose a national security issue

Where relevant, commercial assurance activities should also be undertaken in accordance with the *Government Functional Standard for Security* and the *Government Functional Standard for Counter Fraud*.

25.6.1.6 Dealing with complex services and high-risk procurements

When a complex service is outsourced for the first time and there is limited information available about the requirements and risks, a pilot should be run as part of a programme or project to test viability and make any necessary changes. Options for running pilots include:

- trials and proofs of concept
- identifying potential innovations
- identifying lessons learned

Where the contract is high-risk (for example, complex requirements, unproven market capability, uncertain policy environment), methods such as 'should cost' modelling should be used to assess the risks relating to different offers. Such contracts usually require a bespoke procurement approach that allows for project delivery teams to obtain targeted responses from the supply market that meet the business needs.

Counter fraud risk assessments should be used when selecting suppliers for complex contracts and after the award of the contract to ensure payments are made in line with the agreed contractual terms.

25.6.1.7 Understanding how the contract is to be managed

When services, works or goods are being procured, how the contract is to be managed should be considered. The *Contract management playbook* sets out principles. This includes involving the intended contract manager during the procurement and ensuring that they have reviewed and understood aspects such as:

- the scope of the work, including contract management resource implications, statutory obligations, the obligations of both parties and provisions for intellectual property rights or commercial exploitation levy
- the payment regime, including what is covered by fixed and variable or call-off costs and how these will be calculated, budget controls, pricing provisions for future change control and any implication these might have on the resources needed to manage the contract
- the key performance indicators, including the frequency and ease of data collection, validation and reporting requirements (see Chapter 18: Reporting)
- the provisions for managing under-performance and breach of contract, including dispute resolution, arbitration and step in rights
- the provisions for changes to the contract (variations), including ensuring that any changes are justified and controlled (see Chapter 22: Change control)
- the provisions for risk management, in accordance with the risk management approach for the portfolio, programme or project overall and considering the need for agreed resolution plans to ensure continuity of service (see Chapters 20: Risk management and 21: Issue management)
- the exit provisions, including break clauses and notice periods, the triggers for termination, supplier and client obligations in relation to exit and transition. Those who will be involved in managing the contract should be involved throughout the procurement to ensure that they are able to build relationships with the eventual supplier and wider market and so that the contract that is awarded can be operated and administered

25.6.1.8 Developing strong working relationships

Strong internal and external working relationships help to facilitate the delivery and management of a contract. This can be achieved by a shared understanding of the role of the contract manager and the roles and responsibilities on the supplier side. Documenting these respective responsibilities, and behaviours, in a joint document, such as a contract management plan or charter, can help, especially if there is ever a change in the people involved.

How the contract manager and supplier communicate should be considered and planned for. This includes both regular structured and informal communication routes which are open and easily used as well as routes for formal notices.

25.6.2 Preparing to procure and manage contracts

25.6.2.1 Overview

Preparing for commercial management is important, to ensure that the commercial management framework put in place meets the requirements in the *Government Functional Standard for Commercial*, the *Procurement Act 2023* (see 25.6.1.1 on complying with the Act), any relevant *Public procurement policy*, organisational practices. In particular, there needs to be a clearly defined mandate and objectives for the work, as these will determine the nature of the commercial activities and resources involved and how these might need to be managed.

In a portfolio, for example, commercial management is closely linked to wider organisational commercial practices. Where a new portfolio is being established or arrangements are being reshaped, particularly at organisational level, strategic decisions might be needed from the accounting officer and executive board on how portfolio commercial activity is to be planned and managed.

Commercial management in programmes and projects normally operates within existing commercial management arrangements. Defining the commercial governance and management framework for the work is a critical early task, starting as soon as any need to source goods or services from a third-party has been identified. This helps ensure that commercial activities can be planned and costs can be budgeted for. Where necessary, an initial framework can be put in place and then developed as the work expands and commercial planning and management requirements increase.

25.6.2.2 Define the commercial management framework

The governance and management framework for commercial forms part of the overall governance and management framework for the work and should be integrated with the framework in place for the organisation.

The first step is to take a strategic view of likely requirements for commercial management. The commercial needs in project delivery can vary widely, from the outsourcing of the design, development and delivery of the solution, short term needs for professional services and goods through to commercial pipeline and market development activities. Depending on the likely commercial needs of a programme or project, Cabinet Office controls and the *Treasury approvals process for projects and programmes* might apply.

This initial view should provide a basis for defining the core elements of the framework. This should cover key requirements and controls, for example:

- core standards and government requirements to be followed
- the criteria for the tiering and segmentation of commercial agreements and suppliers
- authority limits and decision-making roles and rules

- degree of autonomy
- assurance needs
- reporting structure
- accountabilities and responsibilities for undertaking commercial practices

In a portfolio, the framework sets the parameters for managing commercial activities at portfolio level, as well as what is expected of programmes and projects within the portfolio, in line with the *Government Functional Standard for Commercial* and the *Government Functional Standard for Project Delivery*. How this works depends on whether commercial management activities are undertaken through the portfolio, or separately. Even in the latter case, there should be full visibility of programme and project commercial needs and activities at portfolio level, as this is essential for accurate portfolio monitoring, reporting and intervention. Consideration should be given to whether a commercial pipeline, which feeds into the organisation's commercial pipeline and might contribute to a published commercial projection, is needed. The portfolio commercial management framework should set out how this works.

For organisational portfolios, the framework should be approved by the chief commercial officer and accounting officer and the appropriate governance board, usually the organisational portfolio board or investment committee. Below this level, the framework should be approved by the portfolio director.

In a programme or project, the oversight of procurement and contract management should be delegated to the senior responsible owner to manage as a core element of their accountability for the work. The senior responsible owner can make further sub-delegations, normally to the programme or project manager, so they can manage commercial activities on a day-to-day basis, and sometimes beyond. The framework plays an important part in demonstrating how the senior responsible owner plans to exercise their commercial responsibilities in line with their delegated authority (and taking account of any sub-delegations), to meet the required standards and maintain commercial discipline in line with organisational and portfolio requirements. At programme and project level, the framework should be approved by the senior responsible owner and the appropriate governance board.

25.6.2.3 Identify the appropriate systems, processes and tools

The platforms, applications, processes and tools needed to support commercial planning, procurement and control should be identified early. This usually means using existing organisational commercial and reporting platforms and established processes but might need also to be supplemented by additional processes or specialist tools.

For smaller initiatives, commercial data, modelling and analysis is often handled on spreadsheets. Some organisations provide specialised tools for managing commercial activities which interface with their existing platforms, and these can save considerable

time and effort on rekeying or uploading data, particularly at portfolio level but also for programme and project managers in reporting upwards. For larger and more complex endeavours, specialised planning and control software, incorporating commercial data, can be used: see Chapter 16: Planning.

25.6.2.4 Brief the team on the contracts

Team members who interact or work with a supplier need to understand the contract and what its terms mean for their own responsibilities. Contracts include obligations on both parties which, if not respected, can lead to a material breach of contract.

Team members should understand:

- how these obligations are reflected in the contract management plan
- what authority they have as individuals
- what they are and are not allowed to agree, approve or instruct, so they do not inadvertently compromise the contract

Contracts also include strict timescales and specify a route and named person for formal contract notices. It is the responsibility of the sender to make sure communications are received, not the receiving party.

25.6.3 Key activities in procuring and managing contracts

25.6.3.1 Overview

Commercial management in project delivery involves a series of related activities, as shown in Figure 25.2 and considered below. These activities are undertaken by the commercial or procurement manager and the contract manager, and their respective teams.

Depending on the scale, cost and complexity of the commercial work, these roles may be fulfilled by members of the project delivery team or commercial specialists. Where commercial specialists are referred to as completing activities in the descriptions below, this refers to accredited members of the Government Commercial Function.

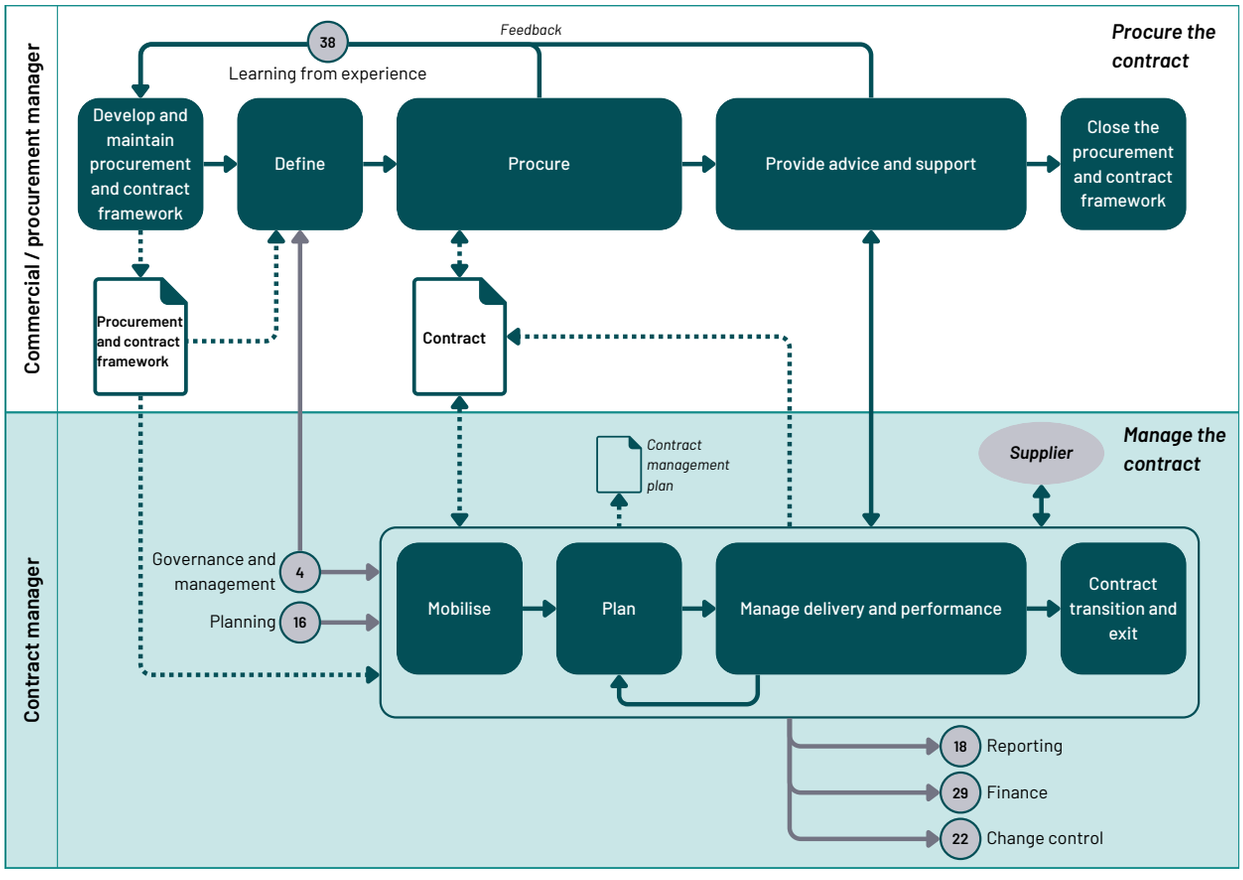


Figure 25.2 Overview of the key procurement and contract management activities and their primary relationships

25.6.3.2 Develop and maintain the procurement management framework

The approach to procurement and contract management should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management and 25.6.2.2 on defining the commercial management framework).

Commercial management in project delivery is governed by the overall government control framework in *Managing public money*, and how that is then applied within the organisation in which it takes place. It is important, nonetheless, to set out the specific commercial management controls required within the portfolio, programme or project, aligned to the scale, complexity and risk profile of the work. It is also important to monitor the operation of the framework to ensure that it remains effective and appropriate as the work proceeds, particularly if things change. If necessary, it should be updated.

25.6.3.3 Define the procurement

Overview

Defining a procurement involves:

- shaping the business needs and choosing the delivery model assessment
- supply market analysis and early engagement
- analysis of commercial options
- setting criteria for selecting suppliers

Shaping the business needs and choosing the delivery model assessment

Options for commercial delivery should be evaluated at the outset of a new programme or project to inform the business need and provide sufficient time to select the commercial delivery model to be used.

An assessment of the delivery model should be undertaken to provide an analytical, evidence-based recommendation on whether a programme or project team should deliver a service or part of a service in-house, procure from the market or adopt a hybrid solution. Assessments should be proportionate to the scale and complexity of the work.

Commercial specialists should be appointed early to support definition of the business need and oversee the project delivery commercial activities and delivery model assessment.

Business needs should be translated into commercial requirements which can be defined in a contract or equivalent commercial format. Commercial requirements should be accessible to the supply market, be sufficiently flexible to allow for potential future changes or innovation and enable performance and outcomes to be measured.

Particular care should be given to the need to protect against the risk of fraud, bribery and corruption. There are clear rules and duties of due diligence which should be adhered to when awarding purchasing contracts or grants. This should be considered at an early stage, and the design of the proposal should consider proportionate counter measures. More detail can be found in the *Green Book*.

Supply market analysis and early engagement

Early market engagement can lead to increased competition, promote innovation and improve value for money for contracts. Commercial specialists should ensure that potential suppliers have sufficient time to appropriately influence, understand and prepare to make an offer against the contract requirements when advertised (except in the case of a catalogue procurement) and the outcomes that are expected to be delivered.

A commercial specialist should assess the business need by conducting supply market analysis in order to recommend the most appropriate market engagement approach. Outcomes from the market engagement should be used to shape the business need, define the contract requirements and develop the commercial options.

Analysis of commercial options

Identifying and analysing commercial options enables effective appraisal and selection of the optimum commercial approach to deliver the intended outcome. Justification for choosing a particular commercial option should be documented. This should be done through cross-functional analysis and the timely production of commercial cases. Options should be assessed following the requirements of the *Government Functional Standard for Analysis*.

Setting criteria for selecting suppliers

The criteria for selecting suppliers and offer evaluation method should be established before inviting offers from the supply market. Offer evaluation criteria should enable differentiation between supplier offers and should consider both priced and unpriced elements to identify the most economically advantageous offer.

25.6.3.4 Procure the goods, works or services

Overview

Procuring services and goods involves:

- agreeing the route to market and procurement procedure
- selecting form of contracts
- preparing the draft contract
- inviting offers
- evaluation of offers and selection of suppliers
- contract award

Agreeing the route to market and procurement procedure

The appropriate route to market is informed by the selected commercial approach and the associated complexity and risks. Project delivery teams should draw on the expertise of commercial specialists as appropriate to agree the route to market for non-transactional contracts. Additional advice might be needed from the chief commercial officer of the organisation for the most complex of contracts.

The selected route to market should be justified and aligned to the selected commercial option while complying with commercial policy and regulations and ensuring opportunities are accessible.

Selecting a form of contract

A form of contract should be selected before inviting offers from the market. Model forms of contract should be used except when otherwise justified to facilitate more efficient sourcing and contract management. The *Model service contract* should be used as a reference for which terms and conditions should be used for major services contracts. It is intended for use by commercial specialists and lawyers to reduce administration, legal costs and negotiation time.

Proportionate key performance indicators should be refined, defined and included in contracts. These indicators should be developed in consultation with relevant stakeholders and be published in line with policy.

Preparing the draft contract

A draft contract and supporting tender documentation should be prepared using the chosen form of contract. Contracts can be output or outcome based and should be designed to promote proactive commercial assurance through its terms and conditions.

Inviting or identifying offers

Suppliers should be invited to submit documented offers to deliver the requirement or, where a procurement involves using a pre-existing framework, catalogue or dynamic purchasing system, supplier offers should be identified. This should be done in accordance with the commercial governance and management framework, the organisation's processes and controls and in compliance with regulations.

Evaluation of offers and selection of suppliers

Effective supplier selection and evaluation of offers ensures the appropriate supplier is chosen to undertake the work to deliver the required outcomes and that value for money is achieved.

Proportionate due diligence should be carried out on the selected supplier before recommending a contract award. The evaluation of supplier proposals should be carried out using the criteria defined. Evaluations should be conducted with cross-functional support with evaluators having no conflicts of interest that could prejudice the activity and award.

Contract award recommendations should be justified and approved. Where the contract is to develop or deliver the main solution for the work, this is normally combined with approval of the full business case.

Contract award

Finalised contracts should reflect the negotiations with the prospective supplier and be signed by authorised representatives from the contracting party, after the required 'stand still' period. Negotiations should include documenting each contracting parties' liabilities and obligations and any transition responsibilities.

The unsuccessful bidder(s) should be notified, and details of the awarded contract should be published on the relevant procurement portals.

25.6.3.5 Mobilise for delivery

Mobilisation begins delivery against the contract. Arrangements should establish the use of a contract management plan which defines the roles and responsibilities of each party and should be periodically reviewed. Any obligations under the *Transfer of Undertakings (Protection of Employment) Regulations 2006* (TUPE) in respect of employee transfers must be fulfilled as soon as the contract takes effect.

The support required from commercial specialists should be proportionate to the complexity and risks of the contract, with the simplest and lowest cost of contracts potentially needing no specialist support.

25.6.3.6 Plan how the contract is managed

A contract management plan should be produced by the contract manager and should be approved by the senior business owner which, in the case of programmes and projects is likely to be the senior responsible owner and for portfolios the portfolio director.

The contract management plan should include aspects such as:

- definition of the contract management team, including roles and responsibilities
- contract risk management approach and the relationship with the portfolio, programme or project risk management
- performance indicators
- formal and informal communications channels
- dispute resolution provisions, including informal and formal resolution, arbitration and any step-in rights
- contingency options
- the plan for exit or transition

- the plan for re-procurement or contract extension if applicable
- the processes and tools required to support contract administration, monitor delivery and manage performance

The budget and processes for committing and monitoring contract spend should be established (see Chapter 29: Finance).

25.6.3.7 Manage delivery and supplier performance

The delivery of goods, works and services should be managed proportionately to the complexity, value and risk of the contract. Supplier performance should be monitored to ensure that intended outputs are delivered to contractual milestones and that outcomes and benefits from contracts are realised.

The contract manager should ensure that the necessary resources, processes and systems are in place that enable:

- the supplier to be instructed
- delivery against contractual obligations, including key performance indicators and milestones, to be tracked
- performance and benefits to be monitored and quality to be assured
- continuous improvement
- supplier invoices to be verified and validated, and then prompt payments made, including through the supply chain
- opportunities for innovation to be identified
- contract disputes to be managed

The contract manager should regularly report contract performance to the portfolio, programme or project manager and other relevant stakeholders, in support of monitoring the effective application of the contract management plan and the performance of the supplier.

Where performance does not or is unlikely to meet the requirements of the contract, preventative or corrective actions should be taken. These actions should be within the terms of the contract and should be aimed at remediating the situation. Examples include issuing a formal notice or issuing a notice for a performance improvement plan. Where performance does not improve, or in the event of serious or persistent breach of contract, specialist commercial advice, and if necessary legal advice, should be sought. Contract performance and any performance management action taken should be rigorously documented, ensuring that both client and supplier obligations are met at all times.

Periodically, through the life of the contract, the senior responsible owner, supported by the contract manager and commercial specialists, should review the contract and its arrangements. The aim of such reviews is to ensure that the contract accurately reflects the parties' relationship, current risks, market conditions and that the contract continues to deliver the business needs and provides value for money.

Over the life of the contract, changes may be identified that need to be managed. All contract changes should be justified and controlled to ensure that the requirements continue to meet the business needs and align to the organisation's financial processes. Contract change control should be fully integrated and aligned to the change control processes for the portfolio, programme or project (see Chapter 22: Change control).

25.6.3.8 Provide advice and support

During the life of the contract, the advice and support of commercial specialists might be needed. Advice and support can be provided on a range of topics and should be sought on aspects such as:

- performance issues and the implementing of preventative or corrective actions
- benchmarking prices against the market and other public sector organisations
- contractual disputes
- contractual risk management and techniques, such as stress testing, scenario planning and contract contingency plans

25.6.3.9 Contract transition and exit

Contract transition ensures that handover is conducted smoothly with no unplanned interruption to service and happens in situations such as:

- where a programme or project is coming to an end, and managing the delivery of the service needs to transition from the programme or project team to an operational team
- where the delivery of the service is transitioning from one supplier to another

A transition plan should be established which defines the goals, responsibilities and activities of the transition. The plan should follow the guidance in Chapter 36: Transition into use and include:

- knowledge asset and data handover
- supplier staff transition
- contingency plans

Commercial knowledge assets can include intellectual property, research, data, expertise and other intellectual resources that have been developed by third-party suppliers when delivering a contract.

Contracts may be exited either when completed or when terminated early and can happen during the life cycle of a programme or project, or during their closure. Formal notice is usually required and should be reflected in planning. An exit plan may be separate or can be included in the contract management plan and should include:

- clear outline of activities, milestones and required resources
- roles, responsibilities and accountabilities
- any residual obligations in respect of supplier employees under the *Transfer of Undertakings (Protection of Employment) Regulations 2006* (TUPE)
- key interfaces and dependencies
- asset registers and transfers

Early termination of a contract should be a last resort, only enacted after other provisions for the delivery of the contract, including remedies, have been exhausted. When early termination is proposed, the cost and impact of the termination should be considered, including the likelihood and implications of any legal dispute, and specialist commercial and legal advice should be sought.

On contract closure, information systems should be updated, any staff and facilities reassigned and the contract documentation archived.

25.6.3.10 Close procurement and contract management framework

In a programme or project, following completion of the work, commercial management arrangements are brought to a close. In a portfolio, commercial management arrangements normally continue unless the portfolio is fully concluded and wound up, or substantially reset.

In some programmes or projects, commercial data, reporting and accounting arrangements are handed over to support commercial management as part of operations, particularly where there are ongoing contracts or follow up activities following programme or project close, or where the work moves into a sustainment model (whereby future development is carried out on an iterative basis as part of business as usual operations).

The effectiveness of commercial management should be evaluated as part of closing the work. Commercial management information should be archived in accordance with the sponsoring organisation's information and data retention policies (see Chapter 24: Information and data management). The commercial management framework should then be closed.

25.7 Further reading

- Cabinet Office, *Commercial pipeline guidance*
- Cabinet Office, *Cabinet Office controls*
- Cabinet Office, *Guidance: Contracting authority definition*
- Cabinet Office, *Guidance: Devolved contracting authorities*
- Cabinet Office, *Procurement policy notes* (collection)
- Cabinet Office, *Prompt payment policy*
- Cabinet Office and Government Commercial Function, *Assessing and monitoring the Economic and Financial Standing of Suppliers guidance note*
- Cabinet Office and Government Legal Department, *Model services contract*
- Crown Commercial Service, *Public procurement policy*
- Department for Environment, Food and Rural Affairs, *Sustainable procurement: the Government Buying Standards (GBS)*
- Government Commercial Function, *Contract management professional standards*
- Government Commercial Function, *Should cost modelling: tools and templates (collection)*
- Government Commercial Function, *Delivery model assessment guidance note Government Commercial Function, People standards for the profession*
- Government Commercial Function, *Procurement Act 2023 knowledge drop for contracting authorities: Northern Ireland*
- Government Commercial Function, *Procurement Act 2023 knowledge drop for contracting authorities: Wales*
- Government Commercial Function, *Procurement Act 2023 - Guidance documents collection*
- Government Commercial Function, *Resolution planning*
- Government Commercial Function, *Sourcing playbook* Government Commercial Function, *Supplier code of conduct*
- Government Commercial Function, *The official transforming public procurement knowledge drops* (collection)

- Government Commercial Function, *The Procurement Act 2023: a short guide for senior leaders*
- Government Commercial Function, *TPP knowledge drop supporting factsheets* (collection)
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 007: Security*
- HM Government, *Government Functional Standard GovS 008: Commercial*
- HM Government, *Government Functional Standard GovS 013: Counter Fraud*
- HM Government, *National procurement policy statement*
- HM Government, *The Construction playbook: government guidance on sourcing and contracting public works projects and programmes*
- HM Government, *The contract management playbook: Government guidance on the effective management of contracts*
- HM Government, *The Sourcing playbook: government guidance on service delivery, including outsourcing, insourcing, mixed economy sourcing and contracting*
- UK Parliament, *Procurement Act 2023*
- UK Parliament, *Public Services (Social Value) Act 2012*
- UK Parliament, *The Transfer of Undertakings (Protection of Employment) Regulations 2006*
- HM Treasury, *Treasury approvals process for projects and programmes*
- Welsh Government, *Wales procurement policy statement*

26. Stakeholder engagement

26.1 Purpose of stakeholder engagement

The purpose of stakeholder engagement is to ensure that the needs and concerns of stakeholders are addressed appropriately to meet the objectives of a portfolio, programme or project.

26.2 Key points

- Stakeholder engagement needs a systemic approach and active management throughout the life cycle.
- Identify and analyse stakeholders so that engagement can be prioritised, tailored and reflect their needs and preferences.
- Openness and consistency build confidence and trust.
- Stakeholder data must be handled in accordance with government data standards and sensitively managed and stored.
- Monitor and assess stakeholder engagement throughout, using evidence to manage resistance and adapt the approach.

26.3 Why engage with stakeholders?

Stakeholders may be sponsoring or investing in the work, involved in delivering it, affected by it, or have a broader interest in it, for example as a campaigning organisation.

In government, some stakeholder engagement is required by law, for example as part of public consultation and impact assessment.

Effective stakeholder engagement throughout the life cycle:

- builds support for the work
- helps identify opportunities, threats and issues early
- supports the management of resistance

Understanding stakeholder interests and expectations helps to:

- define objectives, outcomes and outputs

- inform the design and delivery of the solution
- enable benefits realisation

Where stakeholders have concerns about the work, or oppose it, it is important to recognise and understand these concerns, including their potential impacts, and consider how they can best be addressed.

Engagement with a diverse range of stakeholders to inform policy and delivery options development is a way to identify impacts on different groups. This helps ensure the work is designed with equality, diversity and inclusion (see Chapter 5: Equality, diversity and inclusion) in mind, as part of the government's obligations under the *Public sector equality duty*.

26.4 What is stakeholder engagement?

Stakeholder engagement requires a systemic approach to stakeholder identification, analysis, planning and engagement activities through the life cycle.

The *Project delivery glossary* defines a stakeholder as:

> Individual, group or organisation that can affect or be affected by, or perceive itself to be affected by a decision, initiative or activity.

In government, project delivery can impact on or engage the interest of multiple stakeholders, sometimes with very different expectations and perspectives. These might include:

- citizens and service users
- campaign and special interest groups
- the media
- ministers
- senior officials
- employees
- delivery partners (suppliers)
- other government and public sector organisations
- private sector, third sector and other non-government organisations
- representative bodies, such as trade unions, trade and professional associations
- international partners

Stakeholder analysis is carried out to identify groups and individuals who have a stake in the work, the nature of their interest, expectations and influence, so that these can be represented in planning and considered throughout the life cycle. A list of stakeholders forms the basis of the **stakeholder register**.

A **stakeholder engagement plan** is then developed as part of planning (see Chapter 16: Planning), defining how to engage stakeholders in a co-ordinated and appropriate way. The plan should be implemented, monitored and updated to reflect newly emerging stakeholders and changes in the position of existing stakeholders as the work proceeds.

Engagement can be designed to:

- consult, for example, to seek ideas and feedback through face-to-face meetings, workshops, questionnaires, surveys or consultation exercises
- inform, for example, to explain proposals, update on progress or publicise success, with channels ranging from email and social media, organisation websites, press releases and briefings, media interviews and publications
- direct, for example, to set direction or provide instructions, whether through briefing meetings or written communications
- build relationships: for example, to build support or consensus, or help new delivery partners get to know each other, typically through launch events, awaydays or collaborative working activities

Some stakeholders are also engaged directly in the work, for example in:

- providing approval and funding (see Chapter 29: Finance)
- verifying and validating the solution (Chapter 34: Verification and validation)
- leading organisational and societal change as senior leaders, product owners and change advocates (see Chapter 35: Management of organisational and societal change)
- managing the future solution and realising benefits following transition to business as usual (see Chapter 35: Management of organisational and societal change and Chapter 36: Transition into use)

Stakeholder attitudes should be assessed, updated and validated throughout the work. The views of stakeholders should also be considered as part of learning from experience, post programme and project evaluation, and benefits realisation.

26.5 Who manages stakeholder engagement?

Stakeholder engagement can take many forms and so can involve a range of people across the team. Accountability and responsibility for stakeholder engagement should be clearly defined within the governance and management framework and reviewed on a regular basis, to avoid duplication or gaps.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for stakeholder engagement, including owning the stakeholder engagement framework and plan, and engaging with the most critical and senior stakeholders.

The **portfolio, programme or project manager**, as appropriate, is accountable for developing and managing the stakeholder engagement framework, register and plan, including ongoing monitoring, review and evaluation, as well as any specific stakeholder engagement activities allocated to them.

Everyone in the team should understand how stakeholders are to be engaged and what information is (and is not) to be shared, with whom and when. This matters even if team members are not directly involved in stakeholder engagement activities, to reduce potential for confusion and miscommunication.

In general, any person with a legitimate interest may identify a stakeholder. In practice stakeholders are normally identified in the early phases of the work by the sponsoring body or the team itself, including suppliers. For public works, stakeholders may often identify themselves.

Depending on the scale of the work, there could be a dedicated **stakeholder manager** or team with responsibility for developing and maintaining the stakeholder register and engagement plan and managing engagement activities, either themselves or through an engagement owner. An **engagement owner** is responsible for building the relationship with their assigned stakeholder. The stakeholder manager and engagement owners should work closely with the business analysis, business change and communications teams. In some cases, the stakeholder manager may also act as the engagement owner for specific stakeholders.

More detail on the stakeholder manager role and competences can be found in the *Project delivery capability framework*.

26.6 How to manage stakeholder engagement

26.6.1 What to consider when engaging stakeholders

26.6.1.1 Focusing stakeholder engagement activities

The approach to stakeholder engagement, monitoring and evaluation should be tailored to suit the nature of the work and the phase of the life cycle. Large portfolios, programmes and projects, particularly those involving contentious proposals or extensive organisational or social change, require a more developed approach and more ongoing management than simpler ones.

Engagement activities should also be tailored to the particular position, interests and perspectives of different stakeholder groups, and should reflect their needs and preferences, for example, in terms of how best, where and when to engage. Stakeholders have a choice whether or not to engage so the approach needs careful consideration. For example, a stakeholder unfamiliar with government can find it easier to explain their perspective in their own environment. Employees might prefer to use an existing meeting rather than add another one. When in doubt, ask for their preferences or provide options.

26.6.1.2 Understanding power and influence

Stakeholders vary considerably, not only in terms of their interest and attitude towards the work but also in terms of their power and potential influence on it. Sources of power can include:

- position, in terms of role, grade or other formal authority
- status, in terms of how people are perceived
- resource, when someone has resources that you need
- expertise, where someone's knowledge and skills are considered authoritative
- legal and regulatory authority, where a body or individual has authority over designated areas of activity

Influence can stem from power but also from other sources, for example:

- relationships, where someone is known and trusted for their opinion
- social networks, where views and informal alliances form around issues
- public perception, in terms of a strong collective view or public campaign, often channelled through broadcast or social media

Government project delivery takes place in a complex socio-political context, where stakeholders do not operate in isolation but are part of a complex system of social networks. Understanding this and factoring this into planning and engagement activities is therefore critical for effective stakeholder engagement. Power and influence can be visualised on a power-influence matrix (see Figure 26.2).

26.6.1.3 Being open and consistent

In engaging stakeholders, openness and consistency are key to building confidence and trust. It is important to ensure that an accessible and consistent overall narrative, with a supporting body of information, is maintained for sharing with stakeholders, tailored appropriately to their interests and contribution. This is especially important in mass communications (see Chapter 27: Communications) where external scrutiny, by groups such as the media and campaign and special interest groups is likely. Care should be taken, particularly in larger and more complex work, to avoid confused or conflicting information being given to different (or even the same) stakeholders. Where information cannot be shared, or shared yet, the reason why should be explained.

See also Chapter 24: Information and data management.

26.6.1.4 Building relationships

Stakeholder engagement is most effective when it helps to build enduring relationships based on trust, rather than as a one-off transactional activity. This can mean starting to engage with some stakeholders early in the life cycle, before their input is needed, and maintaining the relationship afterwards.

Two-way communication and feedback are key to successful stakeholder engagement. If a stakeholder takes time to contribute their views and hears nothing further, they could conclude that their input was not valued or has been ignored. Providing feedback, not just on what decisions were taken but also why, is important in ensuring that stakeholders feel heard. Similarly, if a difficult message has to be given, it is likely to land better if stakeholders hear it directly rather than through other channels. Even where an unwelcome decision has been made, direct communication helps show a stakeholder is still valued and can help build trusted relationships for the longer term, despite disagreement. (See also Chapter 27: Communications).

26.6.1.5 Recognising and managing resistance

Not all stakeholders are likely to be positive about the work. For some people, the changes proposed can be seen as disruptive or threatening in terms of how it might affect their work or their lives. Strong stakeholder resistance can delay or stop work, increase costs or reduce benefits, or even lead the sponsoring body to decide to cancel it altogether. Identifying where resistance can come from, recognising the signs, and taking steps to manage it are all essential to effective stakeholder engagement.

Stakeholders can be:

- **advocates**, highly committed and active champions for the work
- **supporters**, well disposed towards the work and happy to go along with it
- **neutral**, indifferent to the work or not yet decided
- **critics**, negative about the work and likely to criticise and resist it
- **opponents**, actively opposed to the work and working to challenge and stop it

Active opposition is usually easy to identify: while it might not be possible to change an opponent's views, handling can be planned for as part of stakeholder engagement and communications. Some sources of resistance are less obvious: some critics might not be obvious but gradually undermine confidence; some people who appear neutral prove to be negative. Signs of resistance to look out for are:

- unwillingness to engage - missing meetings and events, not responding to requests, silence
- attacking the detail – asking for more and more detail, finding multiple flaws to undermine the work, inflating minor issues to discredit the whole concept
- promising action – but doing nothing
- negative briefing – internally, criticising the work to others or spreading unfounded rumours; externally, private briefings with other stakeholders, comments on social media, unattributed press stories

Such signs of resistance might have alternative explanations: people might not engage because of a heavy workload or personal issues; critical comment often reflects genuine concern and the wish to get the work right. Where in doubt, ask or seek other feedback. Where there are growing signs of resistance, however, this usually means that more, or different, engagement or communication is needed, whether directly with the stakeholder concerned, or with others who might be influenced negatively as a result.

26.6.1.6 Responding and adapting to stakeholders' attitudes

Expect stakeholder interest and engagement to evolve over the life cycle. This often reflects the phase of the life cycle: for example, proposals going through Parliament often drive significant attention from ministers and external interest groups, while service user interest typically peaks during implementation and transition, as changes are introduced.

Stakeholder perspectives can also shift as a result of internal or external changes. For example, a reduction in funding can increase demand for changes that deliver savings or efficiencies; domestic or international policy changes can raise sensitivity and drive opposition to changes.

It is easy to assume that engagement is going well, in the absence of evidence to the contrary. Developing evidence-based indicators to track stakeholder perceptions is therefore important, particularly where work is complex or contentious. External review can also help provide a broader perspective and insight into key issues.

Loss of stakeholder confidence and trust can be very damaging, particularly if momentum builds, and responding quickly is important, particularly if significant concerns or opposition start to arise. Changes in stakeholder engagement assumptions and requirements should be identified as early as possible, together with their impact, for example on schedule and resources, and escalated and managed under change control as part of the integrated plan.

26.6.2 Preparing to manage stakeholder engagement

26.6.2.1 Overview

Stakeholder engagement requires a systemic approach to stakeholder identification, analysis, planning and engagement activities through the life cycle. Defining a strategic framework to govern these activities, and deciding on suitable tools and processes to support them, provides the foundation for effective stakeholder engagement.

26.6.2.2 Define the stakeholder engagement framework

The first step is to take a strategic view of likely requirements for stakeholder engagement. Is this a short-term project with consistent stakeholders, or an evolving programme where they could change significantly over time? In a portfolio, are there common stakeholders or are they all different? Is the work likely to be contentious or complex, or involve multiple groups with differing views?

This initial view should provide a basis for defining an overall approach for stakeholder engagement, to be set out in the stakeholder engagement framework which forms part of the governance and management framework for the work. The stakeholder engagement framework defines the processes, methods and tools to be used, including how:

- stakeholders are to be identified, categorised and grouped
- stakeholder analysis is to be conducted and represented
- stakeholder data is to be collected, analysed, managed and stored
- engagement activities are to be managed and resourced
- interaction, feedback and communications with stakeholders are to be managed
- monitoring is to be conducted and reported, and the success of stakeholder engagement measured

26.6.2.3 Prepare a stakeholder register

Key in the engagement framework is the **stakeholder register** which includes a list of stakeholders together with information such as:

- organisation or group they belong to
- attitude (positive, neutral, negative)
- sources of power-influence
- known relationships to other stakeholders
- what they could gain or lose
- other information, for example, contact details and preferred communications channels, to support communications activity
- status, such as proposed, active, closed

This register is the primary working tool for keeping information on stakeholders up-to-date.

26.6.2.4 Choose the appropriate tools

The other task at this point is to identify what tools are to be used, for example in identifying and profiling stakeholders, analysing and storing data. These should also be set out in the engagement framework.

For small initiatives, information and analysis can be handled on spreadsheets and standard software analysis tools. For larger and more complex endeavours, for example involving public consultation or interaction with multiple stakeholders over time, keeping track and managing complex data sets can be very resource-intensive, and specialist data analysis or customer relationship management (CRM) systems could help.

There are a number of tools which can be used to help analyse and visualise stakeholder information, and some examples are shown in Figure 26.1, Figure 26.2, Figure 26.3 and Figure 26.4. These are often linked to the information in a stakeholder register so that changes in the register are immediately apparent in the diagrams.

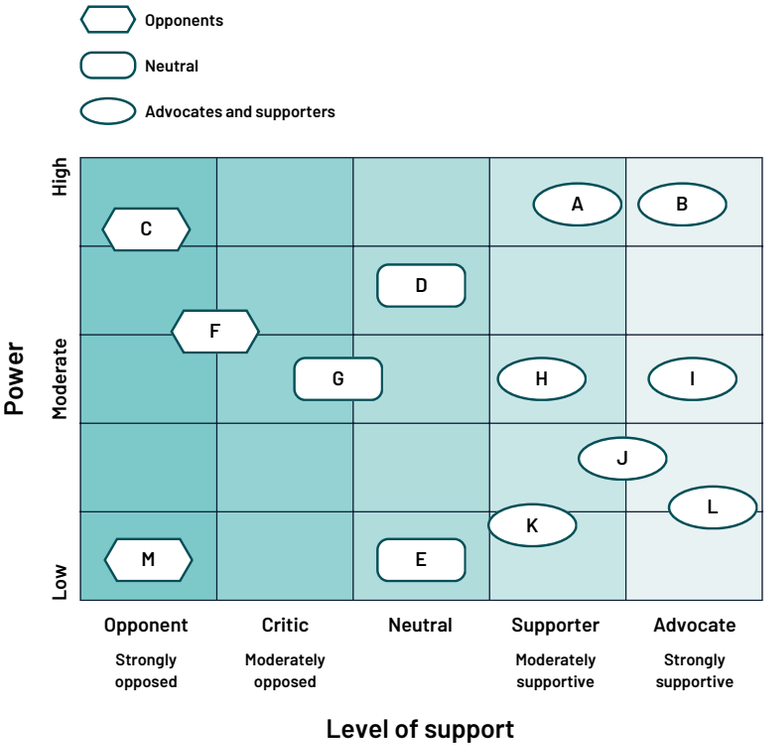


Figure 26.1 Stakeholder power-support matrix

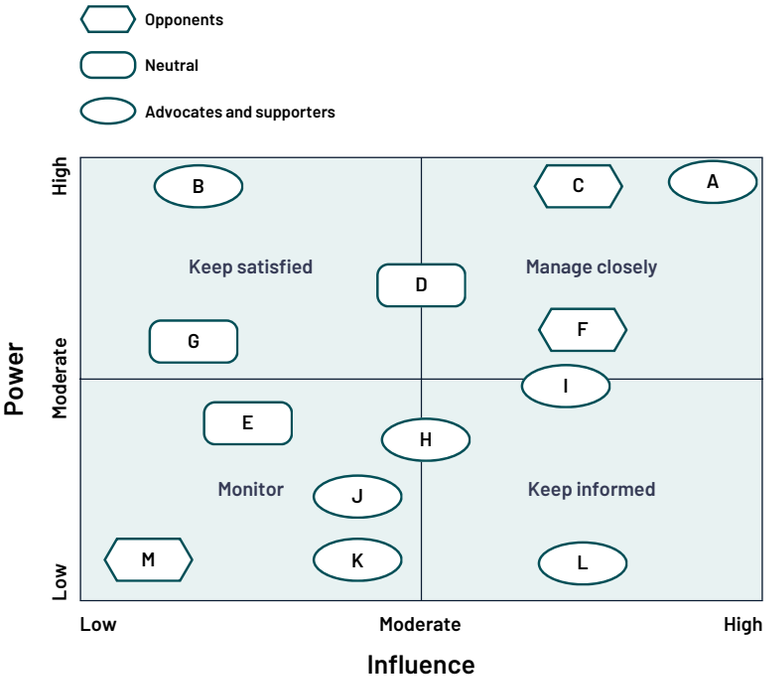


Figure 26.2 Stakeholder power-influence matrix

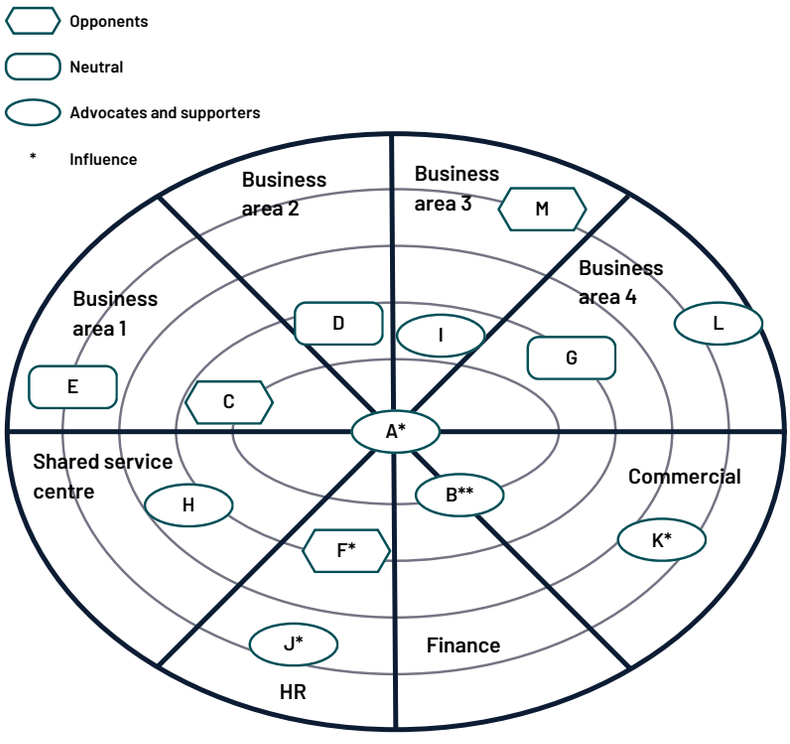


Figure 26.3 Stakeholder landscape

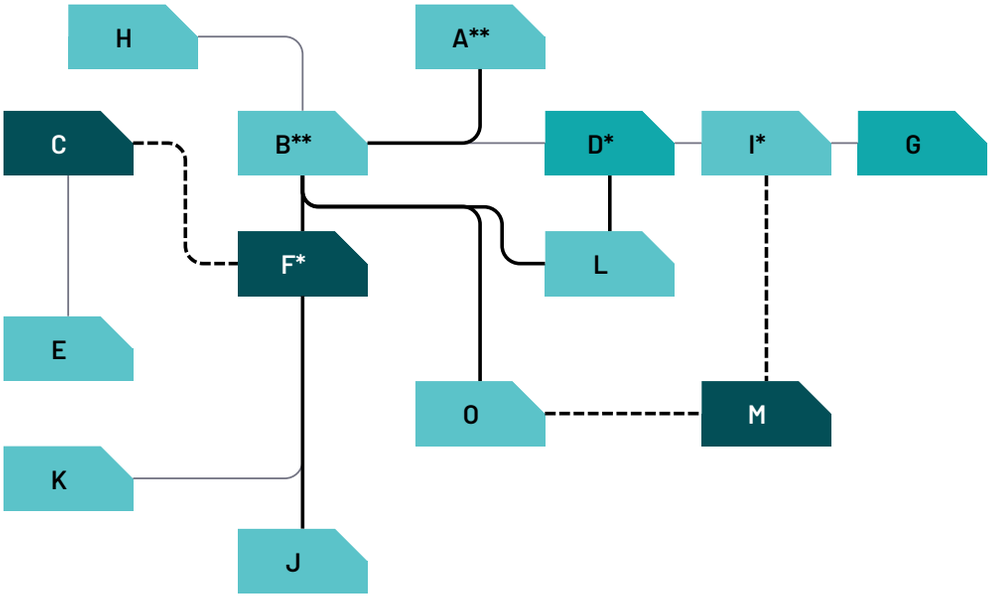


Figure 26.4 Stakeholder relationships network

26.6.3 Key activities in managing stakeholder engagement

26.6.3.1 Overview

Stakeholder management involves a series of related activities, as shown in Figure 26.5 and considered below. These may be sequential or iterative, depending on the nature of the portfolio, programme or project.

