



Infrastructure
and Projects
Authority

Project Routemap

Setting up projects for success

Delivery Planning

UK Module



Interactive
document



Contents



Cover image

The M4 upgrade will increase capacity and reduce congestion, by smoothing traffic flows and improving the way incidents are managed.

The project used digital rehearsals, allowing any potential issues to be identified early on and solved before work began on site.

Acknowledgements

Balfour Beatty, on behalf of Highways England



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 up their project 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.

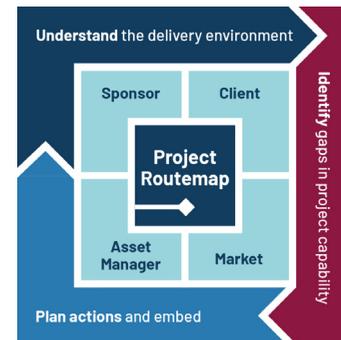
Building on its success with economic infrastructure, Routemap has also been expanded to cover social and defence-related infrastructure projects and includes guidance for application to other types of projects.

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:



Requirements

Delivering strategic project outcomes and realising the benefits.



Governance

Establishing clear accountability and empowering effective decision-making.



Systems Integration

Making multiple systems work as one.



Organisational Design & Development

Organising the project team to deliver successfully.



Procurement

Understanding how the project will buy goods and services.



Risk Management

Managing uncertainties and opportunities.



Asset Management

Balancing costs and risks to maximise whole life benefits.



Delivery Planning

Readying the project for transition into delivery.

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.

Introduction: How do you use the Routemap modules?

This table summarises how different module sections support the three key stages of the Routemap methodology.

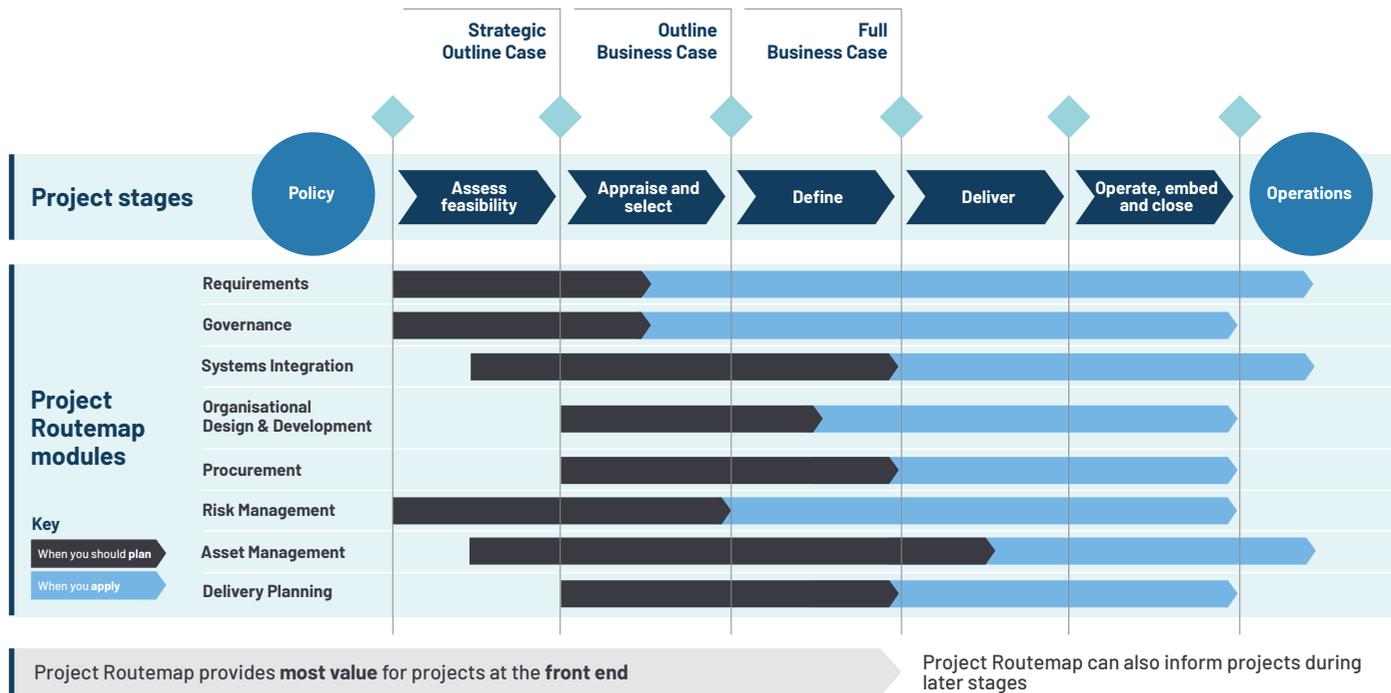
The modules are useful when applying the Full Project Review and Modular Deep Dive approaches, which are described in the Routemap handbook.

Routemap approach	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
 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 focuses 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 delivery planning 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 delivery planning 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.	<i>Not applicable to this stage</i>	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.	<i>Not applicable to this stage</i>	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.	<i>Not applicable to this stage</i>	<i>Not applicable to this stage</i>	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.



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?



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? Has it been hardwired into the business case, with a clear link to the UN Sustainability Development Goals?
- Is your project aspiring to leave a "net positive" impact on the natural environment to combat the impacts of climate change?
- How are you maximising benefits for project affected communities and contributing to levelling up?
- Is there clear accountability for the economic, environmental, and social benefits and outcomes?



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?



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?



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?



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?

Delivery planning, and why it's important

"Successful delivery will require clients and suppliers to develop and adopt new ways of working across the board; to share information and embrace new technologies that deliver better performance and more balanced outcomes across the asset lifecycle."

Transforming infrastructure performance: roadmap to 2030 – Infrastructure and Projects Authority 2021

Why delivery planning matters

The underlying principle of Routemap is that successful project set up will be repaid many times over later in delivery – so we must get it right from the start. However, project delivery is very different from project set up. It is characterised by a step change in scale with significantly more people and spend. The commitments made also mean the consequences of changing course during delivery or not going ahead are much greater. This module hones in on the critical transition period at the end of project set up, when the project is readying itself to start delivering.

Project delivery requires different capabilities with different tasks being carried out by different people at different times and in different places. These capabilities need time to establish and bed down. If you don't invest the necessary time and effort *before* transitioning, you will have lost the luxury of time to think and risk quickly losing control. Making sure all of your project management strategies and plans – from resource plans to procurement and from risk management to stakeholder management – are consistent and fully aligned to the overarching delivery strategy is also critical to avoid costly and time-consuming problems later down the line.

