Infrastructure and Projects Authority

Project Routemap
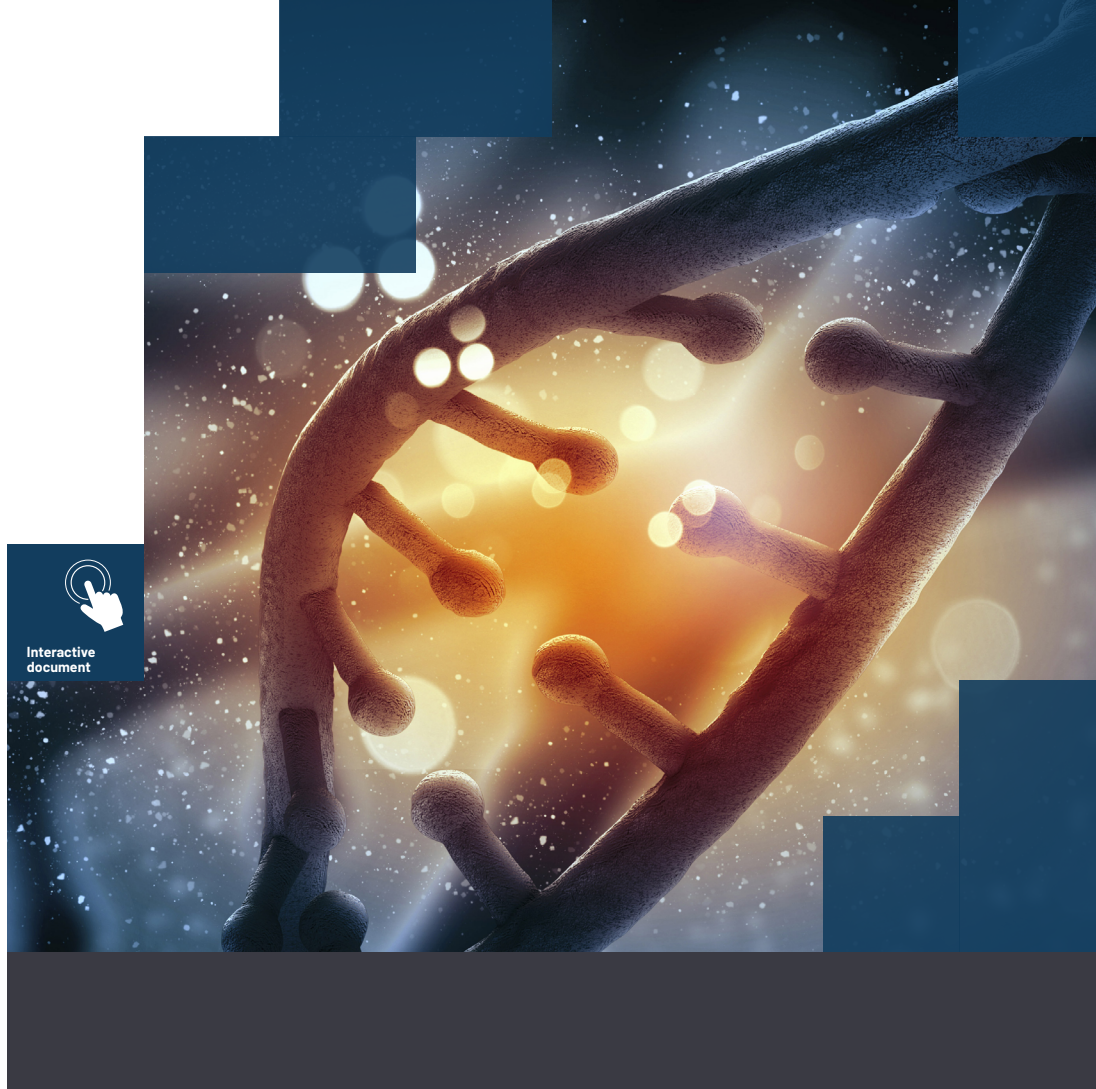
Setting up projects for success

Requirements

UK Module

Interactive document

Contents

Requirements

Rq

01

Cover image
The 100,000 Genomes Project, which created
the largest database of its kind, linking
genomic and health data to accelerate
research and offer patients with cancer and
rare diseases the chance of improved diagnosis
and care.

Acknowledgements
Genomics England, part of the Department of
Health and Social Care
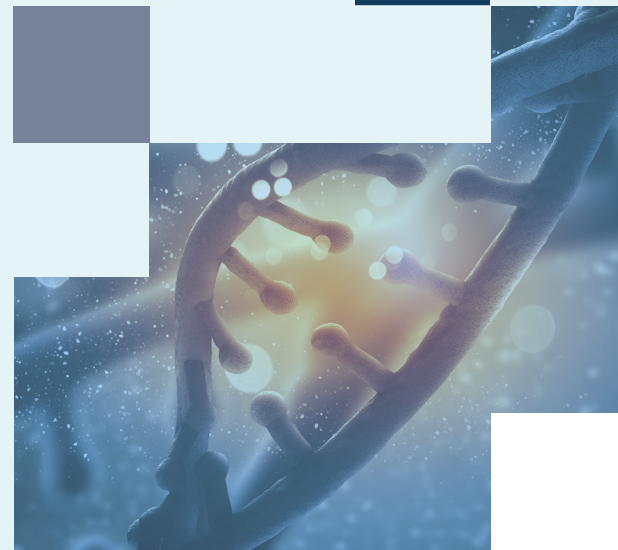
Preface

Project Routemap is the Infrastructure and Projects Authority's (IPA) support tool for novel or complex major projects. It helps sponsors and clients understand the capabilities needed to set projects up for success, incorporating learning from other major projects and programmes.

The IPA is the centre of expertise for infrastructure and major projects, sitting at the heart of government and reporting to the Cabinet Office and HM Treasury in the UK.

Over the coming years there will be more investment in infrastructure and major projects than ever before, backed by both public and private sectors. This investment will be a catalyst to building back better and stronger. Infrastructure and major projects will play a critical role in fuelling economic growth and improving the lives of people right across the country.

With greater investment comes greater responsibility and we must ensure we have a strong delivery record that demonstrates real value. This means setting projects up for success from the very start, so that they come in on time and budget, and deliver on their promises - to the benefit of the citizens of the UK.

Although setting up projects for success can take more time at the start, this will be repaid many times over in the delivery phase. Projects that focus enough attention on the early stages are much more likely to achieve their intended outcomes later on and display world-class delivery standards.

That's why the IPA developed the Project Routemap ("Routemap") - a support tool that provides practical advice based on learning from other major projects and programmes.

There is no doubt that complex projects can test the limits of organisational capability, but if applied in the most crucial early stages of project development, Routemap will ensure that best practice and learning about the most common causes of project failure and principles for project success are incorporated. This will result in benefits ranging from selection of the most appropriate delivery model, to clearer governance arrangements, proper risk allocation and accelerated decision-making.

Routemap has been used by many of the UK's biggest, most complex and high-profile projects since its first publication in 2014 and more recently it has also been applied to projects internationally. However, the project delivery system and the way projects are delivered has evolved. That is why the UK Routemap handbook and accompanying modules have been updated to incorporate new and emerging best practice in project delivery and to align with standards, including the Government Functional Standard for Project Delivery and the UN Sustainable Development Goals.

Building on its success with economic infrastructure, Routemap has also been expanded to cover social and defence-related infrastructure projects and includes guidance for application to other types of projects.

Applying Routemap to more of our projects will be another step towards realising our ambition of world-class delivery standards. Whatever the project, applying Routemap will give confidence to the people delivering them, those approving them, and those investing in them.

The IPA would like to thank all those organisations and individuals who have contributed to the development, of both the original, and the updated UK Routemap handbook and accompanying modules.

Nick Smallwood
Chief Executive Officer of the Infrastructure and
Projects Authority and Head of Government's
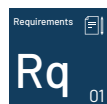Project Delivery Function
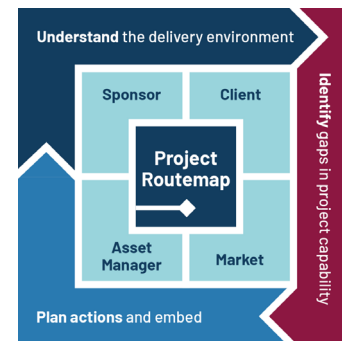
Introduction: What are the Routemap modules?

The Routemap modules provide practical advice to help set up projects for success. The modules have been developed by the UK government in collaboration with industry and academia. They capture best practice and learning from common causes of project failure and success over the past decade from £300bn of capital programmes.

These modules sit alongside the Routemap handbook. The handbook explains how Routemap can be applied to identify gaps in project capability and build an action plan to close those gaps.

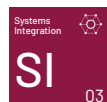There are eight modules, one covering each of the following areas:

The best practice and learning contained in the modules reflect the collective experience of public and privately funded projects from the infrastructure and defence sectors. However, most of the principles apply to all projects, including digital and transformation projects.

These modules are aligned with the government's Project Delivery Capability Framework and help projects comply with the Government Functional Standard for Project Delivery. They also help projects to align with other recognised standards and guidance, including the United Nations Sustainable Development Goals.

They are useful whether you are using the Routemap to undertake a Full Project Review or a Modular Deep Dive, as detailed in the Routemap handbook. They can also be a useful standalone reference to identify potential risks and improvements in project capability development, and relevant good practice from other projects.