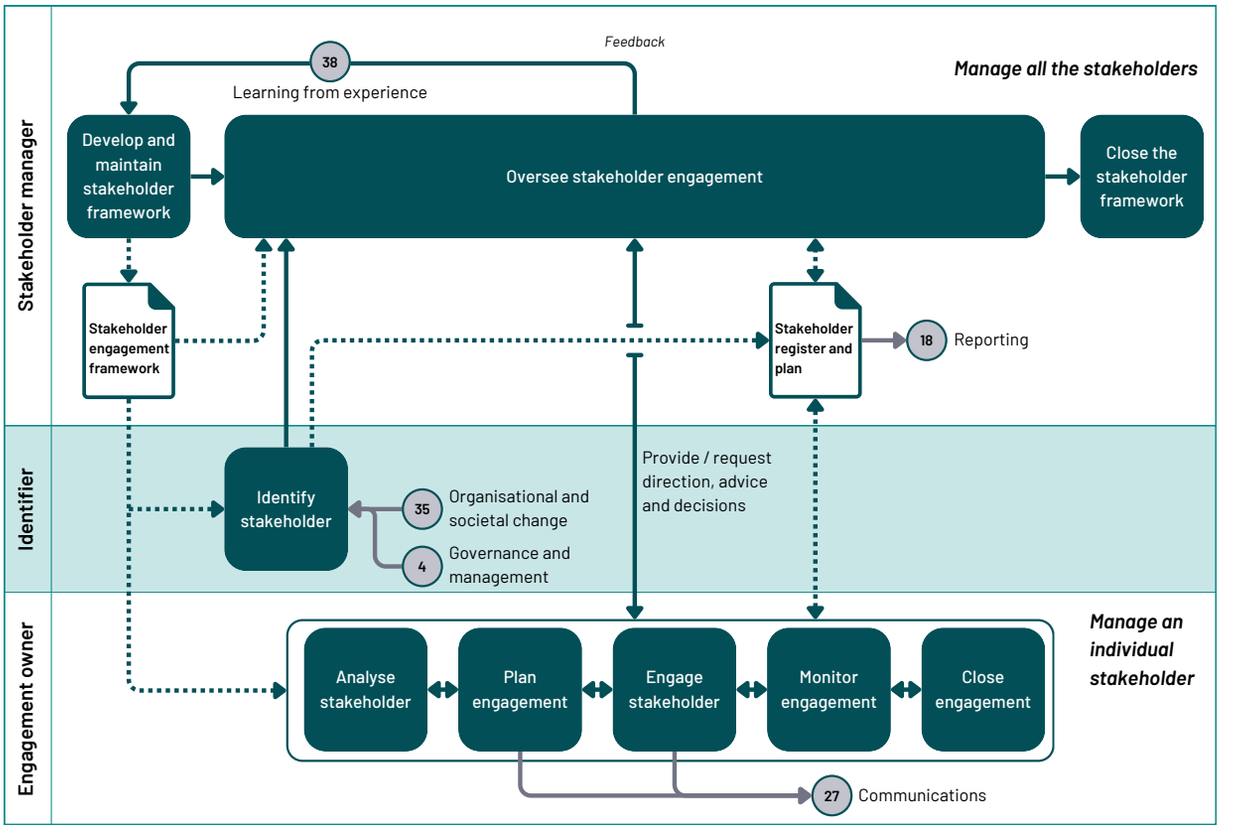


Figure 26.5 Overview of the key activities for stakeholder engagement and their primary relationships

26.6.3.2 Develop and maintain the stakeholder engagement framework

The approach to engaging stakeholders should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 26.6.2.2 on defining the stakeholder engagement framework. The framework should be maintained to address relevant feedback from its use.

26.6.3.3 Oversee stakeholder engagement

Overview

This brings together the needs and concerns of all stakeholders to build an overall picture of the challenges and opportunities, and how these might affect the work's objectives. For example, are there common themes emerging, shared by different groups, or is there a genuine lack of consensus? How should the stakeholders be grouped? Who is best placed to be assigned as the engagement owner?

Populate and maintain the stakeholder register

A preliminary analysis should be done on any identified stakeholders (see 26.6.3.4 on identifying an individual stakeholder or group) to segment them into groups, such as decision-makers, suppliers and users, and against specific areas of interest. These can then be broken down further, for example by role, organisation or geographical location, to support analysis. The list of stakeholders should be verified and held in a stakeholder register which, like a risk or issues register, should be kept up-to-date. The preliminary analysis can then be used to assign an appropriate engagement owner for each stakeholder who is then responsible for further analysis, planning, engagement and monitoring.

Prepare and maintain the stakeholder engagement plan

The engagement plans for each stakeholder (see 26.6.3.6 for planning to engage the stakeholder) or group should be brought together in a stakeholder engagement plan. A stakeholder engagement plan outlines how all the stakeholders are to be engaged in a coordinated way, with priorities set on those who have the most impact. It draws on the stakeholder register, identifying the stakeholders, their level of interest and influence, and the best methods and frequency of engaging and communication for each stakeholder group. Stakeholder maps can also be included to show the situation at a point in time (see 26.6.2.4 for choosing the appropriate tools). Activities, where significant, should be included in the overall schedule, resource and cost plans for the work. Once approved, the stakeholder engagement plan should be managed under change control, as part of the wider integrated plan (see Chapter 16: Planning).

Monitor and report on stakeholders' attitudes and perceptions

Throughout the life of a portfolio, programme or project, stakeholder attitudes and perceptions need to be reported on regularly so that the portfolio director and senior responsible owner and their respective boards have an up-to-date understanding of problems or opportunities being faced and can plan any required responses accordingly.

Assess feedback on use

The management framework should be monitored to make sure it remains effective and appropriate as the work proceeds, particularly if things change significantly.

26.6.3.4 Identify an individual stakeholder or group

Government project delivery, by its nature, involves many different stakeholders, whether supporting the work, developing and delivering it, being impacted by it, or as organisations and people with a broader public interest. Not all stakeholders are obvious or indeed interested in being involved, even if they are likely to be affected by it in due course. The attitudes of groups and individuals can change over time. A systematic approach to identifying and maintaining an up-to-date register of stakeholders is therefore important, to avoid missing a key individual or group.

Identification usually begins at the start of the work with the stakeholder manager and other team members creating a long list of stakeholders, and then assigning an engagement owner to each individual or group, as appropriate (see 26.6.3.3 on overseeing stakeholder engagement). Additional stakeholders can also be identified and added at any point in the life cycle.

26.6.3.5 Analyse the stakeholder's needs and concerns

Once a stakeholder has been identified, the assigned engagement owner should undertake further analysis to understand the characteristics of the stakeholder more fully, such as their likely interests, attitudes and potential impact or influence on the work. This information is collated to create a profile for each stakeholder that is recorded in the stakeholder register (see 26.6.2.3 on preparing a stakeholder register) and can be plotted onto stakeholder maps. The profiles and maps together support ongoing oversight of stakeholder engagement, with the register providing a summary view of relevant information for each stakeholder or stakeholder group.

Further analysis can also be conducted using this information, for example to show the relative interest and influence of different stakeholders; key interested groups across different phases of the work; and the network of relationships and influence between different stakeholders (see 26.6.2.4 on choosing the appropriate tools). This data can be held in the stakeholder register used by the stakeholder manager to decide on priorities for stakeholder engagement as the work evolves.

26.6.3.6 Plan to engage the stakeholder

The analysis of the stakeholder is then used to develop, in consultation with the stakeholder manager, a plan to engage their assigned stakeholder. As for other plans, the plan can be developed iteratively, with an overall high-level plan, and detailed planning for individual phases. The plan should identify, for each stakeholder or group, the nature and purpose of the engagement, the timing and proposed channels, and who is involved.

The individual stakeholder engagement plan is submitted for approval to the stakeholder manager so it can be checked against plans for other stakeholders and collated into an overall stakeholder engagement plan (26.6.3.3 on overseeing stakeholder engagement).

26.6.3.7 Engage the stakeholder

Once approved, the stakeholder engagement plan is implemented, with activities logged and progress on engagement monitored, through the life cycle.

Often, interaction with some stakeholders starts before a plan is in place, for example with ministers, sponsors and the immediate team. Once the plan is approved, however, it should be used to manage and track engagement across all stakeholder groups, in line with the stakeholder engagement framework.

26.6.3.8 Monitor and report on engagement with the stakeholder

Progress on stakeholder engagement should be monitored and reported regularly to the stakeholder manager. This should include not only what has been done, but also the response to it, with supporting data and evidence. Where possible, stakeholder views should be assessed, either through direct feedback or other means, for example stakeholder surveys or other available data.

26.6.3.9 Close engagement with an individual stakeholder or group

Not all stakeholders need to be engaged throughout the duration of the work; and so direct engagement can, in consultation with the stakeholder manager, be stopped or they could be added to a different group for lower level of monitoring. Once a stakeholder no longer needs to be engaged, engagement activities can cease, and the engagement owner can be stood down. The stakeholder register should be updated to reflect the 'closed' status of that engagement.

26.6.3.10 Close stakeholder engagement framework

Following transition to business as usual, stakeholders should be informed and thanked for their contribution to the work, where appropriate, identifying any continuing activities they can support, for example in contributing to work on learning from experience or benefits realisation. Where a programme or project closes, ongoing stakeholder engagement activities can either cease or move to portfolio level.

The effectiveness of stakeholder engagement should be evaluated as part of closing the work. Stakeholder engagement information should be archived in accordance with the sponsoring organisation's information and data retention policies (see Chapter 24: Information and data management). The stakeholder engagement framework should then be closed.

26.7 Further reading

- *Project delivery capability framework*
- Office for Equality and Opportunity, *Public Sector Equality Duty: guidance for public authorities*

27. Communications

27.1 Purpose of communications

The purpose of communications in project delivery is to ensure that interactions with stakeholders are effective and support the successful outcomes and delivery of the work.

27.2 Key points

- Communications in project delivery should be planned and managed through a communications framework and communications plan.
- Target audiences should be analysed and understood so that messages can be tailored and channels used effectively.
- Campaigns should be planned using the OASIS framework, with defined objectives, audience insight, a strategic approach, an implementation plan and evaluation of its effectiveness.
- Communications should be accessible, inclusive and respect the government's identity and style requirements.
- Communications data should be sensitively managed and stored.
- The effectiveness of communications should be monitored and evaluated in terms of outputs, outtakes and outcomes, using the approach set out in the GCS evaluation cycle.

27.3 Why communicate?

Where stakeholder engagement (see Chapter 26: Stakeholder engagement) focuses on identifying, analysing and building relationships with specific individuals and groups, communications focuses on the design, delivery and evaluation of messages and campaigns at defined audiences.

Good communications ensures that there is a common understanding of what an initiative is trying to accomplish and how different stakeholders are affected.

In the wider social context, effective communications help create public understanding of the aims of government and build public trust in government services and actions. Within government, communications build understanding and confidence in the changes that are delivered to ways of working in government organisations.

27.4 What is communications?

Communication includes announcements, media management, coordinated campaigns (including social media and branded campaigns) and external affairs. Communications activities are designed to support the government's policy and priority objectives or a government organisation's strategic objectives. Communications can be directed at both external and internal audiences.

In practice, communications cover a range of activities: from planned media engagement and public-facing campaigns to internal briefings, digital content and event management. The scale and complexity of communications should reflect the nature of the work.

Effective communication involves careful planning and coordination. The right messages need to reach the right audience, at the right time and in a way which is accessible to the people receiving them. This means understanding who the audiences are, what channels will reach them, what barriers may prevent the message landing and how to measure whether the communication has worked.

Communications in this context is distinct from:

- reporting (see Chapter 18: Reporting), which covers the regular and consistent flow of information between members of the portfolio, programme or project team and the sponsoring organisation, though the principles of good communication can support good reporting
- stakeholder engagement (see Chapter 26: Stakeholder engagement), which is focused on identifying, analysing and building relationships with specific stakeholders, though communications relies on the analysis and understanding of those stakeholders
- organisational and societal change management (see Chapter 35: Management of organisational and societal change), prepares, equips and supports organisations and individuals in adopting the new solutions, practices and/or behaviours, though communications can play a part in supporting it

27.5 Who manages communications?

Communications can take many forms and so can involve a range of people across a portfolio, programme or project team.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for ensuring that communications framework and plan are in place and for delivering the most critical messages.

The **portfolio, programme or project manager**, as appropriate, is accountable for developing and maintaining the communications framework and plan, including ongoing

monitoring, review and evaluation, as well as any specific communications activities allocated to them.

Depending on the scale or reach of the work, there could be a dedicated **communications manager** or team with responsibility for developing and maintaining the communications framework and plan and delivering communications activities, either themselves or through a **campaign or event manager**. Depending on the nature and complexity of the work, these roles might need to be advertised or filled by **communications specialists** from the sponsoring organisation or from the wider government communications profession. This can either be for the full duration of the work or during specific phases in the life cycle, when skills in areas such as external affairs, internal communications, media and marketing are needed. See the *GCS career framework* for more information.

The sponsoring organisation's communications team also need to be consulted and involved in any external media engagement.

27.6 How to manage communications

27.6.1 What to consider when communicating

27.6.1.1 Taking a planned approach to communications

Whether communications are internal or external, a planned approach matters. People receive many communications in a day and can easily miss or ignore information if it is not planned and targeted appropriately. Unclear or conflicting communications can confuse, irritate or leave gaps. Generally, each portfolio, programme or project should have an overall communications plan. This plan should outline the communication packages (events and activities) to be run. When a group of related events and activities are planned, this is a campaign.

Communication plan

The *Government Functional Standard for Communication* requires each government organisation to prepare a communication plan annually. The communication plan for a portfolio, programme or project needs to be aligned and consistent with that of its sponsoring organisation and should set out:

- how it supports the effective delivery of both the wider government, and the sponsoring organisation's own, policies, priorities and public services
- outcome-based metrics summarising what outcomes the communications are looking to achieve

See Government Communication Service's *Strategic communication* guidance for further support on communication planning.

Campaigns

The *Government Functional Standard for Communication* sets out how to plan and manage campaigns. All government communications campaigns are required to follow the objectives, audience, insight, strategy, implementation, scoring (OASIS) campaign life cycle.

The Project delivery glossary defines a campaign as:

> A planned sequence of communication and interactions that uses a compelling narrative over time to deliver a defined and measurable outcome.

The *Guide to campaign planning: OASIS* can help ensure campaigns:

- have defined, achievable and measurable **objectives**
- are driven by an understanding of the target **audience's** attitudes, habits and preferences (see Government Communication Service's guidance on *Segmenting your audience for internal communications*)
- are delivered against an agreed **strategic** approach, defining aspects such as the proposition, messages and channels
- are **implemented** against a defined plan which takes into account known constraints (such as time, cost, resources and risk)
- are **scored** and monitored for their effectiveness

See Government Communication Service's Marketing guidance for further support on campaigns and the OASIS campaign life cycle.

Communication events and activities

For every communication event or activity, it should be clear:

- who the target audience is
- what the message is
- when it is needed
- how it is to be delivered
- how its effectiveness is to be measured

27.6.1.2 Ensuring compliance with the government identity and brand

The *Government Functional Standard for Communication* requires government departments, agencies and arm's length bodies comply with the *HM Government identity guidelines*.

The unifying element of the government's identity is the Royal Coat of Arms, which only departments of HM Government and its organisations are permitted to use, other than agreed exceptions for individual departments, in Scotland (where the Royal Arms of Scotland is used) and overseas.

For those engaged in project delivery, this normally means that communications should follow the brand of the organisation they are a part of or are delivering for. For larger-scale work, a separate brand might be needed, especially where the public are impacted and need to be communicated with, or where the organisation's brand for communications is not appropriate. When considering how to brand communications, project delivery professionals should refer to the *HM Government brand guidelines*, the organisation's brand guidelines and, where appropriate, consult with relevant communications teams in the organisation or Cabinet Office.

See Government Communication Service's *SAFER framework for digital brand safety* for guidance on ensuring digital brand safety when placing paid advertising and organic content across online platforms.

27.6.1.3 Communicating appropriately

All communications, internal or external, should meet the standards expected of civil and public servants and be consistent with the core values of integrity, honesty, objectivity and impartiality. Government Communication Service set principles for *Internal communications* in their guidance.

The *HM Government brand guidelines* requires all government communications to be professional, transparent and authoritative.

Professional communications should be formal, accurate and consistent. This means avoiding colloquialisms and being specific, informative and to the point. Facts and figures should support points and recommendations. Communications should be fact-checked and proof-read before release.

Transparent communications should be clear, open and accessible. Important areas and calls to action should be signposted. Both sides of an argument should be presented without judgement. Jargon and difficult words should be avoided and longer sentences and paragraphs broken up.

Authoritative communications should be direct, unambiguous and confident. This means using the active voice, using definitive rather than vague language, and limiting the use of tentative words.

Following these guidelines helps ensure that internal and external communications are clear, appropriate and effective, regardless of their audience. The Government Digital Service's *Style guide* covers the style, spelling and grammar conventions for all content published on GOV.UK for both general and technical audiences and should be followed for all communications.

All forms of communication, regardless of channel, are potentially disclosable under the *Freedom of Information Act 2000* and under legal disclosure requirements. Make sure all communications meet the standards expected at all times.

27.6.1.4 Ensuring communications are inclusive and accessible

The public sector equality duty places a legal obligation on public bodies (and those performing functions on behalf of them) to consider how any policy or decision affects people who are protected under the *Equality Act 2010*. Communications is no exception. Communications managers and their teams need to consider the needs of the potential audience and be mindful that not everyone receives or responds to communications in the same way.

When communicating, consideration should be given to the need for:

- **simple, clear language**, writing in plain language as far as possible to aid understanding
- **alt text**, text descriptions of images, photography and any other visual content
- **captioning and transcripts**, text versions of the any audio or visual content

The *Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations 2018* places a duty on public sector bodies to take necessary measures to make their website or mobile application perceivable, operable, understandable and robust. Meeting this legal requirement involves:

- complying with level A and level AA of the success criteria set out in the *Web content accessibility guidelines (WCAG)* recommended by the World Wide Web Consortium
- publishing an accessibility statement that explains which parts of the website of mobile application are not accessible, the reasons why, any accessible alternatives provided and how users can report accessibility problems

The *British Sign Language Act 2022* recognises British Sign Language as an official language of England, Wales and Scotland. While the Act does not place a requirement for all government communications to be translated into British Sign Language, government organisations should continue to improve their provision of British Sign Language. In particular, the Act states that British Sign Language should be actively considered for public announcements on policy or changes to the law, including:

- publication of plans, strategies, policy and other consultations and consultation responses
- press conferences
- social media
- websites

For more support, see Government Communication Service's guidance on *Inclusive and accessible communications.*

27.6.1.5 Measuring the effectiveness of communications

How communications will be evaluated should be defined as part of planning, as specific arrangements often need to be set up to gather the right data. Without this, it can be difficult to demonstrate whether communications have contributed to the objectives of the work.

The Government Communication Service's *GCS evaluation cycle* sets out a structured process for planning and conducting evaluations of communication activities, covering inputs, outputs, outtakes, outcomes, impact and learning and innovation. The cycle applies to communications aimed at behaviour change (where most government communication is focused), raising awareness or influencing attitudes, and recruitment.

When planning communications, consideration should be given to:

- what baseline data is needed before the communication activity starts
- what metrics will be used to track reach, audience response and behaviour change
- how real-time data can be used to adapt communications while a campaign is still running
- how lessons will be captured and fed back into planning for future activities

Further evaluation approaches can be found in the *Magenta Book*. See Chapter 2: Policy and evaluation.

27.6.2 Preparing to manage communications

27.6.2.1 Overview

Communication requires a systemic approach to identifying the target audience, analysing their communication needs, and planning and undertaking the communication activities through the life cycle. Defining a framework to govern these activities and deciding on suitable tools and processes to support them provides the foundation for effective communication.

27.6.2.2 Define the communications framework

The first step is to take a strategic view of the likely requirements for communications. Is this a simple and short-term project involving mainly internal communications, or an iterative and complex programme reaching deep into society, needing a mix of internal communications, marketing, public announcements and media as well as specialist communications teams? Is there a significant risk of manipulated, false, and misleading information (see the framework *RESIST 3: Building resilience to information threats* for support)?

This initial view should provide a basis for defining an overall approach for communications, to be set out in the communications framework which forms part of the governance and management framework for the work. The communications framework defines the processes, methods and tools to be used, including:

- roles and accountabilities for communication
- tools needed for communication and assessing its effectiveness

The communication framework can develop and change to reflect the needs in the communication plan.

Advertising, marketing and communications activity over a defined threshold are subject to spend controls and need specific approval through *Cabinet Office controls*. This should be factored into the communications framework and scheduled in the work plan.

27.6.2.3 Prepare the communications plan

Communications should be coordinated, and a plan for this purpose should be developed and maintained throughout the life cycle. The plan should include the objectives, an overview of the planned communications campaigns, events and activities, when or at what frequency, their target audience and how their effectiveness is to be evaluated (see 27.6.1.1 on taking a planned approach to communications and 27.6.1.5 on measuring the effectiveness of communications).

27.6.2.4 Choose the appropriate tools and channels

The other task at this point is to identify what communication tools, techniques and channels may be required to fulfil the communication plan. These should be set out in the communications framework.

For smaller work, communications activities can be handled using the sponsoring organisation's communication grid, standard channels and techniques such as internal briefings and newsletters, emails and information sites, show and tell events or open briefings.

For larger and more complex endeavours, consideration should be given to whether there is a need for:

- **specialist data analysis techniques and software** to understand the target audiences, and their perceptions and responses
- **digital media** to enable communication teams to connect directly and quickly with influencers and audiences in a well-managed and planned way
- **marketing campaigns** or **partnership marketing** to help reach citizens across multiple channels (see Government Communication Service's guidance on *Planning and delivering effective communications partnership strategies*)
- **media relations** to help explain government work to create understanding and public trust (see Government Communication Service's guidance on *Media*)

27.6.3 Key activities in managing communications

27.6.3.1 Overview

Communications involves a series of related activities, as shown in Figure 27.1, and considered below. These may be sequential or iterative, depending on the nature of the portfolio, programme or project.

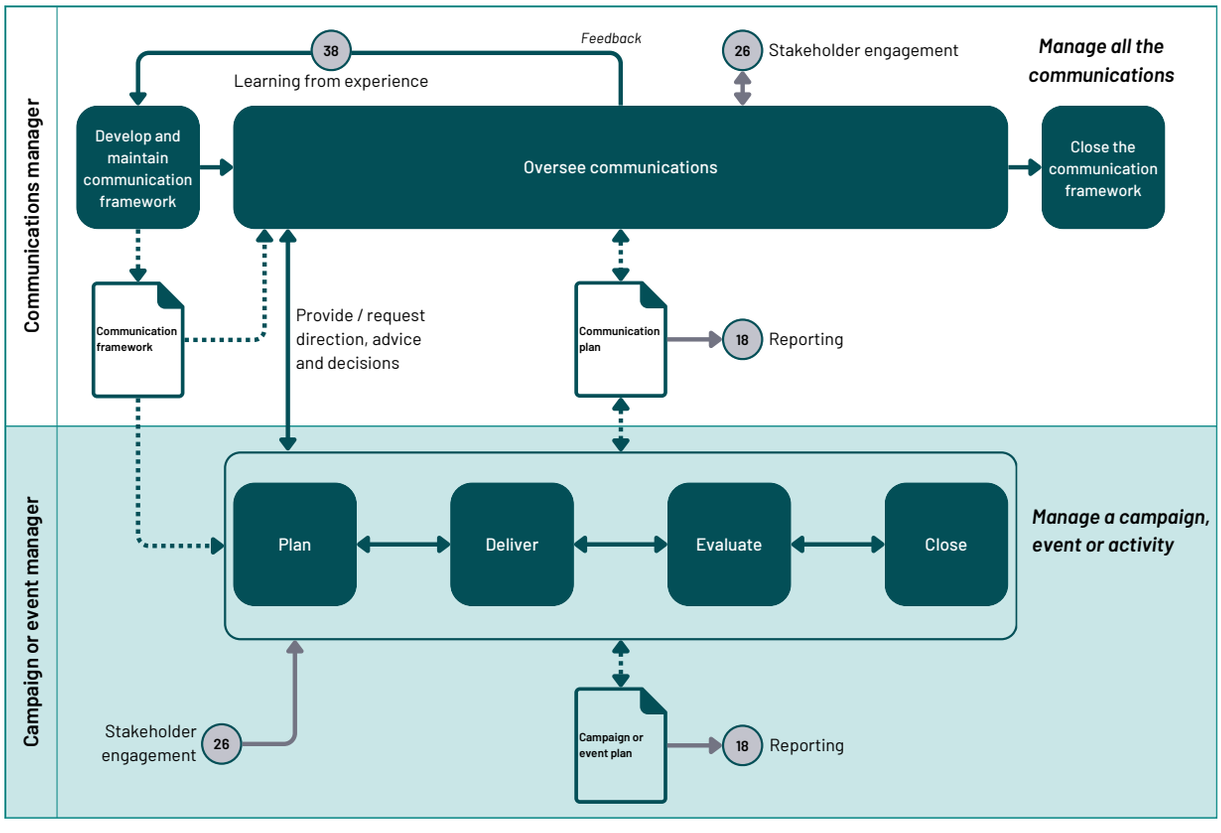


Figure 27.1 An overview of the key communications activities and their primary relationships

27.6.3.2 Develop and maintain the communications framework

The approach to communications should be defined, including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 27.6.2.2 on defining the communications framework. The framework should be maintained to address relevant feedback from its use.

27.6.3.3 Oversee communications

Overview

This activity looks at the combined needs for communication across a portfolio, programme or project so that an overall view of what needs to be communicated, to who and when, is maintained. When overseeing communications, the communications manager should consider whether there are any common themes emerging in messaging, audiences or effectiveness of communication and whether further activity is needed in consequence. The communications manager is also the initiation point for specific campaigns or events.

Prepare and maintain the communications plan

The communications plan (see 27.6.1.1 on taking a planned approach to communications) brings together all of the communication activities, campaigns and events relating to the work and its outcomes. The plan should outline how all audiences are to be communicated with in a coordinated way, with priorities set on those activities which are likely to have the most impact.

It can draw on the work done under stakeholder engagement (see Chapter 26: Stakeholder engagement). Activities, where significant, should be included in the overall schedule, resource and cost plans for the work (see Chapter 16: Planning).

Once approved, the communication plan should be managed under change control, as for other parts of the plan (see Chapter 22: Change control).

Monitor and report on communications

Throughout the life cycle, communications need to be reported on regularly so that the portfolio director and senior responsible owner and their respective boards have an up-to-date understanding of problems or opportunities arising and can plan any required responses accordingly.

Assess feedback on use

The communications framework and plan should be monitored to make sure they remain effective and appropriate as the work proceeds, particularly if things change significantly.

27.6.3.4 Plan a campaign, event or activity

The purpose of planning a campaign, event or activity is to ensure that each communication is viewed in the context of a wider campaign and can be linked back to a clear objective.

When planning a campaign, event or activity, objectives should be defined to ensure that those managing and delivering the communications are clear on what is required and so that different elements can be aligned. Communications objectives should:

- support the policy or business aims of the portfolio, programme or project
- describe how communication is expected to contribute to achieving this aim
- be achievable and measurable
- be focused on outcomes not outputs

It is important to use data to develop an understanding of the target audience's attitudes, habits and preferences so that communication activities can be relevant, meaningful and effective (see Chapter 26: Stakeholder engagement). Any analysis should be done in accordance with the *Government Functional Standard for Analysis*.

The objectives and audience insights should be used to define the target audience, proposition, messages and channels and techniques to be used. To ensure that the campaign or event is realistic, a plan should be developed that includes:

- any risks or issues
- roles and accountabilities
- the method for measuring the success of the campaign or event
- the approach to be taken
- the timescales for delivery
- resources required
- any partners to be involved

27.6.3.5 Deliver campaign, event or activity

Once planned, the campaign, event or activity should be delivered with each communication package initiated in accordance with the plan. Progress should be monitored in terms of outputs, outtakes and outcomes.

27.6.3.6 Evaluate campaign, event or activity

Evaluation should be conducted to assess the performance and success of the campaign, event or activity. It is important to capture information and lessons to understand whether the campaign, event or activity achieved the planned objectives such as changing behaviour, improving operational effectiveness, building reputation or explaining a portfolio, programme or project (see 27.6.1.5 on measuring the effectiveness of communications).

Lessons should be captured, shared and used to improve current and future communication activities (see Chapter 38: Learning from experience). Communications information and data should be stored for future reference, ensuring that any sensitive data is handled appropriately (see Chapter 24: Information and data management).

27.6.3.7 Close campaign, event or activity

Once a campaign, event or activity has concluded, it can be closed and the relevant manager stood down. The communications manager should agree that the campaign, event or activity has closed and update the communications plan.

27.6.3.8 Close the communications framework

When no longer needed, the communications framework should be closed down. As part of this, any ongoing need for communication activity following the closure of a programme or project should be identified and transitioned to managers in operations to take on, or alternatively moved to the portfolio level.

The effectiveness of communications overall should be evaluated as part of closing the work. Communications information and data should be archived in accordance with the sponsoring organisation's information and data retention policies (see Chapter 24: Information and data management). Lessons should be captured, shared and used to improve future communication activities (see Chapter 38: Learning from experience).

27.7 Further reading

- Cabinet Office, *Cabinet Office controls*
- Government Communication Service, *Guide to campaign planning: OASIS*
- Government Communication Service, *Career framework*
- Government Communication Service, *GCS evaluation cycle*
- Government Communication Service, *Inclusive and accessible communications*
- Government Communication Service, *Internal communications*

- Government Communication Service, *Marketing*
- Government Communication Service, *Planning and delivering effective communications partnership strategies*
- Government Communication Service, *RESIST 3: Building resilience to information threats for support*
- Government Communication Service, *SAFER framework for digital brand safety*
- Government Communication Service, *Strategic communication* Government Digital Service, *Style guide*
- HM Government, *Government Functional Standard GovS 010: Analysis*
- HM Government, *Government Functional Standard GovS 011: Communication*
- HM Government, *HM Government identity guidelines*
- UK Parliament, *British Sign Language Act 2022*
- UK Parliament, *Equality Act 2010*
- UK Parliament, The Public Sector Bodies *(Websites and Mobile Applications)(No. 2) Accessibility Regulations 2018*
- World Wide Web Consortium (W3C), *Web Content Accessibility Guidelines (WCAG) 2.2*

28. Resource management

28.1 Purpose of resource management

The purpose of resource management is to balance the supply and demand for appropriate resources to be deployed when needed. This includes people with the right skills, equipment, materials or facilities.

28.2 Key points

- Resource management in project delivery balances supply and demand so that resources are available and can be deployed when needed.
- The strategic workforce planning function in the sponsoring organisation should be engaged as early as possible.
- Identify resource needs, sourcing plans and lead times as part of integrated planning.
- Consider the likely availability of resources and skills, both within government and in external markets.
- Record agreements with other parts of the organisation to commit resources to the work.

28.3 Why manage resources?

Portfolios, programmes and projects are delivered by multidisciplinary teams using equipment, materials, and facilities. Having the appropriate human and other resources needed to deliver the work is essential to enable work to be completed within defined constraints such as resource, schedule, cost, and risk.

Securing the resources needed at the right time is not always straightforward. People with the skills and experience needed can be in short supply within the organisation or deployed to other work. Recruitment and external sourcing timescales can be lengthy and subject to local constraints, and external market demand can make it hard to compete on cost or to source what is needed.

Managing resources efficiently and effectively is a critical responsibility for government organisations, and a core part of meeting the obligations on the proper use of public funds granted by Parliament, as set out in *Managing public money* (see Chapter 29: Finance).

28.4 What is resource management?

Resource management is concerned with ensuring that resources are planned for and managed efficiently, so that they are available when needed, and that efficient use is made of available capacity and capability in the organisation, using external sourcing where necessary. Resources can be classified into 3 types:

- **reusable**, the people, equipment and facilities that can be moved between work when needed
- **replenishable**, those that can be refilled as they are used up, such as construction materials or office supplies
- **exhaustible**, the resources that cannot be replaced once they are used up

Resource management in government often focuses mostly on people, facilities and equipment, but it is important to consider and plan for the full range of resources needed through the life cycle.

People are the most important form of resource and manage the other resources. They can be employed directly by the organisation, seconded or loaned by another organisation, or contracted from the external market. People employed by government organisations can be:

- **civil servants**, employed by central government departments
- **public servants** of various kinds, employed in arm's length bodies, the armed forces, NHS, police forces, public corporations or local government
- **secondees** or people **on loan** from other organisations, whether public sector or external

There are specific rules governing the recruitment and movement of different employee categories which are important to consider when planning resource management. Advice can be provided by the human resource function in the organisation, and further information is in the *Government Functional Standard for People*.

Skills can also be procured through external contracts, for example:

- **professional services**, provided by an individual or a supplier organisation, contracted to help deliver a solution or service to defined outputs and outcomes
- **consultancy services**, providing advice to fill a knowledge gap, for example to identify options and recommendations, or to assist with implementing solutions, with defined outputs and time limits
- **contingent labour**, sometimes also known as temporary or agency staff, interims or contractors, are contracted to perform a specific role or function on an hourly or daily basis, either individually or through an agency contract

Skills can also be provided as part of wider contracts with suppliers for the delivery of solutions and services, including through the delivery partner model being used increasingly for the delivery of major capital works.

There are strict controls on the use of contingent labour and consultancy within central government overseen by the central Government Commercial Function in the Cabinet Office. Further guidance on sourcing from the external market is provided in Chapter 25: Procurement and contract management, and in *The sourcing playbook* and *The consultancy playbook*.

The approach to resource management forms part of the governance and management framework for the work (see Chapter 4: Governance and management) and a part of planning to ensure that resources are available when they are needed and managed efficiently (see Chapter 16: Planning).

Resource management should be undertaken in accordance with the *Government Functional Standard for People* and the *Government Functional Standard for Commercial*, and advice should be sought from the government human resource and commercial functions as necessary.

28.5 Who manages resources?

Anyone overseeing or managing resources requires an understanding of how to define resource needs, the routes available for meeting them, and of their responsibilities in managing them. Accountability and responsibility for resource management should be clearly defined within the governance and management framework for the work and reviewed on a regular basis, to avoid duplication or gaps. Typically, accountability follows the hierarchy in the work breakdown structure, but some roles can also be designated as having cross-cutting responsibilities.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, has overall accountability for resource management and owns the resource management framework, ensuring that it is effective in providing the capability and capacity needed to deliver the work.

The **portfolio, programme or project manager**, as appropriate, is accountable for developing and managing the resource management framework, including its processes, tools, techniques, and for ensuring that it remains effective through the life cycle, as well as acting as the **resource manager**. Depending on the scale and complexity of the work, there could be a dedicated resource manager (often from a **support office**) with responsibility for overseeing resource management on behalf of the portfolio, programme or project manager. Support is also usually provided by an organisational **human resource and commercial business partner** who can call on specialist support from the organisation's human resource and commercial functions if needed. More information on human resource and commercial roles are set out in the *Government Functional Standards for People* and the *Government Functional Standard for Commercial* respectively.

The resource manager might exercise their responsibilities partly through a **resourcing board**, which they or the portfolio, programme or project manager might chair, usually as a sub-board reporting to the portfolio, programme or project board.

Resources are assigned a **resource owner**, who is a named individual responsible for identifying, sourcing, mobilising, managing and demobilising the human and other resources needed for the work. Depending on the scale of the work this could be by resource category. The resource owner needs to have the appropriate skills and experience to manage the resource category assigned to them (for example, human resources, commercial, facilities) and can be supported by others as necessary.

The resource owner also ensures that, as people join the team:

- employees have an identified **line manager** responsible for their management during their time on the team; in a matrix or hybrid team, the individual could also have a **task manager** assigned
- individuals working in the team under external contracts are overseen by an identified **contract manager**, responsible for managing the contract and, where appropriate (for example where contingent labour is used), managing the day-to-day deployment of individuals covered by the contract

As with financial management, resource management carries significant responsibilities in terms of the use of public funds and resources. Roles involving decisions on recruitment or procurement and deployment of resources should therefore be undertaken by substantive employees, other than where this is a defined element of the contract, for example for an interim managerial role, or outsourced to a delivery partner.

More detail on the resource management competency and how this relates to each project delivery role can be found in the *Project delivery capability framework*.

28.6 How to manage resources

28.6.1 What to consider when managing resources

28.6.1.1 Exploring resourcing options

Resource management needs to start as soon as the work is initiated, to identify the resources needed to start planning the work. Typically, in-house resources are used in the early phases.

As options are developed, the people capability and other resources required to carry out the work are identified (see Chapter 16: Planning) and linked to individual work activities in the work breakdown structure to provide a basis for estimating cost and time. Human resource requirements should be identified by skill, role type and level, using the relevant professional capability framework where appropriate.

As resourcing needs are identified, the resource manager should consult the organisation's strategic workforce planning and facilities teams to explore whether the resources can be met from the existing workforce, as this can offer the quickest and most cost-effective route to meeting them, particularly for small-scale work.

If the required resources are not available internally, the resource owner, working with the resource manager, needs to consider options for sourcing them from other parts of government or externally, through external recruitment or procurement.

Where procurement is likely to be required, commercial advice should be sought, and a delivery model assessment should be completed in line with the *Government Functional Standard for Commercial* and *The sourcing playbook and The consultancy playbook*.

The decision on how to source resource should be based on:

- the availability of the resources within the organisation and how long it would take to allocate them from elsewhere
- how long the resource is needed for and whether it could be needed for other work
- the risks associated with different sourcing options, for example where work is particularly sensitive or where there is a risk of becoming overly reliant on one supplier or contractor
- the potential for savings through economies of scale

There are additional considerations in sourcing people and skills, such as:

- the alignment with the workforce plan and location strategy of the organisation
- the ability to source people from the job market within the mechanisms for reward available and/or location
- the need for roles to be fulfilled by a person for a minimum or maximum time period
- the nature of the role and responsibilities, and whether this requires a civil service or public service employee
- the requirements for security clearance

The accountabilities and responsibilities of a senior responsible owner mean that this role should be held by a substantive civil servant or public servant.

28.6.1.2 Scheduling resources within the plan

Scheduling resources is an integral part of planning (see Chapter 16: Planning). The availability of resources and time needed to mobilise them can be a significant constraint on scheduling. For example, where there is a shortage of subject matter experts, a

recruitment freeze, limited availability of resources locally, nationally or internationally, or the need for specialised equipment or environments that are limited in availability.

The plan should take into account the availability of resources and set the timescales for activities accordingly. In some types of work, for example in iterative software development, the availability of the appropriately skilled people is the primary driver of the schedule, whereas in major construction work, the availability of engineering equipment can be the driving factor.

Other environmental constraints can affect resourcing and need to be considered, such as night-time working requirements, shift patterns, or international time zones where work is carried out overseas. Creating a view showing resourcing requirements and plans for meeting them (sometimes known as a resource forecast) is important in developing a robust schedule for the work.

Resource loading is a commonly used approach to allocate resources within a schedule, assigning resources to activities and then reviewing the overall allocation of resources. This enables the overall balance of resources to be considered across the work and provides the opportunity to rebalance or optimise their deployment across work activities, for example through:

- **resource levelling**, sometimes called resource-limited scheduling, designed to avoid peaks and gaps in activities that mean people are overstretched or under-occupied, and so optimise use of resources
- **resource smoothing**, sometimes called time-limited scheduling, designed to achieve a smooth profile of work and resourcing to optimise use of time, for example to meet a deadline

Both resource levelling and smoothing can require changing the sequencing of activities in the schedule, which is why schedule and resource planning need to be closely aligned. The plan should show when activities are completed and resources are no longer needed, so that they can be reallocated or moved on in an appropriate and considerate way.

Sourcing resources can often take longer than anticipated. Allocate an appropriate amount of time for this activity and plan it alongside other activities, considering the potential risks and responding to them, for example through adding time contingency (sometimes known as a buffer).

The typical risks associated with sourcing external resource are a change in the global supply chain creating a market shortage in particular skills, a recruitment campaign that fails to find someone with the necessary skills, knowledge, behaviours, and experience, or a failed procurement of contingent labour, professional services, or consultancies.