It would be wrong to set an expectation that with good planning, the transition to delivery will always be a smooth one. Though much of it can be pre-planned, unforeseen challenges will emerge and you should be prepared for bumps in the road.

This module can help you to assess whether your existing or proposed arrangements for transitioning to delivery are suitable for the complexity of your project. As well as capabilities specific to delivery, this module also focuses on a number of topics not covered in depth by other Routemap modules, including stakeholder engagement, information management, baselining, change control and performance management. Whilst these activities may well have been ongoing during set up, you can expect a shift change in their importance in delivery.

What are the key project documents?

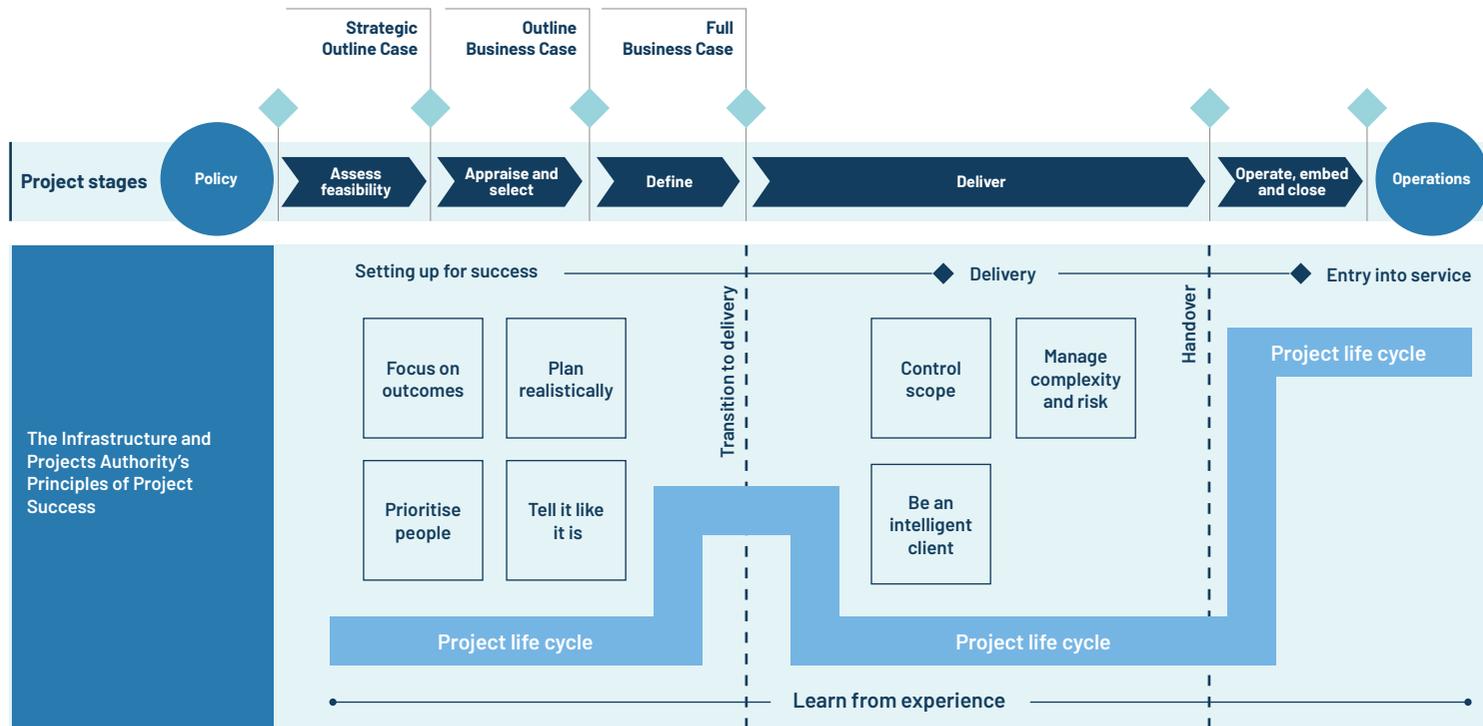
If you are seeking to find out more or to review the existing delivery planning arrangements on your project, the typical documents and reports set out below may contain information that will help.

- Delivery strategy
- Business case, in particular the management case
- Sponsor's requirements (Brief)
- Target operating model, including client model
- Governance framework including terms of reference for decision-making bodies
- Systems for internal controls and financial reporting
- Information management plan, including asset information requirements
- Organisation chart
- Health, safety and wellbeing plan
- Corporate charters or codes of conduct
- Stakeholder map and engagement plan
- Communications strategy and plan
- Delivery transition plan
- Change control procedure

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

Delivery planning, and why it's important

This graphic shows the important things to get right at different stages of the project life cycle, and highlights the point of transition from set up to delivery (the main focus of this module). It is adapted from the Infrastructure and Projects Authority's Principles of Project Success.



Typical findings

 Primary module
 Other relevant modules

Typical findings relating to delivery planning

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

There isn't a clear understanding of the capability required to deliver, nor how proven practices (methods, tools and techniques) could be utilised to the best effect.

Governance isn't fit for purpose and senior leadership lack the skills required for the changing needs of the project as it transitions to delivery.

Project planning is inconsistent. For example, the delivery strategy, business case, procurement strategy and organisational design are not aligned.

Information management and the use of digital tools are not integrated into the project's ways of working. Common data and quality standards have not been defined.

Stakeholders have not been effectively engaged, so their attitudes and expectations aren't well understood.

Expectations for delivery are overly optimistic and lack appropriate challenge.

The desired project culture is not evident in the behaviours displayed by project leadership. For example, open discussion is not encouraged in programme board meetings.

The project team is not clear on their roles and responsibilities, their priorities nor how they fit into the bigger picture.

Change control doesn't take into account the consequent impacts on project interdependencies and risk exposure.

A single common systems integration plan considering existing and adjacent systems has not been developed as part of delivery planning or is applied inconsistently.

The baseline is set up with an overly narrow focus on time and cost, without tangible measures for benefits, including environmental or social performance.

Performance measures are mainly backward looking indicators and do not provide a forecast for future performance nor benefits realisation.

There is no consideration of how project performance, and the data collected to measure this, will be assured and corrective action prompted.

Relevant modules

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

Pillars of effective delivery planning

The four pillars below summarise the characteristics of effective delivery planning.