The modules are not a complete guide to project development, nor a substitute for business case development. Instead, they provide considerations to challenge your thinking and to launch your project on the path to success. The project team will need to consider their project's individual characteristics and context and identify what will be most helpful to them.

Requirements
Delivering strategic project outcomes and realising the benefits.

Procurement
Understanding how the project will buy goods and services.

Governance
Establishing clear accountability and empowering effective decision-making.

Risk Management
Managing uncertainties and opportunities.

Systems Integration
Making multiple systems work as one.

Asset Management
Balancing costs and risks to Maximise whole life benefits.

Organisational Design & Development
Organising the project team to deliver successfully.

Delivery Planning
Readying the project for transition into delivery.

Introduction: How do you use the Routemap modules?

This table summarises how different module sections support the three key stages of the Routemap methodology.
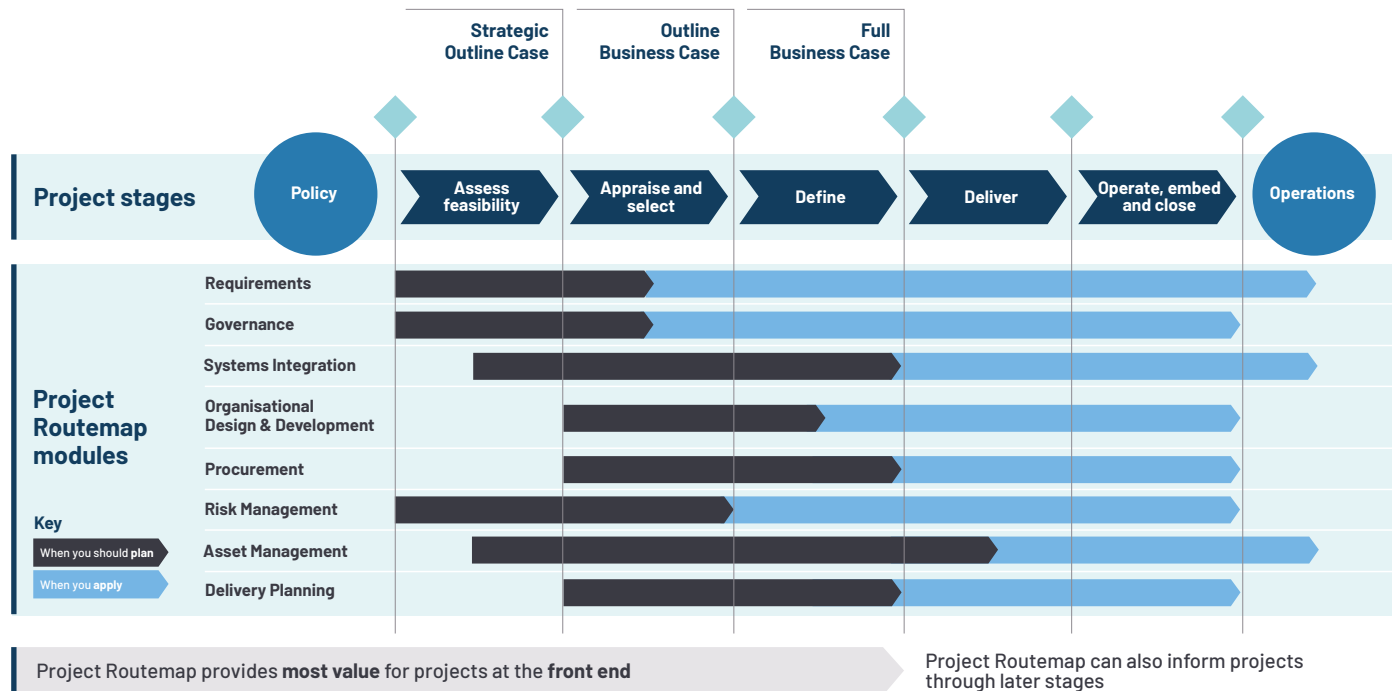
The modules are useful when applying the Full Project Review and Modular Deep Dive approaches, which are described in the Routemap handbook.

	Setup Determine the scope and timing of the Routemap, which can be project-wide or targeted to specific areas of capability	**Diagnosis** Gather information and identify where capabilities need to be enhanced	**Action planning** Collaborative development of practical solutions to enhance capability
Routemap approach			
Full Project Review	Determine if there is value in using Routemap to support project-wide capability development.	Determine which modules may help.	Apply best practice and learning from the modules and any other major project examples.
Modular Deep Dive	Determine if there is value in using specific Routemap modules to support development of a specific area of capability.	There is likely to be one module in particular that focusses on your selected area of capability. However, there may be value in consulting other interfacing modules too.	Apply best practice and learning from the modules and any other major project examples in the selected area of capability.
Module section			
Key project documents Documents that will help you understand the requirements arrangements for your project.	You may find it helpful to review these types of project documents, to define the areas of interest in the Routemap scope.	Cross-checking this document list against existing project documents may also help you to identify capability gaps.	You may find that developing or enhancing these types of documents will help to close capability gaps.
Typical findings Indicators that issues might arise during delivery.	If these indicators are apparent even before you start applying Routemap, this should inform the areas of interest in the Routemap scope.	You may find it helpful to review these when identifying issues and articulating your findings.	If your findings contain statements like these, this module could help strengthen capability.
Pillars of effective requirements management Hallmarks of successful project set up.	Comparing your project with these characteristics of good practice may help you to identify areas of interest in the Routemap scope.	*Not applicable to this stage*	Comparing your project with these characteristics of good practice may help you set goals for your action plan.
Considerations Detailed list of questions to understand root causes and suggest improvements.	*Not applicable to this stage*	This section lists a series of questions that can help you to test the effectiveness of existing arrangements.	Working through these questions can help you understand the root causes of the findings and develop solutions.
Good practice examples and suggested reading Context to support your wider understanding.	*Not applicable to this stage*	*Not applicable to this stage*	You may find these good practice examples and suggested reading useful in developing actions to address capability gaps.

Introduction: How do the modules map to the project life cycle?

This diagram maps the Routemap modules to the stages of a project life cycle.

It shows when each of the modules should be used to support planning during project set up. It also suggests the stages when the modules' principles are expected to have been applied.

Strategic Outline Case

Outline Business Case

Full Business Case

Project stages

Policy | Assess feasibility | Appraise and select | Define | Deliver | Operate, embed and close | Operations

Project Routemap modules

- Requirements
- Governance
- Systems Integration
- Organisational Design & Development
- Procurement
- Risk Management
- Asset Management
- Delivery Planning

Key

When you should **plan**

When you **apply**

Project Routemap provides **most value** for projects at the **front end**

Project Routemap can also inform projects through later stages

Cross-cutting themes projects can't ignore

Six cross-cutting themes emerged from our engagement with major projects and industry, which have informed the updated Routemap modules. These place complex demands on project teams, and if overlooked during set up, can create issues during the later stages of the project life cycle.

These themes include the need for focus on behaviours and culture, consideration of wider economic, environmental, and social value and the increasing use of digital systems and tools to enable a systems-focused approach.

Planning ahead for the right skills, experience and capacity to address these themes is key to success.

To help you navigate these themes, we have developed a series of prompts. You can use these prompts to check whether your project is set up to meet the challenges ahead.

Benefits and outcomes focus
adopting a whole life perspective whilst managing the project

- Have you got a clear vision of the target outcomes, which is aligned across the sponsor, client, asset manager and market?
- Have the project outcomes been effectively communicated to key stakeholders and the supply chain?
- Has the project set realistic and transparent targets?
- Are you able to measure the realisation of benefits throughout the whole life cycle? Including any potential early releases?
- Have you considered the disbenefits and how to minimise them?

People and skills
planning ahead for the right skills, experience and capacity to deliver the project

- Have you undertaken activity-based resource planning to ensure you have the people with the right skills, knowledge, experience and behaviours at the right time to deliver the project?
- Are these plans reviewed on an ongoing basis? And do they incorporate skills development and succession planning to ensure continuity in key roles and to meet evolving needs?
- Have you considered the time commitment of your project leaders to ensure they have the right capacity to deliver the project?
- If using delivery partners or third parties, do they have the capacity and expertise to support the project as required?

Behaviour and culture
realising project success with a capable, diverse and integrated team

- Is there a plan for how desired behaviours and values will be cascaded and embedded through the sponsor, client, asset manager organisations and the supply chain?
- How are the desired behaviours and culture promoted in the project?
- Does the project have a culture that empowers constructive challenge and diversity of thought?
- How is the project planning to build relationships and invest in creating the right environment to realise project outcomes?

Economic, environmental and social value
taking in a wider view of the project's impact

- Have you considered how the project will generate economic, environmental, and social value, both through its intended outcomes and/or as a by-product of delivery? Has this been hardwired into the business case, with a clear link to the UN Sustainable Development Goals?
- Is your project aspiring to leave a "net positive" and climate resilient impact on the natural environment?
- How are you maximising benefits and minimising risk and disbenefits for project affected communities and contributing to levelling up?
- Is there clear accountability for the economic, environmental, and social benefits and outcomes?

Digital and technology
embedding systems and approaches at the front end to maximise project productivity

- Have digital and modern methods been considered at the earliest point in the life cycle to maximise their impact on benefits?
- How has the project assessed and addressed digital capability within the sponsor, client, asset manager and market?
- Has the project considered how information, data and knowledge will be shared across the project, including with the supply chain?
- What consideration has been given to potential changes in technology that may influence benefits realisation?