Scenario planning can help identify resourcing risks so that action to mitigate them can be taken. This might include ensuring lead times for sourcing include contingency within the plan, having separate contingency plans, for example to fill a role temporarily

if recruitment fails, or the ability to reschedule work components if critical equipment or development environments are not available.

The aim is to build a comprehensive resource plan that is integrated into the overall plan at the level of detail appropriate for the planning horizon.

28.6.1.3 Taking a rolling approach to resource planning

Resourcing needs to be managed actively through the life cycle of the work in alignment with work activities and the integrated plan. Even in a portfolio, there are likely to be peaks and troughs of work which call for resources to be moved to different priorities at different times. In a programme or project, resource requirements can change significantly as work progresses, with people moving into and out of the team as the skills needed change. A rolling approach to resource forecasting should be taken, which aligns to the phased approach to planning. In a rolling approach the immediate activities are planned in more detail than those which are later in a phase or in future phases. For example, for immediate work, resource plans can be by individual name, whereas future plans might be by skill type and level only.

Even with a rolling approach to resource planning, problems can arise. Assumptions on resourcing can be inaccurate or work can slip, leading to an over- or under-allocation of resources. The resource manager should work with the resource owners to identify any resourcing issues, for example where people are overstretched or under-occupied, and action agreed to address them. This could include reprioritising work, for example to protect or advance work closest to the critical path, or to reallocate people or other resources across work activities.

28.6.1.4 Ensuring accurate resource monitoring

Resource management depends on information and data. The type and level of information and data needed to monitor resources effectively varies depending on the work, its scale and complexity, and the nature of the resources involved.

Government organisations typically monitor human resource information and data through shared reporting platforms. Reporting requirements often differ for employees and contingent labour. These platforms should be used to monitor resourcing for the work. Where more detailed or different information is needed to support decision-making and the management of resources, additional software or spreadsheets can be used.

Consistent and accurate use of organisational definitions and categories in reporting is important. Human resource data feeds into programme, portfolio and organisational reporting, and is used in organisational resource management and workforce planning, and in national statistics on public sector employment. Data on contracts, and on the use of consultancy and contingent labour, is also often scrutinised as part of commercial governance and reported on publicly as part of government transparency commitments. Where necessary, advice should be sought from human resource and commercial functions.

Where work is allocated to professional services or consultancy they should be accountable for planning the resources needed for their work, with the sharing of information and reporting defined in their contract.

28.6.2 Preparing to manage resources

28.6.2.1 Understand the context and nature of the work

Take a strategic view of likely requirements for resource management. These are likely to be shaped by the context and nature of the work, particularly its complexity, scale, objectives, and desired outcomes. This helps determine the likely type of capability and capacity required, typical routes for sourcing, and where the resource is needed.

28.6.2.2 Understand the wider governance and management framework

It is also important to understand the wider governance and management framework for the portfolio, programme or project, as this should shape the development of the resource management framework and plan. It is particularly important to consider:

- planning, which is critically linked to resource planning (see Chapter 16: Planning)
- procurement and contract management, which supports the sourcing and management of external resources (see Chapter 25: Procurement and contract management)
- induction and training, which supports mobilisation and effectiveness in role (see Chapter 39: Project delivery team induction and training)

Understanding the planning management framework is particularly important in designing an effective resource management framework and plan. It helps determine the level of resource planning needed to ensure sufficient visibility into resource use and availability to ensure work is completed on time. It can also help determine the level of resource loading and smoothing needed.

28.6.2.3 Choose the appropriate tools and processes

Once the scale and complexity of the work is known, appropriate tools and processes can be defined, together with the people needed to use them. For simple solutions or when the bulk of the work is outsourced, resource planning and resource data can be handled through spreadsheets. For more complicated solutions specialist tools are needed to manage the volume of data and relationships and to make it available to those who need it when they need it. Where planning software is used for the work, this usually also includes resource planning and management capability.

28.6.3 Key activities in managing resource

28.6.3.1 Overview

Resource management requires a systemic approach to identifying, sourcing, mobilising, managing and demobilising resource through the life cycle. It also requires a defined framework to govern and manage these activities, overseeing resource management and closing the resource management environment.

These related activities are shown in Figure 28.1. These can be sequential or iterative, depending on the nature of the work.

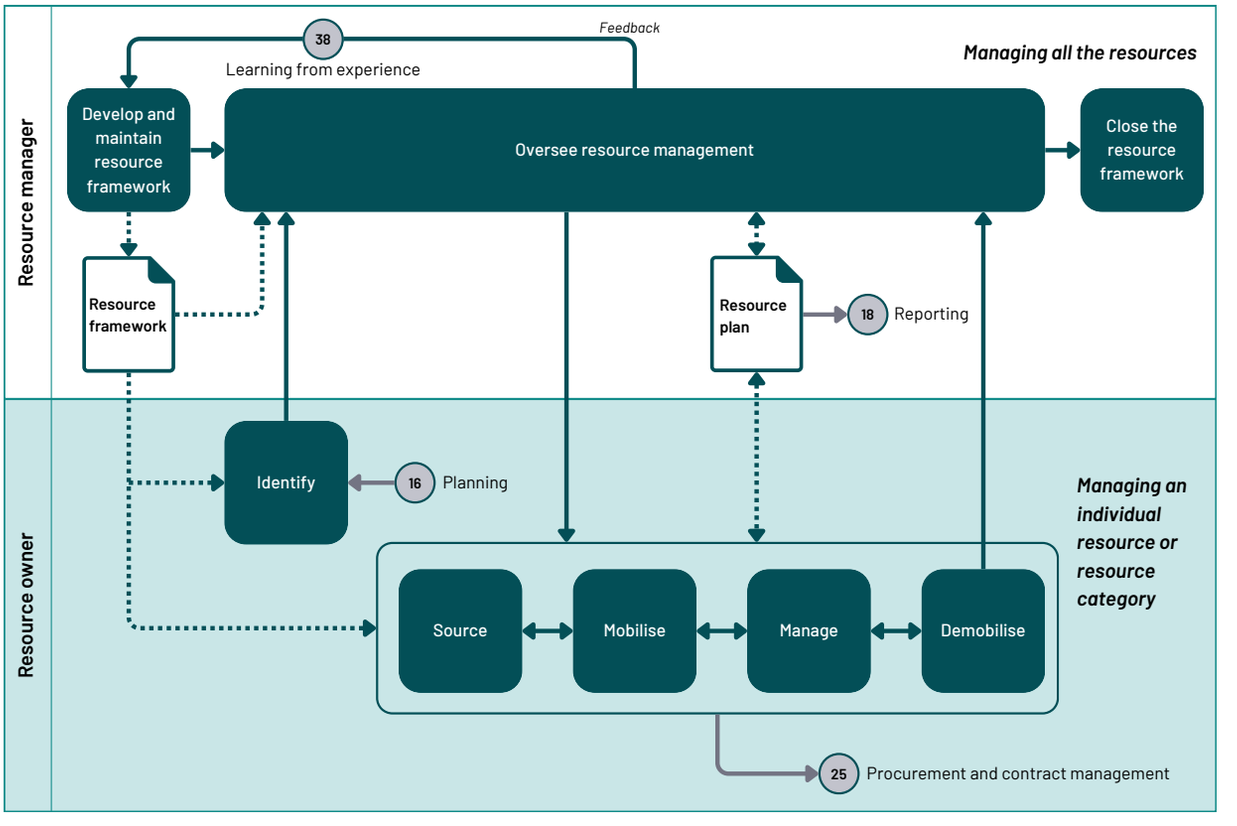


Figure 28.1 An overview of the key activities for resource management and their primary relationships

28.6.3.2 Develop and maintain the resource management framework

The approach to resource management should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in section 28.6.2. The framework should be maintained to address relevant feedback from its use.

The framework should describe:

- the data needed for overseeing and managing resource, how it is collected, recorded, and stored (see Chapter 24: Information and data management)
- how resources are identified and categorised, for example whether a resource is reusable, replenishable, exhaustible, and for people, their profession, role type, level, employer, and the basis of their employment (whether substantive, temporary, seconded or on loan, contracted as contingent labour)
- how resources can be sourced, mobilised and demobilised

28.6.3.3 Oversee resource management

Overseeing resource management involves making sure the work has the right people and other resources at the right time, and that resource decisions support delivery priorities.

This includes:

- confirming the capabilities and capacity needed to deliver the plan, and identifying gaps
- agreeing how gaps will be addressed, for example through internal moves, recruitment or procurement
- planning sourcing and allocation activities with the organisation's strategic resource planning function (see Chapter 16: Planning)
- monitoring resource use and availability, including pressures such as overallocation, underuse and key-person dependencies
- managing employees, professional services, consultancies and contingent labour in line with organisational standards and contractual requirements
- reporting resourcing information to support decisions, including risks, issues, forecast changes and likely impacts on time and cost
- updating the resource management framework and plan when needs change over the life cycle

28.6.3.4 Identify resource requirements

Resource requirements should be identified as part of overall planning (see Chapter 16: Planning) and captured within a resource forecast or a workforce plan.

The amount of information provided in the plan depends on the level of the plan. A higher level plan only needs to include the necessary capability along with the aggregated capacity, while a more detailed plan could include information on each individual resource. In the case of people, such detail could include job role type, location, required skills,

knowledge, and experience. Government professional standards can be used to identify the job roles and what skills, knowledge, and experience they provide, such as the *Project delivery capability framework*. Job titles can vary; however, there is guidance for *Standardised job titles for project delivery roles* in the project delivery profession. In the case of equipment, this could be the model type, battery life, or ease of use.

Employee and contingent labour requirements should be estimated for each work activity, both in terms of competency (professional skills, both type and level) and capacity (how many people are needed). They should be expressed as work days on a full time equivalent (FTE) basis, with estimated costs per FTE, so that resources can be costed.

Requirements for professional services, consultancy and other contracts should be identified separately and included as part of the procurement plan, specified in terms of outputs or outcomes and estimated costs and timescales.

By the time it is approved, the integrated plan (see Chapter 16: Planning) should include a robust, evidence-based resource plan, fully aligned to the schedule, and making provision for risk and contingency.

28.6.3.5 Source resources

When deciding on how to source resources, the resource owner should consider whether resources are available in-house, for example from an existing organisational pool, internal recruitment or other resource, or if they need to be sourced externally through recruitment or procurement (see 28.6.1.1 on exploring resourcing options). Check legal and commercial requirements on sourcing (see 25.6.1 on what to consider when procuring and managing contracts), for example the off-payroll working rules known as IR35. See HMRC's guidance on *Understanding off-payroll working (IR35)*.

Plans for sourcing should be agreed as part of portfolio plan and business case approvals, with sourcing activities scheduled to meet resourcing requirements through the life cycle. Typically, sourcing activities are progressive through the life cycle, and it is important to ensure that the appropriate sourcing expertise is available for the period required. Recruitment, both internal and external, can be resource intensive, and advice on how best to manage this should be sought from the organisation's human resources function. Procuring resources from the external market or through the supply chain requires commercial sourcing expertise, and advice should be sought from the organisation's commercial function (see Chapter 25: Procurement and contract management).

28.6.3.6 Mobilise resources

Mobilising resources ensures that the necessary resources are available and ready for the activity they are assigned to. For example, when it comes to equipment, the resource needs to be in the right location and in full working order.

When it comes to people, this includes onboarding them, which involves security clearance, induction, and on-the-job learning so that they can start work. Onboarding

should be tailored based on whether the person is new to the delivery or sponsoring organisation. If the person is new to the organisation, the onboarding arrangements should include the organisation's onboarding process. If the person is not new to the organisation, they should receive a work-specific onboarding experience. The onboarding arrangements for people brought in under contract should cover the requirements of the role as set out in the contract management plan.

See Chapter 39: Project delivery team induction and training.

28.6.3.7 Manage resources

Managing resources involves managing employees and contracts to deliver planned activities, and efficiently allocating resources to different activities. It also includes ensuring that resourcing and contract data is recorded, kept up to date and reported as required.

All employees engaged in the work should have an agreed job description and line manager (and/or an identified task manager), regular performance meetings and annual performance reporting, and a learning and development plan to support their development. For project delivery professionals, development should be based on the *Project delivery capability framework* and draw on the learning opportunities within the Government Projects Academy; for other professions, the relevant professional capability framework should be followed.

People employed under contingent labour contracts should have an identified contract manager, be deployed in line with their contract and provided with appropriate induction and support to carry out their role.

All line managers and contract managers should be aware of their responsibilities and follow the requirements of the *Government Functional Standard for People* and the *Government Functional Standard for Commercial* at all times.

28.6.3.8 Demobilise resources

Demobilising resource involves releasing reusable resources that are no longer needed. If the reusable materials, equipment, and technology are owned by the organisation, they should either be returned, transferred to another user by agreement, or disposed of appropriately, bearing in mind environmental and sustainability considerations (see Chapter 6: Environment and sustainability, and Chapter 37: Use and disposal).

It is important to be clear on the expected term of assignment for employees and contracted staff. When an employee's role is approaching its end, the individual should be supported in seeking another role. Depending on the nature of the role and assignment, the end of an employee's role can trigger formal redeployment or redundancy arrangements, and advice should always be sought from the organisation's human resource function on how to handle this.

When demobilising employees, exit interviews should be conducted to understand how the individual has performed in the role and any learning for future assignments.

If the resources were procured under contract, the contract manager should ensure that the notice required is provided under the contract and that other contractual arrangements, for example the transition and/or exit plan, are completed before contract end and the release of resources. Where other resources are used, utilisation should be reviewed and documented as part of closing the contract.

28.6.3.9 Close the resource management framework

Once the work has been completed and resource management is no longer needed, the management framework should be either closed or merged into the management framework for the organisation or solution as appropriate. Information and data should be retained in accordance with the delivery and sponsoring body's information retention policy (see Chapter 24: Information and data management).

28.7 Further reading

- Government Project Delivery, *Project delivery capability framework*
- Government Project Delivery, *Standardised job titles for project delivery roles*
- HM Government, *Government Functional Standard GovS 003: Human Resources*
- HM Government, *Government Functional Standard GovS 008: Commercial*
- HM Government, *The sourcing playbook: government guidance on service delivery, including outsourcing, insourcing, mixed economy sourcing and contracting*
- HM Government, *The consultancy playbook: government guidance on how to commission and engage with consultants more effectively, achieving better outcomes, better value for money and supporting Civil Service capability through the creation of knowledge and skills*
- HM Revenue and Customs, *Understanding off-payroll working (IR35)*
- HM Treasury, *Managing public money*

29. Finance

29.1 Purpose of financial management

Financial management ensures the efficient and effective management of money (funding) to accomplish the objectives of the organisation.

29.2 Key points

- Ensure financial management meets the requirements of *Managing public money* and the *Government Functional Standard for Finance* at all times.
- Conduct investment appraisal in accordance with the *Green Book*.
- Identify funding and secure the necessary approvals and authorities before expenditure is committed.
- Ensure financial reporting is accurate, timely and proportionate, and all costs are captured.
- Flag any costs or forecasts exceeding agreed tolerance as soon as possible.

29.3 Why does financial management matter?

All project delivery has a cost. This can be direct, through funding provided for the purpose, or indirect, through the use of organisational resources. Financial management is how a portfolio, programme or project understand their costs, secure funding and control spending through delivery and into operations.

In government, project delivery involves using public resources. Financial management provides the information to show that public funding has been used in line with the terms agreed by Parliament, and that the that the accounting officer standards of regularity, propriety, value for money and feasibility, as set out in *Managing public money*, are upheld. This is typically the case, even for work that is funded through private finance, where public funding is normally used for overseeing, planning and delivery, and there might be commitments for future expenditure.

Effective financial management also makes sure that the rules on using public money are factored into planning and managing budgets, and that the necessary accounting standards are met.

29.4 What is financial management?

Financial management in project delivery covers managing:

- funding
- budgeting
- authorisation
- spending
- tracking and accounting for the money needed to carry out the work

It can also involve other financial processes such as grant administration, debt recovery, tax, asset management and investment appraisal, and management of financial risk, including the prevention of fraud, bribery and corruption.

All financial management in government, including for project delivery, should follow HM Treasury's *Managing public money* and its supplementary guidance for accounting officers. It should also follow the standards, including in the *Government Functional Standard for Finance, Government Functional Standard for Internal Audit, Government Functional Standard for Counter Fraud, Government Functional Standard for Debt* and the *Government Functional Standard for Grants*.

29.5 Who manages finance?

29.5.1 Overview

Everyone working in government project delivery has a responsibility to ensure that public resources are managed and used efficiently, effectively and in line with the principles and standards in *Managing public money* and government functional standards.

Most project delivery work requires the involvement of qualified finance professionals, working within the immediate team, the sponsoring organisation and other organisations, particularly HM Treasury. Accountability and responsibility for financial management should be clearly defined within the governance and management framework and reviewed regularly.

29.5.2 Financial roles in government

Financial management in government project delivery takes place within a formal framework of accountabilities governing the use of public money, set out in *Managing public money*.

The **government** has the responsibility to control and account for public expenditure. Ministers seek to implement government policies and deliver public services through their organisations, but only when **Parliament** has granted the right to raise, commit and spend resources.

HM Treasury is responsible to Parliament for the control of public resources. It allocates funding approved by Parliament to government departments and, through them, to their arm's length bodies. HM Treasury ensures that government organisations have adequate legal authority to spend the public resources voted to them by Parliament through formal approval of legislation and policy decisions with public expenditure implications. Where spending proposals exceed an organisation's delegated authority limit, or are novel, contentious or repercussive, HM Treasury scrutinises and approves business cases through the *Treasury approval process for projects and programmes*.

In individual **government organisations**, overall accountability for financial management sits with the organisation's **accounting officer**, usually supported by a **chief finance officer** or **finance director**. The accounting officer is accountable to Parliament for ensuring that the organisation's actions meet the accounting officer standards of regularity, propriety, value for money and feasibility. They are also responsible for managing the governance and management framework for financial management within the organisation.

Funding for **arm's length bodies** is usually delegated as grant-in-aid by the sponsoring government department. The accounting officer in the arm's length body is usually accountable to the principal accounting officer in the sponsoring department for use of allocated funding as well as to Parliament. For more information on this and other forms of grant, see the *Government Functional Standard for Grants*.

29.5.3 Financial roles in project delivery

The **accounting officer** is accountable for approving all significant initiatives, policies, programmes and projects in advance, taking account of any internal delegated authorities. This is usually managed through an investment scrutiny and approval process overseen by the organisation's investment committee and chaired by the accounting officer or chief finance officer on their behalf.

Government Major Projects Portfolio and accounting officer assessments

For programmes and projects in the Government Major Projects Portfolio, an accounting officer assessment must be produced at decision points. A summary of the assessment should be published (see *Accounting officer assessments: guidance* for more information).

The **portfolio director**, in a portfolio, or **senior responsible owner** in a programme or project, is accountable for effective financial management. This includes owning the financial management framework and plan, and leading work to identify and secure funding. For a portfolio, this is often part of the organisation's spending review funding bid. For a programme or project, this is usually through annual business planning or the organisation's investment scrutiny and approval process.

The **portfolio, programme or project manager** is accountable for developing and implementing the financial management framework and finance plan, and for ongoing financial control, reporting and accounting.

Some financial management activities may be delegated to a **work package manager**. Financial management work is normally led by a **finance manager** and supported by a **finance team**, usually based in a support office.

More detail on professional finance roles is set out in the Government Finance Function's *Career framework*.

29.6 How to manage finance

29.6.1 What to consider

29.6.1.1 Consistency with organisational systems and processes

Financial management in project delivery needs to integrate with the wider financial management and accounting arrangements in the sponsoring organisation.

At portfolio level, a portfolio can cover the whole of an organisation's capital investment and resource spend. Programme and project financial arrangements also need to be integrated with the sponsoring organisation. Even where a separate organisation (usually an arm's length body) is created to deliver work, its accounts are normally consolidated into the sponsoring organisation's accounts.

Financial management arrangements should be consistent with the sponsoring organisation's processes and use their financial management and accounting systems wherever possible. Accounting data should be captured consistently across portfolios, programmes and projects so that costs, income, savings and forecasts can be compared and reported at each level.

29.6.1.2 Funding sources and availability

Funding availability cannot be assumed, even where there is strong support for the work and a compelling business case, as organisations have to balance many different priorities in pursuit of their objectives. A realistic funding plan and a commitment from the funder are needed before a business case is approved. Approval then either triggers the release

of funding for part or all of the work, or provides authority for expenditure where funding is already held in organisation budgets.

Funding is allocated by financial year. Allocations cannot be moved from one financial year to the next without agreement from HM Treasury and updating the business case. Funding sources can include those from grants, estimates, tax, public dividend capital, public borrowing, external borrowing and income generation, as set out in *Managing public money*.

There are also strict rules on expenditure classifications agreed with HM Treasury, including distinctions between administrative and programme spend, and between resource and capital spend. These are described in the *Consolidated budgeting guidance*.

Some government funding is also delegated on a ring-fenced basis by UK Parliament or HM Treasury for specific purposes, for example Official Development Assistance (see 10.8 on international).

Some project delivery work involves the use of private finance, for example joint ventures with private sector partners. Where this is being considered, advice should be sought from the National Infrastructure and Service Transformation Authority. These arrangements require HM Treasury approval.

29.6.1.3 Business case approval and spending authorisation

Business case approval and spending authorisation are not the same thing, but in practice are often linked:

- **business case approval** confirms that the business case is acceptable to the relevant investment scrutiny body and can proceed
- **spending authorisation** allows public money to be committed or spent

Both form part of the government control framework for programmes and projects, as set out in *Managing public money*. Business case approval also depends on other requirements being met, for example functional controls set out in the Department's Memorandum of Understanding with HM Treasury.

Approval and authorisation can be for the next phase of the work or for all of it, depending on the business case and other considerations, for example for risk and future funding availability beyond the current spending cycle.

Business case approvals and spending authorities are governed by a department's delegated authority limit (DAL). Spending proposals are governed by a department's delegated authority limit (DAL). Spending proposals are required to follow the *Treasury approvals process for projects and programmes* if they:

- exceed this limit
- are likely to create pressures leading to a breach in agreed budget and supply estimate limit
- are likely to involve contractual commitments to significant levels of spending in future years for which budgets have not been set
- may set a potentially expensive precedent
- are novel, contentious, or could cause repercussions elsewhere in the public sector
- require primary legislation
- are a statutory requirement to seek HM Treasury consent

This process provides different levels of scrutiny depending on the scale and complexity of the programme or project concerned.

Approvals not requiring HM Treasury approval

Business cases that do not require HM Treasury's approval may be approved within the sponsoring department using the departmental investment approvals process, in line with their delegated spending authority arrangements. Similar delegated arrangements are in place between departments and their arm's length bodies.

Authority for spending within the delegated authority limit is held by the accounting officer, and delegated further as appropriate. Senior responsible owners should have delegated spending authority within agreed limits and are encouraged to delegate day-to-day spending authority to programme or project managers, who can delegate further if appropriate.

Delegated authority for spending can be provided to develop proposals and prepare a business case before formal approval, in line with the limits on modest or temporary expenditure set out in *Managing public money*. Once an investment case has been approved, the senior responsible owner or their delegate has authority for expenditure, subject to the terms of the delegation. Spending authority and other delegated authorities, for example on procurement, should be set out in a delegation letter to the senior responsible owner and in individual letters to anyone that authority is further delegated to.

29.6.1.4 Managing financial uncertainty

Financial planning and forecasting involves dealing with uncertainty.

First, make uncertainty visible. Financial analysis and modelling should be robust and evidence-based, but where uncertainty exists, it should be stated clearly, with a range of plausible outcomes presented. Specialist advice should be sought on methodology where needed.

Second, build contingency into the plan and business case. The financial case should include contingency to cover financial risks and liabilities. The economic case should account for uncertainty and risk in its modelling. As the work progresses and projections become more certain, assumptions should be adjusted and contingency updated.

Third, hold contingency centrally. Contingency should be held within the sponsoring organisation, not allocated as part of the budget for the work. This is because government is effectively self-insured: residual contingency in the financial case is converted into nominal prices and used to estimate the contribution to the organisation's reserves. Arrangements for managing contingency, drawing it down and accounting for its use should be included in the governance and management framework.

Financial analysis and modelling should conform to the *Government Functional Standard for Analysis*, supported by the *Aqua Book*. The *Green Book* provides specific guidance on handling uncertainty, optimism bias and risk in business cases.

29.6.1.5 Maintaining a culture of financial discipline

In portfolios, funding is allocated in line with agreed priorities. Spend against budget should be reported and analysed regularly to identify actual and forecast underspends and overspends. Where variances occur, the portfolio director should flag these promptly and take decisions on addressing them.

In programmes and projects, the senior responsible owner is accountable for financial discipline.

Accurate planning, recording and reporting of spend matters because:

- if spend is not planned and profiled accurately across financial years, there may not be enough funding to complete the work on time
- if costs are not recorded properly, financial reports can understate spend, leading to unexpected overspends at year end
- if work and spend are delayed and the impact not flagged, funding cannot be reallocated in-year, leaving an underspend and a gap in the budget for the next year

29.6.1.6 Protecting against fraud, bribery and corruption

Everyone working in government has a responsibility to protect public money. Accounting officers are responsible for managing fraud, bribery and corruption risks as part of their accountability to Parliament.

Senior responsible owners should balance preventative and detective controls to tackle and deter fraud, bribery, corruption and other malpractices. For all proposals, proportionate counter fraud measures should be built into the design as a constraint and therefore as a requirement of all viable options.

Government major projects and initial fraud assessments

New programmes or projects joining the Government Major Projects Portfolio (GMPP) are required to complete an initial fraud impact assessment in line with *Professional standards and guidance for fraud risks assessment in government.* Assessments should be submitted to the Public Sector Fraud Authority for assurance before spending approval.

This assessment:

- informs approval decisions
- provides an early view of the need to resource counter fraud activity
- maps counter fraud requirements through the life cycle
- identifies any vulnerabilities so that these can be addressed up front

The senior responsible owner should complete this with support from local counter fraud teams. Once spending is approved, a full fraud risk assessment should be completed in line with the *Professional standards and guidance for fraud risk assessment in government* and monitored through the life cycle.

For further information see the *Government Functional Standard for Counter Fraud.*

29.6.2 Preparing for financial management

29.6.2.1 Overview

The financial management framework should reflect the mandate and objectives for the work, as these determine the nature of the finances involved and how to manage them.

Where a new portfolio is established or arrangements are being reshaped, the accounting officer and executive board may need to take strategic decisions on how portfolio investment is to be planned and managed before spending starts.

Programmes and projects can start to incur costs as soon as work begins, and these can accelerate quickly. Defining the financial management framework is an early priority so that costs can be budgeted for, met, reported and accounted for from the outset. An initial framework can be put in place and developed as the work expands.

29.6.2.2 Define the financial management framework

The governance and management framework for finance forms part of the overall governance and management framework for the work and should be integrated with the framework in place for the organisation.

The first step is to assess likely requirements. A short-term project where costs are primarily salary costs held in existing budgets needs a different framework from multi-year work involving different funding streams or external delivery contracts.

This initial view provides a basis for defining the framework. It should cover:

- core accounting and financial reporting standards to be followed
- planning controls, for example on how costs and benefits are estimated
- approvals and authorities for expenditure
- management of contingency
- forecasting and profiling future costs, benefits and cashflow
- handling of international currency (where appropriate)
- recording actual and committed costs and benefits, and tracking them against plan
- tolerances and management of variances
- financial reporting and accounting requirements

In a portfolio, the framework sets the parameters for managing finance at portfolio level, as well as what is expected of those managing programmes and projects within the portfolio. How this works depends on whether funding is held, managed and allocated through the portfolio, or held and allocated separately.

For organisational portfolios, the framework should be approved by the chief finance officer and accounting officer and the appropriate governance board, usually the organisational portfolio board or investment committee. Below this level, the framework should be approved by the portfolio director.

In a programme or project, the senior responsible owner with support from the appropriate governance board should approve the framework. The framework should set out how the senior responsible owner will exercise financial responsibilities in line with delegated authority, and how any further delegations for day-to-day budget management will work.

29.6.2.3 Identify the appropriate systems, processes and tools

Financial planning and control should use existing organisational finance and accounting platforms wherever possible (see 29.6.1.1 on consistency with organisational systems), supplemented by additional processes and specialist tools where needed.

Some organisations provide tools for managing project finances that interface with their existing accounting platforms. For smaller initiatives, spreadsheets are often used for financial data, modelling and analysis. For larger and more complex work, specialised planning and control software, incorporating financial data, can be used.

29.6.3 Key activities

29.6.3.1 Overview

Financial management in project delivery involves a series of related activities, as shown in Figure 29.1 and considered below. These are iterative and can be applied at portfolio, programme, project and work package levels.

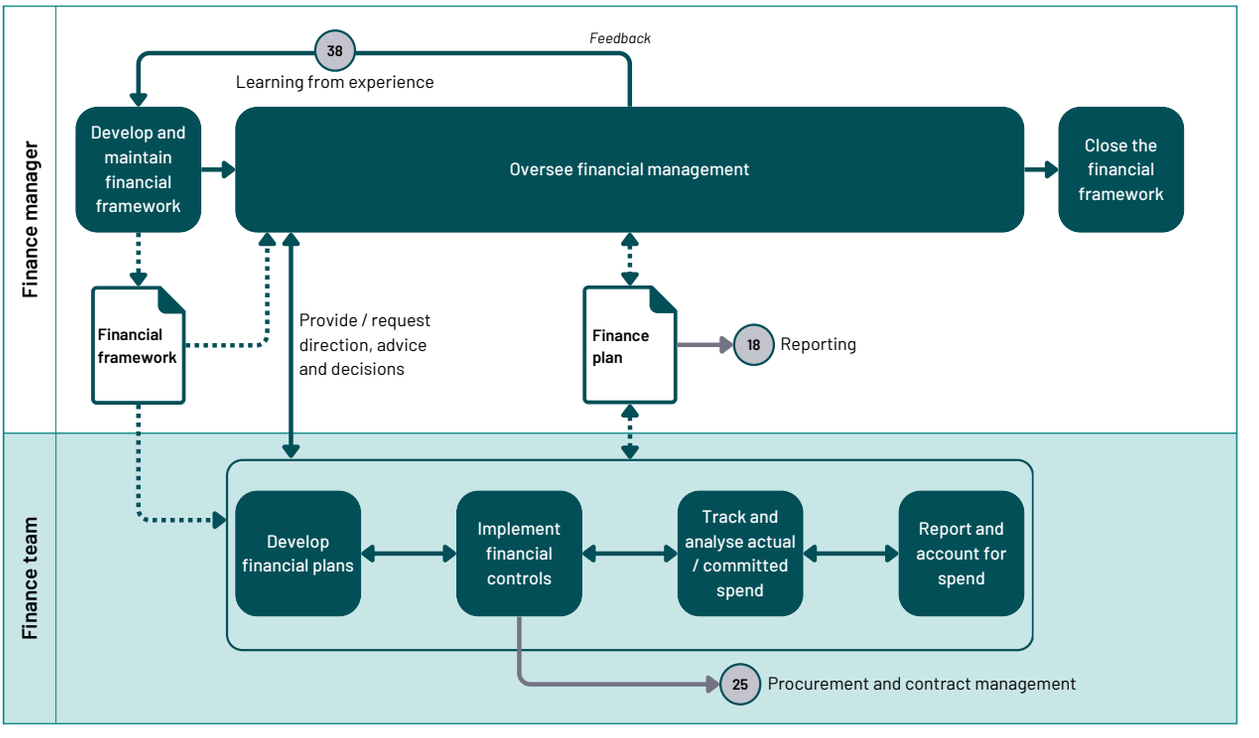


Figure 29.1 Overview of key financial management activities and their primary relationships

29.6.3.2 Develop and maintain the financial management framework

The approach to managing finances should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in section 29.6.2.2 on defining the financial management framework. The framework should be maintained to address relevant feedback from its use.

29.6.3.3 Oversee financial management

Overseeing includes making sure that:

- the financial management framework is assessed and updated as needed
- funding sources are identified and robust financial plans developed as part of business case planning
- annual delegations are in place and funding is allocated in line with them
- the necessary approvals and authorisations are secured before spend is committed
- payments to suppliers are managed in line with performance and held over where necessary
- spend and any income are monitored, reported and accounted for accurately
- variances against budget profiles are identified and handling agreed through the appropriate governance, including the potential release of underspends and seeking drawdown of contingency where necessary

It is important to monitor the operation of the finance management framework to ensure that it remains effective and appropriate as the work proceeds, particularly if things change.

29.6.3.4 Develop financial plans

Finance requirements form a core part of planning (see Chapter 16: Planning) and make up the basis of the financial case within the HM Treasury's *Business case guidance for projects and programmes.* The approved financial plan provides a part of the baselined plan against which delivery can be managed and tracked.

The financial plan should be derived from the schedule and determine the level of funding needed through the life cycle. It should provide a summary view for the whole life cycle, and a detailed view for the next phase.

The financial plan should include the:

- **investment cost**, developing and delivering the work, including business change
- **operating cost**, in-life operation or use
- **maintenance cost**, in-life maintenance or refresh
- **disposal cost**, end of life decommissioning and disposal

It should also provide information on:

- what each phase and component of the work costs, and who is accountable
- what financial benefits (for example, revenue, income or savings) are to be realised, when, and who is accountable for realising them
- financial commitments made, for example contractual costs or scheduled grant payments
- cash flow or in-year spend profile, as required by the relevant organisation
- financial authorisations needed and given

The financial plan should be set out in financial years on a whole life basis. They should identify different categories of public expenditure, for example resource (administrative or programme), capital and other categories, for example annually managed expenditure (AME). Official Development Aid (ODA) expenditure should also be identified separately and is subject to a specific governance regime, overseen by the Foreign, Commonwealth and Development Office.

29.6.3.5 Implement financial management controls

Financial management controls should be implemented as soon as possible in the first phase of the work, before any significant spend is committed. Controls can be implemented progressively if needed but must be reflected in procurement documentation and contracts from that point onwards.

Audit activity often focuses on financial controls around investment and supplier management, and a strong, properly documented and actively-managed control framework is needed to demonstrate proper use of public funding.

Profiling expected spend across the year in line with delivery plans provides a baseline for tracking and managing performance. Profiling should take account of contractual arrangements and when material delivery milestones are expected, triggering the requirements for funding or payments to suppliers.

29.6.3.6 Track and analyse actual and committed spend

Actual and committed spend should be recorded in organisational finance and accounting systems as they occur. Spend should be reviewed regularly and forecasts updated, for example as part of the organisation's monthly financial reporting cycle, covering both annual and multi-year forecasts showing current spending review years and whole life totals.

Actual and forecast spend should be analysed against budget profiles to identify variances. Some variation against profile is usual, but persistent variances can point to

delays or other performance issues, leading to underspends, or unforeseen costs or work overruns, leading to unplanned overspends.

Financial reports and spreadsheets used for tracking should show monthly, annual and whole-life cost profiles, actual and committed spend, and future forecasts, aligned to work breakdown structures. S-curve analysis is a common approach, tracking planned cost, actual cost against schedule or agreed milestones (see Figure 29.2).

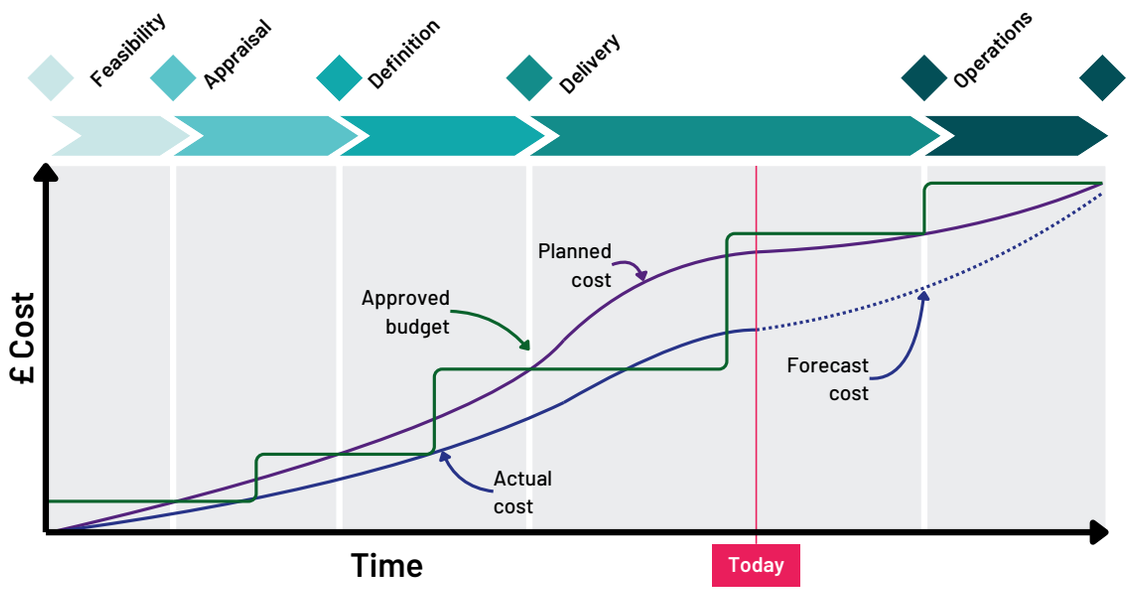


Figure 29.2 Example of S-curve analysis using the reference project life cycle

Even small variances can point to trends and provide early warning that work is going off track. The root causes of variances should be identified and addressed.

29.6.3.7 Report on financial status and account for spend

Financial status should be reported coinciding with the sponsoring organisation's reporting cycle but, where systems allow, should be available on demand (see Chapter 18: Reporting).

Financial reports should show actual, committed and forecast spend against budget profiles for each expenditure category (admin, programme, capital and others). Reports should provide more detail for the current phase and show a summary view overall. Variances should be highlighted, and where known, the reasons for them explained. Figure 29.3 shows an example of a summary report.

Financial reports can also include other information, for example on funding availability or the effectiveness of financial controls. Financial risks can be flagged here in context but should also be fed into wider risk reporting.

Item	Month	Financial year					Life				
	Actual	Actual to date	Forecast outturn	Current budget	Variance	Committed	Actual to date	Forecast outturn	Planned at completion	Variance	Committed
Feasibility stage	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**6**	**6**	**0**	**0**
Work package 1	0	0	0	0	0	0	2	2	3	1	0
Work package 2	0	0	0	0	0	0	4	4	3	-1	0
Appraisal stage	**0**	**65**	**65**	**64**	**-1**	**0**	**65**	**65**	**64**	**-1**	**0**
Work package 3	0	23	23	22	-1	0	23	23	22	-1	0
Work package 4	0	42	42	42	0	0	42	42	42	0	0
Definition stage	**23**	**39**	**92**	**95**	**3**	**21**	**56**	**187**	**189**	**2**	**36**
Work package 5	6	12	32	35	3	10	15	52	52	0	10
Work package 6	9	10	15	16	1	8	17	72	72	0	23
Work package 7	8	17	45	44	-1	3	24	63	65	2	3
Delivery stage	**0**	**0**	**33**	**33**	**0**	**0**	**0**	**451**	**451**	**0**	**0**
Work package 8	0	0	10	10	0	0	0	120	120	0	0
Work package 9	0	0	4	4	0	0	0	56	56	0	0
Work package 10	0	0	7	7	0	0	0	45	45	0	0
Work package 11	0	0	12	12	0	0	0	230	230	0	0
Operation stage	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**112**	**144**	**32**	**0**
Work package 12	0	0	0	0	0	0	0	56	72	16	0
Work package 13	0	0	0	0	0	0	0	56	72	16	0
TOTAL	**23**	**104**	**190**	**192**	**2**	**21**	**127**	**821**	**854**	**33**	**36**

Items can be portfolio, programme, project, other work, work package and/or category
Costs can relate to cash basis, cashflow or financial costs, including treatments such as accruals and provisions

Figure 29.3 Example of a summary report on spend against budget

It is important that expenditure is properly recorded and reported on as part of the preparation of annual accounts at organisational level, ensuring that costs incurred or committed are included in the appropriate accounting year.

29.6.3.8 Close financial management

In a programme or project, following completion of the work, financial reports covering the scope of the work are concluded and financial management arrangements brought to a close. In a portfolio, financial management arrangements normally continue unless the portfolio is fully concluded or substantially reset.

In some programmes or projects, financial data, reporting and accounting arrangements are handed over to support operations. This is common where there are ongoing contracts or follow up activities following closure, or where the work moves into a sustainment model with future development carried out as part of business-as-usual operations. Where this happens, there should be clear separation between costs within the agreed scope of the work and costs that fall to operations or arise from new development.

Accounting arrangements should be left in place for an agreed period, and at least to the end of the current financial year, so that all spend is accounted for as part of the organisation's annual accounts and audit and follow up activities can take place.

The effectiveness of financial management should be evaluated as part of closing the work. Financial management information should be archived in accordance with the sponsoring organisation's information and data retention policies (see Chapter 24: Information and data management). The financial management framework should then be closed.

29.7 Further reading

- Government Finance Function, *Finance career framework*
- HM Government, *Fraud risk assessment core discipline*
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 006: Finance*
- HM Government, *Government Functional Standard GovS 013: Counter Fraud*
- HM Government, *Government Functional Standard GovS 015: Grants*
- HM Treasury, *Accounting officer assessments: guidance*
- HM Treasury, *Consolidated budgeting guidance*
- HM Treasury, *Managing public money*

- HM Treasury, *Aqua Book: guidance on producing quality analysis*
- HM Treasury, *Green Book: UK government guidance on appraisal*
- HM Treasury, *Orange Book: management of risk – principles and concepts*
- HM Treasury, *Treasury approvals process for projects and programmes*
- Public Sector Fraud Authority, *Government Counter Fraud Profession Standards and Guidance*

Part F:

Solution delivery

Chapter 30. Quality management
Chapter 31. User needs and requirements
Chapter 32. Solution design
Chapter 33. Solution development and integration
Chapter 34. Verification and validation
Chapter 35. Management of organisational and societal change
Chapter 36. Transition into use
Chapter 37. Use and disposal
Chapter 38. Learning from experience
Chapter 39. Project delivery team induction and training

Part F: Solution delivery

Overview

The purpose of the solution delivery practices is to make sure the right solution is developed to the required quality, in a way that can be maintained over time.

The practices in this part of *The Teal Book* contribute to the quality of the solution. The solution delivery practices should be managed and monitored using the planning and control practices (see Part E: Planning and control).

A portfolio, programme or project manager does not need to be a solution delivery expert. But as the person accountable for managing the work, they need to understand enough to be confident that an appropriate solution is developed within the constraints defined in the business case and that progress can be tracked.

Solution delivery practices apply to any type of solution or part of a solution, whether technical or people-based, using any delivery approach such as adaptive, iterative, incremental or predictive. For example, it is usually necessary to iterate the requirements and the design to achieve a viable solution which represents value for money.