Pillar 1: Demonstrating a clear delivery strategy

1

- Check that your key project documents are fully aligned, for example the delivery strategy, the business case, client model and organisation design.
- Make sure the delivery strategy is accurately reflected across all delivery plans, for example expectations on the use of modern methods of construction.
- Identify and plan for the capabilities (including people, processes and tools) that you will need for the delivery phase.
- Seek assurance that the capabilities are in place ready for transition and secure the necessary approvals, for example via an agreed plan for transition.

Pillar 2: Building engagement and championing your project

2

- Ensure the project's purpose is clear to everyone, and the desired project culture and values are well defined, communicated and evidenced through the behaviours of the project's leadership.
- Maintain active and continuous stakeholder engagement, including with the market, to ensure their continued support during the delivery phase.
- Use accessible channels to engage with external stakeholders. Be responsive and deal promptly with any issues caused by delivery.

Pillar 3: Establishing a baseline

3

- Make sure the project baseline includes environmental and social value measures, as well as more traditional measures like cost, schedule and risk. Ensure baseline estimates are based on reliable benchmark data and the project is affordable.
- Understand the interdependency of variables in the baseline and their associated tolerances, and in particular those which are reliant on external factors.
- Establish a robust change control process to keep the project baseline up to date.
- Govern the change control process through appropriate and informed decision-making bodies. Maintain continued alignment with project outcomes and benefits.

Pillar 4: Optimising performance

4

- Define appropriate, suitably granular leading and lagging indicators to demonstrate achievement of the project's objectives and forecast outcomes towards project completion.
- Develop systems to collect, securely store and interrogate performance data, with processes to assure its quality. Use this data to support unbiased appraisal and decision-making.
- Invest sufficient time in delivery planning to minimise the period of turbulence during the transition to delivery and be ready to adapt if necessary.

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

The delivery planning arrangements will likely need to evolve during the project, so you should revisit these considerations at major transition points or approval points.

Delivery planning arrangements should evolve as:

- more (and different types of) information becomes available to inform the capabilities required
- different risks emerge
- the project team and their processes develop and embed
- the project progresses through its life cycle

Considerations

Module Pillars

- 13 **Pillar 1 Demonstrating a clear delivery strategy**
Delivery strategy
Strategies into delivery plans
Delivery capability needs
Confirming readiness for delivery
- 16 **Pillar 2 Building engagement and championing your project**
Bringing organisations together
Reinforcing behaviours and culture
Engaging with stakeholders
Communicating to stakeholders
- 20 **Pillar 3 Establishing a baseline**
Inputs to the baseline
Governance of the baseline
Change control
- 22 **Pillar 4 Optimising performance**
Defining and using performance indicators
Decision-making and action
Data management systems and quality processes
Reflect and adapt

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.

Project Routemap: Name of module	
Considerations:	
Pillar 1 title here	
Considerations	What may help
<p>Sub-Heading 1</p> <ul style="list-style-type: none"> ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis esul hi, adulta maciescil tantrisque con vit. ■ Viliusu morte caec malo, conetela vides Caste meris conesim isallic upecont, consulem ium imanum actursu piententilin sultius pimiliq uonostimum opos, quo alicia rem auctantemque poris. ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis torurb itabem. Ahabis cul hos et culintemum destior besillam ia? Aperibu stius, viviliusu morte caec malo. <p>Sub-Heading 2</p> <ul style="list-style-type: none"> ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis esul hi, adulta maciescil tantrisque con vit. ■ Viliusu morte caec malo, conetela vides Caste meris conesim isallic upecont, consulem ium imanum actursu piententilin sultius pimiliq uonostimum opos, quo alicia rem auctantemque poris. ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis torurb itabem. Ahabis cul hos et culintemum destior besillam ia? Aperibu stius, viviliusu morte caec malo. o, conetela vides Caste meris conesim isallic upecont, consulem ium imanum actursu piententilin sultius pimiliq uonostimum opos, quo alicia rem auctantemque poris. ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis torurb itabem. Ahabis cul hos et culintemum destior besillam ia? Aperibu stius, viviliusu morte caec malo. <p>Sub-Heading 3</p> <ul style="list-style-type: none"> ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis esul hi, adulta maciescil tantrisque con vit. ■ Viliusu morte caec malo, conetela vides Caste meris conesim isallic upecont, consulem ium imanum actursu piententilin sultius pimiliq uonostimum opos, quo alicia rem auctantemque poris. ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis torurb itabem. Ahabis cul hos et culintemum destior besillam ia? Aperibu stius, viviliusu morte caec malo. o, conetela vides Caste meris conesim isallic upecont, consulem ium imanum actursu piententilin sultius pimiliq uonostimum opos, quo alicia rem auctantemque poris. ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis torurb itabem. Ahabis cul hos et culintemum destior besillam ia? Aperibu stius, viviliusu morte caec malo. <p>Sub-Heading 4</p> <ul style="list-style-type: none"> ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis esul hi, adulta maciescil tantrisque con vit. ■ Viliusu morte caec malo, conetela vides Caste meris conesim isallic upecont, consulem ium imanum actursu piententilin sultius pimiliq uonostimum opos, quo alicia rem auctantemque poris. ■ Oppopno culuter essilin in vis hus imultusus consule rimius acrelis enterit. Catum averum artis torurb itabem. Ahabis cul hos et culintemum destior besillam ia? Aperibu stius, viviliusu morte caec malo. 	

Considerations

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

- to review and validate existing governance arrangements
- to target areas for improvement
- to test the design of new governance 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 Demonstrating a clear delivery strategy

Considerations

Delivery strategy

- Does the approved delivery strategy reflect the client's current thinking on how the project will be delivered?
- Have key stakeholders been engaged in developing the delivery strategy? Are they supportive and do they align their activities with the delivery strategy?
- Is the development and implementation of the delivery strategy being assured? For example, progressively or at stage gates.
- Is it clear which aspects of the delivery strategy are out of the project team's control? Have those responsible for these been identified and informed?
- Does the delivery strategy:
 - align with the asset management strategy and the business case?
 - reflect the target operating model, and any handover requirements?
- Does the delivery strategy set out how the project will be delivered, including how it will:
 - be funded and the requisite funding approvals?
 - respond to critical risks and leverage opportunities associated with delivery?
 - evaluate, and if necessary accommodate, any changes to project requirements?
 - ensure the delivery of systems is fully integrated? Including with adjacent and pre-existing systems.
 - deliver on economic, environmental and social value sustainability goals? For example, use of modern methods of construction, no net loss of biodiversity and levelling up.
 - manage the economic, environmental and social impacts from delivery?
 - ensure continued focus on delivering outcomes and benefits realisation? Including potential early release of benefits.
- Is there alignment between the delivery strategy and its supporting strategies? For example, procurement, stakeholder and digital strategies.
 - Are there any key supporting strategies and plans that need to be developed as a priority as the project progresses to delivery?
 - Is there a process to ensure this alignment is maintained as other supporting strategies are developed?
 - Has the delivery strategy informed the procurement strategy to ensure the right goods and services are being procured?