Transitions
planning for change and developing the required capability before progressing to the next life cycle stage

- Does the project have a clear plan for how they will transition from one life cycle stage to the next?
- Does the plan set out the changes needed to organisational and governance arrangements?
- Does the project have the necessary capability to transition to the new organisational and governance arrangements for the next life cycle stage? Including the change management capability required to embed the changes?
- Is the project clear on how the relevant documents and people will carry knowledge and learning across life cycle stage boundaries?

Requirements, and why they're important

"Establish clear requirements and iterate these to secure an affordable project, and then hold steady the requirements and funding to provide a stable and predictable environment."

Lessons from transport for the sponsorship of major projects – Department for Transport and Infrastructure and Projects Authority 2019

Requirements

Rq 01

Why requirements matter

Requirements are the project stakeholders' wants and needs. They must be prioritised and agreed in the context of the project's expected outputs, outcomes and benefits. Furthermore, they must be aligned with organisational, regional, national and international policies and aims, such as the UN Sustainable Development Goals, the Paris Agreement, the UK's Net Zero Carbon Targets and commitments made at COP26. Without good requirements management, the project may fail in the eyes of stakeholders, as it will not be delivering in line with their expectations.

A clear set of unambiguous requirements helps project teams and their supply chain understand what they need to deliver and informs the organisational design of the project. Proactive and ongoing stakeholder engagement is critical to manage expectations, especially with the asset manager, who will maintain and operate the asset once the project is complete. It demonstrates how the project will deliver on its vision and helps to mitigate potential late changes that may compromise the business case.

Stability of requirements is key to success. Requirements will inevitably need to develop as more information becomes available; however, they should be locked down and baselined before the business case is finalised for approval. To prevent unpredictable cost and schedule implications, requirements should be subject to robust change control including the testing of any unavoidable changes for impact against the plan, business case, outcomes and benefits before decisions are taken.

Organisations are more likely to realise their goals and strategic objectives, as well as contribute to wider economic, environmental and social targets when:

- project teams and stakeholders have a shared understanding of the vision of success
- future world changes are taken into account, such as a decreasing reliance on fossil fuels, the need to be Net Zero by 2050 and evolving social and economic circumstances
- the sponsor and asset manager engage upfront to determine how the asset will be transitioned into operation, through a systems-led approach
- requirements are clear and unambiguous
- benefits are owned and actively championed by empowered sponsors who regularly engage with the project team and other key stakeholders
- there is alignment between requirements and the expected benefits, and a common understanding of the interdependencies within the project, and with other projects, programmes or portfolios
- there are both quantitative and qualitative measures to judge project success

This module can help to assess if existing or proposed arrangements for managing requirements are suitable for the scale or the complexity of your project.

What are the key project documents?

If you are seeking to find out more or to review the existing requirements management arrangements on your project, the typical documents and reports set out below may contain information that will help.

- Sponsor's requirements (Brief)
- Target operating model
- Business case, in particular the strategic, commercial and management cases
- Benefits register and realisation plan
- Regulatory or statutory requirements
- Requirements baseline
- Change control procedure
- Stakeholder map and engagement plan
- Communications strategy and plan
- Record of stakeholder/user consultation
- Contracts and third-party agreements
- Data (and modelling) to evidence assumptions
- Environmental impact assessment (EIA)
- Equality impact assessment (EqIA)
- Project delivery plan (NBP): Sustainability strategy

Not all projects will have all of these documents, particularly in the earliest stages of development.

Typical findings

● Primary module
◑ Other relevant modules

Typical findings relating to requirements

This list describes situations that might arise and would indicate that the approach to managing requirements needs improvement. Other relevant modules may also help you close identified capability gaps.

Relevant modules

Finding	Requirements	Governance	Systems Integration	Organisational Design & Development	Procurement	Risk Management	Asset Management	Delivery Planning
The requirements are poorly articulated or conflicting, so the purpose of the project and/or what it needs to deliver is confusing.	●				◑		◑	
The project requirements are not aligned to national or international goals regarding economic, environmental and social value, for example, UN SDGs and Net Zero targets.	●	◑					◑	
It will be difficult to prove success because the benefits are not defined in tangible or measurable terms.	●				◑			◑
Through the life of the project there is little provision for, or anticipation of, potential scope changes caused by external factors, for example, climate change.	●		◑		◑	●		
Upfront consideration of strategic alternatives or different ways of addressing requirements has not occurred leading to a predetermined view of the solution.	●		◑				◑	◑
There is no clear process, nor defined responsibilities, for prioritising requirements and deciding which of those should be incorporated into the project.	●	◑						
It is not clear how the deliverables align or contribute to the expected benefits, leading to a risk that the benefits will not be fully realised.	●							◑
The project requirements, business case and design indicate a lack of future thinking and insufficient focus on the experience of the end user.	●		◑				◑	
Assumptions are untested and consequently there is low confidence either that the requirements are fit for the future or that the benefits can be realised.	●						◑	
Asset life cycle parameters are not well defined in the project requirements, for example asset reliability or cost of maintenance, and Building Information Modelling (BIM) is not built into project development activity.	●		◑				●	◑
There is conflict or tension between the participating organisations as the project is not fully aligned with their relevant individual objectives.	●	◑		◑		◑		
The technical requirements have advanced more quickly than the development of the target operating model.	●		◑			◑		

Pillars of effective requirements management

The four pillars below summarise the characteristics of effective requirements management.

Pillar 1: **Setting the project vision and strategic objectives**   **1**

- Create a shared vision of success which is realistic and easy to understand.
- Incorporate strategic objectives relating to economic, environmental and social value, modern methods and digital at the outset to avoid costly late changes.
- Proactively test the project vision with key stakeholder groups, resolving conflict and balancing their expectations of what constitutes success.
- Communicate the agreed vision, tailoring the messaging to reflect the different impacts the project will have on stakeholder groups.

Pillar 2: **Developing and prioritising requirements**   **2**

- Develop clear requirements at an early stage to underpin business case development.
- Actively engage with stakeholders to gather, negotiate, and prioritise requirements.
- Define the target operating model, being sure to involve the asset manager.
- Establish a robust governance framework to manage the development of requirements and to control change.
- Freeze requirements as early as possible.

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits**   **3**

- Projects need to continually monitor how requirements link to national and strategic policies, as well as any local initiatives and relevant ESG criteria.
- Maintaining the "golden thread" between the project's outputs, outcomes and the benefits is crucial.
- If the project outputs do not align to overall strategy, the project requirements should be re-examined.
- Use baselining and change control to robustly manage and continually assess the implications of requirement changes against the business case.

Pillar 4: **Realising and measuring project benefits**   **4**

- Define objective measures for all benefits and data sources in a benefits realisation plan.
- Allocate resources and assign clear responsibilities to manage benefits realisation and reporting, both during the project and after it has closed.
- Ensure progressive communication of benefits realisation to stakeholders.

These four pillars underpin effective requirements management for infrastructure projects. If one pillar is missing or out of balance, the project requirements will likely be ineffective or inefficient. The pillars are expanded in the considerations section of this module.

The arrangements for managing these requirements might need to evolve during the project, so you should revisit the considerations at major transition points or approval points, or as plans change.

Requirements management arrangements should evolve as:

- more information becomes available, the sponsor increases their understanding of project requirements and how they align with the outcomes and benefits
- the project team and their processes develop and embed
- the project progresses through its life cycle, from design and planning through implementation to operation

Considerations

Module Pillars

The considerations questions help you understand the root causes of the capability gaps and suggest improvements. You may not need to review all the considerations, just use the most relevant ones for your project.

Considerations

Each pillar is expanded into a number of consideration questions. These questions will help you:

- to review and validate existing requirements arrangements
- to target areas for improvement
- to test the design of new requirements arrangements

What may help

Signposts other related material which you might find helpful. These include other relevant modules with related content, key project documents, good practice examples and suggested further reading.

Routemap uses four primary roles to describe the key areas of responsibility in the early stages of project development. These are sponsor, client, asset manager and market. Before reading through the detailed considerations, you should familiarise yourself with these definitions in the glossary and consider which organisation is fulfilling which role for your project. Sometimes an organisation can fulfil more than one of these roles, for example both the sponsor and client roles. Also, where a project is still at an early stage, a role might not yet be filled by any organisation, for example the market role.

Considerations:

Pillar 1 Setting the project vision and strategic objectives

Considerations	What may help

Defining success

- Is the strategic need for the project clear?
- Has success been clearly defined ? Including in terms of the economic, environmental and social value the project is expected to bring.
- Has this been documented? For example, in a vision statement and strategic objectives.
- Is the vision easy to understand, providing a unified direction, and easy to promote?
- Does the project vision align with:
    - the organisation's long-term strategic objectives? For example, sustainability targets.
    - national and other relevant policy statements and strategies? For example, the UN Sustainable Development Goals.
    - other projects, programmes and portfolios within the organisation?
- Has the project's success been defined in terms of measurable benefits?
- Have metrics and indicators been established to assess the project's performance against these expected targets and benefits, including any linked to ESG criteria?
- Has the process to identify the vision been collaborative and inclusive, involving the relevant stakeholders? How have conflicts been managed and recorded? Is the vision accepted?
- How has the vision of success been shared and tested?

Communicating the vision

- Is there a plan to communicate the vision to key stakeholders?
- Is there a means for people to identify with and recognise the project, for example a project identity or brand? If so, does this mirror the project vision, objectives, values and benefits?