The practices in Part E: Planning and Control and Part F: Solution delivery of *The Teal Book* should work together, as the outputs from one are often the inputs to another practice. The primary relationships and information flows among the practices in *The Teal Book* are shown in Figure F. 2.

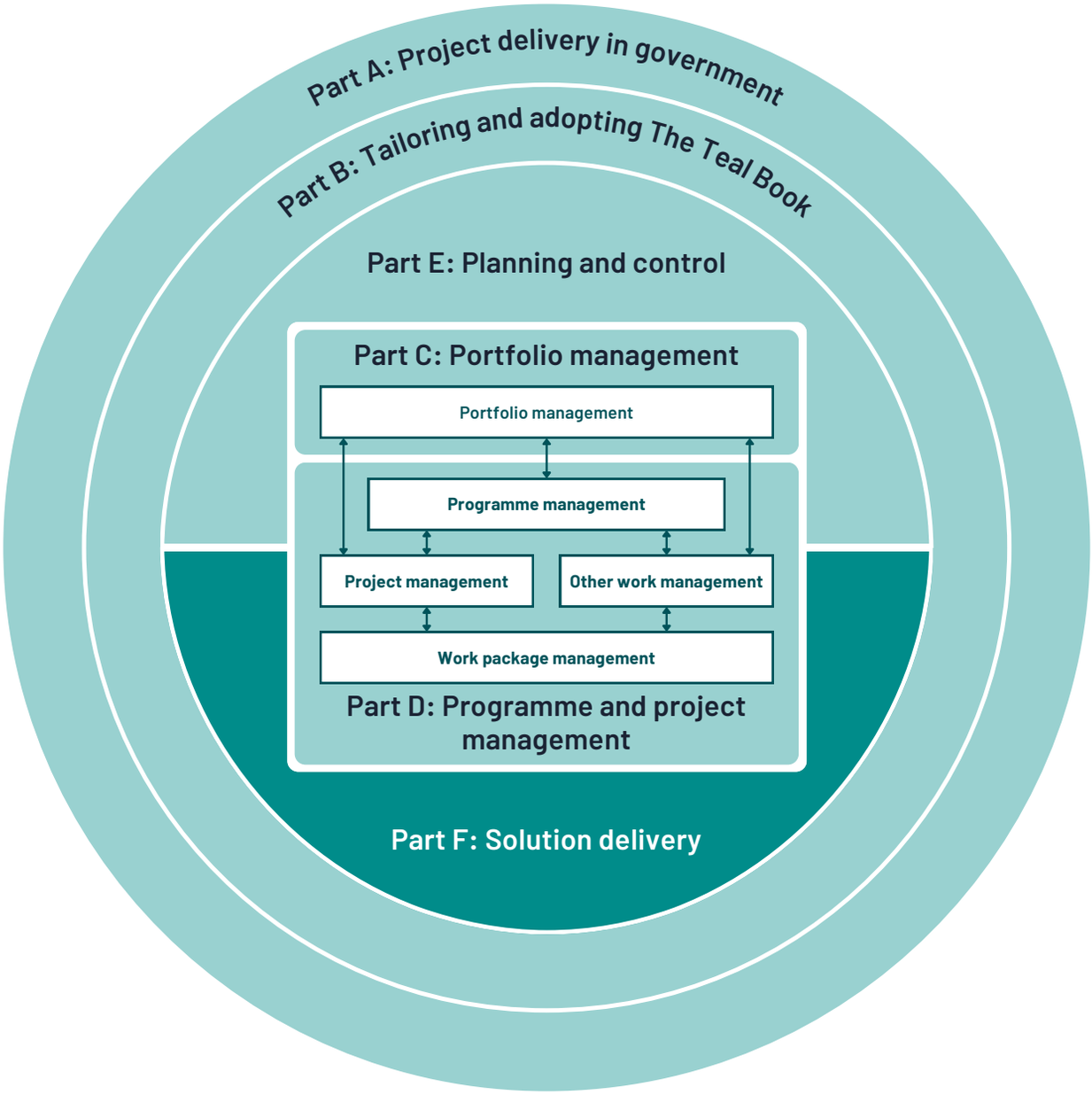


Figure F.1 Solution delivery practices in relation to the structure of The Teal Book

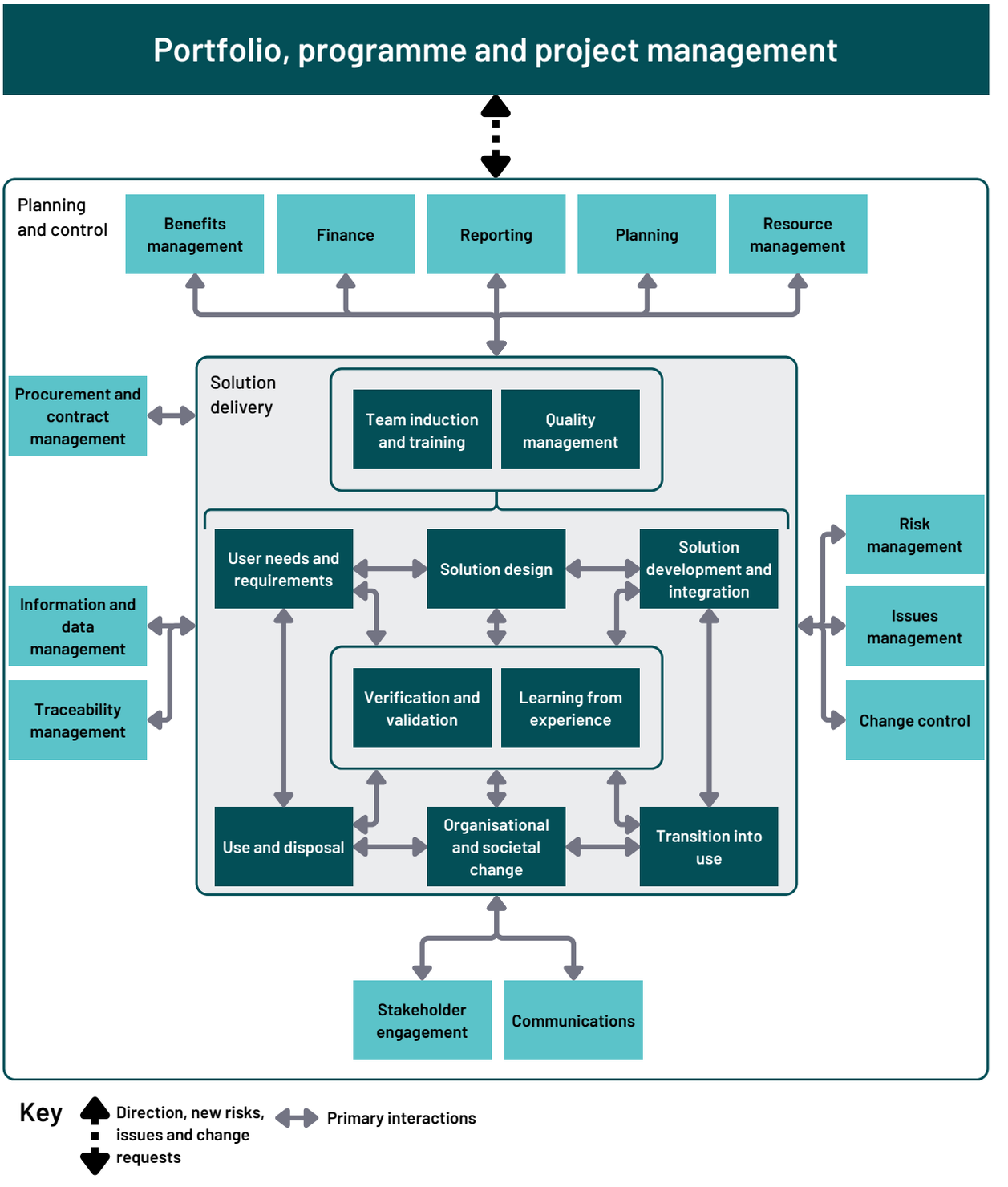


Figure F.2 The primary interactions between the solution delivery practices in the context of the management, planning and control practices

Taking a systems approach

Just as the practices needed to plan and control the work need to function together, the components (also called elements) of the resultant solution need to work together. The design, development, integration, operation and disposal of a solution, the environment it operates in and the other solutions it interacts with, all need to be considered. The behaviour of the whole is usually different to the sum of the behaviours of the individual parts. This holistic way of looking at a solution is called **systems thinking**.

Systems thinking can be applied to disciplines as diverse as social sciences, engineering and management, often in combination. It focuses on relationships, causality, feedback loops and emergence and is well-suited to complex situations.

A **system** is an equivalent to a solution and has its own solution or system life cycle, from concept through to disposal.

The *Project delivery glossary* defines a system as:

> Arrangement of parts or components that work together to provide a product, service or outcome.

A solution needs to be designed for all the phases of a system life cycle. Table F.1 shows some examples.

The number and naming of the phases should be chosen to emphasise what is important with respect to the solution being delivered. Do not confuse a solution or system life cycle with a programme or project life cycle (see Chapter 14: Programme and project life cycles) nor with a systems development life cycle (which is a development approach for digital solutions).

Table F.1 Examples of a solution or system life cycle

Source	Phases						
ISO 15288	Concept	Development		Utilisation	In service	Support	Disposal
Ministry of Defence	Concept	Assessment	Demonstration	Manufacture	In service		Disposal
Product	Discovery	Development	Release	Service delivery			Disposal

Different techniques can be used to analyse a solution using a systems approach. One common technique is **solution hierarchy** (also called a system hierarchy or product breakdown structure). This breaks a solution down into its component parts, grouping smaller parts under larger ones.

The solution hierarchy can be useful for assigning accountability (see Figure F.3). Each component has a manager who is responsible for everything within it, including all the levels below it, and any gaps or overlaps between components.

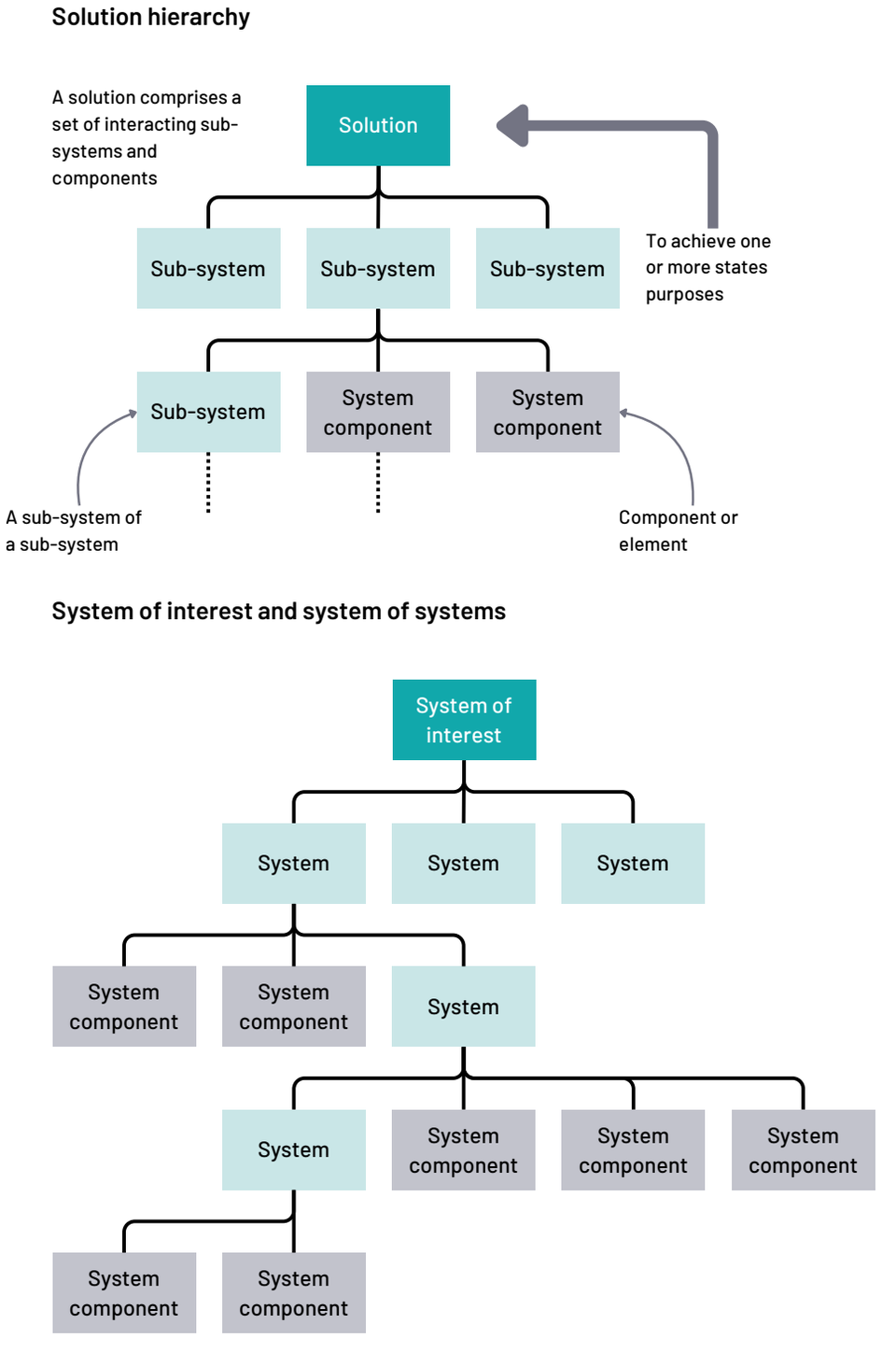


Figure F.3 An example of solution hierarchy, system of systems and system of interest

In many cases a solution relies on other independently managed systems to meet its requirements. In this case, a **system of systems** needs to be considered.

The *Project delivery glossary* defines a system of systems as:

> A collection of systems which can operate independently fulfilling a purpose on their own, are independently acquired and managed, and can maintain a continual independent operational existence.

The **system of interest** is the specific system whose life cycle is under consideration. In *The Teal Book*, this means the solution itself. As government services become more connected, understanding how systems interact is increasingly important.

Systems thinking is most needed when a solution becomes complex as opposed to complicated. A complicated system is one which involves the management of a large number of requirements and components where the outcomes are predictable and reproducible. On the other hand, a complex system is one where the relationships are not always predictable and reproducible; they can evolve and have emergent behaviour. To manage a complicated system, it is necessary to coordinate a large number of components comprising the solution; this is known as traceability management (see Chapter 23: Traceability management). To manage a complex solution, it is essential to navigate an emerging landscape, observe, interpret, learn and act. Complex systems often include the natural environment and people as essential components, and their behaviour determines the outcome. Where people are concerned the management of organisational or societal change is necessary if the outcomes are to be achieved (see Chapter 35: Management of organisational and societal change).

The names of roles relating to solution delivery vary widely depending on the outputs delivered and delivery approach used. Generally, there should be one person accountable for the integrity of the whole solution, called a **solution architect** in *The Teal Book*. Other names include system engineer or chief engineer. This person is supported by teams of specialists, each addressing their respective part of the solution.

Further reading

- International Standards Organisation, *ISO/IEC/IEEE 15288:2023 Systems and software engineering — System life cycle processes*

30. Quality management

30.1 Purpose of quality management

The purpose of quality management is to ensure outputs are fit for purpose and can function in the intended environment, meeting the agreed requirements and can be used safely and effectively.

30.2 Key points

- The quality of an output or deliverable should be appropriate for the purpose for which it is used in its intended environment, bearing in mind the risks.
- Consider quality in terms of the whole solution operating in its intended environment, not just the quality of individual parts.
- Employ competent suppliers and people using robust processes and methods.
- Quality should be built into the way work is done, not left to inspection.
- Quality records should be maintained and used to identify trends, understand the reasons for deviations and take improvement action.

30.3 Why manage quality?

To achieve government objectives, outputs have to be of a sufficient quality to work in the intended environment. The impacts of poor quality are apparent in different ways in different sectors. For example:

- in infrastructure, defective foundations or structural components can lead to a road or railway collapsing with loss of life
- for transformation, changes to public services designed to improve performance could fail to meet expectations
- for digital services, service users can be frustrated when online tools deliver incorrect information or don't work as expected
- in a military context, a troop carrier or weapon might not operate effectively in an extreme climate

30.4 What is quality management?

The *Project delivery glossary* defines quality as:

> The degree to which the features and inherent or assigned characteristics of a product, person, process, service and/or system bear on its ability to show that it meets expectations or stated needs, requirements or specification.

Quality management is an aspect of assurance (see Chapter 4: Governance and management).

In project delivery, quality does not mean how good or bad something is compared to other things. Delivering higher quality than needed is not usually value for money.

The *Government Functional Standard for Project Delivery* requires quality to be actively managed through the life cycle and so needs to be considered in all project delivery practices. Without effective planning and control, outputs can be compromised. For example, an output based on a flawed business case could be unviable.

A poorly constructed plan could mean deadlines cannot be achieved and critical milestones could be missed.

Solution delivery practices support the measurement of whether outputs are working and behaving as intended and whether users or those impacted by the outputs perceive their quality.

Quality requirements are usually apparent in the specifications for parts of a solution, which prescribe variables reflecting the users' requirements and environmental needs. Quality is therefore a constraint, like time and cost, which needs to be managed within defined tolerances (see Chapter 16: Planning).

30.5 Who manages quality?

People undertaking a project delivery role require at least an awareness of quality management in general and of its implications for their own role, in particular.

At a portfolio level, quality is focused on the adequacy of governance and management. Decisions at portfolio level can have a significant impact on quality within the component programmes and projects. The **portfolio director** therefore holds ultimate accountability for every aspect of quality within the portfolio. They are supported by the portfolio manager.

For a programme or project, the **senior responsible owner** is responsible for ensuring a quality management framework is in place and that it is effective.

The **portfolio, programme or project manager** is responsible for designing and implementing the respective quality management framework and for ensuring that the portfolio director or senior responsible owner understands the implications of decisions which could impact quality. They may be supported by **quality specialists**, say in a project office.

Specialists should be used to design and oversee the development and introduction of a solution. The role titles can differ, depending on the type of output being developed. Typical titles include solution architect, chief engineer and system engineer. The **solution architect** acts as the work package manager for all parts of the solution. Quality specialists can form part of a solution architect's team.

For the components of a solution, the key role is usually the specialist, acting as the **work package or team manager**, who is accountable to the solution architect for defining, creating, building or developing the outputs to meet the users' requirements and needs, as well as defining the working methods for their assigned components.

For larger scale and more complex work, the design of the solution, its quality and other attributes, are often supported by a **design authority** or similar arrangement to help monitor progress and the integration of the components that make up the solution.

30.6 How to manage quality

30.6.1 What to consider when managing quality

30.6.1.1 Applying quality assurance and quality control appropriately

Project delivery leaders cannot check everything for themselves and need to be assured that arrangements are in place to prevent quality issues and to capture any that do occur (see Chapter 21: Issue management).

Information on **quality assurance** in the quality management framework provides confidence that outputs are likely to match the defined quality criteria. This is provided by defining and establishing the management and solution delivery practices covered in Part F: Solution delivery.

Information on **quality control** in the quality management framework monitors and verifies compliance with the specified designs and to identify ways to eliminate causes of unsatisfactory performance (see Chapter 34: Verification and validation).

30.6.1.2 Choosing the right development approach

The quality of a solution and its component parts is dependent on selecting an appropriate design and development methodology. Different approaches are appropriate in different circumstances. For example, an iterative, or agile, delivery approach for digital service is used if the user requirements are not fully developed. These processes and methods

usually have the quality aspects included which cover both verification and validation (see Chapter 34: Verification and validation). Systems thinking generally improves the effectiveness of quality management as it focuses on the whole solution, and not just its separate parts. The effect on quality of interfaces among the various components of a solution needs to be considered when designing, developing and integrating the solution.

30.6.1.3 Building quality into contracts with suppliers

Supplier contracts need to be carefully worded to ensure quality requirements are clear and unambiguous. Most of these are incorporated into the specifications which support the contract. A supplier's performance and the quality of their outputs should be monitored, and deliverables and services should only be accepted after verification against the contractual requirements or, in the case of an outcome-based contract, validation of outcomes. See Chapter 25: Procurement and contract management for more information.

30.6.1.4 Having adequate supporting tools

The quality of data in management information systems used to manage the work should be such that it can be relied on. This is particularly important when related to change control, where traceability between components of a solution, the plan, work packages and contracts is needed if a potential change is to be properly assessed (see Chapter 22: Change control and Chapter 23: Traceability management).

Specialist tools for testing, defect tracking and traceability should be used for large and complex solutions.

30.6.2 Preparing to manage quality

30.6.2.1 Overview

For quality to be managed effectively, thorough preparation is essential. This involves:

- developing an understanding of the context and nature of the work
- defining an appropriate quality management framework
- preparing the quality strategy and register

The application of quality management should be proportionate. A small project could be dealt with in a single document; a larger programme or project would have the detail distributed across several documents for different work packages.

30.6.2.2 Understand the nature and context of the work

When managing quality, the context in which the work is undertaken and the solution operated needs to be understood. This helps to keep quality management proportionate to

the scale and complexity of the work and to identify any relevant regulatory requirements to be complied with. Chapter 10: Tailoring to the nature and context of the work, can help with this as it sets the context for different types of portfolios, programmes and projects.

30.6.2.3 Define the quality management framework

A quality management framework should be defined and established, which is appropriate to the outputs and work required. People should be trained, briefed and competent to undertake the work assigned to them (see Chapter 39: Project delivery team induction and training). The approach to quality management can change as work proceeds to reflect the stage of development, type of solution proposed and external influences. The activities in 30.6.3 for managing quality can be used as a basis for defining processes and procedures.

The sponsoring body's or organisation's quality management policies and procedures should be referred to as these are often suited to the types of output that organisation delivers as well as providing a source which can be tailored to suit the work in hand. For cross-government solutions, common approaches should be used by those organisations involved.

30.6.2.4 Prepare the quality register

It is important to capture and maintain information on quality at both an aggregate and individual level. The quality register covers the quality control aspects and includes details such as:

- name of the deliverable or solution component
- person accountable for its production
- quality verification method (derived from the quality strategy)
- quality control authority (derived from the quality strategy)
- acceptance criteria
- result
- records

For large programmes or projects this is unlikely to be a single register but rather a hierarchy, with an overall summary of individual registers for specific components of the solution. Quality registers usually reflect the type of output and often include additional information, such as for software test results and defect tracking.

30.6.3 Key activities in managing quality

30.6.3.1 Overview

Quality management comprises a set of continuous activities undertaken throughout the life cycle of a portfolio, programme or project. The activities are iterative and involve managing quality in aggregate and for individual parts of a solution and for the related management information. The activities are summarised in Figure 30.1.

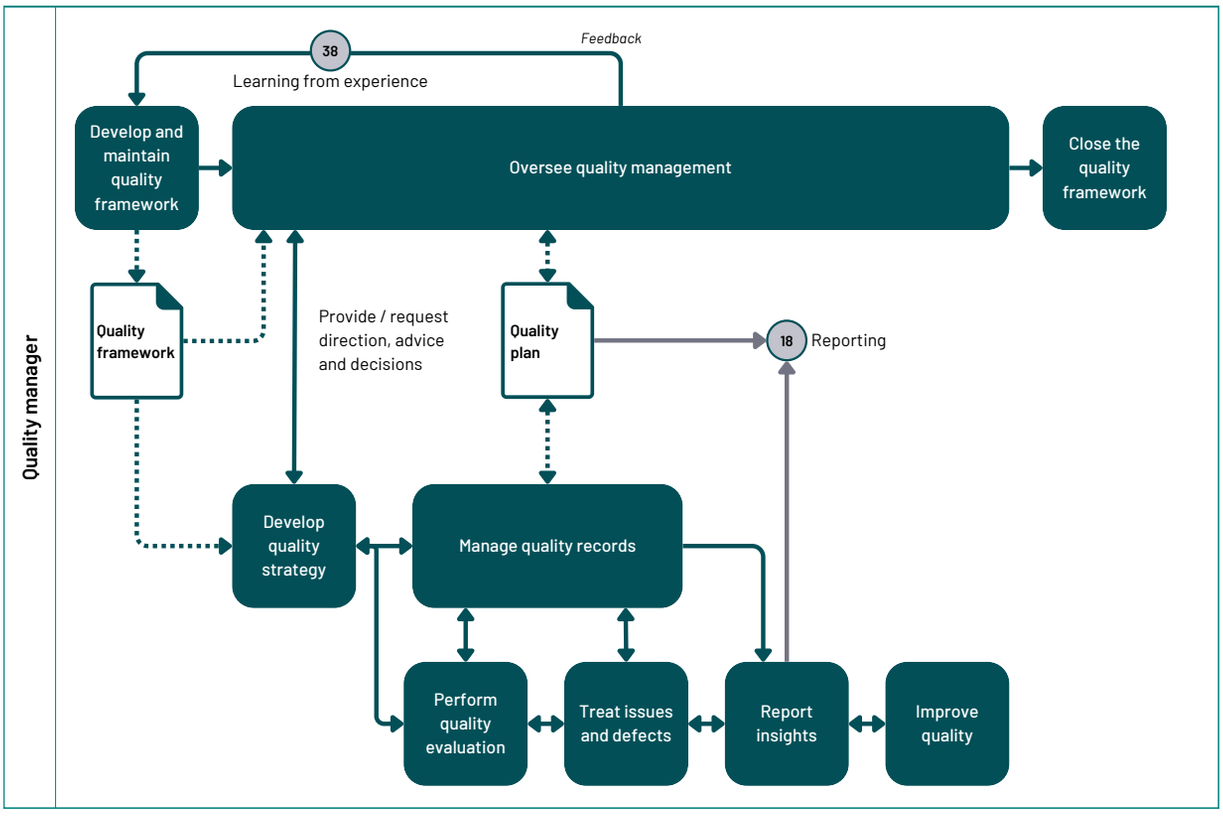


Figure 30.1 An overview of the key quality management activities and their primary relationships

30.6.3.2 Develop and maintain the quality management framework

The approach to managing quality should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in section 30.6.2.3 on defining the quality management framework.

The quality management framework needs to be monitored to make sure it remains effective and appropriate as the work proceeds. Methods and tools can often be tailored from the organisation's enterprise capabilities but would need to be developed if they do

not already exist. Specialist outputs require special processes and methods. If necessary, the framework should be updated, for example, reflecting new or emerging requirements in the quality strategy.

30.6.3.3 Oversee quality management

Overseeing quality management means maintaining a broad understanding of quality and its effect on objectives, timescales and the logic and methods used to develop, deliver and integrate outputs.

An overall strategy for quality, including the means of verification and validation to be used (see Chapter 34: Verification and validation), should be established at a holistic level.

Once work is under way, review the effectiveness of the practices which impact on quality and preventative and corrective action should be taken when needed.

30.6.3.4 Develop the quality strategy

The quality management framework sets out the processes and methods to be used. The strategy sets out the overall approach for quality assurance and quality control. The strategy can evolve, especially in the early phases of the work before a solution has been selected. As a result, the quality management framework might need to be adjusted throughout the life cycle.

The strategy should explain how quality is to be achieved and the reasons for selecting specific methods or tools for the management and solution delivery practices. The strategy should set out how quality control should be dealt with by defining the verification methods to be used for each type or class of deliverable. This should be reflected in the quality management framework and quality register.

30.6.3.5 Manage quality records

Managing quality records means reliable data can be used to identify issues, ensure they are resolved, and to understand what impact, if any, there might be on other aspects of the solution (see 30.6.3.7 on treating quality issues).

The information should be captured, where possible as a part of undertaking the work so that a near-real time view on quality is available to those who need it, together with a record of issues and defects to be resolved. The timing from when an issue or defect was introduced to when it was identified should be captured, and especially if introduced in a previous phase. These records should be used as sources for reporting at portfolio, programme, project and work package levels (see Chapter 18: Reporting).

30.6.3.6 Perform quality evaluation

Quality evaluation verifies and validates that deliverables and outputs conform to established criteria, contracts, standards and regulations, and to identify any issues or defects (see Chapter 34: Verification and validation).

Quality evaluation should be done in accordance with the prescribed methods and records of the results should be retained. While resulting issues can be logged on the main issues register, some aspects such as defects can be recorded in a separate but related register, with a summary on the main register.

30.6.3.7 Treat quality issues and defects

The purpose of treating quality issues and defects is to resolve the issues or correct those defects which threaten the objectives of the work. Issues and defects should be recorded, analysed, classified, prioritised and tracked to closure as described in Chapter 21: Issue management. Trends should be noted and analysed so they can be shared and resolved).

30.6.3.8 Report insights

Reporting insights to share observations on quality can lead to a reduction in issues or more appropriate working methods being adopted. This applies when there is a series of issues on a specific aspect of work which cannot be resolved through treating each incident in isolation or where defects are not identified until a later phase of the work.

The quality records should be analysed and trends noted and the underlying reasons for deviations identified so that improvement action can be taken (see 30.6.3.5 on managing quality records).

By taking a holistic view, insights should inform stakeholders on the likelihood that the output will conform to quality requirements and enable the outcomes and realisation of the expected benefits for the sponsoring organisation or for society.

30.6.3.9 Improve quality

The purpose of improving quality is to reduce the number of quality issues and defects and, if they occur, identify them sooner. This involves understanding the source of the issues, developing options for resolving the issues and selecting the preferred approach (see Chapter 21: Issue management and Chapter 38: Learning from experience).

This can mean actions such as establishing an enhanced control regime, say on materials, further training for people involved, modified working methods or redesign of problematic components of the solution.

31. User needs and requirements

31.1 Purpose of user needs and requirements management

The purpose of managing user needs and requirements is to ensure the needs of stakeholders are understood and considered throughout the design and development of the solution.

31.2 Key points

- User needs and requirements drive the design of a solution so that the desired outcomes can be achieved.
- Requirements should be understood for the whole solution in its context, not just individual parts.
- Requirements come in different types, including business, user and system.
- Maintain traceability from the original need through to the design, solution, plan and contracts.
- Prioritisation techniques can help decide which new or emerging requirements to include in the solution and which to descope.

31.3 Why manage user needs and requirements?

If government is to achieve its objectives, it needs to develop a solution that meets the aims of the sponsoring organisation and which can be used in practice. The benefits of good requirements management include:

- better understanding of the sponsoring body's and users' expectations
- setting the foundation for an appropriate solution leading to the desired outcomes
- precise and unambiguous statements of requirement
- faster assessment of the impact of a change in requirements
- traceability between the original requirements, current requirements and the planned work and its products

31.4 What are user needs and requirements?

The *Project delivery glossary* defines **user needs** as:

> Prerequisites identified as necessary for a user, or a set of users, to achieve an intended outcome, implied or stated within a specific context of use.

The *Project delivery glossary* defines a **requirement** as:

> Statement which translates or expresses a need and its associated constraints and conditions.

31.4.1 The drivers for design

The user needs and requirements drive the design of the solution so that the desired outcomes can be achieved, and subsequent benefits realised. Requirements describe what is required for an organisation to meet its objectives and are usually stated in terms of what a person or group needs to do. They cover the expectations of:

- those sponsoring the work in terms of fulfilling an aspect of government policy or a government organisation's internal objectives, say for improved efficiency
- the users of a solution, whether an online tool, say for completing tax returns, or a driver using a new or upgraded road

Figure 31.1 shows where requirements are in the policy-to-delivery chain as described in Chapter 23, Traceability management.

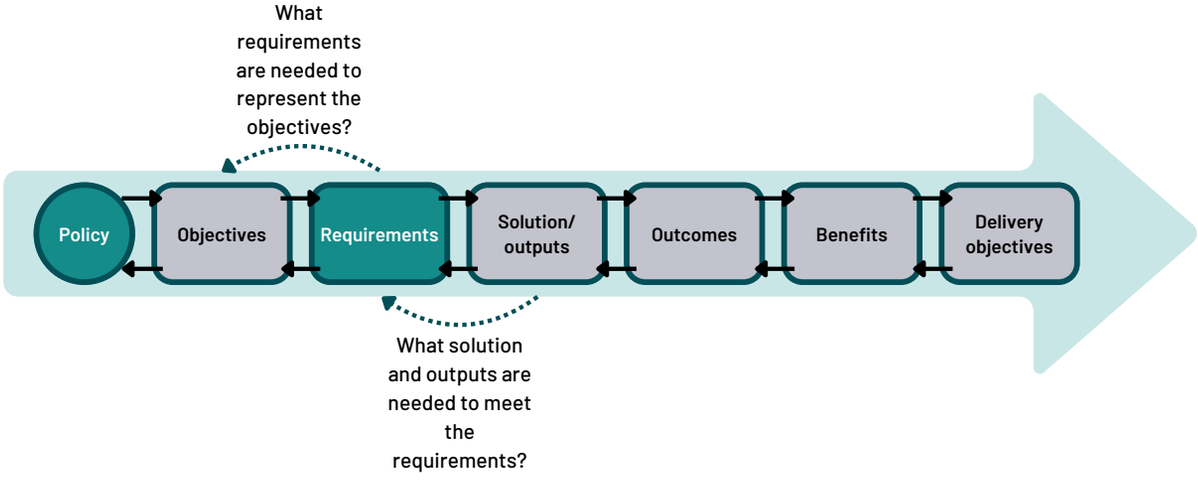


Figure 31.1 The mapping of requirements within the policy to delivery chain

31.4.2 External requirements

Many organisations have specific requirements they impose on their solutions to enable the efficient use of parts and interoperability between solutions. There can also be statutory requirements which must be complied with relating to solution design, such as those arising from:

- the *Public Sector Equality Duty* and accessibility regulations (see Chapter 5: Equality, inclusion and diversity)
- environmental and sustainability law (see Chapter 6: Environment and sustainability)
- health and safety law (see Chapter 7: Health, safety and security)
- information and data protection law (see Chapter 24: Information and data management)

See 8.6.3 on taking account of external constraints for further examples.

31.4.3 Different outputs need different approaches

The methods and processes for managing user needs and requirements vary in terminology, approach and the way they are documented. For example, some methods use the term 'user story' instead of 'user need'.

Requirements management methods are generally part of an overall design methodology for a particular type of output. User needs and system requirements can differ, with system requirements sometimes associated more with the design of the solution (See Chapter 32: Solution design).

The approaches, however, have many features in common, and while a portfolio, programme or project manager does not need to be a specialist in those methods, sufficient understanding is needed so that they can be satisfied that requirements are being sought, documented, tracked and controlled. If requirements are not visible and in control, the overall portfolio, programme or project is not in control. Table 31.1 describes some commonly used types of requirements.

31.5 Who manages user needs and requirements?

Anyone overseeing or managing requirements should have an understanding of the key user needs and requirements management activities and of their responsibilities in managing them. Accountability and responsibility for requirements management should be clearly defined within the governance and management framework for the work and reviewed on a regular basis, to avoid duplication or gaps. Typically, accountability follows the hierarchy in the work breakdown structure, but some roles can also be designated as having cross-cutting responsibilities.

Table 31.1 Examples of types of requirements

Type of requirement	Description
Legal requirements	Statutory requirements which must be complied with, for example, those stemming from the *Public Sector Equality Duty*, accessibility regulations, statutory requirements on environment and sustainability and on information and the protection of public data.
Business requirements	High-level statements of objectives and needs. Business requirements do not include details or specific features.
User need (or requirement)	The needs of specific stakeholder groups (such as senior leaders, employees, the public) and what they expect from a solution.
System requirements	A technical view of a solution that can be built and which meets the needs of the user.
Specification	A detailed, exact statement of particulars, especially prescribing materials, dimensions, and quality of work for something to be built, installed, or manufactured.
Functional requirements	Definition of what a product and its features should do.
Non-functional or performance requirements	The general properties of a solution. They are also known as quality attributes, for example accuracy, security, availability, usability and timeliness.
Allocated requirements	Requirements which flow directly from the system requirements down to the components of the solution. Often, allocated requirements are delegated, through a contract, to a supplier to fulfil.
Derived requirements	Requirements which are dependent on the design of the solution.
Transition requirements	What is temporarily needed for an organisation to move from its current state to its desired interim or final state. For example, digital solutions might have staging or test environments.

The **senior responsible owner**, in a programme or project, has overall accountability for requirements management and owns the requirements management framework, ensuring that it is effective in providing the capability and capacity needed to consider user needs and requirements throughout the design and development of the solution.

The **programme** or **project manager**, as appropriate, is responsible accountable for developing and managing the requirements management framework, including its processes, tools, techniques, and for ensuring that it remains effective through the life cycle, as well as acting as the requirements manager. Depending on the scale and complexity of the work, there could be a dedicated requirements manager (often from a support office) with responsibility for overseeing requirements management on behalf of the programme or project manager.

If the solution has an organisation-wide application, the **portfolio manager** has a similar responsibility. Their primary reference is the quality management framework and quality strategy, which provide the overarching information.

The **requirements manager**, should collate, analyse, define and track requirements. Often a requirements manager or senior business analyst would be responsible to a solution architect for the totality of requirements, with a designated requirements owner for each requirement or group of closely related requirements. The responsibilities would normally follow the solution hierarchy (sometimes called a system hierarchy or product breakdown structure).

The role title for people who own and manage requirements (**requirements owner**) can change, depending on the methodology used. In iterative or agile delivery, for example, the product owner owns the requirements for the product, and the product manager is responsible for managing them.

31.6 How to manage user needs and requirements

31.6.1 What to consider when managing user needs and requirements

31.6.1.1 Engaging the right stakeholders

Success depends on making sure the relevant stakeholders understand and agree the requirements. If using a formal requirements management method, the approach for achieving this should be defined in that method. Agreement depends on people understanding the requirements and the resultant solution, whilst keeping business needs and user experience to the forefront.

31.6.1.2 Describing requirements

Requirements can be described using plain or technical language or conceptual models. How to describe and record requirements should be based on the type of requirement (see Table 31.1) and who the requirement is typically described to.

The use of plain language means that, whatever the stakeholder's background, they can understand. However, there is a risk that the requirement may be ambiguous with other requirements and interpreted differently across stakeholder perspectives.

The use of technical language or conceptual models allows requirements to be described more succinctly, and stakeholders with the appropriate perspective can understand them with reduced ambiguity. Examples of conceptual models can include use cases, goal models and activity diagrams.

Irrespective of the language used, requirements should have the following features as set out in Table 31.2.

Table 31.2 Characteristics of a requirements register

Characteristic	Description
Unique	The requirement addresses one and only one thing. This removes any ambiguities to spot duplicate requirements.
Current	The requirement has not been made obsolete.
Consistent	The requirement does not contradict other requirements or authoritative external documentation.
Understandable and unambiguous	The requirement is concisely written. It expresses objective facts, not subjective opinions and is subject to only one interpretation within the limitation of the language used.
Verifiable	The implementation of the requirement can be determined through: inspection (including peer review), analysis (including modelling, simulation, and analogy or similarity), demonstration or testing.
Validity	The implementation of the requirement can be determined through: inspection, analysis, analogy or similarity, demonstration, simulation, peer-review, testing or certification.
Traceable	Each requirement is traceable from the original need, via the plan, through to what is finally delivered.
Prioritised	Each requirement is classified according to an agreed set of importance criteria.

31.6.1.3 Taking a systems approach

For all but the simplest solutions, a systems approach, as outlined in Part F: Introduction, should be taken, ensuring the business needs are met and that all the aspects of the overall solution work together.

Requirements identified at one level in the solution can be allocated to various sub-systems so that the supplier of each sub-system understands their scope and what is expected of them. The solution hierarchy is essential when contracting to suppliers as it determines the requirements which should be included in their respective contracts.

31.6.1.4 Handling emerging requirements

As the work proceeds, new requirements, areas for prioritisation or areas for focus are likely to emerge. Value management techniques can help make sure that emerging requirements are prioritised against the existing requirements in serving a purpose for stakeholders and their efficiency to deliver the strategic objectives. Agile methods are particularly useful for software or process related work as the tools and techniques used are particularly good at developing requirements in parallel with designing the solution. Different options for a solution have different system requirements while meeting the same user need.

31.6.1.5 Balancing requirements and design

A solution rarely meets every requirement in full, so a range of possible solutions should be considered. Changes to cost and time as more detail on both requirements and solution design becomes available should be allowed when planning with an appropriate horizon (see Chapter 16: Planning).

There is nearly always a trade-off to make when selecting a solution option, as some solutions meet the requirements better than others. Each option should be assessed for risk which can result in changes to requirements and scope, and lead to the redefining or rejecting of one or more options for the solution.

The choice of the solution should be based on the relative priorities for each requirement. Depending on the complexity of the portfolio, programme or project, prioritisation techniques can vary from single to multi criteria analytical, such as:

- ranking requirements by stakeholders on one criterion
- top ten technique, where a select number of the most important requirements for a select criterion are identified and then ranked
- the Kano approach, where requirements are classified as dissatisfiers, satisfiers or delighters and prioritised with respect to acceptance by stakeholders

A common technique is the **MoSCoW** approach:

- **M**ust have
- **S**hould have
- **C**ould have
- **W**on't have

A simple or weighted priority numbering is also often used. Prioritisation indicates what to include in the solution. Low priority requirements can be descoped and high priority ones brought forward.

This prioritisation of requirements, using a backlog, is central in agile delivery for deciding what to address in each sprint or iteration, but the concept can be used for any type of deliverable.

31.6.2 Preparing to manage user needs and requirements

31.6.2.1 Overview

Managing user needs and requirements is a specialist discipline, and the approach and the form of documentation and tools used depends on the methodology chosen for the particular aspect of the work. Regardless of the method adopted, it is vital to understand the context for the work and define the management approach.

31.6.2.2 Understand the nature and context of the work

When defining and managing requirements, the context in which the work is undertaken and the solution operated needs to be understood as it has a fundamental impact on the design. A systems approach is helpful when deciding on the boundaries of solutions, especially when required to act alongside other systems (as a system of systems).

31.6.2.3 Define the user needs and requirements management framework

A requirements management framework should be defined and established which is appropriate to the outputs and work required. For most work, several methods are likely to be needed, each reflecting the customary processes for that type of work. They should, however, be organised so that the results can be consolidated for monitoring and reporting purposes (see 31.6.3 for the key activities in managing user needs).

Reporting measures can include the number of requirements verified against the plan and indicators of requirements stability, such as the number of obsolete requirements, new requirements, requirements to be defined, unchanged requirements and fulfilled requirements.

31.6.2.4 Prepare the requirements register

Central to managing requirements and the framework is the provision and maintenance of a register of user needs and requirements. The sum of all the requirements should cover all needs with respect to the solution.

For large solutions there is unlikely to be a single register but rather a hierarchy, with individual registers for specific parts of the solution. The detail held within a requirements register usually reflects the type of output and the solution delivery approach adopted.