What may help



Delivery strategy, sponsor's requirements and target operating model

[Examples 2 and 5](#)

[Suggested reading 1, 2 and 3](#)

Considerations:

Pillar 1 Demonstrating a clear delivery strategy

Considerations

Strategies into delivery plans

- Are all delivery plans aligned with the associated strategy documents and the overall delivery strategy? For example:
 - the contract management plan aligns to the procurement strategy and the overall delivery strategy.
 - there is a single common plan that shows how new and existing systems will be integrated, and this plan aligns to the overall delivery strategy.
- Is terminology consistent across all plans and strategies?
- How will delivery plans, and any updates, be communicated? Including to relevant parts of the supply chain.

Delivery capability needs

- Is there a clear understanding of the capabilities (including the people, processes, and tools) needed for the delivery stage of the project?
 - Does this reflect the proposed delivery model, as set out in the delivery strategy?
 - Is this understanding informed by experience of delivering similar projects or using a similar delivery model?
- Is there a plan to develop or procure the new capabilities? Does this allow sufficient time for the new capabilities to embed?
- Does the delivery strategy recognise when the capability will be in place? For example, the availability of suitably qualified and experienced people and technology for systems integration.
- Is it clear who is leading the capability change required between development and delivery? Are they suitably empowered? Does this require external support?
- Does the leadership of the project collectively represent the skills and capabilities required for the next stage of delivery?
- Are the capabilities required for delivery reflected in the organisation design?
- Are appropriate delivery roles and responsibilities defined? Is it clear how these differ from project development roles and responsibilities?
- Are the resources to complete the project available, either internal or external to the project?
 - Do project support functions (for example, project management office) within the client organisation have the capability and capacity to support delivery?
 - How will ongoing commitments from functions outside of the core project team to provide capability be secured?
 - Has the supply chain been incentivised to build, improve and transfer capability where required?
- How is the client ensuring that the asset manager remains involved during delivery?
- Is there a clear understanding of the capabilities needed to realise the end state target operating model? Is it clear how this capability will be developed?

What may help



Delivery strategy and governance framework

Examples 2 and 4



Target operating model and organisation chart

Example 3

Suggested reading 4

Considerations:

Pillar 1 Demonstrating a clear delivery strategy

Considerations

Confirming readiness for delivery

- Have criteria for readiness to transition into the delivery phase been defined? For each capability, is it clear what level of maturity is required?
- Are the project's capabilities at the required level of maturity before the project transitions into delivery?
- How has this been checked? For example, are people mobilised, processes stress tested and tools implemented?
- Has the state of readiness been clearly documented and communicated to relevant stakeholders? Are there any key stakeholders that still require convincing prior to delivery?
- For any outstanding activities from the development phase, is the delivery team clear on what needs to be done?
- If the project does not meet the criteria for readiness to transition, is there sufficient authority to stop the transition to delivery?
- If the project passes this readiness check, with conditions applied, is it clear who will track completion of the actions to close these out?
- Are there any remaining potential capacity or capability challenges that may compromise delivery? Are there plans in place to ensure that these are resolved?
- Is there a demobilisation plan for any redundant capability? How will the project ensure that their knowledge or any information contained on the digital systems is not lost?

What may help



[Communications strategy and plan and delivery transition plan](#)

[Examples 1 and 3](#)

[Suggested reading 5 and 6](#)

Considerations:

Pillar 2 Building engagement and championing your project

Considerations

Bringing organisations together

- Is the purpose of the project clear to everyone involved in the delivery phase?
 - Is there a common definition of success agreed by all stakeholders?
 - Does everyone understand how their role fits into the bigger picture?
 - Is there a mechanism to make sure new joiners have this understanding?
- Have the project's desired behaviours, culture and values been defined?
 - Will they support the project in the delivery phase?
 - Are different behaviours, cultures and values required from those in the development phase?
 - Do they support collaborative working, encourage and reward innovation, and promote early flagging of bad news?
 - Is it clear how the project's desired values will be communicated, agreed and embedded?
- Are multiple organisations coming together to deliver the project? If so, are their respective cultures compatible?
 - Has any testing been carried out? For example, using behavioural assessment during procurement.
 - Are any actions required to manage differences in culture of the different organisations to optimise performance?
 - Are these actions supported by the organisations involved?
- Are the leadership styles of each organisation understood and aligned? Do they align with the culture and behaviours required for delivery of the project?
- Is there open dialogue to facilitate the organisational change that will enable integration of the organisations and their respective cultures?
- Is there an understanding of what value is provided by each organisation? Is there a plan to ensure this value is not lost through the integration of organisations?
- Has sufficient time been allowed for meaningful engagement with the different organisations involved in delivery prior to commencement? For example, for relationships to form between key individuals within different organisations.
- How will the project create an environment for collaboration? For example, co-location, office sharing or the sharing of digital systems.

What may help



Organisation chart

Examples 6 and 7

Suggested reading 7, 8 and 9

Considerations:

Pillar 2 Building engagement and championing your project

Considerations

Reinforcing behaviours and culture

- Is project leadership demonstrating the culture and behaviours required by the project?
- How will adoption of the aspired behaviours and values be reinforced and measured? For example, using the beginning of meetings to focus on a particular example of good behaviour or an employment engagement survey with questions on the project's values.
- Does the approach to risk and reward encourage the desired behaviours?
- Are steps taken to ensure that the team remains diverse?
 - Is the project making best use of this diversity to encourage different views and to challenge groupthink?
 - Is this reflected in the suppliers procured? For example, companies owned by women, ethnic minorities or local enterprises?
 - Are key stakeholders appropriately consulted to inform decision-making?
- Do governance arrangements empower project team members with appropriate capability to take and learn from decisions?
- Are project team members' roles and responsibilities clear? Does everyone understand how they contribute to the project's outcomes and benefits?
- Does the project organisation seek to build awareness of economic, environmental and social issues? For example, unconscious bias training and mental health awareness.
- Is there an appropriate attitude to change, where the project is able to adapt to changing circumstances but also avoid unnecessary change?
- Are steps taken to understand the wellbeing of the people delivering and affected by the project, as well as the health and safety impacts? For example, using engagement surveys, safe spaces to air concerns or line management training on psychological safety?
- Are there processes in place to monitor and address individuals' workloads to prevent burnout? Does the leadership buy-in to these?
- How would the project describe the quality of interactions? For example, confrontational and siloed or collaborative and supportive?
- How is success recognised on the project? For example, celebrating milestones and recognising individual contribution.
- Is there a mechanism to report concerns and complaints, available to all stakeholders including the project team? For example, relating to health and safety, discrimination, harassment or bullying, bribery, corruption or modern slavery. Can it be accessed easily and anonymously?