What may help

Asset Management
AM 07

Business case (strategic), stakeholder map and engagement plan and benefits register and realisation plan

Examples 1 and 2

Suggested reading 1 , 2 , 21, 23

Delivery Planning
DP 08

Communications strategy and plan

Considerations:

Pillar 2 Developing and prioritising requirements

Considerations	What may help

Gathering requirements

- Is there a clear process for gathering and tracking stakeholder requirements?
- Does the process facilitate timely stakeholder input?
- How has the project identified and prioritised stakeholders to gather requirements from? For example, the asset manager, end user and project affected communities.
- Does the approach ensure adequate information is gathered about the requirements for assessment by the project team? For example, time constraints or technical information.
- Are requirements described clearly to ensure there are no differing interpretations of meaning?
- Has a high-level target operating model been established? Is this used as a basis for requirements definition?
- Does the project have mandatory requirements? For example, national legislation, regulations, ESG criteria or corporate policies.
- Are organisation complexities that might impact the requirements understood? Such as any operational changes, asset integration processes or organisational restructuring?
- Is there an understanding of key constraints, dependencies and risks? Does this include any gaps in understanding requiring specific consultation?
- Are there complexities in the project delivery model that might impact requirements such as critical delivery timescales, systems interfaces, or incremental/staged handovers?
- Are the requirements of this project dependent on the requirements of other projects?
- Have opportunities to adopt shared requirements and common standards with other projects, programmes and portfolios been considered to encourage innovation, drive efficiency and share learning across your supply chain?
- Is there evidence that the complexity of technology or innovation, and its impact on requirements, are understood?

SI 03 **DP** 08

Stakeholder map and engagement plan, sponsor's requirements and regulatory or statutory requirements

Examples 2, 3 and 4

Suggested reading 3, 4 and 5

Prioritisation

- Is there a clear process for the collection, definition, acceptance and prioritisation of stakeholder requirements?
- Are there clear criteria for prioritising the project's requirements? For example, through the use of a Must, Should, Could and Will Not (MoSCoW) analysis.
- Is there a mechanism for down-selecting from a 'long list' of requirements to a preferred 'short list'? For example, workshops with key decision-makers.
- Does the process include a mechanism for resolving any conflicting requirements?
- Does the process ensure any potential biases or preferences are avoided?
- Are the agreed requirements all clearly defined with specific success criteria? Does this include taking a whole life perspective of the implications for delivery and future operations?
- Do any of the requirements enable or hinder any early release of benefits prior to completion?
- Has the project considered which requirements may be superseded or have less relevance by the time they need to be delivered?
- Are potential requirements checked against other projects or programmes within a portfolio? Is the need being fulfilled elsewhere?
- Are existing and new requirements being mapped against the business case to ensure that they are clearly contributing to the overall benefits?
- Does the project continually test and challenge its requirements at each respective stage to ensure alignment with the business case is maintained?

Gv 02 **AM** 07

Benefits register and realisation plan, business case (strategic) and record of stakeholder/user consultation

Examples 2 and 4

Suggested reading 4 and 5

Considerations:

Pillar 2 Developing and prioritising requirements

Considerations	What may help

Governing the process

- Is there a clear process for managing evolving requirements as more information becomes available?
- Is it clear how and when different parts of the project organisation contribute to this process?
- Is the governance over this process clear, in particular for taking decisions to get to an affordable project?
- Is there a process of aligning stakeholder expectations with the requirements that have been approved?
- How will the interdependencies and trade-offs between requirements be examined? For example, up-front investment for long term carbon emission reductions.
- When deciding between conflicting requirements, are alternative future scenarios considered?
- If conflicting requirements cannot be reconciled, is there an escalation process or appropriate delegated authority to make a final decision?
- How is the project guarding against pressures to adopt requirements that may compromise or have a negative impact on the business case?
- Does the project governance and approvals process have sufficient flexibility to allow progress with requirements at different levels of maturity? For example, developing knowledge of particular requirements that may only be fully understood at a later stage.
- How are requirements that are not incorporated into the project captured and used for future requirement setting and informing future projects?

What may help:

Governance **Gv** 02

Sponsor's requirements, business case (strategic) and record of stakeholder/user consultation

Examples 2 and 4

Suggested reading 6 and 7

Change control

- Is there a process to baseline, track and exercise strict change control over requirements?
- As part of this process, are unavoidable changes in scope or design tested for impact against the plan, business case, outcomes and benefits before decisions are taken?
- Is it clear who has authority to change requirements from the baseline?
- Is this decision-making process effectively linked into risk and contingency management practices?
- How will the project manage changing stakeholder requirements requests received after the project has progressed to delivery?
- How will stakeholders be informed about changes to the requirements after their input has been considered?

What may help:

Governance **Gv** 02   Delivery Planning **DP** 08

Change control procedure, requirements baseline and stakeholder map and engagement plan

Example 4

Considerations:

Pillar 3 Ensuring alignment of objectives, requirements and benefits

Considerations	What may help

Logic map
- Can you demonstrate a clear link between the project's outputs, outcomes and the benefits? Including those related to economic, environmental and social sustainability?
- Do all outcomes lead to benefits?
- Have disbenefits been considered?

Business case (strategic), benefits register and realisation plan

Examples 6 and 7

Suggested reading 8 and 9

Testing assumptions
- Is there evidence to support the cause-and-effect relationships between outputs, outcomes and benefits?
- Is there evidence to show that cultural and behavioural change is likely to occur, if this is necessary for success?
- Have stakeholders been involved in testing the validity of assumptions and any potential issues? For example, have representatives of project affected communities been consulted about the validity of assumptions regarding socio-economic impacts?
- Have assumptions been tested with suitably diverse, qualified and experienced subject matter experts? For example, on behaviours, digital and sustainability.
- Have assumptions been tested through pilot projects or learnings incorporated from relevant previous projects (internal and external)?
- Have external factors, which may constrain the project, been identified and considered?
- Have interdependencies with other projects, programmes or portfolios been identified? For example, operations that are dependent on the completion of the project? Are these reflected in the business case and project's requirements?

Data (and modelling) to evidence assumptions and stakeholder map and engagement plan

Example 4

Suggested reading 8, 9 and 10

Alignment
- Do expected outcomes and benefits align directly with national and regional policies (including those of devolved governments where relevant), strategies, initiatives, standards, legislation and other projects in the investment portfolio? For example, the UN Sustainable Development Goals.
- Is there a framework that regularly tests this alignment? For example, demonstrating the link the contribution of the project makes to the delivery of the government's priority outcomes as defined by the Public Value Framework?
- Have you assessed and confirmed how the corporate strategic aims will be affected by the project's disbenefits?
- If there is more than one sponsor, are the project's outcomes and benefits aligned? Has this been captured?
- Have the project's requirements been tested to ensure that they align with the sponsor and client organisations' evolving business plans and strategic objectives?

Governance **Gv** 02   Asset Management **AM** 07

Business case (strategic)

Examples 2, 5 and 8

Suggested reading 4, 7, 21 and 23

Considerations:

Pillar 4 Realising and measuring project benefits

Considerations	What may help

Measures
- Does the business case document the intended benefits?
- Have suitable measurable benefits been identified at the outset?
- Have economic, environmental and social performance indicators, along with suitable baselines, been established and to measure the project's performance? Have these been communicated?
- Is there a plan on how these measures will be cascaded through the supply chain?
- If behavioural change is an intended benefit, is it clear how this will be measured?
- Have benefits been individually defined in a way that they can be attributed to the project's outputs and outcomes?
- Are measures of actual and forecast benefits incorporated into the benefits realisation plan?
- Are there appropriate contractual measures and incentives to promote benefits realisation?
- Has evaluation and measurement been integrated into project planning?

Data
- Are measurable data and sources for measuring project benefits identified? For example, for benchmarking key project metrics and benefits? Does the data exist? If not, what steps need to be taken to obtain it?
- Are tools and methods for quantitative and qualitative measurement in place?
- Are there clear and appropriate protocols in place to engage with project affected communities to collect data to measure benefits realisation? Is there easy access to the specialist skills required for these activities?
- Does the project have the capability to interpret and make decisions based on the data received?

What may help

Procurement
Pr 05

Business case (commercial and management), benefits register and realisation plan and contracts and third-party agreements

Examples 5 and 8

Suggested reading 22

Asset Management
AM 07   Delivery Planning
DP 08

Stakeholder map and engagement plan and data (and modelling) to evidence assumptions

Suggested reading 10 and 11

Considerations:

Pillar 4 Realising and measuring project benefits

Considerations	What may help

Management

- Is there a benefits realisation plan? Is it regularly updated? Is it clear how and when reviews and assessments will be carried out?
- Does the plan set out how benefits and opportunities will be maximised, along with mitigations to address disbenefits? Including those related to economic, environmental and social sustainability?
- Do the benefits profiles clearly show how each benefit links to project objectives? Do they show how progress will be tracked and measured and who owns each benefit?
- Are outcomes and benefits tracked on a timely basis? How will they be reported on during the project and after project close?
- Have dependencies between benefits and associated systems been mapped? Are the dependencies being tracked and managed?
- Have benefits milestones been defined and agreed upon?
- Have adequate resources been allocated to benefits management? Have inputs from economic, environmental and social advisers been factored into these?
- Has the benefits tracking process been incorporated into the end state target operating model? Has the process been agreed between the sponsor, client and asset manager?
- Once the project has closed, how will benefits management/tracking be embedded into standard operating practice?

Gv Governance 02

Benefits register and realisation plan, business case (management), target operating model and project delivery plan

Example 2

Ownership

- Are the functions, roles and responsibilities for benefits realisation defined?
- Does the project's sponsor have accountability for outcomes and benefits, including potential economic, environmental and social impacts? Is it clear who is accountable within the sponsor organisation, for example a nominated senior responsible owner?
- Is the sponsor actively leading the process of realising benefits, including measuring, tracing and recording benefits?