The requirements register includes details such as:

- a unique identification code
- description of the requirements
- type of requirement
- the version of the requirement
- author of the requirement
- stability of the requirement, the likelihood of changes
- associated risks
- prioritisation of the requirement
- name of the person who owns the requirement

31.6.3 Key activities in managing user needs and requirements

31.6.3.1 Overview

The management of user needs and requirements comprises a set of continuous activities undertaken throughout the life of a programme or project. The activities are iterative and involve managing requirements in aggregate and for component parts of a solution. The activities are recursive through the solution hierarchy and are summarised in Figure 31.2.

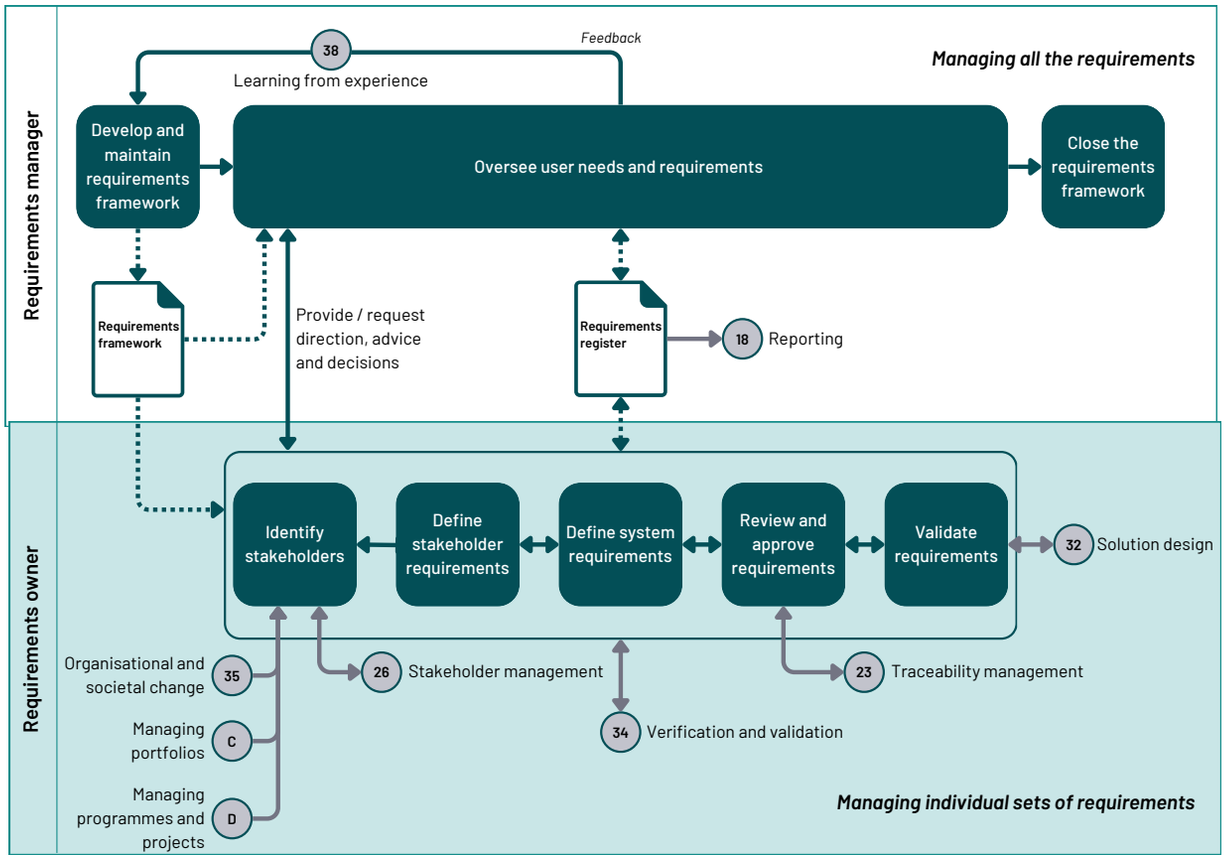


Figure 31.2 An overview of the key user needs and requirements management activities and their primary relationships

31.6.3.2 Develop and maintain the user needs and requirements management framework

The approach to managing user needs and requirements should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 31.6.2.3 on defining the users' needs and requirements management framework. The framework should be maintained to address relevant feedback from its use.

31.6.3.3 Oversee user needs and requirements

It is important to maintain an overall understanding of how the solutions requirements are being derived, managed and fulfilled. Requirements should be planned in a hierarchy and traceable to those parts of the design that fulfil them. Some requirements can be validated discretely, and others have to be validated after integration of parts or all of the solution. Once work is under way, an overall view of progress towards fulfilling requirements needs to be assessed and corrective action taken, if needed (see Chapter 17: Controlling).

The user needs and requirements management framework should be monitored to make sure it remains effective and appropriate as the work proceeds.

31.6.3.4 Identify stakeholders

The stakeholders of a solution include anyone who has a legitimate interest in the solution, ranging from those sponsoring the programme or project, to others impacted throughout the solution's life cycle. Users include not just end users (such as a train passenger or benefits applicant) but also those involved in the ongoing operation, maintenance and disposal of a solution. Some can represent themselves, but others need to be represented by a nominated individual who has their interests in mind. Ensure that a broad and diverse range of stakeholders, including those who might be opposed, is identified. See Chapter 26: Stakeholder engagement.

31.6.3.5 Define stakeholders' requirements

The initial task in defining and analysing stakeholders' requirements is to understand their needs in each life cycle phase and build scenarios (often called user journeys) of how they expect to interact with the solution. From there a definitive set of stakeholder requirements can be defined. Once the solution design is under way elaboration of the requirements is done alongside the definition of system requirements and initial solution design work (see Chapter 32: Solution design).

31.6.3.6 Define system requirements

System requirements are the foundation for the design of a solution from a technical and operational viewpoint. A range of analysis techniques and trade-offs can be applied iteratively to transform stakeholders' needs into system requirements. The system requirements specify the characteristics of a solution, attributes, functions and performance expected to meet the users' needs.

31.6.3.7 Review and approve requirements

Once a set of stakeholder and system requirements has been defined they should be reviewed and validated by the stakeholders and approved by the nominated role. Once approved they should form the 'requirements baseline' against which traceable components of the design and later validation can be undertaken. Changes to requirements require the baseline to be changed. See Chapter 22: Change control and Chapter 23: Traceability management.

31.6.3.8 Validate requirements

Once a solution or workable part of a solution has been built and its component parts verified as being compliant with the system requirements or specifications, it should undergo final validation (often called a trial). This should be in as near a real-life

environment as possible to provide objective evidence that the solution, when in use, is likely to fulfil its business objectives and the stakeholders' needs. See Chapter 34: Verification and validation.

31.6.3.9 Close the requirements management framework

Once the work has been completed and requirements management is no longer needed, the requirements management framework should be merged into the management framework for the solution or closed, and retaining information and data in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

31.7 Further reading

- Government Digital Service, *Service Standard*
- Government Digital Service, *Service manual*
- Government Digital Service, *Government design principles*
- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 005: Digital*

32. Solution design

32.1 Purpose of solution design

The purpose of solution design is to ensure outputs meet user needs and requirements and are likely to achieve the desired outcomes, realise the required benefits and provide value for money.

32.2 Key points

- Solution design should reflect the needs of all stakeholders, from the sponsoring body to the end user.
- Design within the constraints of the plan such as benefits, time, cost and risk.
- A systems approach should be taken for all but the simplest solutions, building a solution hierarchy that makes clear the components, their interfaces and specific scope.
- Validation against user needs should be undertaken throughout the design process, using techniques such as prototyping, simulation or model offices, not left until the solution is complete.
- Ensure everything is traceable to requirements and the other aspects of the plan.

32.3 Why manage the design of the solution?

Good design starts with a clear understanding of the problem or opportunity to be addressed, user needs and the environment the solution will operate in.

Solution design connects user needs and requirements (see Chapter 31: User needs and requirements) to something that can be built, delivered and operated. Without a managed approach, the gap between what is needed and what gets built tends to widen. This can lead to rework, cost overruns, or a solution that does not meet the needs it was intended to address.

Managing design also means taking a systems thinking view (see Part F: Introduction). Most government work does not exist in isolation. A new portfolio, programme, project or work package needs to work within existing organisational structures, legal and regulatory constraints, and alongside other solutions already in use. A managed solution design process makes sure these dependencies and constraints are identified and addressed, rather than discovered late.

32.4 What is solution design?

Solution design is the representation of how a strategic objective, user need, problem or opportunity can be fulfilled. It describes what a solution will comprise, such as the parts, materials, performance criteria and appearance. It involves applying various principles and patterns to ensure the solution is scalable, reliable, secure, maintainable, and aligned with the objectives of the portfolio, programme or project.

The *Project delivery glossary* defines a solution as:

> The services, products and infrastructure which are intended to fulfil the requirements for an aspect of government policy or the organisation's objectives.

A solution design can take different forms, including diagrams, flow charts, wire frame models, prototypes and interactive visualisations.

Figure 32.1 shows where the solution is in the policy-to-delivery chain, described in Chapter 23: Traceability management.

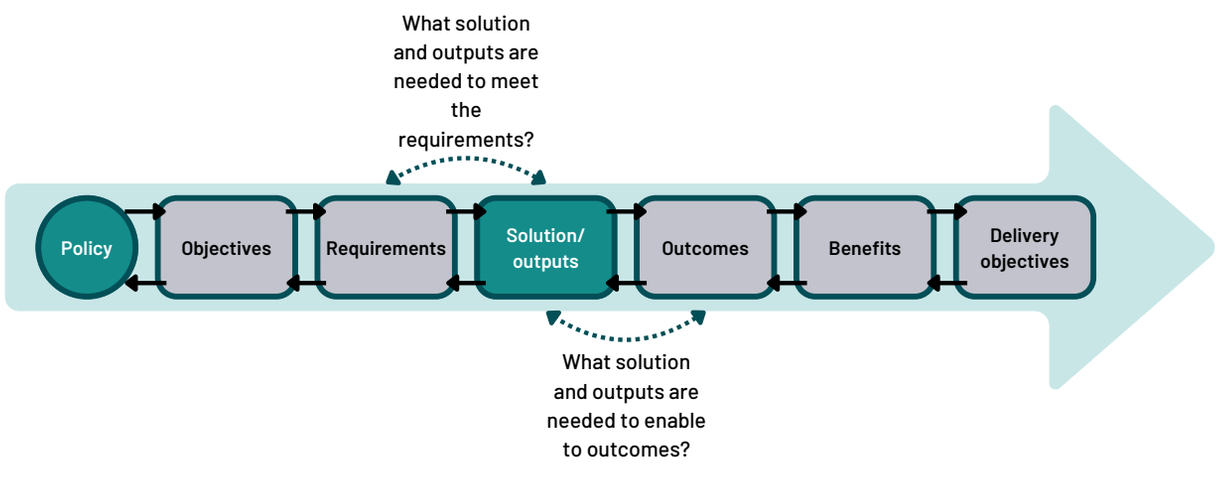


Figure 32.1 The mapping of the solution within the policy to delivery chain

A solution can be represented at different levels as a solution or system hierarchy. The top level is often referred to as a high-level design or architecture. A detailed design is necessary for each component before it can be developed or built.

Effective project delivery depends on both the quality of the design work and the management environment in which it takes place. Strong governance, planning and control cannot compensate for poor design, and good design work is unlikely to succeed without an appropriate governance and management framework around it.

32.5 Who manages the design of the solution?

People undertaking a project delivery role require at least an awareness of how the solution is designed, otherwise they cannot identify risks and issues that affect the work, nor ask the right, challenging questions.

For a programme or project, the **senior responsible owner** is accountable for ensuring a solution design framework is in place and that it is effective.

The **programme** or **project manager** is responsible for ensuring robust design processes and methods are in place and used.

A specialist **solution designer** should be responsible for defining the methods to be used and develop the design, not only to meet the user needs and requirements (see Chapter 31: User needs and requirements), but also to stay within the planning constraints set in the baselined plan (see Chapter 4: Governance and management).

Generally, a senior solution designer would be responsible for the totality of the design, with a designated **component designer** for each output or group of closely related outputs. The responsibilities normally follow the solution hierarchy (sometimes called a system hierarchy or product breakdown structure). For extensive solutions, the component designer should become the solution designer for the sub-parts of that component.

The role title for people who manage design can change, depending on the type of solution and the methodology used. Typical titles for senior designers include chief engineer, chief architect, service designer, product designer, project engineers, change architect or organisation development and design director.

For larger scale and more complex work, the design of the solution, its quality and other attributes, are often supported by a **design authority** or similar arrangement. This brings together people with the relevant expertise to make collective decisions on design, track progress and oversee the integration of the components that make up the solution.

32.6 How to manage the design of the solution

32.6.1 What to consider when designing the solution

32.6.1.1 Taking a systems approach

For all but the simplest solutions, a systems approach should be taken to designing the solution. This makes sure the needs of stakeholders, including the sponsoring organisation, are met and that all aspects of the solution work together (see Chapter 33: Solution development and integration).

The solution or system hierarchy provides clarity on the scope of each component and the interfaces between them, whether social, physical or virtual. The entire solution should be considered when investigating options, and high-level design (often called a high level target operating model, system architecture or outline design) is selected.

The high-level design can then be progressively broken down into its component parts, including those managed by suppliers, to produce a detailed design.

32.6.1.2 Being aware of enterprise architecture, regulatory and political constraints

Those designing the solution do not generally have complete freedom to define it. The design is often constrained by legal and regulatory requirements, and by constraints imposed by the sponsoring organisation and government policies.

Government policy constraints are often enacted in law but can also be implemented on a voluntary basis, for example through a code of practice with trade or professional associations, local government bodies or charities. From a systems perspective, the design of a solution should not detract from or conflict with other solutions for implementing government policy, whether in development or enacted.

Regulatory requirements exist including those for aviation, railways, building control and environment, and health and safety. Such regulations are imposed by law and must be factored into the design, build, use and disposal of every solution. Legal requirements also include social aspects such as equality and diversity, data privacy and human rights.

Constraints imposed by sponsoring organisations often include security requirements, digital architectures and the selection of technical parts, for example a digital service or building asset management. The *Government Functional Standard for Digital* requires greater sharing of data and technology across government and the pooling of resources, through shared services.

32.6.1.3 Designing for all requirements in all phases

The solution design should include the outputs needed to achieve the desired outcomes. This means the design should, depending on the need, reflect requirements relating to people, software, equipment, operations and maintenance products, manufacturing, security, information, organisation design, supply chain, performance characteristics and desired behaviours.

Different phases of the solution's life cycle often need their own designs, represented by interim operating models. The design should address not only the needs of end users but also the needs of each phase, including feasibility and integration, verification and validation, transition into use, ongoing support and maintenance, and eventual disposal.

For **feasibility and integration**, the design should support those building or developing the solution and putting its parts together. This might include the ability to build components

offsite or in a separate environment and integrate them incrementally, or to develop and implement transformation progressively (see Chapter 33: Solution development and integration).

For **verification and validation**, the design should support making sure the solution is built correctly, works as intended and serves the right needs (see Chapter 34: Verification and validation).

For **transition**, the design should support putting the solution into service, whether in full of incrementally. This could include staging environments for digital systems, such as for data migration or training, or formal trials and shadow operation (see Chapter 34: Verification and validation, Chapter 35: Management of organisational and societal change and Chapter 36: Transition into use).

For **support and maintenance**, the design should make sure end users have the capacity and responsiveness needed. For example in a new digital system or operational building, or where vehicles and machinery can be serviced within required downtime constraints (see Chapter 37: Use and disposal).

For **disposal**, the design should make sure those dismantling all or part of the solution can do so in a sustainable manner. For example, when decommissioning a nuclear facility (see Chapter 37: Use and disposal).

The high-level design is the foundation for and sets the constraints for all the above.

32.6.1.4 Choosing the appropriate design approach for the components of the solution

The methods and processes for designing solutions vary in terminology, approach and the way they are documented. Design methods are often part of an overall development methodology for a particular type of output, and can be proprietary or developed in-house.

The approaches, however, have many features in common. A programme or project manager does not need to be a specialist in design methods, but does need enough understanding to frame decisions and track and control progress on design work. The means of tracking progress should be understood and appropriate to the type of work and people involved.

The main challenge with design work, which involves being creative, is that much of it is intangible, cannot be observed and can be difficult to predict. Planning needs to take into account the uncertainty over the cost and duration of design work (see Chapter 16: Planning).

32.6.1.5 Balancing the design with requirements and risk

As the concept for a solution emerges, not every option will meet the needs and requirements to the same extent. A balance needs to be made between what can be fulfilled and the proposed design.

Different design concepts have different risk profiles, both overall and for specific parts of the design as well as for the phases of the solution life cycle where those risks are most apparent. For example, a risk could be responded to by specifying more expensive materials or additional people, or by putting in place a regime of regular inspections to verify a component continues to meet its requirements. These options have different cost implications, and each choice alters the nature of the risk being taken.

Because of this balance between user needs, requirements and design, these activities are usually iterative.

32.6.1.6 Continuing validation of the solution

Traditionally, validation against user needs has been done as part of formal trials, once the whole solution is in operation, such as in sea trials or for a new approach to social benefits.

However, validation should be carried out throughout the design of a solution, using techniques such as prototyping, simulation, virtual reality walkthroughs or model offices. This helps validate that what is proposed is likely to meet the needs before final outputs are developed or built (see Chapter 34: Verification and validation).

32.6.2 Preparing to design the solution

32.6.2.1 Overview

Solution design is a specialist discipline and the approach, documentation and tools used depend on the methodology chosen for a particular output. Regardless of the method adopted, those working in project delivery need to understand the context for the work, the management approach being used and why it was chosen.

32.6.2.2 Understand the user needs and requirements

Understanding the user needs and requirements provides the context for designing the solution. User needs and requirements include end user needs, business requirements and both functional and non-functional requirements (see Chapter 31: User needs and requirements).

32.6.2.3 Define the solution design framework

A management framework should be defined and established, which is appropriate to the solution as a whole and for each separate component of the solution (see 32.6.1.4 on choosing the appropriate design approach). For most programmes and projects, several methods are likely to be needed, each reflecting the appropriate practices for that type of work (see Chapter 10: Tailoring to the nature and context of the work).

The methods should be organised so that they can be consolidated to form the whole solution and to support monitoring and reporting. The solution design activities in 32.6.3 can be used as a basis for checking the processes and procedures being used.

32.6.2.4 Prepare for managing traceability

Preparation for designing the solution is the responsibility of the solution designers. How they are organised depends on the solution hierarchy. At a programme level, the focus should be on the high-level design and how the solution is made up of its component parts. The individual components are likely to be managed at project or work package level.

It is important to be able to trace the design work package to the plan to make sure dependencies are properly reflected and decisions are identified. There should be a management framework to manage traceability from a design component to its requirements and among groups of closely associated system components.

Without this, tracing the impact of risks, issues and subsequent changes can be time-consuming and prone to error, leading to poor and costly decisions. See Chapter 22: Change control and Chapter 23: Traceability management.

32.6.3 Key activities in managing the design of the solution

32.6.3.1 Overview

Solution design comprises a set of continuous activities undertaken throughout the life of a programme or project. The activities are influenced by the user needs and requirements and by issues identified when undertaking the work. The activities are recursive and iterative through the solution hierarchy and are summarised in Figure 32.2.

32.6.3.2 Develop and maintain the solution design framework

The approach to designing the solution and its component parts should be defined including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in section 32.6.2.3 on defining the solution design framework.

The framework should be maintained to address relevant feedback from its use.

32.6.3.3 Oversee solution design

An overall understanding of how the design work is progressing should be maintained throughout. The design of the solution should be planned in a hierarchy and traceable to the requirements. Some requirements can be validated individually, and others only after integration of closely related parts or of the full solution. Once work is underway, an overall view progress towards fulfilling requirements needs to be assessed and corrective action taken if needed (see Chapter 17: Controlling).

The solution design framework needs to be monitored to make sure it remains effective and appropriate as the work proceeds.

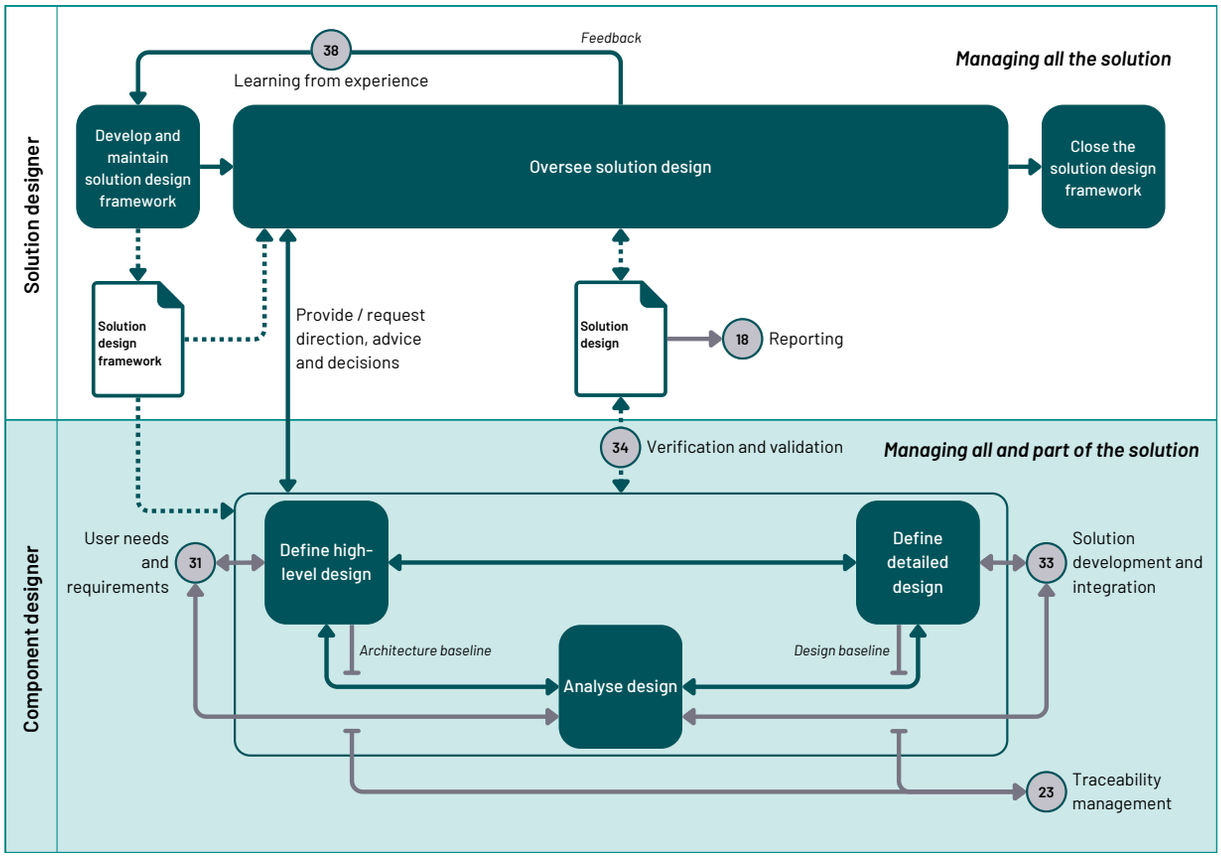


Figure 32.2 An overview of the key solution design activities and their primary relationships

32.6.3.4 Define high-level design

The team undertaking the high-level design should consider a range of options (design approaches, design concepts, or preliminary designs) that can satisfy user needs and requirements. This should take into account the availability of resources (internal and supply chain), risk, complexity and value for money. The *Government Functional Standard for Project Delivery* requires the options to be assessed in accordance with *Government Functional Standard for Analysis*. After analysis is completed, a preferred solution should be recommended for detailed design.

The *Government Functional Standard for Digital* should be complied with for digital components of the design.

The *Government Functional Standard for Property* should be complied with for buildings and facilities which are components of the design.

Once approved, the high-level design should be baselined. This is often called a high level target operating model or a system architecture baseline. Changes to the high-level design require the baseline to be changed formally (see Chapter 22: Change control and Chapter 23: Traceability management).

32.6.3.5 Analyse design

Design often requires balancing one set of needs and design solutions with alternatives (see 31.6.1.5 on balancing requirements and design). The types of analysis needed include costs analysis, affordability, risk, feasibility, operational conflicts, trade-off in requirements and evaluation of strategies such as for integration and validation. These analyses are usually quantitative and involve modelling and simulation.

The results inform the choice of architectural option, the selection of appropriate components in the solution design and which user needs and requirements can be fulfilled, whether fully or partially. The formality and rigour of the analysis depend on how important the information is and how much information is available. This activity can also be used to support any aspect of solution delivery where choices need to be justified and decisions made.

32.6.3.6 Define detailed design

While the high-level design is conceptual, the detailed design should focus on the realisation of the design in terms of components of the solution, such as process, structure, software, physical components, human operations and services. The solution should be specified in enough detail to enable its parts to be verified as compliant. There should be two-way traceability between the high-level design, design components and the plan. The form it takes is dependent on the component; for example, process flow maps for business operations, drawings for civil engineering works.

Once the detailed design has been approved, it should be baselined (often called a solution or system design baseline). Changes to the detailed design require the baseline to be changed formally (see Chapter 22: Change control and Chapter 23: Traceability management).

32.6.3.7 Close the solution design management framework

Once the programme or project has been completed and requirements management is no longer needed, the management framework should be merged into the management framework for the solution or closed. Information and data should be retained in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

32.7 Further reading

- HM Government, *Government Functional Standard GovS 002: Project Delivery*
- HM Government, *Government Functional Standard GovS 004: Property*
- HM Government, *Government Functional Standard GovS 005: Digital*
- HM Government, *Government Functional Standard GovS 010: Analysis*

33. Solution development and integration

33.1 Purpose of solution development and integration

The purpose of solution development and integration is to ensure that the designed solution is developed and built in a defined way such that the different parts of the solution work together when in use.

33.2 Key points

- Preparation for solution development and integration starts when the high-level design is defined.
- The solution's high-level design determines the development, integration, verification and validation strategies.
- Plan the resources, environments, tools and facilities to be ready when needed.
- Allow extra time for addressing problems and defects and any necessary redesign.
- Keep monitoring and measurement simple, timely and useful.

33.3 Why manage the development and integration of the solution?

No matter how creative and thorough the solution delivery team is in designing the solution to meet the user needs and requirements, unless that solution can be realised within the constraints, the desired outcomes and benefits are unlikely to be achieved.

Solution development and integration is normally when most cost is accrued so careful management of this work is needed to stay within the constraints defined in the plan and to deal with emerging risks and issues.

Attention to detail counts. Getting rail signalling or timetabling wrong can cause major delays and costs. Inadequate support for service changes can reduce employee morale. Even providing the wrong version of an instruction manual with a product can undermine confidence at best and be dangerous in the extreme.

33.4 What is solution development and integration?

'Solution development' covers a wide range of circumstances and types of output, including building infrastructure, developing digital solutions, delivering transformational change and providing military equipment.

Solution development and integration are usually the most visible aspect of solution delivery for programmes and projects which have physical outputs, such as buildings, roads and railways. Even digital services need physical components such as the hardware, servers, transmission media as well as the buildings and facilities to house them, whether in-house or contracted out. Equally, infrastructure, military and transformation solutions increasingly involve digital development and integration, which can be less visible but no less critical.

All solutions involve people. For some solutions, people are central to the development of the solution, as customers, service users or as employees involved in transformational change. Even back-office capabilities need people to service and maintain them, and require space such as offices, workshops, storage space and training facilities. All these groups of people often need communications, guidance or instruction manuals.

Solution integration is concerned with bringing these diverse outputs together to form a resilient solution that satisfies both the user needs and system requirements.

The *Project delivery glossary* defines solution integration as:

> The progressive assembling of a solution's components into the whole system.

The term 'integration' is often associated with engineering but in systems thinking it is much broader, encompassing human and environment aspects. Human aspects include training, resource capacity, skills, human factors, safety, occupational health, survivability, and habitability.

33.5 Who manages the development and integration of the solution?

For a programme or project, the **senior responsible owner** is accountable for ensuring a solution development and integration framework is in place and that it is effective.

The **programme** or **project manager** is responsible for ensuring the development and integration strategies and methods are in place, managed and used. They may not be an expert on all the types of outputs that comprise the solution. However, they should understand the language and terms used sufficiently to be able to communicate with the specialists enough to track performance. Strategies and methods should be owned, defined and used by a **solution specialist**, sometimes known as solution architect, product developer, change manager or organisational developer. The solution specialist usually works with designated component specialists, each responsible for one or more closely related outputs that comprise the parts of the solution.

Such outputs are managed in work packages, where the **work package manager** is usually a specialist in the component being worked on. The responsibilities normally follow the solution hierarchy (or system hierarchy, product breakdown structure, or in

organisation design, the future state organisation structure). The role titles for people who manage development and integration differ widely, depending on the type of output and methodology used.

For larger scale and more complex work, the development and integration of the solution, its quality and other attributes, are often supported by a **design authority** or similar arrangement. This brings together people with the relevant expertise to make collective decisions on design, track progress and oversee the integration of the components that make up the solution.

33.6 How to manage development and integration

33.6.1 What to consider when developing and integrating the solution

33.6.1.1 Monitoring the work

It is impossible for a programme or project manager to verify or even see the progress on all but the smallest of projects. In the case of digital components of a solution the outputs are often invisible. It is therefore important for the programme or project manager to come to an agreement with the development and integration specialists on how progress is to be objectively measured. This should include data for work that has been completed and forecasts for work yet to be completed.

Where work is undertaken by a supplier, the contract should include clauses requiring the provision of such data (see Chapter 25: Procurement and contract management). All data collected should serve a useful purpose and inform understanding of how work is proceeding. The best measures require minimal effort to collect, preferably as a part of doing the work, and should also be easily understood.

33.6.1.2 Agreeing the integration strategy

A solution specialist should develop an integration strategy, defining the approach to sequencing delivery and bringing together the various parts of the solution, including any special facilities or temporary environments required.

Managing integration should focus on the static and dynamic interfaces between parts of the solution, whether physical, digital or human. For example, a moving train must fit in a tunnel alongside the signalling and control equipment; digital systems need to pass data over reliable interfaces; and people need to communicate with each other and use the equipment.

Integration is closely associated with verification and validation (see Chapter 34: Verification and validation). Each time parts of a solution are joined up, the correctness of the interface needs to be verified and its functions validated. The integration strategy and verification and validation strategies should therefore be designed to work together.

The integration strategy should take account of:

- the way the high-level solution has been defined
- the delivery dates of the various parts of the solution
- the availability of people required to sustain those parts once in place
- the level of problems, defects and issues likely to be encountered, and time needed to address them

The people, tools, environments and facilities required to perform integration should be planned and designed in advance, when the high-level design of the solution is undertaken. Planning the integration of groups of closely related parts, sometimes called integration aggregates, can lead to the early identification of problems. Table 33.1 includes some commonly used integration strategies.

Table 33.1 Examples of integration strategies

Strategy	Commentary
Global integration	Also known as 'big bang'. Integration is done in a single step, without any simulation of unavailable or higher risk parts of the solution. This increases risk, because problems are not detected until the end. Consequently, the impact of failure is usually greater and detecting root causes is more difficult. This strategy is reserved only for simpler, low risk solutions or situations where circumstances make it unavoidable.
With the stream	Parts of the solution are integrated as they become available, so integration starts sooner, but simulators are needed to emulate missing parts of the solution. It is often impossible to control the end-to-end functionality, however, so this is better reserved for controlled solutions with low technological risks.
Incremental	Parts of the solution are added incrementally, in a predefined order. Fault detection is usually localised in recently integrated parts. Simulators are used for missing parts. This is appropriate for any type of high-level design or architecture.
Subsets	Parts are integrated into subsets (aggregates) which are then integrated into the whole. This strategy enables simultaneous integration, early fault detection and partial delivery of a solution. The subsets are usually based on the solution's sub-systems.
Criteria driven	The most critical or risky parts of the solution are verified and integrated first, allowing time for design changes if needed.

33.6.1.3 Maintaining traceability

Traceability links every part of the solution back to the requirements and user needs that drove it. Maintaining two-way traceability from plan to work package, to design, to requirement, and to the individual parts of the solution, means the impact of any change request can be assessed efficiently and with confidence (see Chapter 23: Traceability management).

A change to a user need can have a significant effect on the plan, the design, including the build of the resultant outputs, the outcomes and benefits realised. Similarly, if it is found that a part of the solution cannot be built to the required specification, it is important to know which user needs or requirements are not being met and the impact that has on the viability of the overall programme or project.

33.6.1.4 Continuing verification and validation

Verification and validation should be undertaken throughout the development of a solution so that the quality and function of outputs can be assessed as each part of the solution is built (see Chapter 34: Verification and validation).

33.6.2 Preparing to develop and integrate the solution

33.6.2.1 Overview

Solution development and integration is a specialist discipline. The approach, documentation and tools used depend on the output being worked on. Regardless of what approach is adopted, people working in project delivery need to understand the context for the work so they can define and agree the management approaches to be used with those designing, developing and integrating the solution.

33.6.2.2 Start with the high-level design

Preparation for development and integration starts when the high-level design is defined (see Chapter 32: Solution design). Part of high-level design is ensuring the solution accounts for how the solution will be delivered, not just what it will look like when complete. User and system requirements should therefore reflect the strategies for development and integration, including logistics and resourcing. Defining the high-level design and the associated requirements is usually an iterative process.

33.6.2.3 Make sure your strategies are robust

The strategies for development and integration should be defined alongside those for verification and validation, which often require specialist resources, tools and facilities. Such strategies should be fully challenged, for example by panels of experts or peer review.

33.6.2.4 Make sure the management information systems are adequate

Management information systems for tracking risks, issues, change control and traceability should be established before development work starts, as should information systems for tracking verification and validation (see Chapter 24: Information and data management).

When development work starts, the measures and tools for tracking and reporting progress are likely to need updating to accommodate new types of work. In technology and engineering work, specialist systems are often needed to track the identification and resolution of defects found as a result of verification failures. Such systems are important throughout the life cycle of the work, and are particularly important during delivery before its transition into use.

33.6.3 Key activities in managing solution development and integration

33.6.3.1 Overview

Solution development and integration comprises a set of continuous activities undertaken during the life of a programme or project. The activities are iterative, influenced by the emerging risks and issues identified when undertaking the work, with similar activities repeated through the solution hierarchy, as summarised in Figure 33.1.

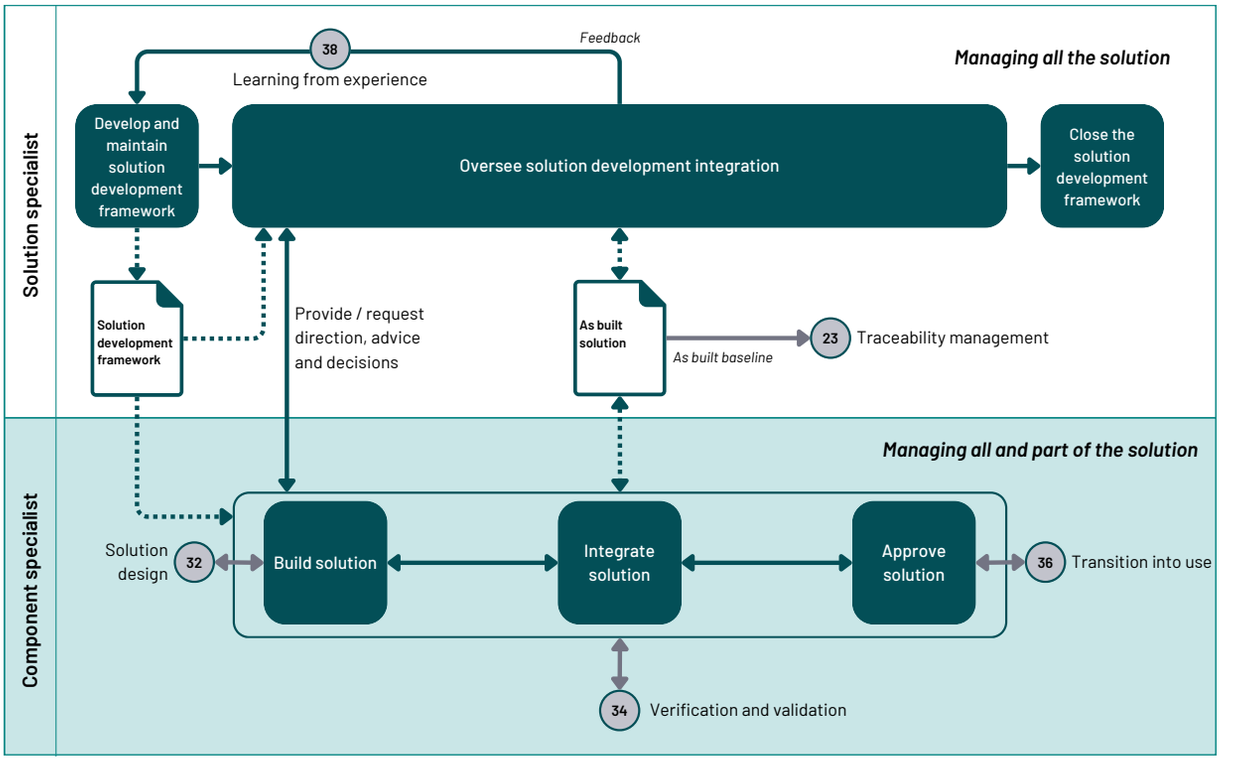


Figure 33.1 An overview of the key solution development and integration activities and their primary relationships

33.6.3.2 Develop and maintain the solution development and integration management framework

The approach to developing and integrating the solution and its parts should be defined, including any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in 33.6.2. The framework should be maintained to address relevant feedback from its use.

33.6.3.3 Oversee solution development and integration

An overall understanding of how development and integration work is progressing and what the prevailing risks are (see Chapter 20: Risk management). Problems and defects identified during the work should be investigated to see if there is any pattern or underlying cause, which should be addressed (see Chapter 21: Issue management).

The solution development and integration management framework should be monitored to make sure it remains effective and appropriate as the work proceeds.

33.6.3.4 Build solution

The progress of development or build of each part of the solution should be tracked, and problems or defects should be detected and rectified (see Chapter 17: Controlling and Chapter 21: Issue management). Outputs should be verified for compliance with specifications and validated for functionality as determined in the delivery plan. If problems and defects cannot be rectified within the current specification, those parts of the solution may need redesigning or the requirements amending (see Chapter 22: Change control).

33.6.3.5 Integrate solution

The integration of each part of the solution should be tracked, and problems and defects should be detected and addressed (see Chapter 17: Controlling and Chapter 21: Issue management). Interfaces should be verified for compliance with the specifications and validated for functionality as determined in the plan.

33.6.3.6 Approve solution

Once the development and integration work is complete it is normal practice for the solution to be formally accepted by the ongoing owner. This can be in total or incremental as each useable part is available. Depending on the circumstances such approval can be before, during or after the transition of the solution into operational use.

33.6.3.7 Close the solution development and integration management framework

Once work has been completed, the management framework should be either merged into the management framework for the solution or closed. Information and data should be retained in accordance with the solution owner's information retention policy (see Chapter 24: Data and information management).

34. Verification and validation

34.1 Purpose of verification and validation

The purpose of verification is to check the correctness of a solution, or part of a solution, to confirm that it complies with the specified design. Verification should be aimed at detecting problems, faults or failures.

The purpose of validation is to ensure the right problem is being addressed and the solution (or part of a solution) is likely to fulfil the user needs when operating in its intended environment. Validation should be aimed at demonstrating user and stakeholder satisfaction.

34.2 Key points

- Start verification and validation early; the later problems are identified, the more costly they are to resolve.
- Involve users and stakeholders in validation where their consent is needed for achieving the desired outcomes.
- Finalise the verification and validation strategies alongside the high-level design.
- The people designing the solution should be involved when developing the verification and validation strategies and planning the activities.
- Set limits on time and cost to stop costs running away and the schedule slipping.

34.3 Why manage verification and validation?

Verification and validation provide the evidence base for confident decision-making throughout work. They demonstrate that outputs comply with specifications, that the solution satisfies policy or business objectives, and that user and stakeholder needs are being met. They also provide the basis for supplier payment and give confidence that what has been built performs a useful purpose.

Well thought-through verification and validation strategies can lead to significant savings without compromising the quality of the outputs or their utility. Achieving the balance between the cost and extent of verification and validation comes down to risk. For example, considering the risk and impact of a solution failure in operations, or of a clunky solution which people then are reluctant to adopt.

Good discipline in the choice and use of methods for determining user needs and requirements, solution design, development and integration can drastically reduce the number of faults or problems detected and therefore the cost of verification and validation. In other words, quality assurance tends to have greater effect on quality than quality control (see Chapter 30: Quality management).

34.4 What is verification and validation?

The *Project delivery glossary* defines verification as:

> An activity that ensures that a solution (or part of) is complete, accurate, reliable and matches its design specification.

The *Project delivery glossary* defines validation as:

> An activity that ensures a solution (or part of) meets the needs of the business. Validation ensures that business requirements are met even though these might have changed since the original design.

Traditionally, verification and validation are thought of as being done towards the end of development, such as when the outputs are tested and accepted, or once the whole solution is built, for example, operating on a trial or shadow basis before it goes into full operation. However, verification and validation can, and should, be undertaken throughout requirements-gathering and the design and build of a solution so that:

- the user needs and requirements reflect what is truly wanted
- the solution meets the government's policy objectives and/or the sponsoring organisation's strategic objectives
- the different solution options can be assessed robustly in terms of their quality and utility
- the component parts of the solution can be proved as compliant prior to integration into the whole solution
- the materials used in physical outputs can be proved fit for purpose
- the interfaces among the different parts of the solution can be proved to be effective

Verification and validation should be iterative and should evolve in line with the solution as work progresses.

34.5 Who manages verification and validation?

People undertaking a project delivery role require at least an awareness in verification and validation and of its implications for their own role, in particular.

For a programme or project, the **senior responsible owner** is accountable for ensuring a verification and validation management framework is in place and that it is effective.

The **programme or project manager** is responsible for ensuring the verification and validation strategies and methods are being managed and used.

The verification and validation strategies and methods should be defined and owned by a **solution specialist** working with a designated **component specialist** for each output or group of closely-related outputs. The responsibilities normally follow the solution hierarchy (sometimes called a system hierarchy or product breakdown structure). The role titles for people who manage verification and validation differ widely, depending on the type of output and methodology used.

For the programme or project manager to fulfil their responsibilities, they need to have access to verification and validation records and to understand the implication the results have on the completion of the work and the likelihood of achieving the objectives. The **senior responsible owner** is accountable for the programme or project achieving its objectives at an acceptable level of risk and therefore needs to be kept updated on issues that could threaten the achievement of those objectives.

34.6 How to manage verification and validation

34.6.1 What to consider in verification and validation

34.6.1.1 Involving the users and stakeholders

Careful consideration should be given to ensuring that users and stakeholders are engaged in verification and validation activities where their opinions have a direct impact on the utility of the solution. In many cases it is not possible to engage all users and stakeholders and so representatives often need to be selected. Users and stakeholders should have been engaged in determining the user needs and requirements and so it is appropriate that they are satisfied these needs have been appropriately interpreted and met. Some development approaches have user involvement built into their methodologies (such as some agile approaches) but other approaches need specific activities planned for the work.