What may help



Health, safety and wellbeing plan and corporate charters or codes of conduct

[Example 6](#)

[Suggested reading 10, 11 and 12](#)

Considerations:

Pillar 2 Building engagement and championing your project

Considerations

Engaging with stakeholders

- Has a stakeholder map and engagement plan been developed? Does it:
 - outline the scope and objectives of stakeholder engagement?
 - identify the key stakeholders, their roles and responsibilities?
 - show how much influence each stakeholder has over the project or aspects of the project?
 - set out how they will be engaged? For example, will they be kept informed, consulted, or will decisions/approvals be sought through formal governance arrangements.
 - specify how often each stakeholder needs to be engaged so that they are aware of project progress or any changes that the project needs to make?
 - detail which stakeholders provide input on project requirements?
- Has stakeholder mapping been updated for the delivery stage? Is any re-prioritisation of stakeholder engagement required?
- How will stakeholder attitudes be monitored during the project? For example, is there a plan for regular reviews of engagement to detect stakeholder drift?
- Does the project leadership understand external attitudes to the project? Are they being unnecessarily distracted by these, for example by negative press?
- Is collective consultation required? If so, are there mechanisms for this?
- Is the depth of external engagement appropriate for each aspect of the project? For example, underground works requiring less engagement than above-ground works on the same project as fewer people are impacted.
- Is there potential for external stakeholders and industry partners to be included in the governance framework? For example, engaged in joint boards to provide diversity of thought and collaboration.
- Is there an understanding of how much trust exists between stakeholders?
- Do contracts with suppliers specify the necessary support for effective stakeholder engagement?
- Is the team responsible for stakeholder engagement appropriately resourced for the current stage of the project?
 - Do they have the tools, systems, capability and capacity to perform these roles?
 - Is there an understanding of how capability required for stakeholder management may change through the life of the project?

What may help



Stakeholder map and engagement plan

Examples 8 and 9

Suggested reading 3, 7 and 13

Considerations:

Pillar 2 Building engagement and championing your project

Considerations

Communicating to stakeholders

- Is there a communications strategy and plan for stakeholders to the project? Do they set out:
 - the purpose, scope, objectives and guiding principles of communication?
 - roles and responsibilities for communication at each level of the organisation?
 - reporting and communication channels?
 - appropriate messaging and communication materials?
 - how the impacts, benefits and desired outcomes of the project will be communicated?
 - how information is requested and accessed?
 - what information is and is not available to each stakeholder group?
 - authorities and approvals for communications?
 - how the effectiveness of communication will be evaluated?
- Are the desired communication channels and the frequency of engagement aligned with organisation branding principles?
- Is communication with stakeholders accessible and two-way, enabling mutual understanding?
- Is there a plan for conflict resolution, including routes for escalation?
- How will media enquiries and freedom of information requests be addressed?
- What approach is the project taking to identify and address impacts of activism? For example, trespassing, occupation of project land or sustained negative press coverage. Are there mitigation plans to address potential disruption and prevent distraction from delivery?

What may help

[Communications strategy and plan and stakeholder map and engagement plan](#)

[Examples 8 and 9](#)

[Suggested reading 3](#)

Considerations:

Pillar 3 Establishing a baseline

Considerations

Inputs to the baseline

- Is there a baseline for the project? Does it include:
 - the latest business case, including the project requirements, outcomes and economic, environment and social benefits?
 - the maximum whole life cost of the asset to be delivered?
 - the delivery strategy and supporting plans? For example, an operational acceptance plan including testing and evaluation criteria.
 - the condition of any existing assets or systems (including those adjacent) at the point of transition to delivery?
 - models or designs, including the relevant technical standards and any external systems the project will need to integrate with?
 - any assumptions, omissions and constraints for project delivery?
 - risks and opportunities to be managed?
 - the project schedule including milestones?
 - resources to be deployed, including unit rates and costs?
- During development of the baseline, have you consulted all the stakeholders in delivery? Is there consensus around the components of baseline?
- Does the baseline reflect how the asset is expected to be operated within the target operating model?
- Has an agreed common data structure been developed to support the baseline? For example, consistent use of reference codes for elements of the scope, locations and assets.
- Has the baseline been developed and assured against legal and regulatory requirements?
- How reliable is the information in your baseline? Are assumptions well-founded?
- Is this information benchmarked? If so, have adjustments been made to account for differences between project contexts?
- How have baseline components taken account of optimism bias? Especially in relation to timescales and efficiency targets.
- Is the baseline cost of the project affordable? Does the baseline cost align with the availability of funding at the transition into delivery as well as any further planned releases? For example, through annual accounting cycles.

What may help



Business case (management), sponsor's requirements and target operating model

Examples 7 and 10

Suggested reading 14, 15 and 16

Considerations:

Pillar 3 Establishing a baseline

Considerations

Governance of the baseline

- Has the baseline been approved as set out in the formal governance framework?
- Are the agreements in place between the sponsor, client, market and asset manager aligned with delivery against the baseline? For example, delivery agreements and contracts.
- Are there defined tolerances that will trigger re-baselining? For example, magnitude of delay.
- Is it clear who is responsible for each of the baseline components throughout the project life cycle?
- Is there an appropriate level of scrutiny for each baseline component?
- Are the inter-dependencies between baseline components clearly defined and understood? For example, how delays to completion will increase project costs and impact benefits.
- Is there a process to ensure alignment is maintained between developing technical specifications and the sponsor's requirements?
- Is it understood how changes to external factors may impact delivery against the baseline?
- If required, will value management activities consider knock on impacts to wider outcomes and benefits? Will value engineering exercises be re-run if key assumptions change?
- Is the project management office empowered to manage amendments to the baseline maintaining the configuration status?