Gv Governance 02   **OD** Organisational Design & Development 04

Benefits register and realisation plan and requirements baseline

Stakeholders

- How will progress with benefits realisation be reported to external stakeholders, project affected communities and the public?
- Does the benefits management plan show who is being impacted?
- Is there any potential for early release of the project's outcomes and benefits to secure stakeholder support?
- How will the client organisation communicate lessons from the project, both within its own organisation, market and broader industry? How will the client organisation make improvements?
- Is there a clear approach to ongoing stakeholder relationship management during operations?

DP Delivery Planning 08

Stakeholder map and engagement plan and communications strategy and plan

Good practice examples

Good practice examples

It is important to assess how applicable each example is to your specific project, and tailor it as appropriate. This table shows which of the four pillars of good practice are characterised by each example.

Pillar

	Pillar 1: **Setting the project vision and strategic objectives** — 1	Pillar 2: **Developing and prioritising requirements** — 2	Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** — 3	Pillar 4: **Realising and measuring project benefits** — 4
Example 1 A shared vision of success to enable collaboration: A Sellafield Ltd case study	●			
Example 2 Requirements management through the project life cycle	●	●	●	●
Example 3 A typical requirements hierarchy		●		
Example 4 Developing requirements		●	●	
Example 5 Aligning the project's benefits to strategic goals: A High Speed 2 case study			●	●
Example 6 Benefits mapping			●	
Example 7 A decision tree to maintain alignment			●	
Example 8 Project outcome profile: A Department for Business, Energy and Industrial Strategy case study			●	●
Example 9 Defining legacy aligned to the UN Sustainable Development Goals: A Sellafield Ltd case study			●	●

Good practice examples

Example 1

A shared vision of success to enable collaboration: A Sellafield Ltd case study

In pursuit of its mission to create a clean and safe environment for future generations, the Sellafield Ltd nuclear site is home to one of the most complex portfolios of construction projects in the world, stretching over many decades. The Programme and Project Partner model was an opportunity to achieve a step change in project delivery by bringing together the best of industry in a collaborative approach. Four partner organisations (KBR, Jacobs, Morgan Sindall Infrastructure Ltd and Doosan Babcock) were procured to work alongside Sellafield Ltd to deliver £7bn worth of projects over a 20-year period.

During the mobilisation phase of the programme, Sellafield Ltd worked with its four partners to translate its own organisational vision into a Programme and Project Partner mission statement to be achieved through five objectives.

Together the project partners co-created a visual representation of their mission statement, shown on the next page. This rich picture captures all the component economic, environmental and social outcomes and benefits that they aspire to achieve through improved project delivery. By engaging the partners in its development, this approach ensured their collective buy-in and support. The visual representation is also a helpful and easy-to-understand way of cascading the mission and objectives across Sellafield Ltd and the partner organisations.

The joint commitment and efforts to enable collaborative behaviours has been recognised by industry as best practice. In 2019, Sellafield Ltd, with the support of its partners, gained accreditation in ISO44001 Collaborative Business Relationship Management systems (Suggested Reading 12). The Institute for Collaborative Working also presented Sellafield Ltd with the Collaborative Award for the Supply Chain category in 2020.

Sellafield Ltd's vision	We are creating a clean and safe environment for future generations.				
Programme and Project Partner mission	A long-term partnership between Sellafield and Programme and Project Partners creating an enduring capability which is recognised for effective and efficient delivery of a cleaner and safer environment for future generations.				
Five objectives	Cost	Employment	Outcome	Output	Workforce skills
	Increased cost certainty and double-digit cost savings on major project total costs.	Invest in the local workforce, training and apprentices.	Realisation of aligned benefits through successful delivery of our major project outputs.	Increased early contractor engagement to ensure increased certainty of project outcomes.	Upskill workforce and supply chain capability through porosity and longevity of the relationship.

Pillar 1: **Setting the project vision and strategic objectives** **1**

Pillar 2: Developing and prioritising requirements 2

Pillar 3: Ensuring alignment of objectives, requirements, and benefits 3

Pillar 4: Realising and measuring project benefits 4

Good practice examples

Example 1

A shared vision of success to enable collaboration: A Sellafield Ltd case study
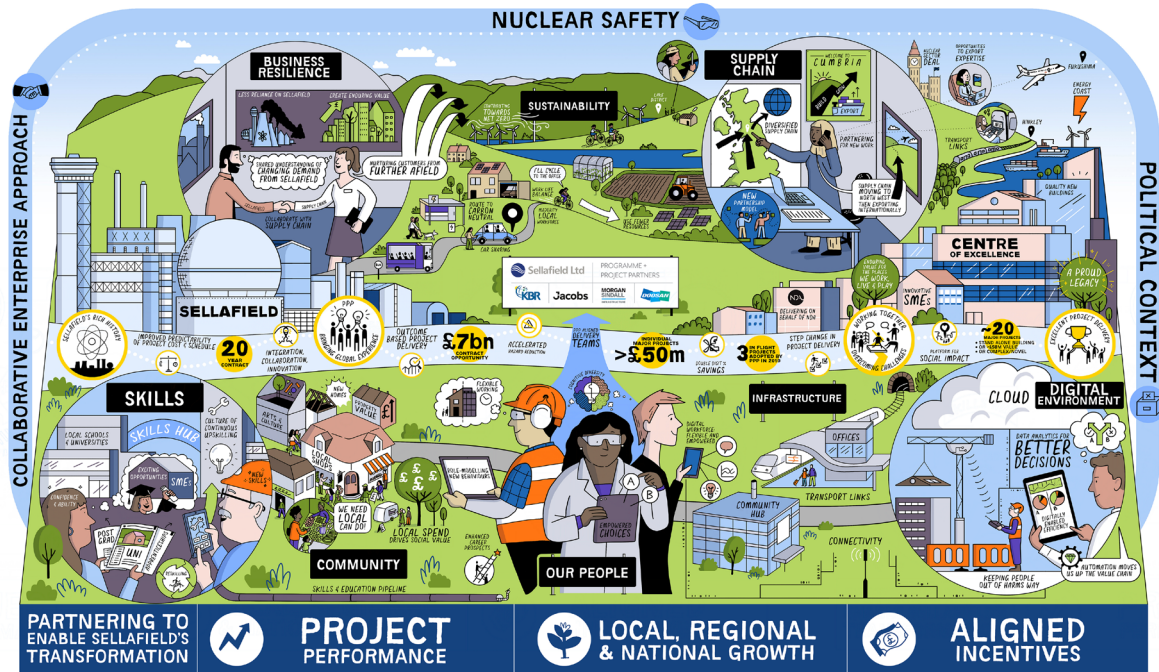
Good practice examples

Example 2
Requirements management through the project life cycle

This example (generally known as a V diagram) shows how project requirements develop from a response to department/corporate strategies or mandatory policies through to contract requirements. It maps ownership of each of the key stages of requirements development against the Routemap's key roles (sponsor, client, asset manager and market) and shows how they influence the outputs, outcomes and benefits of the project.

Projects need to agree at an early stage how compliance with the requirements will be demonstrated at handover. Typically, evidence will be gathered through the assurance process, and the authority to sign-off the project's compliance with their requirements will be established in the governance framework.

It is also important to have a change control process that enables requirements to be modified as the project develops. More complex projects might use requirements management software to track compliance.

Pillar 1: **Setting the project vision and strategic objectives** — **1**

Pillar 2: **Developing and prioritising requirements** — **2**

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** — **3**

Pillar 4: **Realising and measuring project benefits** — **4**

Department/Corporation (Asset manager)

Policy/Strategy ← **Validation** — **Benefits**
Have we realised the benefits in operation as set out within policy and strategy?

Sponsor

Project objectives ← **Validation** — **Project outcomes (operational capability)**
Have we achieved the outcomes in the business case?

Client

Sponsor's requirements ← **Verification** — **Project outputs**
Do the project works comply with the sponsor's requirements?

Market (Supply chain)

Contract requirements ← **Verification** — **Contract outputs**
Do the supplier outputs satisfy the contract?

Build works/ deliver service

Cascading requirements – setting the vision, prioritising and aligning

Deliver, inspect and test, handover, operate and maintain

Good practice examples

Example 3
A typical requirements hierarchy

This example builds upon the V-Diagram in Example 2 and outlines an indicative requirements hierarchy from legislation, policy and strategy down into detailed contract specifications. The triangle shows how typically the number of requirements grows, as the level of detail increases the closer you get to the build or intervention solution.

As the strategic requirements are translated into detailed specifications there is a significant risk that a project will:

- lose value through over specification / preferential engineering or the gathering of additional requirements from stakeholders
- will not realise the expected benefits through loss of focus or clarity in the strategic intent

The sponsor has a critical role to play in maintaining alignment between what is specified for delivery and the overall project objectives.