34.6.1.2 Monitoring the work and maintaining records

Each chapter of Part F: Solution delivery emphasises the need to have measures to monitor the progress of the work. Verification and validation measures are a vital part of that monitoring. Even if the schedule and spend profiles of the plan look to be on target,

the level of problems or defects detected could indicate that the plan is either not realistic or the current rate of progress is unlikely to persist. There are likely to be many techniques used for monitoring verification and validation, and the programme or project manager needs to collate the results from these into a holistic view of the overall status and to help identify problematic areas.

34.6.1.3 Choosing the right techniques

The techniques which can be used for verification and validation are the same, although the purposes are very different. A common verification technique is testing for functionality, but this can be too expensive, inappropriate or not always feasible for all deliverables and outputs. Other techniques are sampling (for example, when concrete cube samples are taken to verify the concrete is strong enough in a construction project) or demonstration (such as trials for a new marine vessel or aircraft). In service transformation, user-based verification and validation are usually used before wider operational trials. Many of the techniques can be used early in the life cycle well before the solution or any part of it, has been built, often on digital simulations. In iterative or agile work, verification and validation is carried out on an ongoing basis as an integral part of development. Table 34.1 shows some examples of verification and validation techniques.

Testing is most common in digital delivery where specific tests serve to verify a particular requirement has been met. These can be automated or manual. For example:

- functional tests verify the solution does what it is designed to do
- user acceptance tests validate the user need has been met
- penetration testing for security
- performance testing for response time and stress testing for capacity

34.6.1.4 Applying verification across the life cycle

Verification can, and should, be applied to any aspect of the management of the programme or project, to verify the management documentation or the delivery of the solution to make sure it is designed and/or built correctly. The earlier errors are detected, the easier they are to rectify. For example, a poorly drafted or ambiguous user requirement which is not discovered until the whole solution is being accepted, could lead to the wrong solution being built. Table 34.2 includes some examples.

Table 34.1 Examples of verification and validation techniques

Technique	Verification To show compliance with the specification and detect errors	Validation To prove stakeholder satisfaction regarding operational capability
Inspection	Examination of a component relying on the human senses or simple methods of measurement and handling. Inspection is generally non-destructive, and typically includes the use of sight, hearing, smell, touch, and taste, simple physical manipulation, measurement and, where necessary, mechanical and electrical gauging. No tests are necessary.	
Analysis	Based on analytical evidence using mathematical or probabilistic calculation, and/or logical reasoning to show theoretical compliance.	
Simulation	Performed on models or mock ups for verifying features and performance. Can be physical (for example, 'model office' environments, or digital, with the latter used increasingly in the form of 'digital twin' and virtual simulation in infrastructure, operational and service delivery settings.	
Analogy	Based on evidence of similar components to the submitted component or on experience feedback. Analogy should only be used if the submitted component is similar in design, manufacture and use; more stringent verification criteria were used previously; and the intended operational environment is the same or less rigorous than the similar component.	
Demonstration	Demonstration (or operational / field testing) of the correct operation of the submitted component against operational and observable characteristics without, or with minimal, test equipment). It generally consists of a set of tests to show that the component is fit for its purpose or to show that people can perform their work as part of or when using the component.	
Test	Performed to confirm functional, measurable characteristics, operability, supportability, or performance capability is satisfactory when subjected to controlled conditions that are real or simulated. Testing often uses special test equipment or instrumentation to obtain accurate quantitative data to be analysed.	
Sampling	Technique based on verification of characteristics using a representative sample. The number, tolerance and other characteristics should be specified to reflect to population the sample represents.	

Table 34.2 Examples of applying verification

Application	Purpose
Management deliverable	To make sure the deliverable conforms to its product description
Stakeholder or user requirement	To make sure the syntax and grammatical rules are followed and that the description is unambiguous, consistent, complete, feasible, traceable and verifiable
Solution architecture	To check that the chosen modelling techniques or methods have been applied and used, consistently and correctly
Solution component	To check the chosen design principles, models, constraints and technologies have been applied and used, consistently and correctly
Solution	To check that the solution's actual characteristics meet the specified requirements as described in the requirements and design documents

34.6.1.5 Applying validation across the life cycle

Validation can, and should, be applied to any aspect of the management of the delivery of the solution to ensure that it is usable and works in an operational setting. Decisions to validate should be based on predefined acceptance criteria.

There is little point in a solution complying with the design specifications if what has been designed does not meet the users and stakeholders' needs or if it does not work in its proposed environment. Similarly, there is little point in a plan which is 'right' in terms of content but does not lead to the achievement of the objectives. Table 34.3 includes some examples.

The involvement of users in validation is important and often built into delivery approaches, such as in agile delivery. Commonly used approaches include user acceptance testing, operational acceptance testing, operational trials and pilots.

Table 34.3 Examples of applying validation

Application	Purpose
Management deliverable	To make sure the deliverable meets the needs of those using it for management oversight, supervision and decision-making
System requirement or specification	To make sure the description of the requirement is justified and relevant to the users' and other stakeholders' needs or expectations
Design document	To make sure the content is justified and relevant to the user's and other stakeholders' needs or expectations and contributes to achieving the business objectives and the operational scenarios
Solution	To demonstrate that the product, service or enterprise satisfies its user and other stakeholder requirements, business objectives and operational scenarios

34.6.2 Preparing for verification and validation

34.6.2.1 Overview

Verification and validation are specialist disciplines and the approach, documentation and tools used depend on the approach chosen for each output. Regardless of the approach adopted, it is vital for project delivery practitioners to understand the context for the work so they can define and agree the management approaches to be used with those designing, developing and integrating the solution.

34.6.2.2 Make sure strategies are robust

The strategies of verification and validation, like that for integration (see Chapter 33: Solution development and integration), are set when the high-level design of the solution is chosen. Once agreed, the high-level design is the major constraint on managing any future issues or defects. These strategies should be reflected in the detailed plan for the work (see Chapter 16: Planning). Care should be taken to assess all these strategies to make sure they are consistent and cover all the phases of the solution's life cycle, paying particular attention to the:

- timing of the delivery of solution components: will they be in time? What is the impact if late?
- transition arrangements, especially what needs to be in place before they can happen
- timing of outputs, and associated operational, organisational or societal changes

- time taken and availability of verification and validation resources
- allowance for rework in case of defects, problems or validation failures

34.6.2.3 Prepare the management information systems

Management information systems, whether automated or manual, should be set up to track the results of the planned verification and validation activities. Specialist applications are usually used for specific types of output but the results need to be able to be pulled together to gain an overview of how well work is proceeding at a programme or project level. Overall reporting should be designed to track the results in real time as part of doing the work, or they risk being seen as an administrative burden and fall into disuse (see Chapter 18: Reporting).

34.6.3 Key activities in verification and validation

34.6.3.1 Overview

Verification and validation comprise a set of similar activities undertaken throughout the life of a programme or project which are repeated through the solution hierarchy. The activities are summarised in Figure 34.1.

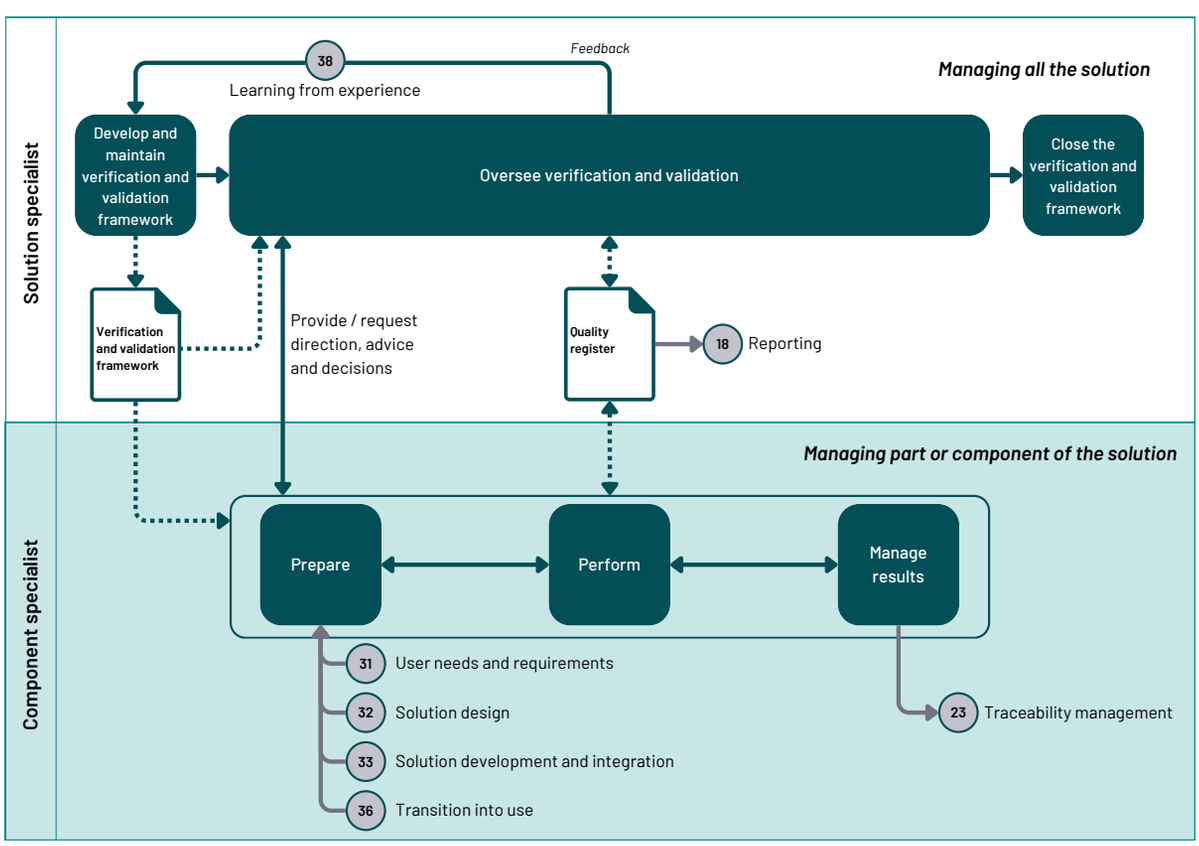


Figure 34.1 An overview of the key verification and validation activities and their primary relationships

34.6.3.2 Develop and maintain the verification and validation management framework

The approach to verification and validation should be defined including any processes, methods, tools and techniques to be used. This forms part of the quality management framework (see 30.6 on how to manage quality) and the overall governance and management framework for the work (see Chapter 4: Governance and management). The important aspects of this activity are discussed in more detail in section 34.6.2 preparing for verification and validation. The framework should be maintained to address relevant feedback from its use.

34.6.3.3 Oversee verification and validation

It is essential to maintain an overall understanding of how development and integration work is progressing and what the prevailing risks are. Defects and problems identified during the work should be investigated to see if there is any pattern or underlying cause. The progress against plan, resources used, and overall results should be analysed to assess the likelihood of achieving the objectives of the programme or project.

The management framework for verification and validation should be monitored to make sure it remains effective and appropriate as the work proceeds.

34.6.3.4 Prepare for verification and validation

The main activities are described in 34.6.2 preparing for verification and validation. Those for management deliverables, user needs and requirements should start at the beginning of the programme or project. Those relating to the delivery of the solution should sit alongside the high-level design.

34.6.3.5 Perform verification and validation

Finalise and agree the detailed plans and techniques to be used before verification and validation itself starts. This should include actions to be taken and expected results. Acquire the necessary resources. Perform the actions in accordance with the plan and record the results as either compliant or not compliant.

34.6.3.6 Manage the results of verification and validation

Analyse the results comparing the actual to expected outcome. Take necessary action to resolve non-compliant results, which can mean reworking to resolve defects or changes to the design or even requirements (see Chapter 17: Controlling). Coordinate with the designers to make sure that any resultant actions are fully defined, and plans amended accordingly.

34.6.3.7 Close the verification and validation management framework

Once the programme or project has been completed, the management framework should be either merged into the management framework for the solution or closed, retaining information and data in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

35. Management of organisational and societal change

35.1 Purpose of managing change

The purpose of managing change is to prepare, equip and support organisations and individuals (for example, users, employees, citizens) in adopting the new solutions, practices and/or behaviours needed to implement government policies and/or organisational objectives.

35.2 Key points

- Change requires a vision, a compelling reason and careful planning that takes human behaviour into account from the outset.
- Ensure the scope and outcomes envisaged for the work are sufficiently understood and defined.
- Consider the changes needed when planning the work and designing the solution.
- People need supporting if they are to engage with the changes.
- Resistance to change should be acknowledged and addressed to avoid hindering the realisation of benefits.

35.3 Why manage change?

The implementation of government policy and organisational strategy usually requires people, whether the public or public sector employees, to adapt their behaviours and practices.

The changes can be minor, such as modifying procedures within a government department or they can be far-reaching, such as moving public services online, changing use of different modes of transport or adapting home heating and energy consumption to support net zero targets.

No matter the scale of the change or the technology, processes or services that are put in place, unless people's behaviours, attitudes and needs are addressed in a planned and managed way, the desired changes, and hence outcomes and benefits, are unlikely to be achieved.

By managing organisational and societal change people can be supported in using the outputs as intended, and working or living differently so the desired outcomes and benefits

envisioned in the policy or objectives can be achieved in reality. Without change, there can be no benefits, but when change management is done well, it can result in benefits being realised sooner.

35.4 What is the management of change?

Managing change involves planning and embedding the changes needed to deliver the desired outcomes. It focuses on cultivating the behaviours needed if policy and organisational objectives are to be achieved, bridging the gap between delivering outputs of the solution and delivering outcomes, as shown in Figure 35.1. This linkage forms part of benefits mapping (see Chapter 19: Benefits management).

Outputs can be new tools and systems, such as digital services tax or social security, or enabling outputs such as education or communications programmes.

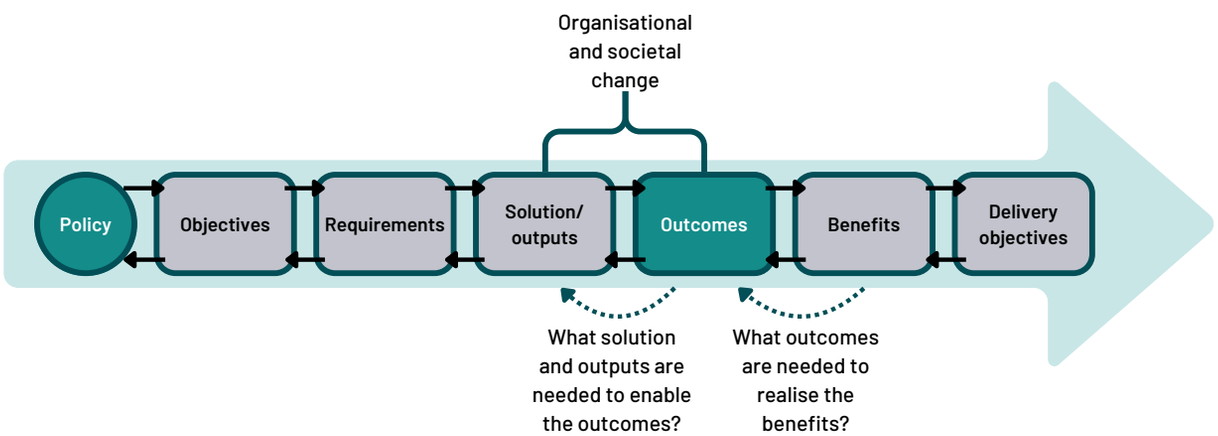


Figure 35.1 Organisational and societal change bridges the gap between delivering outputs and delivering outcomes

People often resist change because of uncertainty, competing priorities, workload concerns or doubts about the skills, knowledge and experience needed. Feeling a lack of control is also a factor.

The approach to managing change should account for this by:

- developing a compelling vision
- assessing impact on individuals, groups, organisation and society
- planning the necessary changes carefully and assessing readiness for change
- delivering and embedding changes well
- validating that the outcomes achieved are the ones intended

This requires a systematic approach as part of the wider governance and management framework for the programme or project, working directly with:

- stakeholder engagement, to assess the attitudes and influence of the target groups (see Chapter 26: Stakeholder engagement)
- communications, to provide information to the target groups (see Chapter 27: Communications)
- validation, to make sure that what is being put in place meets the stakeholders' needs (see Chapter 34: Validation and verification)
- transition into use, which focuses on the outputs needed as part of the change (see Chapter 36: Transition into use)
- use and disposal, to understand how the solution is being used and the need for any further changes (see Chapter 37: Use and disposal)
- learning from experience, to adjust the approach in future work (see Chapter 38: Learning from experience)

35.5 Who manages change?

People undertaking a project delivery role require at least an awareness of planning and managing change, to ensure that it is applied in the right context, using specialists where appropriate. Accountability and responsibility for change management should be defined within the governance and management framework and reviewed on a regular basis, to avoid duplication or gaps. Typically, accountability follows the hierarchy in the work breakdown structure.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for change management and is the ultimate driver of the changes.

The **portfolio or programme or project manager**, as appropriate, is accountable for developing and managing the change management framework, including its processes, tools and techniques.

Depending on the scale and complexity of the work, the programme or project manager could be supported by a **specialist change manager** with the responsibility for managing change and either acting as a team member or acting as the manager of those work packages focused on change management activities. If a dedicated change manager is not necessary, the portfolio, programme or project manager, as appropriate, should undertake the role, if they have the necessary skills and experience.

Individual or closely related changes can be assigned by the change manager to a **change owner**, who is a named individual responsible for planning and embedding a change or

a specific aspect of a change. A change owner needs to be someone who can manage a change either due to their position, authority or knowledge and experience. As a change can evolve as more information becomes available, the ownership can be reassigned to a more appropriate person if necessary. The change owner can be supported by people assisting in managing changes and by change agents.

A **change agent** is someone who drives and supports the required changes from within an organisation or community. They act as a catalyst, helping people move from the existing way of doing things to the new way. Typically, they provide the change owner with the 'local' viewpoint, motivating and providing support to those who are subject to the change, monitoring progress, addressing concerns, dealing with resistance and helping to embed the change.

More detail on the business change and implementation competency and how this relates to each project delivery role can be found in the *Project delivery capability framework*.

35.6 How to manage change?

35.6.1 What to consider when managing organisational and societal change

35.6.1.1 Developing a shared vision and case for change

A clear vision of the future and a compelling case for change helps to create a positive momentum counter resistance. Both should be considered as part of policy formulation and are important in gaining support, facilitating delivery and embedding changes.

A vision should create a positive picture of the future for the people involved in or impacted by the change. It should address a specific challenge or problem that can be understood across all target groups and relate back to the drivers for change. Where the vision spans a group of changes, for example in a portfolio, it should explain the key components and how they work together to create the desired outcome overall.

The case for change is a clear explanation of why the change is needed, why it needs to happen now, and what the benefits are for those affected. It draws on the vision and the evidence in the business case to make the argument for change in a way that is meaningful for different groups.

A well-constructed case for change can motivate both the project delivery team and those people affected by the change. It needs to be consistent but can be tailored to the different needs and potential concerns of different groups. It should be positive and provide both the emotional and logical reasons for the change, focused on winning both hearts and minds, and support the policy, organisational or portfolio strategy, or business case.

35.6.1.2 Integrating the changes with the solution

The changes required, and how to make those changes, need to be defined as part of articulating the user needs and requirements (see Chapter 31: User need and requirements) and in designing the solution (see Chapter 32: Solution design). This often means developing and appraising a range of options and determining the approach which best suits the needs, circumstances and levels of risk.

For example, should the changes be phased over a period of time or delivered in a single event, or can they be delivered on a progressive or regional basis? Some options might require special facilities or capabilities to be in place, such as training facilities, or might need pilots or trials to validate the solution.

35.6.1.3 Engaging and communicating with stakeholders to embed and sustain changes

Stakeholder engagement and communications play an important part in managing change, as shown in Figure 35.2 and addressed further in Chapter 26: Stakeholder engagement and Chapter 27: Communications.

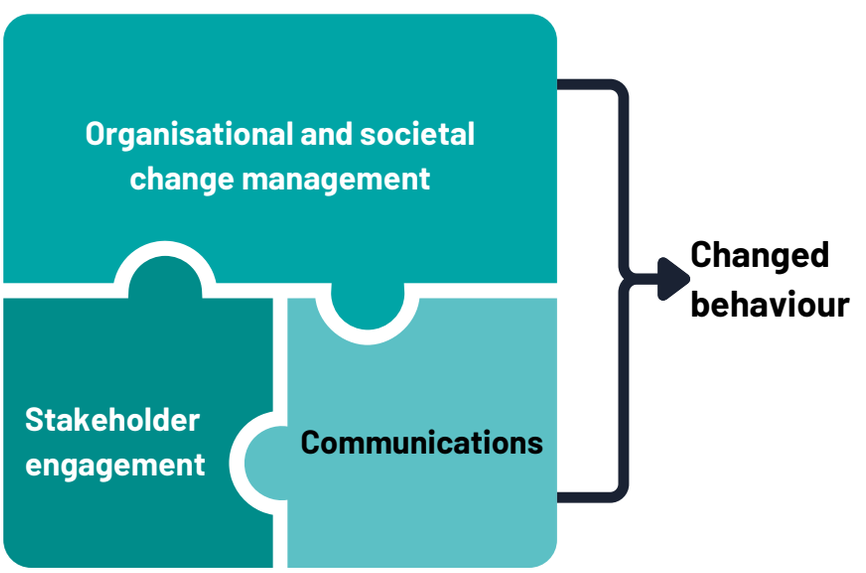


Figure 35.2 Stakeholder engagement and communications are a central aspect of the management of the work

Engaging with stakeholders who perceive themselves to be affected by the undertaking of the work itself, or by the outcomes that result, is necessary for change to be managed effectively. This includes thinking about the media and pressure and special interest groups who take on causes on behalf of others. A change plan cannot be developed without understanding the attitudes, influence and likely reactions of different stakeholders and groups, as set out in Chapter 26: Stakeholder engagement.

Stakeholders can be categorised as:

- resistant to, in denial of, exploring, or champions of the change
- influential observers, spectators, key players, or active players
- allies or partners, neutrals, opponents or adversaries
- those who need to be kept satisfied, managed closely, monitored or kept informed

Each category can prompt a different approach to engaging the target groups. For example, people tend to be hostile to change where practices or behaviours have been established for a long time.

With social or widespread organisational change, it is often not possible to engage everyone individually. User groups, community leaders, surveys and other mechanisms are needed to understand the stakeholder landscape. This can mean skilled analysts might be needed, such as from the social research, economics, statistics, finance and operational research professions.

The stakeholder engagement techniques in Chapter 26: Stakeholder engagement can be supplemented by various specialist change management techniques. For example:

- visualisation techniques to represent the future state of the organisation or society, showing the benefits and complexities of the change
- user journeys to show the future state processes and how the proposed changes are designed to reduce pain points
- value propositions can be used for different target groups
- user stories can explain why changes are necessary based on past successes and failures

Communications are an important part of informing and influencing a target group about a change and their part in it. It provides more detail on planning, messaging, media, timing and feedback loops. For large-scale change, specialist communications professionals should be used, including to monitor effectiveness. Poor communications can undermine change management in even the best-intended work.

35.6.1.4 Developing trust with target groups

Trust with target groups affects their readiness for change. Where true trust exists, people are more likely to engage with and adapt to the changes earlier. Where trust is lacking, resistance is more likely and the change process takes longer.

The stakeholder engagement techniques in Chapter 26: Stakeholder engagement apply directly to building trust with target groups. In the context of change management,

particular attention should be given to being transparent about what is not yet known, providing a degree of choice in how changes are made where possible, and ensuring that the target groups can see that their views have influenced decisions. The more complex and uncertain the change, the more important this is.

35.6.1.5 Working transition and change management together

Organisational and societal change management, and transition into use, are closely linked and should be planned and managed together (see Figure 35.3 and Chapter 36: Transition into use).

The areas are interdependent. In many cases the outputs required by the change team are provided by the transition team, such as operating manuals, and those required by the transition team are managed by the change team, such as an education programme.

Different skills are needed for the different types of work, and it is for the portfolio, programme or project manager to bring together an appropriate multi-disciplinary team to plan and undertake the work, with each member providing their expertise, whether for managing change or the transition.

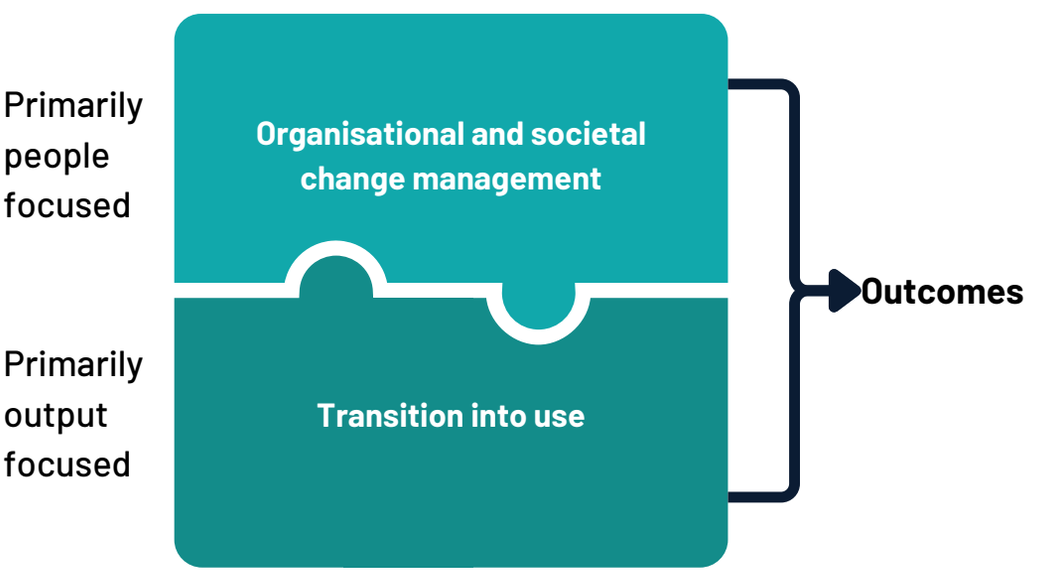


Figure 35.3 Organisational and societal change and transition should be managed together

35.6.1.6 Understanding the capacity and capability for change

Different people and organisations have different capacities and capabilities when it comes to change and adopt or adapt to change at different rates.

Whether an organisation or individual can absorb a change depends on context. Someone working in a high-risk operational environment, for example, is less likely to embrace

potentially disruptive change than someone working in a highly agile environment where innovation is the norm.

The volume of change in a specific time period is also a factor, sometimes known as change saturation. Too much change at once can be overwhelming, no matter how well each change is planned.

In approaching change, consider:

- whether there is enough resource to plan and implement the changes (see Chapter 28: Resource management)
- whether the target group has the capacity, skills and knowledge to take on the change
- what the cumulative impact of the changes will be for groups and individuals, for example, time needed for training or the effect of system down time on operations

To support the capacity for change, it may be necessary to schedule changes to avoid busy operational periods, agree a 'change freeze' for certain periods or build stabilisation periods into implementation. This gives the target groups space to absorb the current changes and allows the impact to be understood.

35.6.1.7 Assessing the readiness for change(s) throughout the life cycle

Change adoption normally follows a curve. Some people adopt changes enthusiastically, most follow more gradually, and some avoid the changes for as long as possible. This pattern of responses should be considered as part of planning.

The readiness of a target group to take on a change should be assessed throughout the life cycle, usually known as a change readiness assessment. The final assessment should take place just before the release of the outputs or capabilities for use, or before any major communications or education programme starts.

Ongoing assessments provide confidence that changes can be started or indicate that additional work is needed to address concerns about readiness and support, or to make changes to organisational arrangements or wider operating environment.

Careful planning is needed if the change is supported by legislation where the new approach, regulation or law comes into effect on a specific date and transition arrangements from the existing legal framework to a new one need to be planned for.

35.6.1.8 Reducing time to benefits realisation

Delivering some changes and outcomes quickly can highlight visible, early successes that can boost confidence in the work being done and its objectives. This could mean delivering a usable part of the change that has some use, often called a minimum viable product. Early deliveries can help build momentum, making it easier to overcome resistance, as

well as helping validate assumptions, refine the vision and case for change, and support learning from experience.

Care should be taken to make sure focus is not lost on the main objectives and that early deliveries meet the stakeholder needs in practice. This should be considered in the delivery strategy and solution design, particularly when considering phased or incremental delivery. Even if initial changes fail, such efforts can support the development of trust (see 35.6.1.4 on developing trust with target groups) and provide valuable learning for change readiness in the future.

35.6.2 Preparing to manage change

35.6.2.1 Understand the wider governance and management framework

The wider governance and management framework for the portfolio, programme or project, and the sponsoring and delivery bodies, should be reviewed early to identify where change management processes interface with other practices. This helps avoid duplication and ensures change management activity is coordinated with the wider planning, control and solution delivery practices.

The scale and complexity of the changes, and the level of impact on groups and individuals affected should determine the extent of change management activity. This is often underestimated. The greater the impact, the more planning and management is needed to prepare people for the change.

35.6.2.2 Understand the context and nature of the work needed

An early view of the context and nature of the work, including its expected objectives and outputs, complexity and scale and the interdependencies with other programmes, projects and work, helps determine the type and scale of change activity likely to be needed. This should be established from the start to help ensure that the appropriate outcomes and benefits are realised.

35.6.2.3 Decide the change approach

Once the context, nature, scale and complexity of the work are known, an appropriate change model or approach can be chosen.

Policy development should be underpinned by a theory of change. A theory of change sets out how the intervention is expected to work, the assumptions made, the evidence supporting them, and the wider contextual factors that could affect the outcome.

See Chapter 2: Policy and evaluation for more on the theory of change.

Change models and approaches fall largely into 2 general categories:

- **psychological**, how people act in different circumstances, for example social cognitive theory, theory of planned behaviour and psychological contracts
- **engineered**, measurable components of an organisation or society, for example Lewin's change model (unfreeze, change, refreeze) and Kotter's 8-step model

Some models combine psychological and engineered approaches, for example, nudge theory. A combination of models is often required and so the approach needs careful selection.

Models for change often have a range of tools and techniques to support them. These include force field analysis, process maps and flow charts, and assessments of change impact, readiness, resilience, resistance and culture.

Change impact assessments

Change impact assessments identify the gap between the current and future state and the implications for the organisation or society and its people. For example, changes in job responsibilities or accessing public services through a different channel.

It should consider the impact from both an organisational and individual perspective, including the extent of the impact on particular groups and other competing demands.

The assessment should take particular account of equality and diversity, as required by the public sector equality duty (see Chapter 5: Equality, diversity and inclusion).

Change readiness assessments

Change readiness assessments address whether an organisation or society and its individuals are ready to accept and use the delivered outputs or capabilities. This typically considers factors such perceptions of readiness and support, whether changes to the governance and management framework have been made, and the wider organisational or societal environment.

35.6.2.4 Define how change is to be tracked

Once the appropriate approach has been chosen, the information and data needed to support monitoring and reporting can be defined. This is needed as part of:

- controlling the work (see Chapter 17: Controlling)
- assurance (see Chapter 4: Governance and management)
- evaluation (see Chapter 2: Policy and evaluation)

The approach taken can firm up as changes are planned and a definitive solution decided. The simpler the change, the less information and data needed and the simpler the tools and processes can be.

Where multiple pieces of work sit within the same portfolio or programme, information from one can be collated with another for reporting, particularly where there are common benefits.

The choice of data, level of detail and categorisation should be compatible to avoid aggregated reporting becoming meaningless. Sufficient information should be recorded to enable decisions and action to be taken, while keeping the management overhead proportionate.

35.6.3 Key activities in managing change

35.6.3.1 Overview

Change management requires a systemic approach to plan, implement and embed changes by understanding the work objectives, the current state of the organisation or society, defining the future state, planning and embedding the change and validating the outcomes.

These related activities are shown in Figure 35.4. These may be sequential or iterative, depending on the nature of the work.

35.6.3.2 Develop and maintain the change management framework

The change management framework should be developed at the start of the life cycle, and, where available, should be aligned to the theory of change underpinning the initial policy proposal. The activities for preparing to manage change feed into the change management framework (see 35.6.2 on preparing to manage change).

The change management framework should include:

- the models, approaches and techniques to be used
- the data needed for monitoring and evaluation, and how to collect, record, and store them (see Chapter 24: Information and data management)
- how changes are identified and categorised

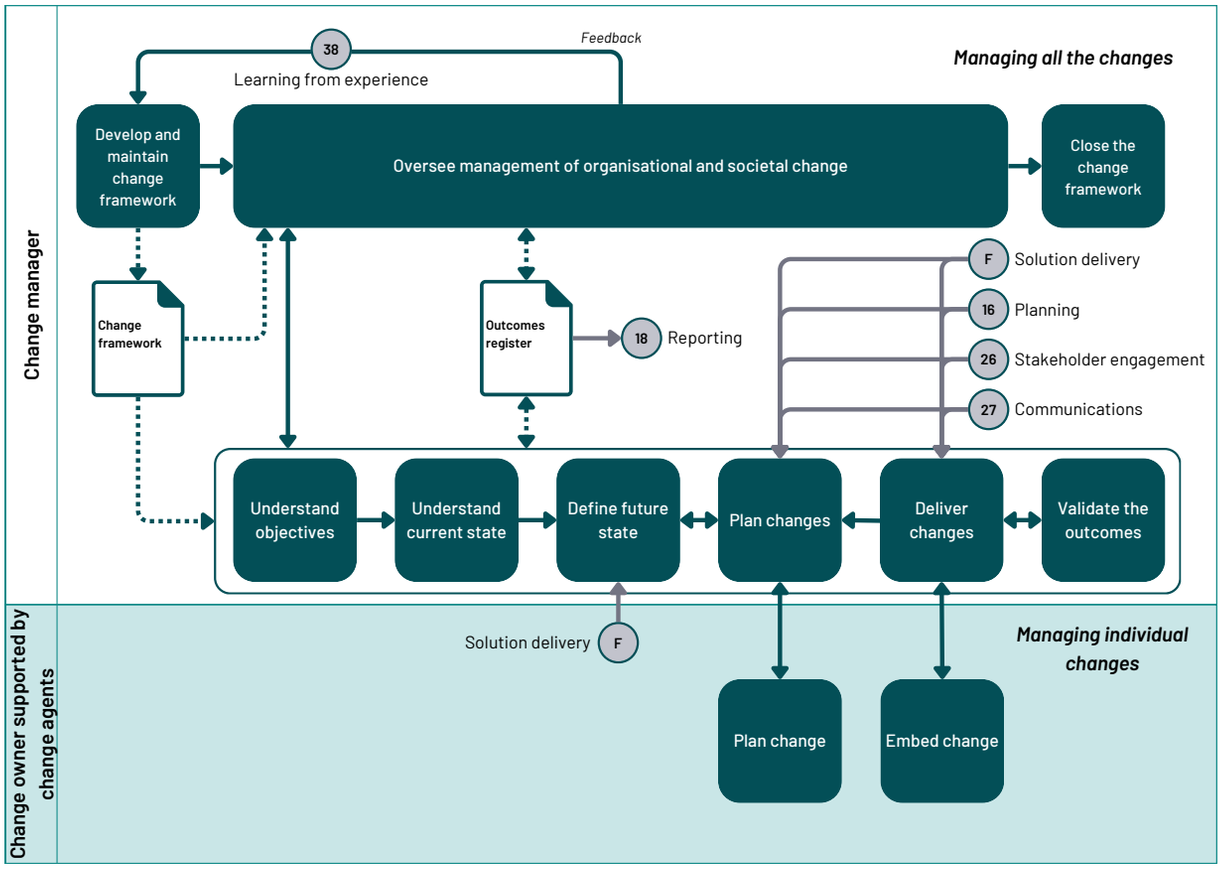


Figure 35.4 An overview of the key organisational and societal change activities and their primary relationships

35.6.3.3 Oversee management of change

Overseeing the management of change makes sure that it continues to fulfil its purpose and meets the needs of the work. This can be achieved by:

- making decisions on updating the change management framework (see 35.6.3.2 on developing and maintaining the change management framework)
- providing periodic reports on changes and outcomes as an aggregate (see Chapter 18: Reporting)
- identifying risks (see Chapter 20: Risk management) and issues (see Chapter 21: Issue management)

Make sure that the management of organisational change is considered early and planned into the solution design and delivery strategy.

Keep the change management framework under continuous review as the context and nature of the work can change throughout the life cycle.

35.6.3.4 Understand the objectives

Understanding the objectives of the work helps with:

- a compelling vision of the future state after the changes have been made
- a case for change which justifies why the change is needed and why it is needed now

This should start from the initial vision and theory of change supporting policy development. It can then be refined progressively as the business plan (for a portfolio) or business case (for a programme or project) develops.

35.6.3.5 Understand the current state

Understanding the current state establishes a reference point for assessing changes and evaluation outputs and outcomes. Examine how the organisation or aspects of society currently works, focusing on those aspects which are going to change. Record this reference point information in line with the evaluation plan (see Chapter 2: Policy and evaluation). This is sometimes referred to as the current operating model.

35.6.3.6 Define the future state

Defining the future state sets out what the organisation or society should look like after the changes have been made. Build on initial policy proposals, taking care to identify who is impacted and possible side effects.

The future state should inform the design of the solution (see Chapter 32: Solution design) and the plan (Chapter 16: Planning). It is sometimes referred to as the target operating model or future operating model.

This should also consider the information needed to assess changes and evaluate outputs and outcomes, in line with the evaluation plan.

35.6.3.7 Plan change(s)

Planning changes identifies what needs to happen to move from the current state to the future state.

Assess the impact

A gap analysis between the current and future state helps identify where the most significant changes will fall. This can then inform an assessment of the impacts on the organisation or society and the target groups, including the implications of the delivered

outputs and capabilities. Equality, diversity and inclusion impacts should also be considered as part of this assessment (see Chapter 5: Equality, diversity and inclusion).

Identifying assumptions and risks at this stage can help avoid issues later in delivery (see Chapter 20: Risk management).

Identify activities

Activities should be identified to prepare, equip and support organisations and individuals to change practices and, where appropriate, behaviours to embed the changes. Milestones representing the achievement of outcomes can be used to track progress and maintain momentum. These activities and milestones should be included within the plan and part of the baseline.

Agree metrics

Metrics should be agreed to assess progress on implementing the changes, including outputs and outcomes, in line with the evaluation plan. Metrics that accurately reflect the outcomes make it easier to identify where changes are not landing as expected. These could be a mixture of lagging and leading indicators. If a direct cause-and-effect relationship cannot be established, a proxy measure can be used instead. Measures should be assessed for current and future performance, with appropriate adjustments made where necessary. The *Government Functional Standard for Analysis* and the *Aqua Book* are useful resources for carrying out these assessments.

Forecast outcomes

Each outcome should be forecasted in terms when it is planned be realised. This could simply be the date when the outcome is fully realised or a phased timeline showing how the outcome is realised over time.

35.6.3.8 Deliver the changes

This activity involves implementing the planned change management activities, including training, engagement, and communication. Transition into use practices can also support delivery (see Chapter 36: Transition into use).

35.6.3.9 Embed the changes

Once a change has been implemented, it needs to be sustained so that the associated outcomes and benefits continue to be realised and do not slip back. This could involve taking preventative or corrective action to strengthen the readiness components for the change.

Sustaining a change depends on the surrounding environment supporting it and encouraging and rewarding the right behaviours. This should be reviewed to see if any further measures are needed.

35.6.3.10 Validate the outcomes

Validating outcomes confirms whether the intended outcomes have been achieved and align with the plan (see Chapter 34: Verification and validation). Any issues resulting in non-delivery of outcomes should be identified and addressed, for example if outputs are unfit for the intended purpose or if changes have not been sustained effectively.

Lessons should be identified, recorded and communicated where they can improve change management activities in the future (see Chapter 38: Learning from experience).

35.6.3.11 Close the change management framework

Once the work has been completed and change management is no longer needed, the management framework should either be:

- merged into the management framework for the solution
- closed

Information and data should be retained in accordance with the delivery and sponsoring body's information retention policy (see Chapter 24: Data and information management).

35.7 Further reading

Government Equalities Office, *Public sector equality duty: guidance for public authorities*

Government Project Delivery, *Project delivery capability framework*

HM Government, *Government Functional Standard GovS 002: Project Delivery*

HM Government, *Government Functional Standard GovS 010: Analysis*

HM Government, *Government Functional Standard GovS 011: Communication*

HM Treasury, *Aqua Book: guidance on producing quality analysis*

HM Treasury, *Magenta Book: central government guidance on evaluation*

36. Transition into use

36.1 Purpose of transition into use

The purpose of transition into use is to move the built or developed solution into its intended future environment so that it can be used. Transition into use also includes formal handover of accountability of the outputs from the senior responsible owner and their programme or project team to the future solution owner or operator.

36.2 Key points

- The transition strategy should be set as part of high-level design and considered within the plan, such as time, resources and cost.
- If suppliers are involved, transition requirements should be included in their contract.
- Accountabilities and responsibilities during transition should be clear, with clear handover points.
- Everything needed to operate, maintain and use the solution should be ready before handover, including processes, manuals, training and operational management systems.
- Programme and project team members should be kept available to support initial operations.

36.3 Why manage transition into use?

Transition into use needs to be managed so that:

- the outputs or outcomes are ready for use and can be accepted by the receiving party
- accountabilities are unambiguous throughout transition with clear handover points
- those involved or impacted understand what is to happen and the part they need to play

A well-planned and managed transition leads to fewer issues in initial operation and builds confidence in those who will be operating and using the solution over the longer term. It also builds trust with the solution owner or operator for the delivery of future work within the portfolio.

36.4 What is transition into use?

36.4.1 Transition into use and handover

Transition into use is the set of activities which are focused on meeting the acceptance criteria for handover to the future owner or operator. It makes sure the solution works as intended and that the future owner and operator are capable of managing it on an ongoing basis.

The receiving organisation can be the body which sponsored the work, another public or private sector organisation charged with owning or operating it, or sometimes a broader group of stakeholders (for example, local authorities following a grant programme or social project).

Transition into use does not have to happen all at once. It can use many combinations of iterative and incremental approaches. For example:

- routine updates to software on a service platform can be done using a pre-defined process, at regular, pre-defined intervals, as in agile delivery
- a service can be rolled out a feature set at a time, starting with a minimum and building up to a full service
- a road can be released for use in phases, rather than wait for the full length to be finished
- a service can be rolled out to different parts of the country or different types of user at different times
- in incremental transition, operational responsibility can remain with the developer until final handover and in other cases, the owner takes that on from the start

All these approaches rely on understanding when certain outputs need to be available, and when they need to be verified and validated, and where necessary, integrated. In every case, the exact configuration of the solution needs to be known at the point of handover if verification, validation and ultimately acceptance are to be valid.