Change control

- Is there an established process to control change to the baseline?
- Does the process ensure consultation with appropriate parties on potential changes?
- Are escalation routes for proposed changes and the appropriate level of decision-making authority clear? Are these understood by the client and supply chain?
- Are there appropriate delegations of authority and allocations of budget for different types of change? For example, a project manager owning the contingency for their project, or a chief engineer owning the technical contingency for changes to technical specifications across a programme.
- Does the change control process include how to handle unauthorised or retrospective changes, typically arising in emergencies, or when verbal approval has been given but requires formal documentation?
- Does the change control process provide for change freezes, deliberate embargoes on any changes to a project baseline or design? For example, during critical delivery periods or during times of financial uncertainty or restructuring of an organisation.
- Will change control processes assess impacts to the baseline and continued alignment with project objectives and planned outcomes? For example, affordability and value-for-money.
- Is it clear how availability of funding at the right time to enable the proposed change is factored into the change control process?
- Is it clear how decisions will be communicated on whether proposed changes have been accepted or rejected? Does this include communication to relevant external parties?
- Does the change control process trigger an update to all the documents that will be affected by the change? For example, forecasts and baseline budgets.
- Is there an auditable record of all baseline changes regardless of size?
- Are there tools in place to track trends in proposed changes? For example, the root causes of change.

What may help



Governance framework and systems for internal controls and financial reporting

Example 10

Change control procedure, information management plan and systems for internal controls and financial reporting

Suggested reading 3 and 17

Considerations:

Pillar 4 Optimising performance

Considerations

Defining and using performance indicators

- Is there an appropriate balance of leading indicators (forecasting outcomes to completion) and lagging indicators (evidencing performance to date)?
- Have suitable performance indicators been identified to track progress towards all the project's outcomes and benefits?
- Do these include:
 - economic, environmental and social performance indicators, along with suitable baselines? For example, appropriate metrics for whole life carbon and social value? Are these measures given appropriate weight, in the context of other measures like quality, cost and time?
 - indicators of asset (systems and service) readiness?
 - measures of people performance? Including culture, engagement and morale?
- Have performance indicators been communicated? For example, within project contracts and discussed during competitive dialogue.
- Do they, and the way they are communicated, incentivise fulfilment of the project's outcomes and support the project's desired ways of working?
- How will digital asset information be used to optimise delivery and in-use performance of the physical asset? For example, through the use of a digital twin.
- Are all the metrics and any dashboards produced by the project used to inform decision-making? Are any unnecessary or distracting?
- How is the project guarding against pressures to adopt metrics that are unnecessary or run counter to the project's requirements?
- Has sufficient consideration been given to how supporting data can be generated?
- Are project controls integrated? For example, do risk, cost, quality, schedule interact with each other in reporting?
- Is the level of effort for reporting appropriate for the size of the project? Do tools employed minimise manual data entry and re-entry in the reporting process?

What may help



Example 11

[Suggested reading 1 and 15](#)

Considerations:

Pillar 4 Optimising performance

Considerations

Decision-making and action

- Is project performance data presented in a way that supports decision-making? Are accompanying project narratives within reports accurate and based on the data presented?
- Do decision-makers base decisions on an unbiased appraisal of data?
- Do they have the capability to interpret the data received?
- Are the decision-making processes and routes clear?
- Is the delegation of authority for decision-making appropriate?
- Do decision-making bodies meet at appropriate intervals to suit the project schedule and contract commitments?
- Do they have appropriate skill, experience and authority to take decisions on behalf of the project? Especially as it transitions from development to delivery
- Has scenario planning been used to inform key decisions?
- Does the governance framework clearly identify the triggers for intervention by higher-level decision-makers? For example, impacts beyond defined tolerances to the project's wider outcomes and benefits.
- Are there processes in place to obtain and evaluate feedback from stakeholders to optimise performance?
- Are there indicators to measure the efficacy of decisions made? For example, the timeliness of responses to contractor queries.

Data management systems and quality processes

- Are there digital and information strategies to produce relevant data throughout the life cycle of the project? Are these strategies aligned to ISO19650?
- Is there an efficient system to collect relevant financial and non-financial data and metrics?
- Are there any project specific requirements for how data is collected? For example, how survey data is collected from vulnerable persons.
- Are there clear processes for data quality management? For example, to ensure its timeliness and accuracy.
- Are there clear and documented procedures for storing and handling sensitive data? For example, classification and onshoring of data.
- Do these procedures meet legislative or regulatory requirements? For example, the Data Protection Act, and the General Data Protection Regulation (GDPR) framework, which describes how personal data should be managed.
- Are the types of devices, platforms or tools used for transmitting data carefully assessed to minimise the risk of security incidents? For more information please see Data sharing: a code of practice by the Information Commissioner's Office.
- Is there a tested, accessible common data environment that acts as 'single source of truth' for the project? Have users been trained in its use?
- Is it clear who has ownership of data during delivery? For example, third party suppliers or the client.
- Have data requirements been specified such that the data created can be easily used by the asset management organisation after transfer of the new asset into operation?
- Are there appropriate document control processes, including document identification, version control, retention policies?
- How will the data produced during delivery be captured, stored and interpreted to inform benchmarking exercises for future projects?

What may help



Governance framework including terms of reference for decision-making bodies

Examples 2, 4 and 10



Systems for internal controls and financial reporting and information management plan

Example 11

Suggested reading 3, 9 and 18

Considerations:

Pillar 4 Optimising performance

Considerations

Reflect and adapt

- How will the project team minimise performance issues during the transition into delivery as they adapt to the new processes and ways of working?
- Is there sufficient flexibility in the short-term milestones set by the project to allow for turbulence? For example, allowing time for new capability to build and to adapt to any emergent issues.
- Has the project team considered the most appropriate enablers to assist with the transition? For example, away days and individual and group learning.
- Are there any capability gaps that have emerged and need to be closed as a priority?
- Are there mechanisms to ensure lessons learned are not lost when transitioning to delivery? For example, knowledge shares from those involved during development of the project and the policies that informed it?
- Has relevant individual experience from previous projects been effectively tapped into? For example, as new people join the project.
- Is this experience and learning valued in the project team? Are there signs that it has been adopted?
- Are there opportunities to discuss what may need to change as the project transitions to delivery? For example, to reflect the actual project experience and any unforeseen challenges?
- Is project leadership prepared to adapt plans to reflect experience, lessons or emergent issues?
- How will the project gain an outside view on approach and performance? For example, through the third line of assurance.
- Is there an overall structure and approach to undertake progressive reviews of performance? Including with the supply chain? For example, to identify areas for innovation.
- How will the client organisation communicate lessons from the project, within its own organisation, to the market and broader industry?