Aggregating and standardising detailed specifications can have positive impacts throughout the project life cycle, including:

- improved on-site safety and efficiency as a result of optimised and repeatable processes across shared solutions
- efficiencies in the design process, for example as a result of automation, the repeated use of designs and sharing of requirements and associated solutions
- buying efficiencies through improved category management and manufacturers leveraging consistency in the component pipeline
- greener solutions as a result of an increase in manufacturing approaches
- greater predictability and lower maintenance costs from the use of shared manufactured components and assemblies, and the associated opportunities to share methods

See the Construction Playbook for further information (Suggested Reading 3)

Pillar 1: Setting the project vision and strategic objectives **1**

Pillar 2: **Developing and prioritising requirements** **2**

Pillar 3: Ensuring alignment of objectives, requirements, and benefits **3**

Pillar 4: Realising and measuring project benefits **4**

Government, industry and society

Sponsor and Asset manager

Client and Market

Statute
For example,
Climate Change Act 2008

Policy and industrial strategy
For example, The Ten Point
Plan for a Green Industrial Revolution

Strategic outcomes and benefits
For example, economic growth and carbon reduction

Project outputs
For example, reliability and capacity

Systems specifications
For example, the performance required from the component systems

Contract specifications
For example, detailed specifications, room layouts, data and interfaces

Number of requirements

Opportunities for dialogue between government and sponsor to define and agree strategic outcomes, considering key trade-offs

Opportunities for dialogue between sponsor and client to agree project outputs as part of business case development, considering key trade-offs

Good practice examples

Example 4
Developing requirements

This example sets out a high-level approach to the development, iteration and control of requirements. This is a process which involves many different parts of the project team.

It outlines:

- a high level six stage process flow
- key functions of the sponsor and client and other stakeholders who may be involved
- key activities involved in each of the six stages

As set out within this example, the need to effectively control requirements is essential in order to deliver an affordable scheme that will deliver the business case benefits. Requirements will inevitably need to develop as more information becomes available; however, they should be locked down and baselined before the business case is finalised for approval.
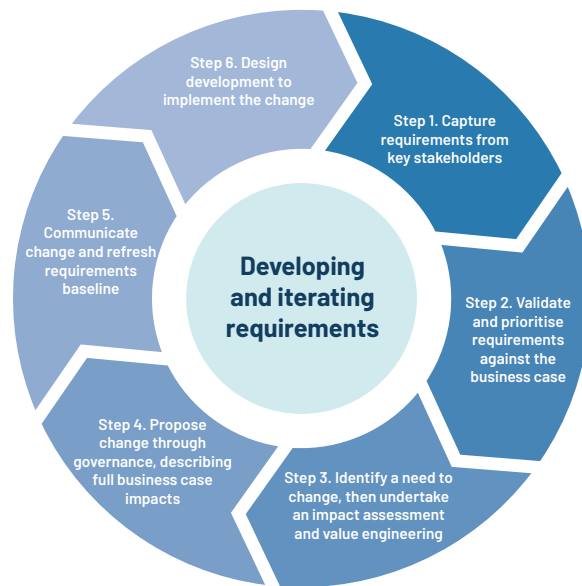

Developing and iterating requirements

Step 1. Capture requirements from key stakeholders
Step 2. Validate and prioritise requirements against the business case
Step 3. Identify a need to change, then undertake an impact assessment and value engineering
Step 4. Propose change through governance, describing full business case impacts
Step 5. Communicate change and refresh requirements baseline
Step 6. Design development to implement the change

Activity	Who may be involved
Step 1 Capture requirements from key stakeholders	Sponsor (for example, the stakeholder engagement team) and key stakeholders
Step 2 Validate and prioritise requirements against the business case	Sponsor and client team (for example, design and requirements management teams)
Step 3 Identify a need to change, then undertake an impact assessment and value engineering	Interaction between the sponsor, client and asset manager to understand the implications to cost, schedule, operations and benefits and to consider alternative options
Step 4 Propose change through governance, describing full business case impacts	Governance forums appropriate to the scale and impact of the change (for example, the impact on benefits, cost, time)
Step 5 Communicate the change and refresh requirements baseline	Sponsor and client (in particular, the stakeholder engagement and requirements management teams)
Step 6 Design development to implement the change	Client team and supply chain (for example, the delivery and project controls teams to factor into revised specifications and delivery schedule)

Pillar 1: Setting the project vision and strategic objectives **1**

Pillar 2: **Developing and prioritising requirements** **2**

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** **3**

Pillar 4: Realising and measuring project benefits **4**

Good practice examples

Example 5
Aligning the project's benefits to strategic goals : A High Speed 2 case study

The High Speed 2 Phase One programme has developed a benefits management approach to ensure High Speed 2 delivers the intended integrated transport benefits, as well as creating a step-change in local growth along the route.

The programme has seven strategic goals which set out the rationale for High Speed 2 and how it will be delivered. Each programme benefit is linked to one or more of these strategic goals to assure alignment.

The approach to delivering these benefits is structured around five principles, which directly address the lessons learned from other major infrastructure projects and drive the ability of the programme to realise the benefits. The benefits register is actively manged using these five principles.

Further information is available in the High Speed 2 full business case (Suggested Reading 13)
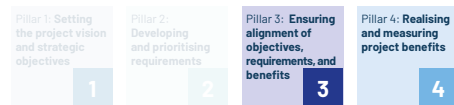
Five principles to deliver the benefits

Principle 1 – Accountability and responsibility are close to delivery
The parties responsible for delivering the individual activities required to realise the programme's benefits are clearly defined.

Principle 2 – Benefits-led decisions
Decision-making which aims to optimise the overall benefits from the core and wider programmes.

Principle 3 – Continuous improvement
The programme continuously seeks opportunities to deliver improved value-for-money.

Principle 4 – Benefits-led performance
The realisation of benefits is at the heart of the programme's performance management.

Principle 5 – Regular monitoring
Benefits reporting and tracking to ensure benefits are fully realised.

Seven strategic goals

The rationale for High Speed 2		
High Speed 2 will be a catalyst for the sustained and balanced economic growth across the UK.	High Speed 2 will add capacity and connectivity as part of a 21st century integrated transport system.	High Speed 2 will deliver value to the UK tax payer and passenger.

How High Speed 2 will be delivered	
High Speed 2 will set new standards in customer experience.	High Speed 2 will create opportunities for skills and employment.
High Speed 2 will design, build and operate a railway which improves industry standards for health, safety and security.	High Speed 2 will create an environmentally sustainable solution and be a good neighbour to local communities.

Pillar 1: Setting the project vision and strategic objectives — 1

Pillar 2: Developing and prioritising requirements — 2

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** — **3**

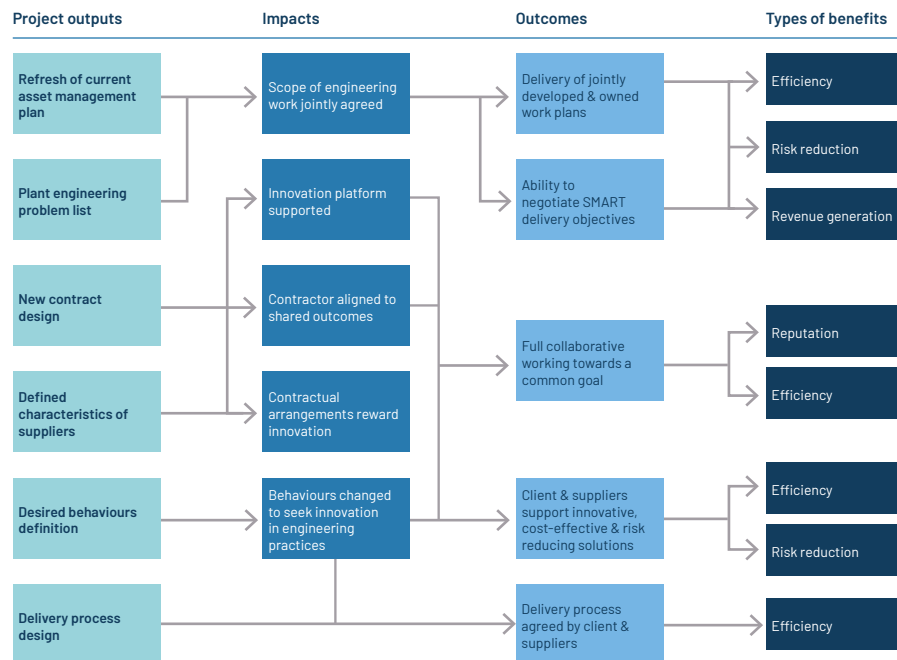Pillar 4: **Realising and measuring project benefits** — 4

Good practice examples

Example 6
Benefits mapping

Benefits mapping provides an easily understandable visual representation of the relationships between the outputs, outcomes and benefits to be realised as a result of a project.

The benefits map should be a live document that is updated throughout the project life cycle. The map should be linked to an established baseline that measures the present state in order to provide evidence of the benefits realisation (Suggested Reading 8). Alternative representations of the benefits map may also be produced for different uses such as a communication or project management tool.

Benefits maps provide a robust decision-making tool to ensure that any risk to outputs can be traced to its potential impact on benefits realisation. This helps to evaluate potential changes to requirements on a total systems basis, taking into account their impact on wider project benefits, as opposed to focusing purely on cost or schedule impacts.