As most government programmes and projects rely on suppliers, transition into use needs to be founded on robust contract terms. Maintaining traceability can help avoid disputes and delays (see Chapter 23: Traceability management and Chapter 25: Procurement and contract management).

36.4.2 Transition from one environment to another

Transition can also happen at any point in the development of the solution when a solution or part of a solution moves from one state to another. For example, a digital service might move:

- from a development environment to an integration environment
- from an integration environment to a training environment
- from an integration environment to a validation environment, such as a trial or field test

In these cases, much of the advice in this chapter applies except that overall ownership remains with the senior responsible owner, although accountability within the team can change, for example from a developer to a trial manager.

36.5 Who manages transition?

Anyone overseeing or managing transition requires an understanding of how to plan for transition, manage the transition and its resultant impacts and of their responsibilities in managing them. Accountability and responsibility for transition into use should be clearly defined within the governance and management framework for the work and reviewed on a regular basis, to avoid duplication or gaps. Typically, accountability follows the hierarchy in the work breakdown structure, but some roles can also be designated as having cross-cutting responsibilities.

The **senior responsible owner**, in a programme or project, has overall accountability for transition into use and owns the transition management framework, ensuring that it is effective in providing the capability and capacity needed to deliver the solution successfully into use.

The **programme or project manager, as appropriate**, is accountable for developing and managing the transition management framework, including its processes, tools, techniques, and for ensuring that it remains effective through the life cycle, as well as acting as the transition manager. They may exercise through a dedicated **transition board**, which they may chair, usually as a sub-board reporting to the programme or project board. Bringing together programme, project, operations and supplier leads to:

- providing visibility of progress and risks
- identifying and resolving or escalating issues quickly
- building collective leadership through transition and into early operations
- reviewing whether the approach to managing transition remains effective and appropriate as the work proceeds

Depending on the scale and complexity of the work, there could be a dedicated transition manager (often from a **support office**) with responsibility for overseeing transition management on behalf of the programme or project manager. They may be supported by **transition specialists**.

Transition specialists should develop the strategies, methods and plans to be used, in line with an agreed and compatible transition and change strategies, whether 'big bang', incremental or iterative. The responsibilities normally follow the solution hierarchy (sometimes called a system hierarchy or product breakdown structure) and are heavily influenced by the integration, verification and validation strategies. The role title for people who manage transition differs widely, depending on the type of output and methodology used.

A crucial part of transition is the transfer of ownership and so the future **solution manager** should be involved in planning and be engaged throughout the actual transition of the solution, including the formal acceptance of ownership.

36.6 How to manage transition

36.6.1 What to consider when transitioning the solution

36.6.1.1 Aligning with the integration strategy

A solution can only transition into use when it's ready to operate and the receiving organisation can use or run it. It is not always necessary or desirable to wait for an entire solution to be ready before those impacted by it can benefit. A good delivery strategy aims to realise benefits as soon as possible.

If the solution is being transitioned in stages, the integration strategy should set out which groups of outputs need to be available for that to happen. As the integration strategy builds on the high-level design, transition needs should be considered as part of that design (see Chapter 33: Solution development and integration). For example, there is no point in relying on a training system in transition if that training system has not been included in the high-level design.

36.6.1.2 Knowing who is accountable: handover

Handover is when accountability passes from one party to another. This transfer of accountability can be:

- between business areas in the sponsoring organisation
- between different public sector bodies acting as separate delivery and sponsoring organisations
- from a supplier to the sponsoring organisation
- from the sponsoring organisation to a new private sector operator

All involved parties should know when a transfer of accountability takes effect and what the implications are on their respective roles and obligations. This is particularly important during periods of concurrent working or where handover is progressive.

If there is a contract boundary, the contract itself should define the requirements, criteria and mechanisms for handover. Agreeing this at the point of transfer is too late, although confirming the practical implications of what has already been agreed before handover is needed.

36.6.1.3 Knowing how the solution is to be accepted

Transfer of accountability can be based on 2 distinct approaches. These apply whether the handover is internal to an organisation, between government organisations or between a sponsoring organisation and a supplier or another delivery partner (for example a local authority).

An **output-based approach** means requirements for a solution and its parts are defined in specifications, sometimes called system requirements. Acceptance is based on verification (see Chapter 34: Verification and validation).

An **outcome-based approach** means requirements are framed as user or stakeholder needs. Acceptance is based on validation (see Chapter 34: Verification and validation).

In a larger programme or project, acceptance criteria can be a combination of both approaches. Decisions on acceptance criteria should be considered as part of high-level design and incorporated into procurement and contractual documents, or agreements between organisations. Handover should not normally proceed until the acceptance criteria have been met.

'Build-and-operate' and outsourced contracts tend to use the outcome-based approach, or a combination of both, and are used if the sponsoring organisation is unlikely or unable to manage the solution on an ongoing basis.

36.6.1.4 Checking the completeness of the solution

Before transition, everything needed to operate, maintain and use the solution should be ready. Depending on the type of solution, this can include:

- operational and maintenance processes, tools, manuals and resources
- logistics and storage for spares and consumables
- operational management information and reporting systems
- training for all aspects of the solution

Asset data should be verified and prepared for transfer, taking account of security and other statutory requirements.

36.6.1.5 Working transition and change management together

Transition into use should be planned and managed together with the management of the organisational and societal changes (see Figure 36.1 and Chapter 35: Management of organisational and societal change).

The transition and change management teams often depend on each other's outputs. For example, the transition team may produce operating manuals that the change team needs, while the change team may manage the communications strategy that the transition team relies on. An appropriate multi-disciplinary team should be mobilised to plan and carry out the work, with each member providing their expertise.

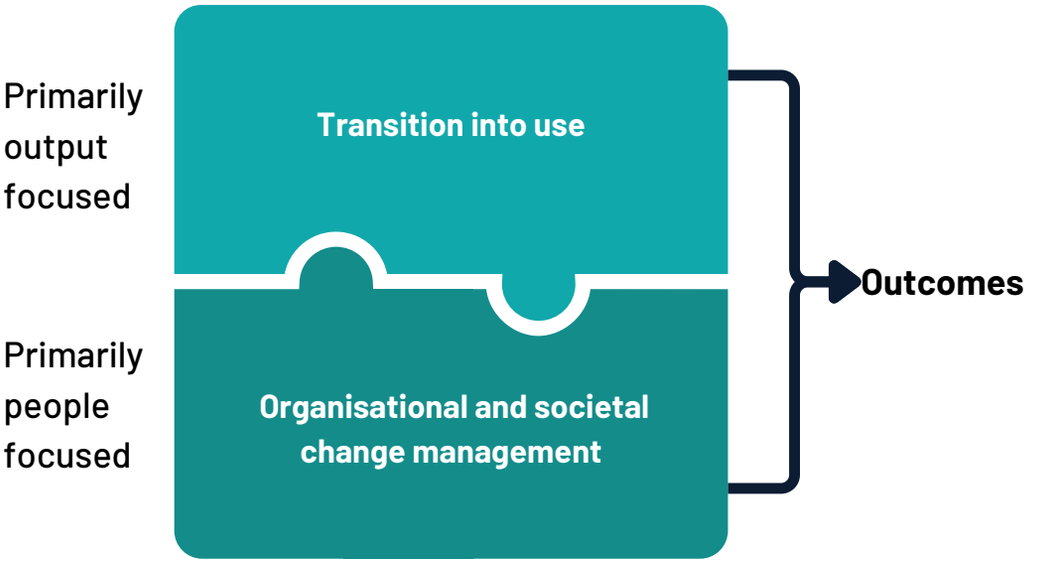


Figure 36.1 Transition and organisational and societal change should be managed together

36.6.1.6 Maintaining operations and services during transition

In the case of upgrades to existing solutions, a typical goal is to minimise disruption to ongoing operations. This should be understood from the start of the programme or project, and defined as a user need, as significant work is often required to achieve continuity.

When the solution replaces an existing or legacy solution, the migration should be planned and managed so that users do not experience any unplanned interruption in services.

Even when a new solution is introduced, there is potential to disrupt other services. For example, a new online service leading to a spike in user numbers which destabilises the platform, or a new road increasing or decreasing traffic on existing roads. These wider impacts should be considered and planned for as far as possible.

36.6.1.7 Knowing how to handle issues after acceptance

Issues are still likely to be discovered after the solution has come into use. That is why the reference project life cycle (see Chapter 14: Programme and project life cycles) includes an initial operation and use stage.

Some issues could relate to defects that were not apparent at the point of handover, but others could relate to the user needs not being met, or to poor communications. Even the most thorough validation activities are unlikely to capture every scenario of use. All types of issue need to be recorded and acted on (see Chapter 21: Issue management).

Where a solution or part of a solution is supplied or operated by a supplier, there are often warranty, guarantee or maintenance clauses in the contract defining how these should be dealt with. In other cases, it is for the owners of the solution to decide what action to take.

36.6.1.8 Motivating the team as their work starts to finish

As a programme or project moves towards completion, team members may face uncertainty about what comes next for them. At the same time, accountability and responsibility for the solution is shifting to the people who will own and operate it, which can create tensions.

The programme or project manager should be aware of these dynamics and support team members through the transition, for example by helping them prepare for or find new roles.

36.6.2 Preparing to transition

36.6.2.1 Overview

Planning for transition into use should start, in outline, as soon as the relevant user needs have been identified. By the time the high-level design is completed, an outline strategy should also be in place and the need for facilities, tools and resources known.

36.6.2.2 Agree the transition strategy

The transition strategy should reflect the user needs, especially the need for operational continuity. It should be compatible with the change management, verification, validation and integration strategies.

Where possible, most verification and validation should happen before transition into use to reduce the likelihood of faults being discovered during this period. The expected time and cost constraints associated with the transition strategy should be planned for and requirements factored into procurement and contract documentation.

36.6.2.3 Make facilities, tools and training available

Transition into service usually includes verification and validation activities encompassing the whole solution, often as demonstrations or operational trials. These activities can

require extensive planning ahead, and sometimes special resources (such as facilities) which need to be booked ahead or even created specially.

36.6.2.4 Know the relevant contracts' terms

The contracts with suppliers need to be understood in full and interpretations agreed in advance between parties if there is any ambiguity. If a dispute arises, it is the terms of the contract that prevail in arbitration. Be especially careful not to approve anything the contract does not require to be approved as often contracts leave approval to the end of a warranty (or similar period).

36.6.3 Key activities in managing transition into use

36.6.3.1 Overview

Transition into use comprises similar activities whether applied to the whole solution or individual parts of it. Transition normally happens towards the end of the programme or project life cycle when ownership moves from the senior responsible owner to the future solution owner or operator. Transition can also happen when the solution passes from one interim state to another, such as when a digital solution is moved to a test or trial environment or a building is handed over from the constructor to another supplier for fit out. The key activities are summarised in Figure 36.2.

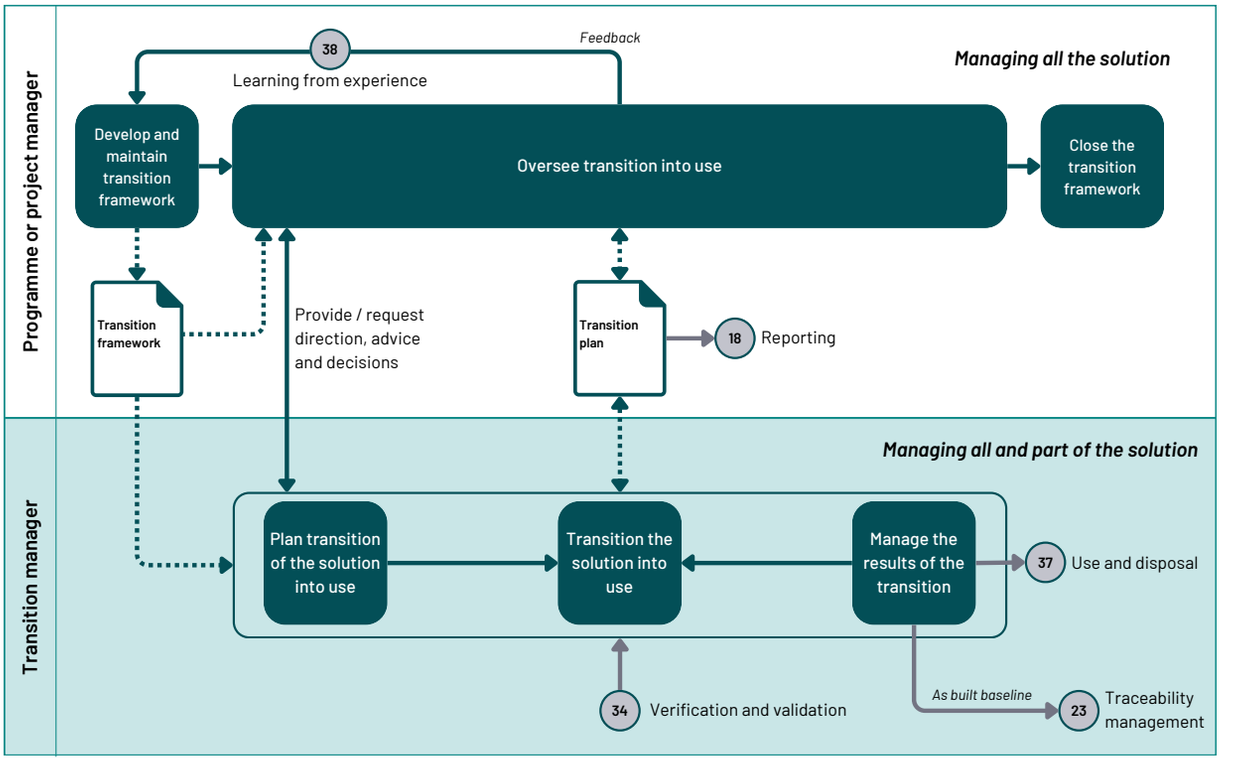


Figure 36.2 An overview of the key transition into use activities and their primary relationships

36.6.3.2 Develop and maintain the transition management framework

The approach to transition should consider any processes, methods, tools and techniques to be used. This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management).

See 36.6.2 on preparing to transition for activities which inform the governance and management framework.

36.6.3.3 Oversee transition into use

Overseeing transition into use ensures that the transition management is considered early and planned into the solution design and delivery strategy.

Transition of major solutions relies on coordinating many activities, often within a short time period. This involves tracking progress, understanding the results of related verification and validation activities, and making timely decisions on whether the solution is ready for handover. It also makes sure that that the framework continues to fulfil its purpose and meets the needs of the work. This can be achieved by:

- making decisions on updating the transition management framework (see 36.6.3.2 on developing and maintaining the transition management framework)
- providing periodic reports on changes and outcomes as an aggregate (see Chapter 18: Reporting)
- identifying risks (see Chapter 20: Risk management) and issues (see Chapter 21: Issue management)

36.6.3.4 Plan for transition into use

Detailed planning for transition should follow the approach in the transition strategy and reflect what is needed to hand over, operate, maintain and use the solution.

The time units and detail for the plan should reflect the types of work, their criticality and planning horizon (see Chapter 16: Planning). For example, a sensitive operational transition, such as a new digital service or changes to track layouts in railways, can take place over a weekend and requires planning down to hours and minutes; whereas transitioning a new prison into operations might be planned and monitored in term of weeks and months.

The plan should take account of risks associated with transition activities that can be problematic, such as data migration, with schedule buffers placed to avoid overruns. Concurrent or shadow running before handover can help reduce risk. Backout and contingency plans should be developed where needed, with timings and decision points factored into the transition schedule. If old solutions are to be decommissioned (see Chapter 37: Use and disposal), the plans for that should be integrated with the transition plan and dependencies managed.

36.6.3.5 Transition the solution into use

Each activity in the transition plan should be tracked, assessed and analysed, if appropriate, collated into reports and action taken to address any variances or problems which have been identified (see Chapter 17: Controlling).

Depending on the acceptance criteria, verification and validation of the whole solution, or of an operational part of it if transition is phased, should be carried out in a controlled environment. This should be followed by a readiness review before a decision is made as part of a decision point on whether to hand over the solution formally and release, activate or commission it (see 14.7.2 on gates and decision points). This is often called the 'go or no go' decision.

User and operator training is often undertaken before final handover using supporting operational and user documentation, so that users and operators are ready to take ownership at the point of handover.

Full asset management and other data should also be made available, represented as the 'as built' reference point.

The transition team should normally be kept on during the initial operation of the solution to deal with defects which were not resolved before releasing the solution and to support the new owner, sometimes known as hypercare.

36.6.3.6 Manage the results of transition activities

Introduction of the solution and activation of interfaces should be completed and demonstrated in accordance with the acceptance criteria and, where relevant, contracts.

The sponsoring body needs transition to be effective so that the solution can be used and benefits can start to be realised. Suppliers also rely on such records for payments.

Accurate record keeping should cover:

- problems identified during transition relating to strategy, enabling systems, interfaces and the action to be taken (see Chapter 21: Issue management)
- operational incidents which require changes to the design or requirements (see Chapter 21: Issue management)
- ensuring traceability among the components comprising the solution throughout transition (see Chapter 23: Traceability management)
- confirming the configuration of the solution as handed over together with the management documentation (see Chapter 23: Traceability management); these form the as-built solution reference point

36.6.3.7 Close the management framework

Once the programme or project has been completed, the management framework should be closed and information archived in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

37. Use and disposal

37.1 Purpose of use and disposal

The purpose of use and disposal is to:

- use, maintain and operate the solution to fulfil its defined purpose
- shut down all or part of a solution and dispose of or reassign any residual facilities and materials

37.2 Key points

- The work should result in a solution which is usable and benefits relevant stakeholders.
- How a solution is used and disposed of should be defined in the design.
- Monitor the use of the solution using defined measures; take action if needed.
- Define what changes to the solution can be done as 'business as usual' and what needs to be managed as a project.
- Disposal of a solution can be non-trivial and might need to be managed as a programme or project.

37.3 Why manage use and disposal of the solution?

Until a solution is used, no outcomes and benefits can be realised. How a solution is used determines how efficient and effective it is and whether it is sustainable over the period it was designed for.

For example:

- if users are not properly trained to use the solution or made aware of it, demand may be lower than expected and new ways of working may not be adopted
- if the solution is not properly maintained, it can degrade faster than expected and might need to be withdrawn early

When a solution or part of a solution comes to the end of its useful life, it needs to be shut down and then disposed of. The cost and time involved can be significant, especially in cases such as nuclear decommissioning. The approach to disposal needs to be planned into the design and risks identified.

Unless use and disposal are actively managed, policy aims and objectives are unlikely to be achieved.

37.4 What is use and disposal?

Use is the operation and maintenance of a solution so that it continues to fulfil its intended purpose. This includes routine maintenance and minor upgrades, which are often managed as business as usual, which can be known as the sustainment model. In many cases, particularly in digital and data or transformation work, parts of a solution are progressively renewed or upgraded through continuous improvement. If the changes are significant, they may be managed as a new project.

Disposal is the planned shutdown and removal of a solution, or part of a solution, when it is no longer needed. Depending on the nature of the solution, this might be described as retiring, withdrawing or closing it.

Use and disposal is relevant to project delivery regardless of how the sponsoring organisation chooses to organise its work. For example:

- the design of a solution needs to include what is needed to use and dispose of a solution (see Chapter 32: Solution design)
- the last stage of a project is usually concerned with overseeing the initial use of a solution (see Chapter 14: Programme and project life cycles)
- portfolios and programmes can have use and disposal within their scope
- portfolios and programmes can include projects and other related work to upgrade or dispose of a solution

37.5 Who manages use and disposal of the solution?

The **senior responsible owner** has overall accountability for the direction of the programme or project. As such, the senior responsible owner has the primary stake in making sure the solution is used and eventually disposed of appropriately. Formally the senior responsible owner's accountability for the programme or project ends when the programme or project is closed. Before this, however, they should ensure that accountability for the ongoing use and eventual disposal of the solution has been agreed and is in place.

The **specialist team** which owns the solution is accountable for its use and disposal as soon as the solution has been handed over (see Chapter 36: Transition into use). The models of ownership vary considerably and there is no set pattern to cover all circumstances. The accountabilities therefore need to be defined on a case by case basis as part of the design of the solution.

The **operations manager** is the role overseeing the use and disposal of a solution, within the context of any other related activities. This role could be undertaken by a chief operating officer or, at a lower level, by a manager with accountability for a set of related services, such as on a digital platform.

The **solution owner** is the role with direct responsibility for the solution. This could be a product manager, service manager or manager of a policy intervention.

The project delivery team usually have a supporting role during initial use to deal with faults and resolve outstanding defects, as shown in the reference project life cycle (see Figure 37.1 and Chapter 14: Programme and project life cycles). This is usually under a **project manager**. The initial use period is often governed by contractual maintenance, warranties or guarantees in the contract agreement to cover latent defects. A year is not an unusual time period for this.

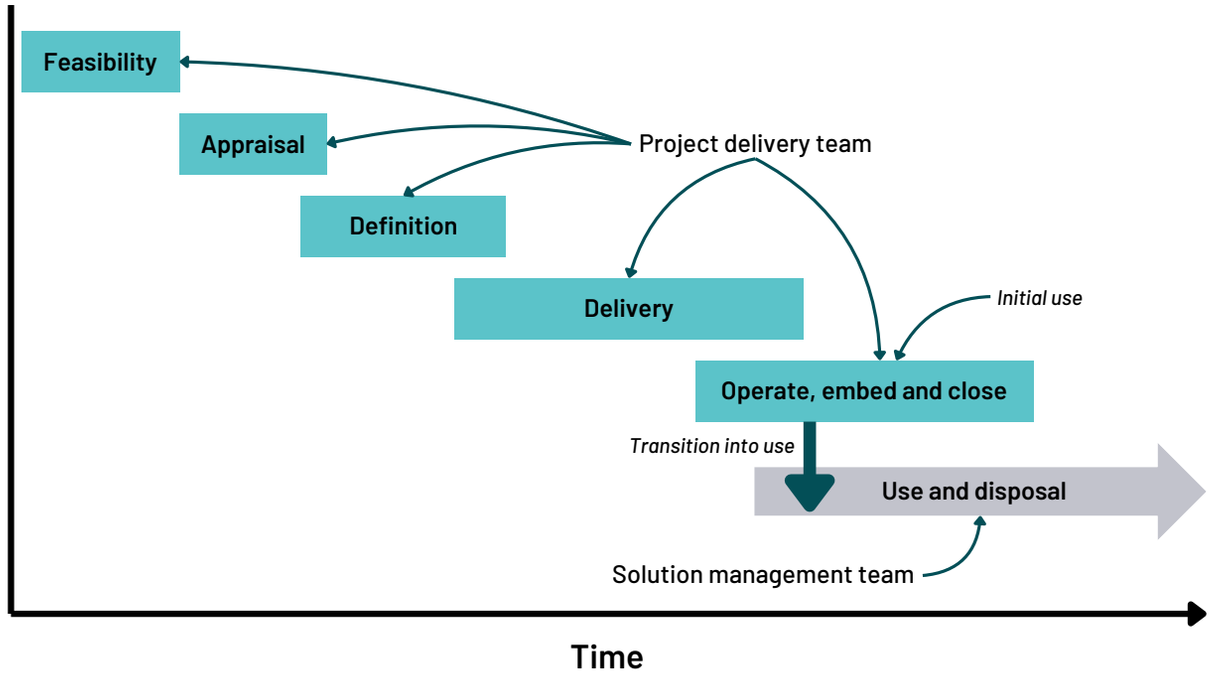


Figure 37.1 An example of initial use as the last stage in a project

If use is included within the scope of a portfolio, programme or project, the portfolio, programme or project manager, respectively, has an oversight responsibility for use. Figure 37.2 is an example of a programme or project life cycle where operation and disposal are in the scope.

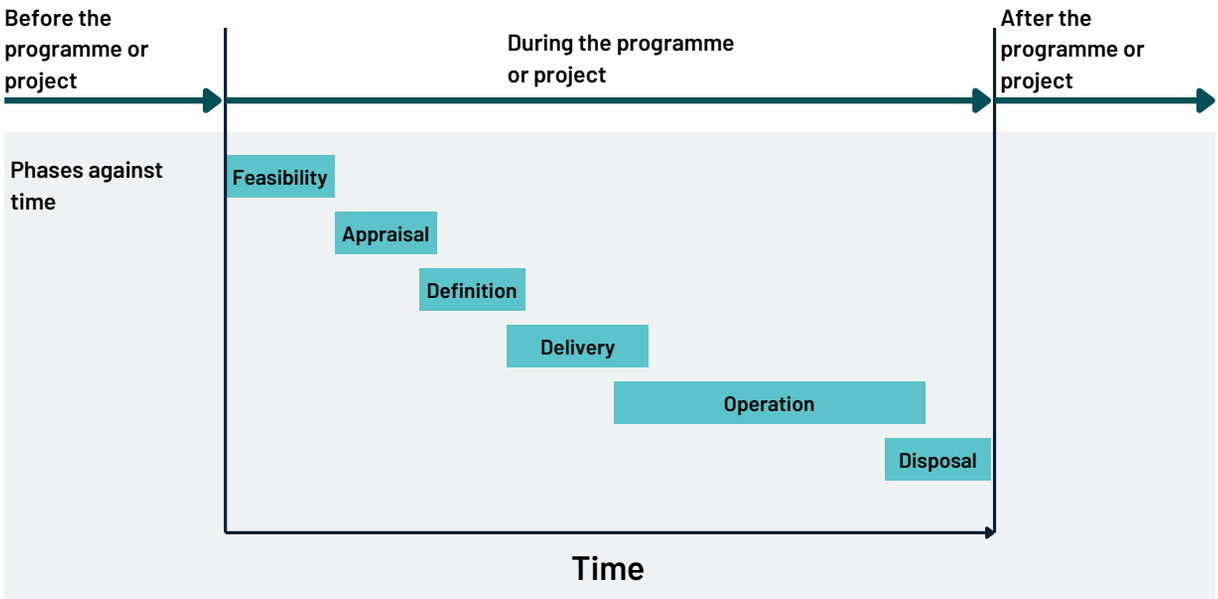


Figure 37.2 An example of a programme or project where the scope includes use and disposal

Disposal can be full, partial or continuous and can relate to a whole solution or just part of it. It can involve disbanding an operation and redeploying employees, disposing of a building or IT hardware, dismantling a major piece of infrastructure – or a combination of these.

At its simplest, disposal is managed by the operational team. For more complex situations, for example, disposal needs to be managed as a programme.

37.6 How to manage use and disposal

37.6.1 What to consider when using and disposing of the solution

37.6.1.1 The high-level design determines how a solution is used and disposed of

Just as the high-level design determines (and is determined by) the integration strategy, so is use and disposal constrained by the design. The breakdown of the solution into workable components determines the extent to which parts of the solution can be used independently and before other parts can be accepted for use. Similarly, the approach to disposal is determined by the way the solution is put together and can be dismantled.

A full design should include the requirement for partial or full disposal of the solution. For partial disposal, the design should accommodate the replacement of parts to increase the active life of the solution. For full disposal, the decommissioning and withdrawal of the full solution should have been designed for.

In older solutions reaching the end of their life span, it might be found that either the solution was not designed for disposal, or the methods proposed at the time have become outdated, inappropriate or even illegal. In this case, a new disposal strategy needs to be developed within the constraints of the as-built solution and prevailing regulations.

37.6.1.2 Maintaining operations and services during disposal

In the case of upgrades to or replacement of existing solutions, disruption to ongoing operations and services should be minimised. This should have been understood from the start and defined as a user need, as significant work is often required to achieve such continuity.

Where a solution is no longer required, operations do not need to be maintained. However, anyone affected should be informed of what this means for them. If the solution is being replaced, the work for transitioning the new solution and disposing of the old solution needs to be coordinated. This often needs to be managed as a programme.

37.6.2 Preparing to use and dispose of the solution

37.6.2.1 Overview

Planning for use and disposal should start early as soon as the relevant user needs have been identified. By the time the high-level design is completed (see Chapter 32: Solution design), the need for associated facilities, tools, logistics and resources for operation should be known.

37.6.2.2 Plan for use and disposal from the beginning

Use and disposal requirements should be identified and addressed during the development of the design, not after the solution has been handed over. The design should account for both the solution itself and any interim states it passes through.

37.6.2.3 Understand maintenance and upgrade needs

Few solutions can be sustained without maintenance. The extent of maintenance required can vary on the type of solution and the environment it operates in, not forgetting that maintenance usually requires ongoing and reliable sources of spare parts.

In addition, demands on the solution can change such as users requiring additional functionality, regulatory authorities changing their rules or demand growing more than expected. Often, minor changes can be introduced as business as usual, included in maintenance work or continuous improvement. Whether such work is considered new or just a part of ongoing use and maintenance needs to be understood, as it can affect funding and resourcing.

Digital products are often designed for continuous evolution through software and hardware updates, with ongoing provision for this allocated in operating budgets. However the changes are categorised and managed, the primary focus should be on ensuring the solution continues to provide a useful and beneficial purpose.

37.6.2.4 Understand how the use of the solution is monitored

Monitoring can be done through a range of techniques depending on what is being monitored. Where appropriate and feasible, continuous and remote monitoring, such as using a digital twin in infrastructure (see Chapter 24: Information and data management) and telemetry, should be considered with thresholds for alerting corrective and preventative action. Techniques associated with evaluation can be appropriate (see Chapter 2: Policy and evaluation).

37.6.2.5 Understand the impacts of disposal

The time between introduction and disposal of a solution can span many years and the social, working and operating environment can change significantly over that time. Plans for disposal should be reviewed carefully when considering whether to extend the life of, evolve or dispose of a solution.

Assumptions on costs and other social, economic and environmental impacts need to be tested to determine if they are still valid, as these can change the balance of a decision.

Financial accounting impacts should also be understood, and early advice sought from the responsible organisation's finance team. Any change in asset value has an effect on the organisation's accounts and should be planned for well in advance.

37.6.3 Key activities in managing the use and disposal of the solution

37.6.3.1 Overview

Use and disposal comprises a set of activities that commence once part of the solution transitions into use. The activities for use and disposal are summarised in Figure 37.3.

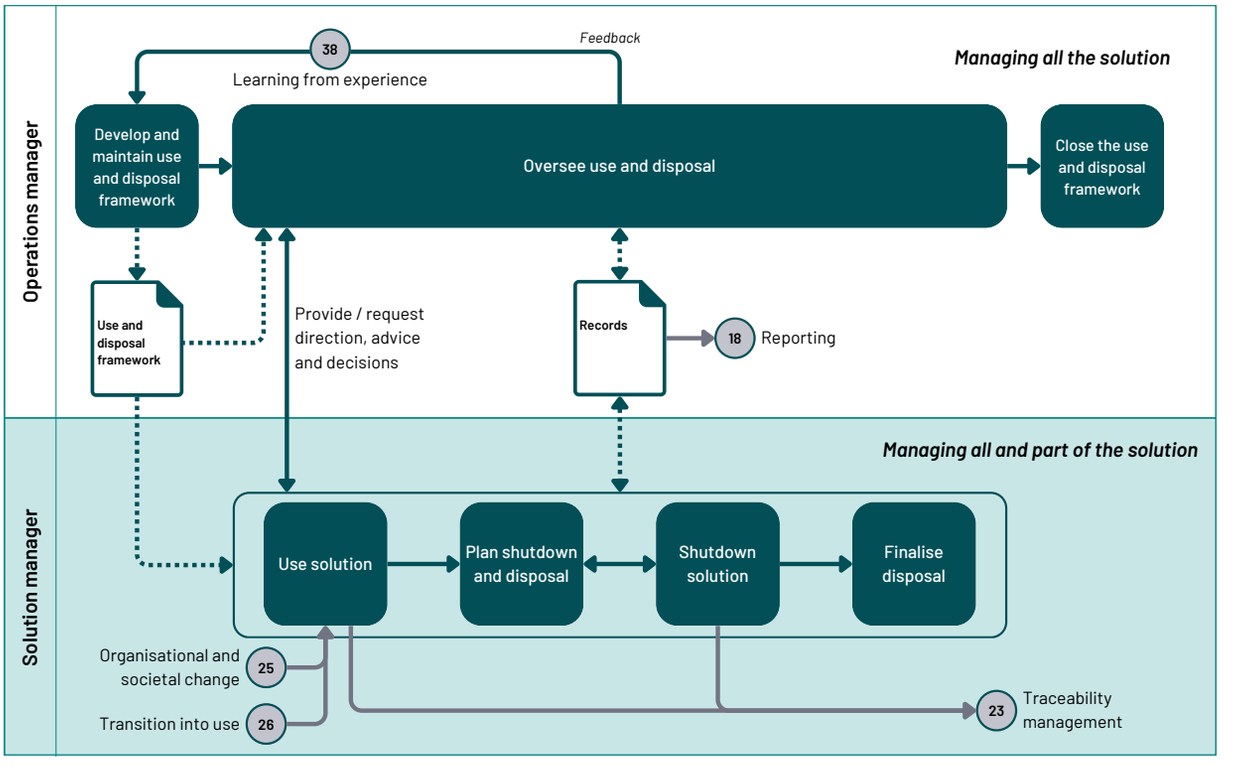


Figure 37.3 An overview of the key use and disposal activities and their primary relationships

37.6.3.2 Develop and maintain the use and disposal management framework

The use and disposal management framework should be developed before any part of the solution transitions into use. The activities for preparing to manage use and disposal feed into the management framework (see 37.6.2 on preparing to use and dispose of the solution). This forms part of the overall governance and management framework for the work (see Chapter 4: Governance and management).

The framework should define the approach to using and disposal of the solution including any processes, methods, tools and techniques to be used.

37.6.3.3 Oversee use and disposal

It is essential to maintain an overall view of how the use of the solution and later disposal is progressing and what the prevailing risks and issues are from both internal and external sources (see Chapter 20:Risk management and Chapter 21: Issue management).

An overall view of performance indicators, such as user feedback, operational metrics and financial measures, needs to be maintained, and preventative and corrective action taken as necessary. Non-functional performance such as accuracy, security, availability, usability and timeliness should not be neglected.

The management framework for use and disposal should be monitored to make sure it remains effective and appropriate as the work proceeds.

37.6.3.4 Use solution

The solution should be used, operated and maintained as defined. Records should be kept up to date so that the status of the solution is known at all times as this is fundamental to future decisions that might be needed on changes (see Chapter 22: Change control). In particular, pay attention to:

- monitoring social and economic factors
- addressing user feedback
- addressing operational incidents which require changes to the design or requirements
- maintaining the configuration of the solution with the updated management documentation (such as manuals and operational processes) to form the updated as-built solution baseline (see Chapter 23: Traceability management)
- maintaining traceability among the components comprising the solution and to external systems

37.6.3.5 Plan shutdown and disposal

Shutdown of the solution should be planned so that impacted stakeholders are aware of what is happening, when and how it could affect them. The withdrawal of capabilities needs to be sequenced to minimise unexpected side effects. This should be managed as organisational or societal change (see Chapter 35: Management of organisational and societal change).

Those accountable for the ultimate disposal of the solution and its parts should plan disposal to be environmentally sustainable. For physical assets, options such as storing, dismantling, reusing for another purpose, recycling, reprocessing and destroying should be considered. Data assets should be handled in accordance with government requirements (see Chapter 24: Information and data management). The choice should take into consideration factors such as costs, disposal sites, environmental impact, health and safety issues, handling, transportation, relocation as well as relevant regulatory requirements.

37.6.3.6 Shut down solution

The solution or parts of the solution should be shut down in accordance with the plan taking account of continuity needs, if any.

37.6.3.7 Finalise disposal

Once the solution or parts of the solution have been shut down, they should be disposed of in accordance with the plan for disposal. Information on the action taken and assets disposed of should be recorded, reported and stored, as this can be important for lessons learned (see Chapter 38: Learning from experience) and future decision-making, for example on land use.

37.6.3.8 Close the use and disposal management framework

Once the solution has been fully disposed of, the management framework should be closed. Information and data should be retained in accordance with the solution owner's information retention policy (see Chapter 24: Data and information management).

38. Learning from experience

38.1 Purpose of learning from experience

The purpose of learning from experience is to help people recognise challenges and successes from previous work, understand how others responded, and share improved practices that benefit current and future work.

38.2 Key points

- Learning from experience should happen throughout the life cycle of the work, not just at the end.
- Lessons can be learned from what went well as well as what did not.
- Lessons can be learned from other portfolios, programmes, projects, sectors and countries, as well as looking through audit reports, case studies and academic research.
- Opportunities for improvement should be identified even if they cannot be acted on immediately.
- Lessons should be shared through a range of approaches, from team meetings to learning legacy repositories.

38.3 Why learn from experience?

Project delivery is challenging. Even in well-run portfolios, programmes and projects, mistakes happen, things go wrong or aspects could be improved on. Work can also go smoothly, or better than planned, with innovative approaches emerging. Capturing and learning from these experiences helps future work run more effectively and efficiently.

Learning from experience can also reduce the risk profile for the work. Real-life examples help identify risks or show how best to mitigate them.

Teams can include civil servants, public servants, secondees, consultants, people from professional services, consultants and contingent labour so turnover can be high and teams change frequently. Without a structured approach to capturing and sharing learning, it can be lost.

38.4 What is learning from experience?

Learning from experience in project delivery is about taking an organised approach to identifying, capturing and sharing lessons learnt from the conduct of the work.

The *Project delivery glossary* defines lessons learnt as:

> The practice of continuous improvement based upon organisational learning in a risk management context.

Everyone in the team should understand how to find and learn from previous lessons, and how to contribute to the lessons process, as shown in Figure 38.1.

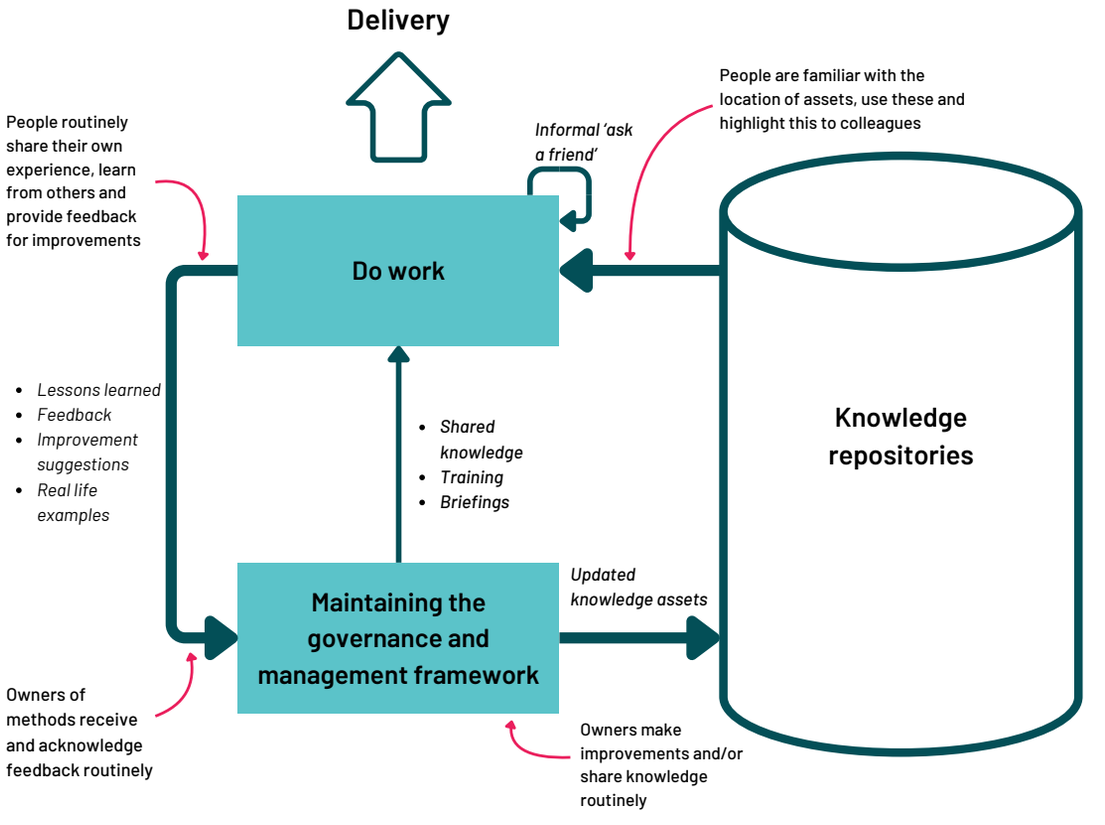


Figure 38.1 Learning from experience as a part of continuous improvement

Practices vary according to the nature, scale and complexity of the work, but there are some core elements. Learning from experience involves:

- setting out the approach to identifying, capturing and sharing learning within the governance and management framework, including how lessons are managed and stored (see Chapter 24: Information and data management)
- recording lessons in a lessons register
- sharing lessons regularly with the team, either as part of day-to-day meetings or in dedicated sessions such as lessons learned meetings or retrospectives

- reviewing lessons at certain points, for example at the end of a sprint, stage or phase, and before closure
- capturing findings in a lessons report or another document, such as the closure report or post-implementation review report

Each lesson record should combine:

- **what happened**, describing what threat was avoided, issue occurred or opportunity exploited
- **what the impact was**, describing the effect of what happened
- **what was learned**, describing the implication for future work
- **what action was taken**, describing the response to the lesson for the current work

When starting and planning work, team members and stakeholders should look for and apply relevant lessons from previous experience, whether from other work in the same portfolio, programme or project or from another organisation.

38.5 Who manages learning from experience?

People in a project delivery role should know how to recognise a potential lesson and where to direct their improvement suggestions and feedback. This should be defined within the governance and management framework and reviewed regularly to check it is being used and is effective.

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for learning from experience. They own the framework for learning lessons, ensuring that it is effective for capturing relevant experiences from previous work in a way that improves how future work is done.

The **portfolio, programme or project manager**, as appropriate, is responsible for ensuring that lessons are being captured and shared effectively as they manage the governance and management framework, which is where the ways or working are defined. In practice, this is often done by a support officer designated as the **lessons manager**. For simpler programmes or projects, the programme or project manager, as appropriate, would undertake the role themselves. For large work packages, the **work package manager** could undertake the role, particularly for specialist delivery approaches.

Each lesson is assigned to a **lessons owner**. This is a named individual responsible for addressing a lesson or group of related lessons. Depending on the scale of the work, this role could be undertaken by the lessons manager or someone in their team. A lesson owner needs to be someone who can manage a lesson either due to their position, authority or technical experience. To keep learning from experience effective, too many lessons

should not be allocated one owner. As a lesson can develop as more information becomes available, ownership can be reassigned to a more appropriate person if necessary.

38.6 How to learn from experience

38.6.1 What to consider when learning from experience

38.6.1.1 Learning from other work and other sectors

At the start of the work it is good practice to research similar work that has been done before and what can be learned from it. This can include looking at experience from other countries, sectors (within and outside government) and work that uses different delivery approaches. Learning and innovative practices are often transferable, even across different sectors.