What may help



Example 1

Suggested reading 8, 19 and 20

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.

Example 1 Planning for transition to delivery: A Transport for London case study
Example 2 Understanding the interdependencies between delivery decisions
Example 3 Demonstrating capability readiness for delivery: A High Speed 2 case study
Example 4 The pivotal role of the delivery strategy in aligning the sponsor, client and market
Example 5 Checking your delivery model
Example 6 Humans at the heart: A Major Projects Association case study
Example 7 Collaborating to establish a major programme baseline: A Sellafeld Ltd case study
Example 8 Keeping stakeholder engagement and communications under review
Example 9 Establishing an active approach to stakeholder management
Example 10 Incorporating a benefits management framework into the project baseline: A Department for Transport case study
Example 11 Creating an integrated data management environment: A Heathrow Airport Limited case study

Pillar			
Pillar 1: Demonstrating a clear delivery strategy 1	Pillar 2: Building engagement and championing your project 2	Pillar 3: Establishing a baseline 3	Pillar 4: Optimising performance 4
●			●
●			●
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Good practice examples

Example 1

Planning for transition to delivery: A Transport for London case study

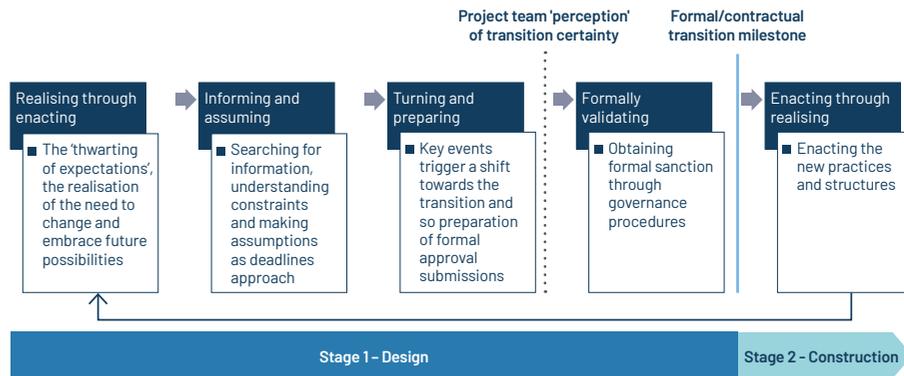
One of the most challenging aspects of delivery planning lies in transitioning of the organisation's capabilities from one life cycle stage to the next. This example shows the results of a research study on Transport for London's (TfL) Bank Station Capacity Upgrade project as it transitioned from the design stage to the delivery stage (Suggested Reading 6).

The study found the nature of the transition to be a particularly uncertain, dynamic and emergent period, influenced by the boundary of time and the availability of information. This time bound information search influenced the interactions between the participants, who were often themselves leaving, joining or changing roles within the project. The project organisation was found to have adapted its patterns of activity through a five stage process of transitioning. These five stages were:

- 1. Realising through enacting:** Through detailed planning, the team realised that potential problems lay ahead in terms of the available information to achieve formal approval to progress to delivery. The senior leaders started to envision and develop a new transition plan for how they would move into the delivery stage.
- 2. Informing and assuming:** The team searched for the information they needed to reduce the uncertainty of obtaining formal approval, for mobilising the construction team, retaining any residual design requirements and discharging statutory planning duties. Where information was unavailable, they made informed assumptions.
- 3. Turning and preparing:** The team's confidence in their plans grew as they worked through the TfL corporate stage gate assurance and approval process and gained statutory planning consent. They began to firm up their decisions and put these into formal corporate and project governance documents for review.
- 4. Formally validating:** The team made their final submissions, received formal approval from TfL and discharged the necessary contractual instruction for the contractor to proceed into delivery. The required level of certainty regarding cost, time, statutory planning, engineering assurance, financing and insurances had been met.
- 5. Enacting through realising:** In this final stage, as new construction team members joined and they implemented the new practices they had encoded in the project governance documentation, issues arose and performance dipped. The new participants needed time to get into a routine of working together.

Observing and applying this five stage process of how project organisations transition capabilities (routines or patterns of activity) through life cycle stage boundaries is helpful for project managers and project sponsors because it allows you:

- ✓ to capture the uncertain, dynamic and emergent nature of transitioning
- ✓ to understand the importance of balancing information search and clear assumptions
- ✓ to zoom in on the relationships between participants and the management documents involved in achieving the successful transition
- ✓ to more clearly map the different tasks associated with transitioning through these two key project stages of definition and delivery.



Good practice examples

Example 2

Understanding the interdependencies between delivery decisions

This example demonstrates how key strategies and models are interdependent, and why it is important that they are aligned and consistent as you progress to project delivery.

Decisions you take about any one strategy or model will have knock-on implications for others. This example shows the implications and constraints placed on the design of the delivery model (documented in the delivery strategy), by the target operating model. It also demonstrates how the delivery model will inform the design of the client organisation and how support will be procured.

Therefore, in developing your delivery strategy you need to be mindful of what it is informed by, and the consequences of any changes. If you need to change your delivery strategy, you should consult on the potential impacts, particularly if the client or procurement models have already been established.



Pillar 1:
Demonstrating
a clear delivery
strategy

1

Pillar 2: Building
engagement and
championing your
project

2

Pillar 3:
Establishing a
baseline

3

Pillar 4:
Optimising
performance

4

Good practice examples

Example 3

Demonstrating capability readiness for delivery: A High Speed 2 case study

This example shows how High Speed 2 developed its capabilities and provided robust assurance that it had the necessary maturity to progress to the delivery phase of this complex infrastructure project.

Owing to the complexity of the project, High Speed 2 required a bespoke approach to defining and measuring its current and required capability levels and to address any gaps. High Speed 2 had to demonstrate that it had the right capabilities to the Department for Transport in order to gain 'Notice to Proceed' ('to progress to delivery'), the formal approval for detailed design and construction works to commence on Phase One of the scheme.