Project outputs	Impacts	Outcomes	Types of benefits
Refresh of current asset management plan	Scope of engineering work jointly agreed	Delivery of jointly developed & owned work plans	Efficiency
			Risk reduction
Plant engineering problem list	Innovation platform supported	Ability to negotiate SMART delivery objectives	Revenue generation
New contract design	Contractor aligned to shared outcomes		
Defined characteristics of suppliers	Contractual arrangements reward innovation	Full collaborative working towards a common goal	Reputation
			Efficiency
Desired behaviours definition	Behaviours changed to seek innovation in engineering practices	Client & suppliers support innovative, cost-effective & risk reducing solutions	Efficiency
			Risk reduction
Delivery process design		Delivery process agreed by client & suppliers	Efficiency

Pillar 1: Setting the project vision and strategic objectives 1

Pillar 2: Developing and prioritising requirements 2

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** 3

Pillar 4: Realising and measuring project benefits 4

Good practice examples

Example 7
A decision tree to maintain alignment

This decision tree outlines a simple way to check that outputs, outcomes and benefits align with organisational objectives and national policies or targets.
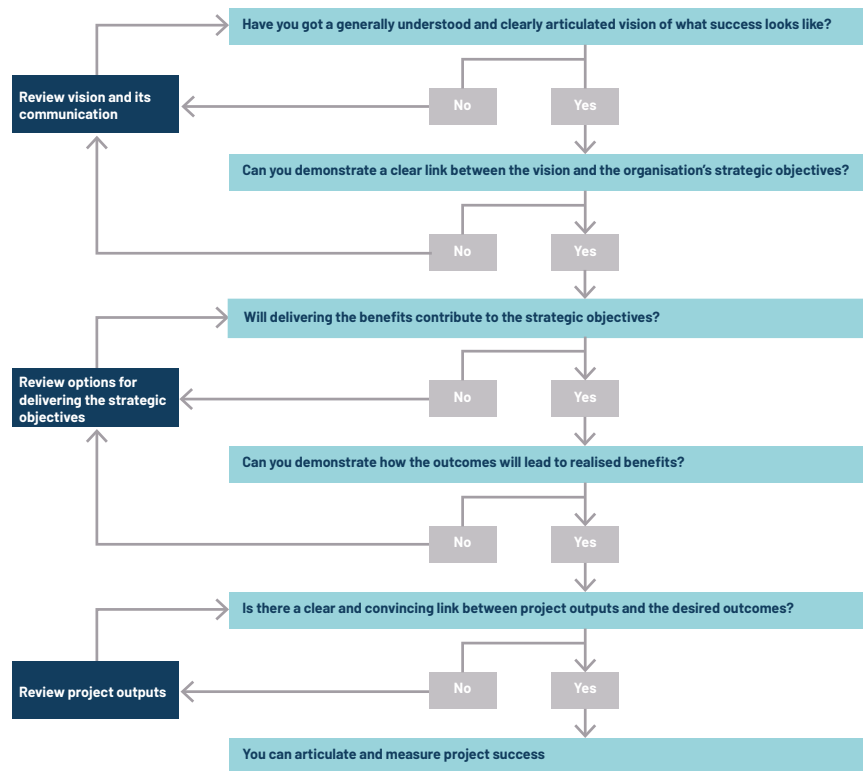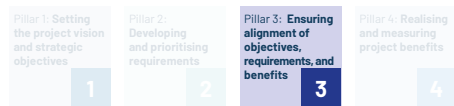
Review vision and its communication
If the vision of what is to be achieved is not clearly articulated, then it will be challenging to determine if stakeholder requirements conflict with expected outcomes and benefits. Clarity of purpose mitigates potential late changes and allows the project to develop the capability it needs to deliver at the earliest point.

Review options for delivering the strategic objectives
If the intended benefits do not align to strategic objectives, the project may not be of value. If there is no alignment at the outset, or a shift in priorities occurs, the existence of the project or the scope should be re-evaluated.

Review project outputs
Where there are ambiguous requirements even though the project might be delivered well, it will fail as it will be delivering the 'wrong' outputs. Projects should be conscious of potential changes to the end state to enable effective handover of the asset in operation.

Pillar 1: Setting the project vision and strategic objectives — 1

Pillar 2: Developing and prioritising requirements — 2

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** — **3**

Pillar 4: Realising and measuring project benefits — 4

Have you got a generally understood and clearly articulated vision of what success looks like?

Review vision and its communication

No — Yes

Can you demonstrate a clear link between the vision and the organisation's strategic objectives?

No — Yes

Will delivering the benefits contribute to the strategic objectives?

Review options for delivering the strategic objectives

No — Yes

Can you demonstrate how the outcomes will lead to realised benefits?

No — Yes

Is there a clear and convincing link between project outputs and the desired outcomes?

Review project outputs

No — Yes

You can articulate and measure project success

Good practice examples

Example 8
Project outcome profile: A Department for Business, Energy and Industrial Strategy case study

This example provides a tool for demonstrating how projects and programmes contribute to wider strategic outcomes.

The IPA's project outcome profile (Suggested Reading 20) is a tool to support government projects and programmes to develop stronger business cases in line with the Green Book guidance (Suggested Reading 20) by:

Step 1 Establishing how the project will support the delivery of government's priority outcomes.	Identify the outcomes that the project is seeking to achieve and determine how these align to government's strategic objectives, described in terms of priority outcomes established as part of the Public Value Framework (Suggested Reading 7).
Step 2 Using consistent metrics to document a project contribution to those priority outcomes.	Develop or select up to three metrics, and define the specific contribution that the project or programme will make to each.

The Social Housing Decarbonisation Fund (SHDF) is a new Department for Business, Energy & Industrial Strategy (BEIS) change programme to improve the energy performance of social housing through targeted investment and collaborative engagement with landlords and other government departments. Over a nine-year spend period, SHDF aims to reduce the carbon emissions from social housing, reduce the number of tenants in fuel poverty, and lower fuel bills. It will make an important contribution to a large proportion of the social housing stock by 2030, as a significant stepping stone to achieving the government's ambition of net zero by 2050. It will also build the capacity in social housing landlords and the supply chain to continue the journey to net zero after completion, with less input from government.

The project outcome profile tool (see next page) has been used to support the SHDF programme in its initiation phase during the development of the Strategic Outline Business Case, in particular for benefits mapping.

The use of the tool enables effective communication of how the programme's objectives are aligned with the government's priority outcomes and how it will monitor, and ultimately measure, its success. It also highlights links with other government departments, such as the Department for Levelling Up, Housing and Communities (DLUHC), supporting greater alignment of departmental activities.

Pillar 1: Setting the project vision and strategic objectives	Pillar 2: Developing and prioritising requirements	Pillar 3: **Ensuring alignment of objectives, requirements, and benefits**	Pillar 4: **Realising and measuring project benefits**
1	2	**3**	4
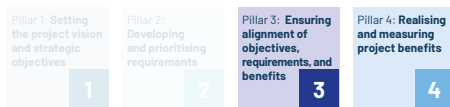
Good practice examples

Example 8
Project outcome profile: A case study from the Department for Business, Energy and Industrial Strategy

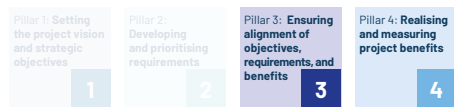| Themes	Environment – We live sustainably, reducing our carbon emissions		Health – We are improving physical and mental health		Economy – We have strong economic growth and improving productivity			
Departmental outcomes	Department for Business, Energy & Industrial Strategy (BEIS): Reduce UK greenhouse gas emissions to net zero by 2050		Department for Levelling Up, Housing and Communities (DLUHC): More, better quality, safer, greener and more affordable homes		BEIS: Back business by making the UK the best place in the world to start and grow a business		BEIS: Support increased productivity through unleashing innovation and new knowledge throughout the country	
Programme outcomes	Reduction of carbon dioxide emissions due to social housing	Build social housing landlords' capacity and capability and to decarbonise their stock by 2050	Reduction in fuel poverty in social housing	Improve the health, comfort and wellbeing of social housing tenants in the homes treated	No increase in fuel bills due to SHDF programme	Development of the green economy and associated jobs	Increase the retrofit supply chain capability and capacity	Development of the retrofit innovation and installation value-for-money in accordance with qualitative measures
Example metrics	MtCO2e (million tonnes carbon dioxide equivalent) Non-Traded carbon savings	Self-reported levels of confidence and capability amongst social housing landlords	Number of social homes improved to EER (Energy Efficiency Ratio) C by SHDF	Self-reported broader mental and physical health outcomes (from satisfaction survey)	Number of homes seeing no increase in fuel bills for equivalent home warmth	Number of jobs supported/created	Number of Trustmark and Microgeneration Certification Scheme	Average time for retrofitting (across each measure)
		Number of applications for funding versus stock which requires funding						

Good practice examples

Example 9

Defining legacy aligned to the UN Sustainable Development Goals: A Sellafield Ltd case study

In pursuit of its mission to create a clean and safe environmental for future generations, the Sellafield Ltd nuclear site is home to one of the most complex portfolios of construction projects in the world, stretching over many decades. Its 20-year Programme and Project Partner (PPP) commitment comprises of £7bn of bespoke, complex, nuclear decommissioning, environmental remediation and ancillary projects, which is being delivered with KBR, Jacobs, Morgan Sindall Infrastructure and Doosan Babcock to achieve a step-change through bringing together the best in the industry in a collaborative approach.

The Sellafield PPP Sustainability Framework was developed to guide and drive the ambition and approach to sustainability, linking it to UN Sustainable Development Goals, and most importantly, define what legacy the programme would bring, and how it would get there. The Framework emphasises that: "*Sustainability is not an add-on to the PPP mission. Embraced fully and with agency our sustainability approach will accelerate PPP and Sellafield Ltd (SL) success and provide additional, permanent, regenerative benefits*".

The Sustainability Framework set out activities for the short- medium- and long-term aligned to the outcomes on the right.