Useful sources of learning include:

- learning legacy repositories
- National Audit Office reports
- public accounts publications, public enquiry reports
- case studies from professional bodies and Government Project Delivery
- academic research or specialist journals
- project delivery magazines

Look out for talks, blogs and special interest groups about relevant experience, or consider setting one up. People tend to share more colour about their experience and the lessons they have learnt when talking directly, and are often willing to provide support if you need advice on a particular issue. The Government Project Delivery website is a good place to start.

38.6.1.2 Identifying lessons can be challenging

Negativity bias means it is often easier to focus on failure. However, understanding the factors that made something successful is equally important, if not more so.

Some lessons can be identified from physical sources such as risk and issue registers. Others are embedded in tacit knowledge, which makes them harder to find. Do not rely solely on formal reporting of lessons or on set-piece workshops at the end of a phase. Capture lessons as the work proceeds, for example as part of team discussions on improving an aspect of work, assurance activities, resolving an issue or dealing with a new risk.

If something in the governance and management framework looks wrong or needs better explanation, the owner of that documentation should be told, with suggested amendments or ideas to address the issue. Do not wait for a formal review meeting.

38.6.1.3 Deciding what lessons need follow up

Not all suggestions for improvements are relevant. The situation might be unique and not generally applicable. Suggestions are not always right: the terms used could differ from those used in the standard documentation, the suggestion might place something in the wrong context, or it could conflict with other practices.

Changes to baselines or established practices need care. Work to implement lessons learned should be managed under change control, like other changes (see Chapter 22: Change control). As with other changes, the lessons manager and owner should consider all proposed changes carefully and only introduce changes after appropriate scrutiny. This includes deciding whether a lesson needs to be raised and who with.

38.6.1.4 Deciding who follows up a lesson

Lessons should be assigned to the person best placed to act on them. If a lesson relates to any of the practices in *The Teal Book*, it is a project delivery lesson. If it relates to a specialist delivery method, technique or process, the professionals who own those approaches are responsible for it.

If the right person is not chosen, the lesson could be lost or misinterpreted. For example, a digital delivery specialist should address feedback on digital matters, while a commercial specialist should own any commercial lessons arising from a procurement.

38.6.1.5 Deciding how to address a lesson

Recording a lesson in a register or adding to existing documentation does not mean people will read it. As documentation grows, people are less likely to engage with it. Team members can also feel threatened by lessons, experience change fatigue, have concerns about the skills needed to implement them, or face increased workloads.

Consider other ways of sharing and adopting lessons, for example through informal updates at team meetings, more formal briefings or more creative communications at organisational or functional level. New content, case studies and stories can be built into induction and training (see Chapter 39: Project delivery team induction and training).

Lessons are also being shared more widely across government, for example through video diaries and case studies on the Government Project Delivery website, or in learning repositories on some major programmes.

38.6.1.6 Being sensitive to realities

If lessons need to be addressed, particularly those resulting from failures or crises, people need to be able to identify them without fear of blame or retribution. Admitting something could have been done better can be interpreted as a weakness and may be hidden. Often such lessons emerge as issues (see Chapter 21: Issue management).

Learning from experience is about moving forward. Lessons should be captured and communicated in a way that avoids revisiting conflicts simply states what should be done in future.

By default, the record of lessons should be open. Care should be taken when writing up and sharing lessons that could be sensitive due to commercial, technical, physical, or people reasons.

Done in the right way, learning from experience can be a safe way to help people move on from a difficult experience, which can improve psychological safety in the team.

38.6.2 Preparing to learn from experience

38.6.2.1 Defining who should be responsible

On a small project, the project manager can manage lessons as part of normal workload. For large portfolios, programmes and projects, the role should be given to a dedicated lessons manager or a member of the support office (see 38.5 on who manages learning from experience).

38.6.2.2 Defining categories for lessons

On portfolios and large programmes and projects, defining categories of lessons makes them easier to find and manage. Categories can be based on the practices in *The Teal Book*. Categories for specialist delivery or outputs should be decided on a case-by-case basis. Owners of organisational project delivery approaches could also define categories to help consolidate lessons from across a portfolio of work.

38.6.2.3 Setting up a lessons register

Each entry in a lessons register and should include:

- whether the lesson is about what went well or what needed improving
- who identified the lesson and when
- a description of the lesson, including context (the situation, constraints, risks or issues faced) and what was learned
- the action to be taken, including target milestones and who is accountable

- what others should do to benefit from the experience
- the category of the lesson
- the status of the lesson (identified, assessed, planned, in progress, closed, cancelled)
- links to more detailed information, if any

A lessons register can vary from a simple spreadsheet to a set of features in an information management system. Additional fields are often added to reflect the needs of the work and team.

38.6.3 Key activities in learning from experience

38.6.3.1 Overview

Learning from experience involves a set of related activities, shown in Figure 38.2. These may happen in sequence or be repeated throughout the work.

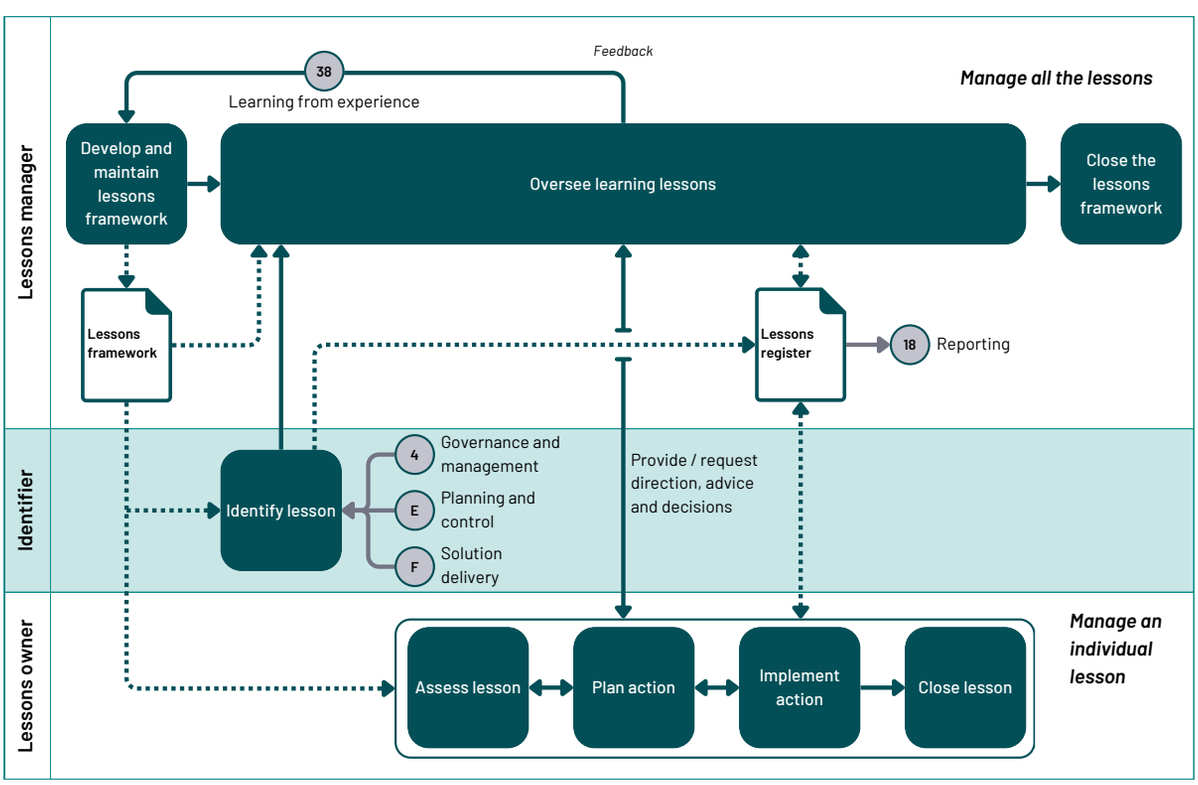


Figure 38.2 Overview of key activities for learning from experience and their primary relationships

38.6.3.2 Develop and maintain the learning from experience management framework

The important aspects of this activity are discussed in more detail in 38.6.2.

The learning from experience management framework should be developed at the start of the life cycle and should describe:

- the data needed for overseeing and managing lessons, and how the data is collected, recorded, and stored (see Chapter 24 Information and data management)
- how lessons are identified and categorised
- how lessons are assessed, planned, implemented, monitored, reported on and closed

The framework should be maintained to address relevant feedback from its use and should form part of the governance and management framework for the work.

38.6.3.3 Oversee lessons management

As each lesson is identified, it should be verified and formally registered by the lessons manager and an appropriate lesson owner assigned. This could mean combining or splitting actions, or reassigning owners.

The lessons manager should make sure that learning from experience continues to meet the needs of the work by:

- prompting updates to the learning from experience framework (see 38.6.3.2 on developing the framework)
- helping people use existing lessons better

Leaving a lesson on a register without further action is unlikely to have any future benefit. The lessons manager should provide regular reports on identified and implemented lessons to show that continuous improvement is being taken seriously.

The context and nature of the work can change throughout the life cycle. Therefore, the learning from experience framework should be under continuous review to ensure it remains effective.

38.6.3.4 Identify a lesson

A lesson could be raised formally or informally, for example as a result of an issue occurring, a threat being avoided, or an opportunity being exploited.

Lessons can also come from reviewing existing knowledge repositories, discussions with colleagues or reviewing reports and case studies. Workshops such as retrospectives,

pre-mortems and peer assists can also help (see 38.6.1.1 on learning from other work and other sectors).

Once identified, the lesson should be assigned to a lesson owner.

38.6.3.5 Assess the lesson

Each lesson should be assessed to understand aspects such as:

- **what happened**, describing what threat was avoided, issue occurred or opportunity exploited
- **what the impact was**, describing the effect of what happened
- **what was learned**, describing the implication for future work

It should be assessed whether to act on it now, in the future, or not at all. If the lesson is not fully understood there is a risk that the impact of the lesson could be incorrectly deduced and the wrong actions might be taken.

The lesson should be classified as defined in the management framework (see 38.6.2.2 on defining categories). The level of assessment needed depends on the nature of the lesson. Guidance on techniques for determining impact can be found in the *Government Functional Standard for Analysis* and in the *Aqua Book*.

38.6.3.6 Plan action

The lesson owner should agree with the lessons manager on who should take action and what the action should be.

If the action sits within the team that identified the lesson, define it fully through to completion.

If the responsibility for addressing the action is with another team, such as the owner of a higher-level delivery approach, the action could be to transfer the lesson to that team.

If the actions are significant, such as implementing a new tool, activities and milestones should be included within the plan (see Chapter 16: Planning), together with any identified assumptions and risks.

38.6.3.7 Implement action

The actions identified in 38.6.3.6 should be tracked to their conclusion.

38.6.3.8 Close the lesson

A lesson should be closed once it has been implemented and no further monitoring is required, stating when and by whom. Keep closed lessons on the register.

38.6.3.9 Close the learning from experience environment

Once the work is been completed, close the framework after any outstanding lessons and actions have been completed or cancelled. Information should be retained in accordance with the delivery and sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

Consider whether the lessons should be made shared more widely, for example as a case study on the Government Project Delivery website or as part of a learning legacy repository. Do this as part of closing the work.

39. Project delivery team induction and training

39.1 Purpose of induction and training

The purpose of induction and training is to make sure team members can work effectively as soon as possible by briefing them on the context of the work and the working practices in use.

39.2 Key points

- Induction should make sure new joiners understand the context for the work, their role and how work is to be done.
- Induction sets a joiner's first impression of the portfolio, programme or project, so it should be planned before they join the team and supported by an induction plan.
- Induction should be provided to everyone joining the team, whether civil servants, public servants, people from professional services, consultants and contingent labour, and tailored to their circumstances.
- Where innovative approaches are used or the work is large or complex, a training needs analysis should identify what is different and what specific training is needed to close skills gaps.
- Review the effectiveness of any training and adapt it is necessary.

39.3 Why have induction and training?

People working in project delivery need to the skills and competencies to carry out their roles. Good processes and guidance only work if people know how to use them.

The *Government Functional Standard for People* expects new employees to be working effectively as soon as possible, with induction covering organisational context and the new joiner's work.

Project delivery teams are temporary, change frequently and may include suppliers and contingent labour who do not have access to the sponsoring organisation's learning and development. Local induction and training makes sure everyone understands the way work is done on the specific portfolio, programme or project.

39.4 What is induction and training?

39.4.1 Induction

Induction means briefing a new team member on the context for the work and the working practices to be used. It should also cover health, safety and security.

Following the appointment to a role, induction is often the joiner's first contact with the team, setting an important first impression. Induction should be provided to everyone joining the portfolio, programme or project, tailored to whether they are:

- a permanent employee who is new to government or the organisation
- an existing employee assigned to the work
- a consultant, contingent labour or someone from professional services contracted to help deliver the work

Plan induction before a person joins the team. It should take place in the first few working days. All new joiners should have a documented induction plan. It is also good practice to offer new joiners a buddy, an informal contact or mentor, while they are settling in.

39.4.2 Training

In most cases, Civil Service and organisational training should meet most learning and development needs. However, on large programmes or where innovative approaches are used, specialist training might be needed to supplement induction. This should be planned and carried out in accordance with the *Government Functional Standard for People*, drawing on the government professions and organisational training and development expertise, where needed.

Training could cover any aspect of the work, such as:

- technical skills, including the ability to use the required equipment, tools, materials, data, and processes
- organisational skills, including behaviour, roles and responsibilities, and working practices
- people skills, including self-management, communication, and the interpersonal abilities needed to successfully perform work needed

39.5 Who is responsible for induction and training?

The **portfolio director**, in a portfolio, or **senior responsible owner**, in a programme or project, is accountable for induction and training. They own the framework for training, ensuring that it is effective in giving people the skills and competencies to carry out their roles.

The **portfolio, programme or project manager**, as appropriate, is accountable for developing and managing the induction plan and training management framework, including its processes, tools, techniques, and for ensuring that it remains effective through the life cycle.

39.5.1 Induction

The team's lead manager is responsible for induction, as **induction manager**. This could be a **portfolio**, **programme**, **project** or **work package manager**. For larger work, a **support office** may handle the general parts of induction, with the team manager covering the detail specific to the role and team. Specialists can support induction where needed.

39.5.2 Training

The **portfolio, programme or project manager**, as appropriate, can act as the **resource manager** who should identify any specialist training needs, working with other senior team managers to develop a strategy to meet these needs (see Chapter 28: Resource management). Depending on the scale and complexity of the work, there could be a dedicated resource manager (often from a **support office**) with responsibility for overseeing training on behalf of the portfolio, programme or project manager. They should draw on the government professions and people specialists where appropriate.

Wherever possible, they should use training courses that already exist across government. Where no existing course meets the need either from government or externally, a **training manager** leads work on developing and delivering the training.

On a small project, the project manager may handle both induction and training. For large-scale or complex work, a wider team may be needed to develop a full curriculum.

39.6 How to induct and train team members

39.6.1 What to consider

39.6.1.1 Understanding what is different about the work

Where a defined project delivery approach is in place, say at organisational level, the owners of that approach should provide the necessary training.

Induction and training on a specific portfolio, programme or project should be focused on what is different in that portfolio, programme or project.

39.6.1.2 Choosing an appropriate approach to training

The term 'training' used throughout this chapter covers all of these learning approaches.

Individual training

One-to-one training tailored to a person's needs, such as on-the-job training, coaching and mentoring. It can include hands-on tuition on equipment and processes. This approach works well for induction or specialist roles where group training would not cover the specific need.

Classroom training

Group training delivered in person, virtually or as a hybrid. It allows for discussion and peer learning in a focused setting away from workplace distractions. This approach works well where a group of people need the same training and would benefit from learning together.

Digital courses

Online courses or modules that can be accessed at any time and from any location. They make it easier for people to fit training around other work, though they do require some self-discipline to complete.

Guided self-study

Self-directed learning where people set goals and study at their own pace, without a formal course structure. It helps develop independent thinking and self-management skills. This approach works well for motivated learners, and benefits from clear objectives and regular check-in points.

Formalised on-the-job training

Structured training that takes place in the workplace using real tasks, equipment and processes. It allows people to apply what they learn straight away, which is helpful where skills are best picked up by doing rather than in a classroom setting.

Facilitated videos

Recorded content such as demonstrations, walkthroughs or case studies, watched individually or as a group with discussion afterwards. Visual explanation can make complex processes or tools easier to understand. This approach works best when combined with other methods, as it is passive on its own.

Knowledge talks and seminars

Presentations or panel discussions from subject matter experts, delivered in person, virtually or as a hybrid. They give people access to expert insight and current thinking, and create space for questions and sharing ideas across teams.

39.6.2 Preparing for induction and training

39.6.2.1 Undertake a training needs analysis

Once it is understood how the project delivery work is to be directed and managed and how that differs from any higher-level approaches, a training needs analysis can be developed. This is only likely to be needed for larger work and can be simplified for simpler portfolios, programmes and projects.

A training needs analysis identifies the training needed for individuals working on a specific portfolio, programme or project. It includes:

- a list of roles performed
- the skills, knowledge and experience needed for each role (the *Project delivery capability framework* and the equivalent professional standards and competency frameworks in other professions provide a good basis)
- target objectives for overall levels of skills, knowledge and experience
- a skills inventory, setting out existing skills, knowledge and experience
- a skills gap analysis, setting out the difference between the existing and the target levels
- topics to be included in training to close the gap or brief people on local working practices

39.6.2.2 Prepare a training strategy

A training strategy provides a high-level outline of the training needed on a specific portfolio, programme or project. This is only likely to be needed for larger scopes of work and can be simplified for simpler portfolios, programmes and projects, if needed at all.

The strategy should build on the training needs analysis and typically include:

- the training activities needed, prerequisites and the intended delivery approach
- the named person responsible for managing and coordinating the training overall and each activity
- an estimate of frequency and number of activities and of participants

- the training approaches to be used (see 39.6.1.2 on choosing an approach)
- how the effectiveness of the training is evaluated

39.6.2.3 Prepare for induction

Before a new joiner starts, make sure the topics to be covered are agreed and that the right people are available to deliver them. An induction plan can help and acts a checklist to make sure everything is covered.

Induction typically involves one or more briefing sessions, typically a collective briefing session, often conducted by a member of the support office, followed by sessions with a line manager. Other activities can also be included, such as meetings with other team members, site visits or work familiarisation activities.

Induction should typically cover the topics in Table 39.2.

Table 39.2 Example topics for induction

Topic	Description
Introduction	Background to the portfolio, programme, project and team the person is joining.
Their role on the work	The organisation structure, their role and responsibilities within it, and line management or reporting arrangements.
Working practices	The project delivery and other working practices to be used described in the governance and management framework (see Chapter 4: Governance and management).
IT and network access	Access to IT systems, including their sign in details.
Applications	Any non-standard applications the person needs.
Materials or equipment	Any special equipment or materials the person needs.
Building and office access	Locations and times of access needed, including government and third-party sites.
Mandatory training	Mandatory training requirements, such as for compliance and security.

Topic	Description
Specific training	Any other training needed.
Health and safety	Local information such as health and safety, fire exits, first aiders, accident reporting and local rules, especially if site-based or overseas (see Chapter 7: Health, safety and security).
Security	Security pass and security arrangements. No one should be assigned to a team without the required security clearance (see Chapter 7: Health, safety and security).
Workplace expectations	Dress code, behaviours and values (see 4.6.6 on behaviours and leadership).
Accessibility	Ensure any disabilities are recognised and identify any specialist equipment or adjustments needed.
Support and buddying	Where to find practical help and support in the first weeks.
First week and month activities	A list of activities, including training courses, to complete after induction.

39.6.3 Key induction and training activities

39.6.3.1 Overview

The activities for induction and training are summarised in Figure 39.1. They can be formal or informal, as appropriate to the scale and complexity of the work and hence training needed.

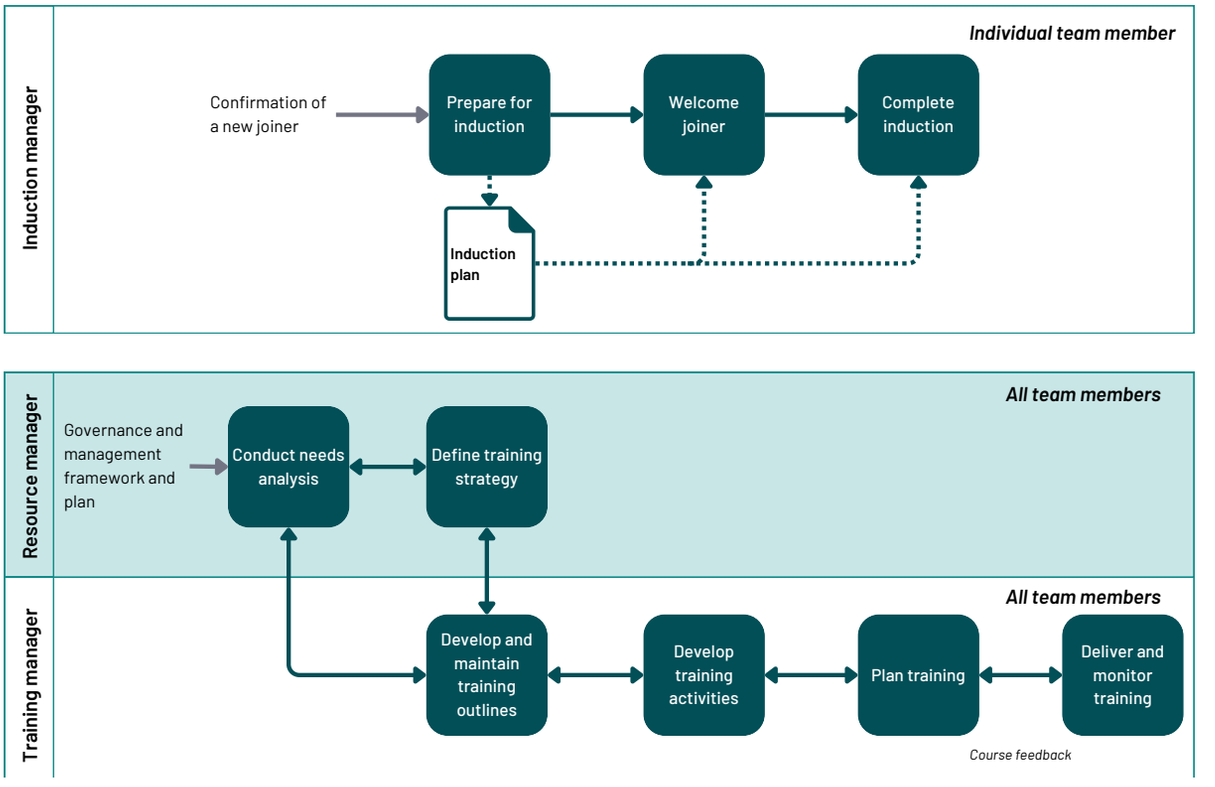


Figure 39.1 An overview of the key induction and training activities and their primary relationships

39.6.3.2 Prepare for induction

Confirm the joiner's details and agree a meeting date and time. If applicable, book the closest induction course to their start date.

Prepare or complete a personalised induction plan setting out what needs to be covered (see 39.6.2.3 on preparing for induction). Raise specific requests for equipment, software and any special requirements. This could also include arranging introductory meetings with all team members and other key contacts and appointing a person to act as a 'buddy' to help the joiner complete induction tasks.

39.6.3.3 Welcome joiner

Welcome the joiner and provide them with general background to the work and their role. If in person, take the joiner on a tour of the work area and make introductions.

39.6.3.4 Complete induction

Refer to the induction plan and ensure the joiner is briefed on each topic covered in the plan. Book specific follow-on training courses, if any.

39.6.3.5 Conduct needs analysis

If required, undertake a training needs analysis (see 39.6.2.1 on undertaking a training needs analysis).

39.6.3.6 Develop and maintain the training management framework

The training management framework should be developed at the start of the life cycle and should include:

- the data needed for overseeing and managing training, and how the data is collected, recorded, and stored (see Chapter 24 Information and data management)
- roles and responsibilities of those involved
- activities each role carries out
- the processes, procedures and techniques to be used, such as how the training strategy is developed

The framework should be maintained to address relevant feedback from its use and should form part of the governance and management framework for the work.

39.6.3.7 Define the training strategy

Working with the relevant manager and other stakeholders, and using the needs analysis as a basis, prepare the training strategy. Ensure those sponsoring, delivering and supporting training activities are consulted (see 39.6.2.2 on preparing a training strategy).

The context and nature of the work can change throughout the life cycle. Therefore, the training strategy should be under continuous review to ensure it remains effective.

39.6.3.8 Develop and maintain training activity outlines

Working with those expected to deliver training activities, prepare an outline for each, using the approach defined in the training strategy. Monitor feedback from activities and update the outline, if necessary.

39.6.3.9 Develop training activities

Develop the training activity, considering both format and content. Ensure it is reviewed by those who are sponsoring the activity, subject matter experts and those delivering it.

If appropriate, pilot the activity to validate its effectiveness, refining the format or content as necessary based on the feedback.

39.6.3.10 Plan training

Confirm that those delivering activities are available to do so. Schedule activities, book the venues, arrange support and accommodation, as required. Ensure expected participants are aware of and have been invited to attend, in-person or virtually as appropriate. Where the timing of the activity is decided by the participant, set a time window within which the training is to be completed.

39.6.3.11 Deliver and monitor training activities

For classroom and event-based training, manage the bookings, dealing with any enquiries, cancellations and moves. For other activities, check arrangements are in place and are working. Provide a contact to help resolve any issues.

Deliver training activities in accordance with the outline. Collate feedback and update the training outline or documentation, if needed. Evaluate the effectiveness of the training to show whether knowledge has been retained and used.

39.6.3.12 Close the training management framework

Once the work has been completed and training management is no longer needed, the training management framework should be merged into the management framework for the solution or closed. Transfer any training solutions if necessary and retain any information and data in accordance with the sponsoring organisation's information retention policy (see Chapter 24: Information and data management).

39.7 Further reading

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Glossary

The meaning of words is as defined in the Shorter Oxford English Dictionary, except where defined in this glossary. See also the common glossary of definitions which includes a list of defined terms and phrases used across the suite of government functional standards.

Term	Definition
accountable (person)	Someone who is accountable is required and expected to justify actions or decisions to a person or body with greater authority, from whom the accountability has been formally assigned. Note: accountabilities can be tiered such that there is a hierarchy of accountabilities, with a higher-level having overall accountability over lower-level accountabilities. Note: an accountable person usually has associated formally delegated authority for their actions and decisions, such as through delegated letters.
accounting officer	A person appointed by the Treasury or designated by a department to be accountable for the operations of an organisation and the preparation of its accounts. The appointee is the head of a department or other organisation or the Chief Executive of a non-departmental public body (NDPB) or other arm's length body.
arm's length body	Central government bodies that carry out discrete functions on behalf of departments, but which are controlled or owned by them. They include executive agencies, non-departmental public bodies, and government-owned companies.
assessment framework (continuous improvement)	In the context of government standards, an assessment framework defines levels of maturity against the most important aspects of the corresponding standard, to make it easy for organisations to understand how well they are meeting the standard, and what practices they should aim to improve.
asset (property)	Tangible fixed assets in the form of land, buildings or related equipment, owned or controlled by government, with the expectation of present or future benefit.

Term	Definition
assumption	An unknown that is taken as being a fact. Note: an assumption is made when something is unknown or not yet decided and is taken to be true for the purposes of planning, but which could change later. Note: assumptions can be treated as risks.
assurance	A general term for the confidence that can be derived from objective information over the successful conduct of activities, the efficient and effective design and operation of internal control, compliance with internal and external requirements, and the production of insightful and credible information to support decision-making. Confidence diminishes when there are uncertainties around the integrity of information or of underlying processes.
baseline	A reference basis for comparison against which performance is monitored and controlled. Note: in a project delivery context baselines apply to plans and to sets of data relating to the solution. Examples include schedule, benefits, cost, requirements and design. Note: once approved a baseline can only be altered through change control.
benefit (project delivery)	In the context of project delivery, benefit is the measurable value or other positive impact resulting from an outcome perceived as an advantage by one or more stakeholders, and which contributes towards one or more objective(s).
BIM	Building information modelling is a broad term that describes the process of creating and managing a digital model of a building or other facility such as a building, bridge, highway or tunnel.
board	The highest-level governing body (for example a board of directors, a supervisory board, or a board of governors or trustees) charged with the responsibility to direct and/or oversee the organisation's activities and hold senior management accountable.
business case	The justification for an organisational activity (strategic, programme, project or operational) which typically contains benefits, outcomes, timescales, costs and risks against which continuing viability is tested.

Term	Definition
campaign	A planned sequence of communication and interactions that uses a compelling narrative over time to deliver a defined and measurable outcome.
central government	All government departments and their arm's length bodies.
channel	The medium to deliver a message to an end audience.
commercial	Commonly used term in central government to define broad procurement activity, but does not include wider commercial activity including income generation for the purposes of this document.
commercial specialists	Staff, of any rank, with particular expertise in the undertaking of specialist commercial activities as defined in this standard, including commercial specialist roles as defined in the Government Commercial Function people standards.
communication outtake	Subject-oriented stakeholder experiences and communicator-oriented learning about communication practice.
communication package	A communication package, managed by a communication lead, is an element of a campaign which covers a specific need or event and is aligned to the campaign objectives. A communication package can be made up of a number of sub-packages.
constraint (project delivery)	In the context of project delivery, a constraint is a limitation or restriction on planning or undertaking work. Note: planning constraints can include, but are not limited to scope, performance, time, cost, resources and risk.
consulting services	Advisory and related client service activities, the nature and scope of which are agreed with the client, are intended to add value and improve an organisation's governance, risk management and control processes without the internal auditor assuming management responsibility. Examples include counsel, advice, facilitation and training.

Term	Definition
contingent worker	A contingent worker is a temporary worker contracted for a particular project or period of time; they are not on the payroll but provide services to the organisation. There are different types of contingent worker, including agency worker or independent contractor, each of which have different legal rights and status.
contract	A legally binding agreement that sets out obligations between parties. A contract can take any form, such as a licence agreement, memorandum, or service agreement.
control (expenditure)	Cabinet Office expenditure controls are part of HM Treasury's scheme of financial delegations. They apply to proposals to procure certain goods and services, to ensure the expertise and insight of the government functions is utilised. Such proposals fall outside departments' delegated authority and require Cabinet Office approval, without which expenditure is irregular.
control (organisational)	Any action taken by management, the board and other parties to manage risk and increase the likelihood that established objectives and goals will be achieved.
critical national infrastructure	Those facilities, systems, sites, information, people, networks and processes, necessary for a country to function and upon which daily life depends.
defect	An identified error or non-conformance in an approved deliverable.
defined (way of working)	A documented way of working which people are expected to use. This can apply to any aspect of a governance or management framework. For example, processes, codes of practice, methods, templates, tools and guides.
delegated authority and delegation letter	A standing authorisation by HM Treasury under which a body may commit resources or incur expenditure from money voted by Parliament without specific prior approval from HM Treasury. Delegated authorities may also authorise commitments to spend (including the acceptance of contingent liabilities) and to deal with special transactions (such as write-offs) without prior approval.

Term	Definition
delivery approach	The practices and methods used to design and implement a solution or part of a solution. Note: sometimes qualified as, for example: • adaptive; an approach in which the requirements are subject to a high level of uncertainty and volatility and are likely to change throughout the work • iterative; an approach that focuses on an initial, simplified implementation then progressively elaborates, adding to the feature set until the final deliverable is complete • sequential or predictive; where work proceeds in a sequence of predefined steps
digital twin	A digital replica of physical assets (physical twin), processes and systems. Note: digital twin can be used as a model to reflect a solution in design, or, through sensors, a real system in operation.
diversity and inclusion	Diversity provides a focus on championing a broad range of backgrounds and opinions - included those protected by prevailing equality legislation - with the merit principle front and centre and drawing on the talents of the widest possible range of geographical, social and career backgrounds. All diversity and inclusion people policies, processes and practices should be data-driven, evidence-led and delivery-focused.
established (way of working)	In the context of standards, established denotes a way of working that is implemented and used throughout the organisation. This can apply to any aspect of a governance or management framework - for example processes, codes of practice, methods, templates, tools and guides.
executive agency	A type of arm's length body. A public body that acts as an arm of its sponsoring department.
gate	A decision point, carried out as part of formal governance, at significant points in the life cycle to ensure that the decision to invest as stated in an agreed business case and plans is, and remains, valid.

Term	Definition
governance	Governance defines relationships and the distribution of rights and responsibilities among those who work with and in the organisation. It determines the rules and procedures through which the organisation's objectives are set, and provides the means of attaining those objectives and monitoring performances. Importantly, it defines where accountability lies throughout the organisation.
governance and management framework	A governance and management framework sets out the authority limits, decision-making roles and rules, degrees of autonomy, assurance needs, reporting structure, accountabilities and roles, together with the appropriate management practices and associated documentation needed to meet this standard.
government function	A grouping aligned across government, embedded into departments and arm's length bodies. For activities within its scope, each function: sets cross-government strategies, sets and assures standards, develops capability, gives expert advice, drives continuous improvement, and develops and delivers commonly required services.
government major project	A central government funded project or programme that requires HM Treasury approval during its life, as set out in Delegated Authority Letters, or is otherwise of special interest to the government. A government major project is listed in the Government Major Projects Portfolio (GMPP).
Government Major Projects Portfolio (GMPP)	The portfolio of the government's largest, complex, innovative, risky and ambitious projects that have been agreed by the National Infrastructure and Service Transformation Authority, HM Treasury and departments and are delivering the government's main policy initiatives.
government profession	A grouping aligned across government to increase the professionalism and engagement of people with particular skills, knowledge or expertise. A profession sets professional standards, supports professional development and career progress, and provides a consistent way to attract and retain people.
grid	A media planning schedule and forward look to plan announcements.

Term	Definition
integrated assurance and approval plan (IAAP)	The planning, co-ordination and provision of assurance activities and approval points throughout the 'policy to delivery' life cycle, proportionate to levels of project cost and risk.
integrated assurance strategy (IAS)	The integrated assurance strategy sets the strategic requirements for assurance provision to ensure agreed and consistent standards across an organisation's portfolio of major projects.
issue	A relevant event that has happened, was not planned and requires management action. It could be a problem, benefit, query, concern, change request or risk that has occurred.
iterative	Repetitive use of a procedure or process. Note: iteration is normally done for the purpose of improving or developing something, where each iteration builds on the work and experience from previous iterations.
knowledge asset	A piece of knowledge viewed as an asset to the person or organisation which possesses it. Note: examples include intellectual property and innovation, datasets, patents, trademarks and new ideas, processes or methods.
lessons learned	The practice of continuous improvement based upon organisational learning in a risk management context.
life cycle	The life cycle provides a phased structure for governing the work and underpinning the delivery plan from start to finish. Note: life cycles can be applied to a portfolio, service, product, system, programme or project.
lines of defence	An assurance model that defines 3 distinct groups of stakeholders involved with separate but complimentary assurance activity.
media	Communication channels through which news, entertainment, education, data, or promotional messages are disseminated. Media includes every broadcasting and narrowcasting medium on and off line such as websites, social media platforms, newspapers, magazines, TV, radio, billboards, direct mail and telephone.

Term	Definition
non departmental public body	A subset of arm's length body. A public body with a role in the process of national government that is legally separate from its sponsoring department and operates independently from ministers.
non ministerial department	A subset of arm's length body. A public body that shares many characteristics with a full department, without ministers, and acts independently from any sponsoring department.
other related work (project delivery)	In the context of project delivery, other related work comprises work within a portfolio or programme which is not managed as a project. Note: examples of other related work are support services (such as for finance and human resources, support offices and specialist information and engineering offices), ongoing improvement initiatives not run as projects, service delivery and business as usual operations.
outcome	The result of change normally affecting real-world behaviour or circumstances. Note: outcomes are desired when a change is conceived. Note: outcomes are achieved as a result of the activities undertaken to effect the change; they are the manifestation of part or all of the new state conceived in the target operating model.
output	A specialist product (the tangible of intangible artefact) that is produced, constructed or created as a result of a planned activity and handed over to users.
portfolio	Part or all of an organisation's investment required to achieve its objectives. Note: a portfolio is governed through its portfolio (or business) plan, and comprises work components, such as other portfolios, programmes, projects, other related work and work packages.
portfolio management	Portfolio management is a co-ordinated collection of strategic practices and decisions that together enable the most effective balance of organisational change and business as usual.
product	An article of substance that is offered or is part of a service delivered by an organisation.

Term	Definition
programme	A programme is a unique, temporary, flexible organisation created to co-ordinate, direct and oversee the implementation of a set of projects and other related work components to deliver outcomes and benefits related to a set of strategic objectives.
project	A project is a unique temporary management environment, undertaken in stages, created for the purpose of delivering one or more business objectives. Note: a project's objective can be fulfilled by a combination of deliverables, products, services, outputs, outcomes and benefits, depending on the project's context.
project delivery	Collectively, portfolio, programme and project management are referred to in government as 'project delivery'.
quality	The degree to which the features and inherent or assigned characteristics of a product, person, process, service and/or system bear on its ability to show that it meets expectations or stated needs, requirements or specification.
quality assurance	The planned systematic process that will be used to provide confidence that outputs will match their defined quality criteria.
quality control	The process of monitoring specific project results to determine whether they comply with relevant standards and of identifying ways to eliminate causes of unsatisfactory performance.
reach	The number of people reached by a communication activity.
requirement	Statement which translates or expresses a need and its associated constraints and conditions. Note: different delivery approaches use differing terminology, for example Scrum uses the term user story.
residual risk	The risk remaining after the risk response has been applied.
responsible (person)	Someone who is responsible has some control over or care for an action, or the obligation to do something as part of a wider job role. Note: a responsible person is responsible to an accountable person, or themselves if they are the accountable person.

Term	Definition
risk	The effect of uncertainty on objectives. Note: risk is usually expressed in terms of causes, potential events, and their consequences. Note: a cause is an element which alone or in combination has the potential to give rise to risk. Note: an event is an occurrence or change of a set of circumstances and can be something that is expected which does not happen or something that is not expected which does happen. Events can have multiple causes and consequences and can affect multiple objectives. Note: the consequences, should the event happen – consequences are the outcome of an event affecting objectives, which can be certain or uncertain, can have positive or negative direct or indirect effects on objectives, can be expressed qualitatively or quantitatively, and can escalate through cascading and cumulative effects.
senior responsible owner	The individual accountable to the sponsoring body for a programme or project meeting its objectives, delivering the required outcomes and realising the required benefits. Note: the senior responsible owner owns the business case and is accountable for governance. Note: the sponsoring body could be a group or individual. Note: the senior responsible owner of a government major project is ultimately accountable to Parliament.
service	Action of an organisation to meet an ongoing demand or need to deliver an outcome for users. Note: a service is a complete solution that brings together technology and non-technology elements to enable users to achieve a defined outcome.
simulation	Use of a similar or equivalent system to imitate a real system, so that it behaves like or appears to be the real system. Note: simulation is primarily used in design. Note: the equivalent systems are usually, but not always, digital. Note: modelling is an alternative term used.
solution	The services, products and infrastructure which are intended to fulfil the requirements for an aspect of government policy or the organisation's objectives. Note: the solution can include people, products, services, information, processes, and natural and societal elements.

Term	Definition
solution hierarchy	The progressive breakdown of a solution into its constituent elements. Note: also referred to as a system hierarchy. Note: this is usually the equivalent of a product breakdown structure used in planning.
solution integration	The progressive assembling of a solution's components into the whole system. Note: also referred to as 'system integration' and 'service integration' depending on context.
sponsoring body	The driving force behind a programme, which provides the investment decision and top-level endorsement for the rationale and objectives of the programme.
stage (project delivery)	In the context of project delivery, a stage is a subdivision of a project life cycle.
stakeholder	Individual, group or organisation that can affect or be affected by, or perceive itself to be affected by a decision, initiative or activity. Note: examples of stakeholders include: citizens, customers, regulators, suppliers and employees and sponsoring bodies. Note: examples of a decision, initiative or activity include those relating to business as usual activities, portfolio, programmes and projects. Note: also referred to as an interested party.
standard	A standard is an agreed document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose.
strategy	A strategy outlines longer term objectives, outcomes and outputs, and the means to achieve them, to inform future decisions and planning.

Term	Definition
system	Arrangement of parts or components that work together to provide a product, service or outcome. Note: the term 'system' is frequently clarified by the use of an associative noun, for example, aircraft system. Note: a complete system includes all of the associated equipment, facilities, material, computer applications, firmware, technical documentation, services, and personnel required for operations and support to the degree necessary for self-sufficient use in its intended environment.
system of systems	A collection of systems which can operate independently fulfilling a purpose on their own, are independently acquired and managed, and can maintain a continual independent operational existence. Note: a system of interest is the system whose life cycle is under consideration within a system of systems.
tailoring	Altering or adapting defined practices, methods and processes to suit particular context or circumstances. Note: tailoring is used to ensure governance and management is appropriate and proportionate.
termination	Termination is the premature closure of a work component because it is no longer needed or viable, or because the risks associated with it have become unacceptably high.
tolerance	The agreed deviation above and below a plan's baseline without escalation to the next level of management. Note: tolerance can be applied to schedule, cost, quality, scope, benefit and risk. Note: tolerances for quality are normally set in the requirements and specifications.
tranche (project delivery)	In the context of project delivery, a tranche is a subdivision of a programme designed to enable an incremental approach to delivery of outputs, outcomes and benefits.
transformation	A distinct change to the way an organisation conducts all or part of its business.

Term	Definition
two-way traceability	The ability to trace both forward and backward (for example, from requirement to an element of the solution and from the solution element back to requirement). It can also be applied in other areas, such as to output-outcome-benefits mapping, and solution-plan mapping.
user	A person whose needs are, or are to be met, by a product, service or process. Note: Users have a direct relationship with the product, service or process and might be end-users (such as a member of the public or a government official) or other users (such as those who maintain the product, service or process).
user needs	Prerequisites identified as necessary for a user, or a set of users, to achieve an intended outcome, implied or stated within a specific context of use. Note: a user need is independent of any proposed solution for that need.
validation	An activity that ensures a solution (or part of) meets the needs of the business. Validation ensures that business requirements are met even though these might have changed since the original design.
value for money (project delivery)	Value for money is a balanced judgment based on the benefit-cost ratio which brings together social costs over the entire life of a proposal, together with decisively significant unquantifiable deliverables, and unmonetised risks and uncertainties, to deliver a proposal's objectives.
verification	An activity that ensures that a solution (or part of) is complete, accurate, reliable and matches its design specification.
work component	A defined and managed part of a portfolio, such as a lower-level portfolio, programme, project, other related work, or work package.
work package	A group of related activities that have a defined scope, deliverable, timescale and cost, contributing to the required outputs and outcomes.

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