Performance	People	Planet	Partnerships
Resilient, inclusive and local economic growth	Activities protect the health, safety and wellbeing of current and future generations	Accelerating climate resilience and zero carbon transition within planning, design and operation	Collective impact of stakeholders, partnership and supply chain working to create shared value
Innovative nuclear programme, projects and improvements create new market opportunities	Inspiring skills, education and personal development activities improve access to sustainable incomes	Sustainable procurement and circular economy throughout our operations and supply value chain	
	Activities reduce inequalities, enhance community assets and address needs	Environmental remediation restoring and enhancing the environment	

Pillar 1: Setting the project vision and strategic objectives — **1**

Pillar 2: Developing and prioritising requirements — **2**

Pillar 3: **Ensuring alignment of objectives, requirements, and benefits** — **3**

Pillar 4: **Realising and measuring project benefits** — **4**

Suggested further reading

Reference	Use
1	**Report** Our vision for the built environment - Centre for Digital Built Britain 2021	An industry report describing a future vision of the built environment.
2	**Guidance** Transforming Infrastructure Performance: Roadmap to 2030	Transforming infrastructure performance is a transformation programme with ambitious objectives for change.
3	**Policy** The construction playbook – Cabinet Office 2020	Sets out key policies and guidance for how public works projects and programmes are assessed, procured and delivered.
4	**Guidance** The green book: appraisal and evaluation in central government - HM Treasury 2020	This guidance issued by HM Treasury outlines how to appraise policies, programmes and projects. It also provides advice on the design and use of monitoring and evaluation before, during and after implementation.
5	**Guidance** Value toolkit - Construction Innovation Hub 2021	A structured approach for value-based decision-making across the investment life cycle of a project, programme or portfolio.
6	**Guidance** A guide to using a benefits management framework – Association of Project Management 2019	A guide for those involved in creating or enhancing benefits management capability at an organisational or portfolio level.
7	**Guidance** Public value framework and supplementary guidance - HM Treasury 2019	A practical tool for understanding how public money is used to generate outcomes.
8	**Guidance** Guide for effective benefits management in major projects – Infrastructure and Projects Authority 2017	This guide provides structure and sets expectations for major project teams when undertaking benefits management.
9	**Guidance** Assurance of benefits realisation in major projects – Infrastructure and Projects Authority 2016	Guidance on benefits management for the assurance review process.
10	**Guidance** Best practice in benchmarking – Infrastructure and Projects Authority 2021	This document outlines the IPA's recommended methodology for cost and performance benchmarking. It introduces the concept and includes a step-by-step guide to undertaking, or commissioning, a benchmarking exercise.

Suggested further reading

Reference	Use
11 **Report** Thameslink programme evaluation: baseline report – Thameslink Programme 2018	An example of a report that provides the basis for ongoing monitoring of benefits realisation.
12 **Standard** ISO 44001 Collaborative business relationships management system - International Organization for Standardization 2017	Identifies requirements for the effective identification, development and management of collaborative business relationships within or between organisations.
13 **Report** Full business case: High Speed 2 Phase One – Department for Transport 2020	This document puts forward the case for Phase One of High Speed 2. It sets out the positive impact that HS2 will have and lays out the steps to ensure the scheme is properly run.
14 **Guidance** Principles for project success – Infrastructure and Projects Authority 2020	A quick guide for practitioners on things to get right for any project to succeed.
15 **Report** Lessons from transport for the sponsorship of major projects – Department for Transport 2019	Identifies 24 lessons learned from transport to improve controlled delivery of major projects by government departments.
16 **Policy** The ten-point plan for a green industrial revolution - Department for Business, Energy & Industrial Strategy 2020	The UK government's ten-point plan to meet a targeted reduction in emissions by 2030.
17 **Website** National themes outcomes and measures (TOMs) - Social Value Portal 2020	A framework for measuring social value to a consistent standard.
18 **Report** Maximising social value from infrastructure projects - Institution of Civil Engineers and Useful Projects 2019	A report on creating and delivering social value through infrastructure delivery and operation.
19 **Guidance** Procuring for growth balanced scorecard – Crown Commercial Services 2016	Guidance on using a balanced scorecard approach for certain types of procurement.
20 **Guidance** Guide to completing the project/programme outcome profile – Infrastructure and Projects Authority 2021	Supplementary guidance to the Green Book on establishing a clear 'golden thread' from government priorities to the development of strategies and business cases for programmes and projects.

Suggested further reading

Reference	Use
21 **Policy** Sustainable Development Goals – United Nations 2015	This website provides an overview of the 17 UN Sustainable Development Goals.
22 **Guidance** Valuation of Energy Use & Greenhouse Gas Emissions for Appraisal – Department for Business, Energy & Industrial Strategy 2021	Supplementary guidance to Treasury's Green Book providing government analysts with rules for valuing energy usage and greenhouse gas emissions.
23 **Policy** A green future: Our 25 year plan to improve the environment – Department for Environment, Food and Rural Affairs 2018	Sets out government action to improve the natural environment over the next generation.

Glossary

Accountability
The accountable person is the individual who is ultimately answerable for an activity or decision. This includes 'yes' or 'no' authority and veto power. Only one accountable person can be held to account. An accountable person has to be accountable to someone for something. Accountability cannot be delegated or shared.

The responsible person is the individual who actually undertakes the task: in other words, they manage the action/implementation. Responsibility can be shared. The degree of responsibility is determined by the individual with the accountability.

Asset
Anything tangible or intangible that is owned or controlled with the expectation of present or future benefit.

Asset manager
In the context of Routemap, the asset manager is the organisation (or parts of) responsible for day-to-day operations and maintenance of the asset. The asset manager may be a part of the sponsor or client organisations, or a separate entity. Similarly, the operator and maintainer of the assets may be separate entities.

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.

Benefits
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 objectives.

Capability
In the context of Routemap, capability describes the ability of the sponsor, client, asset manager and market to organise for effective and efficient delivery. It refers to the capability of all or part of an organisation, and not that of the individual.

Client
In the context of Routemap, the client is the organisation that is responsible for undertaking the work to fulfil the sponsor's requirements. The client translates the requirements from the sponsor and manages the delivery. The client selects the most appropriate suppliers. In some contexts, the sponsor and client could be from the same organisation.

Complexity
In the context of Routemap, project complexity is a measure of the inherent difficulty of delivering a project. This is assessed on factors such as the stability of the wider delivery environment, the level of innovation required, and the number of stakeholders involved.

Delivery model
The delivery model is the form of structural and commercial arrangements to be deployed to meet the sponsor's requirements. The selected model should be the best option from those available, taking into account the capabilities and constraints of the project. For example, the creation of an arm's-length body like High Speed 2 or the formation of a special purpose vehicle as has been used to deliver Thames Tideway Tunnel.

Environmental, economic and social value
The impact a project has on the environment, economy, and society. This may be global or localised, and may result both from meeting the project's objectives (for example, improved transport links) and from by-products of delivery (for example, job creation). It relates to reducing negative impacts as well as increasing positive impacts, and it is important that value delivered against one category is not at the expense of another (for example, delivering economic development but at significant cost to local biodiversity).

Environmental, social and governance (ESG) criteria
These are key criteria for sustainability reporting, in response to widespread investor and consumer demand. They are also increasingly used to inform investment decision making.

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 performance.

Glossary

Market
In the context of Routemap, the market comprises organisations which integrate and compete to deliver goods or services to one or more clients. This includes

- the players, for example, sellers/buyers/partner
- the rules, for example, regulation, legislation
- processes, for example, procurement, delivery
- structure, for example, relationships between buyers, sellers, partners

Outcomes
The result of change, normally affecting real-world behaviour or circumstances. Outcomes are desired when a change is conceived. 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.

Outputs
A specialist product (the tangible or intangible artefact) that is produced, constructed or created as a result of a planned activity and handed over to users.

Requirements
Requirements are the project stakeholders' wants and needs, clearly defined and with acceptance criteria.

Risk
The effect of uncertainty on objectives. Risk is usually expressed in terms of causes, potential events, and their consequences.

- a cause is an element which alone or in combination has the potential to give rise to risk
- 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.
- the consequences are the outcomes 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.

Senior Responsible Owner (SRO)
All UK government projects will have a senior responsible owner. They are accountable to the sponsor organisation for a programme or project meeting its objectives, delivering the projected outcomes and realising the required benefits. The senior responsible owner is the owner of the business case and accountable for all aspects of governance. The senior responsible owner of a government major project is ultimately accountable to Parliament.

Sponsor
In the context of Routemap, the sponsor is an organisation that secures the funding, oversees the business case and is responsible for specifying the requirements to the client. In some contexts, the sponsor and client could be the same organisations.

Stakeholders
Any individual, group or organisation that can affect or be affected by, or perceive itself to be affected by an initiative (programme, project, activity or risk).

Sustainability
This means making the necessary decisions now to stimulate economic growth, maximise wellbeing and protect the environment, without affecting the ability of future generations to do the same.

Target operating model
The target operating model refers to how the asset or change will be funded, owned, operated and maintained once the project has closed.

Transition points
Points at which a project moves from one stage to another. For example, delivery to operations.

UN Sustainable Development Goals (SDGs):
Adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The 17 SDGs are integrated and recognise that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

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Contact IPA

www.gov.uk/IPA
IPA@ipa.gov.uk
@ipagov

Cabinet Office
Correspondence team
70 Whitehall
London
SW1A 2AS

publiccorrespondence@cabinetoffice.gov.uk

General enquiries: 020 7276 1234

HM Treasury
Correspondence team
1 Horse Guards Road
London
SW1A 2HQ

public.enquiries@hmtreasury.gsi.gov.uk

General enquiries: 020 7270 5000