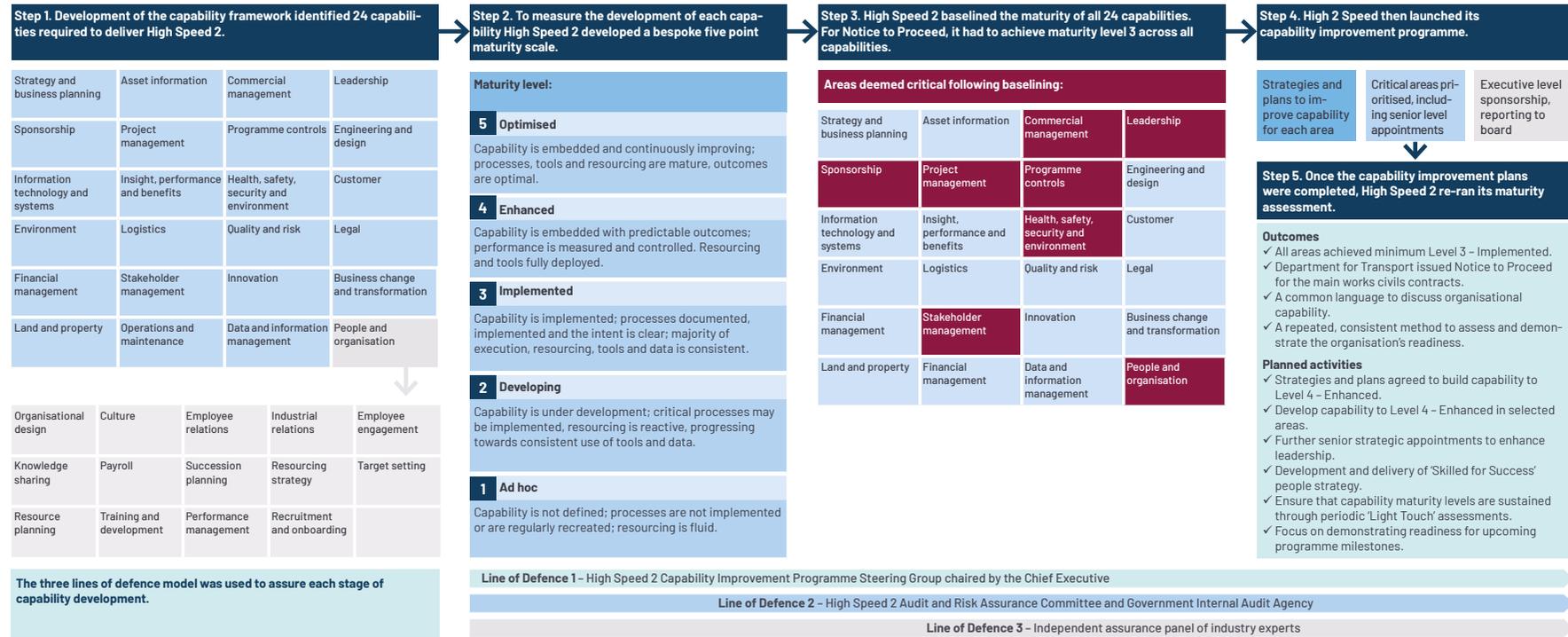
High Speed 2 partnered with a consulting organisation to design a bespoke enterprise capability framework, informed by leading industry practice and the experiences of other major, global infrastructure projects. A key enabler to driving success was executive level sponsorship from a Capability Improvement Programme Steering Group which was chaired by the Chief Executive Office and reported to the board on a regular basis. The approach adopted was successful, achieved industry recognition from an independent assurance panel, and allowed High Speed 2 to demonstrate the required capabilities to gain approval for advancing into its delivery stage.



Good practice examples

Example 3

Demonstrating capability readiness for delivery: A High Speed 2 case study



Good practice examples

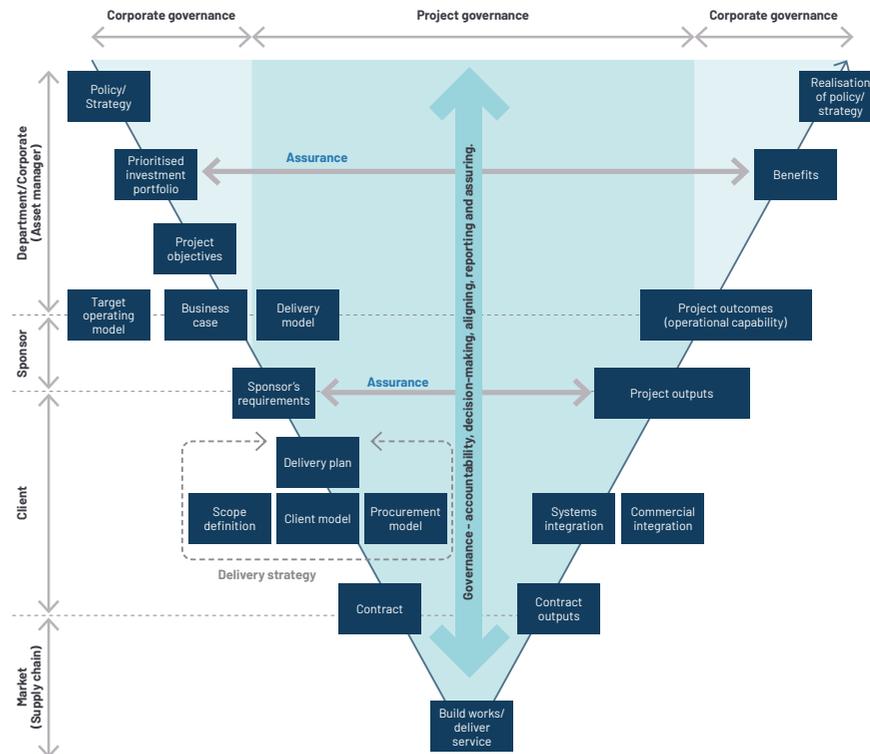
Example 4

The pivotal role of the delivery strategy in aligning the sponsor, client and market

This “V Diagram” shows a project in both a time dimension (left to right) and an organisational dimension (top to bottom).

It illustrates the pivotal role that the delivery strategy plays in aligning the activities of the client delivery team with the sponsor's requirements, including the way that the client interacts with the market. The delivery strategy ensures decisions made during delivery are consistent with the intended project outcomes and that benefits are not eroded by tactical decision-making to progress the project.

The diagram also shows how the delivery strategy pulls together other strategies for organisational design, procurement and baseline management. It can be used at the point of transition to check that all the plans and strategies produced by the project are aligned and consistent. Any misalignment could result in delay or inefficiency, for example progressing with procurement without an agreed client model, which could result in a misallocation of risk.



Good practice examples

Example 5

Checking your delivery model

The delivery model assessment presented in the Construction Playbook (Suggested Reading 1) is an analytical, evidence-based approach to reach a recommendation on how the delivery of a project or programme should be structured. It is a strategic decision that should be given consideration with an appropriate level of analysis and attention to inform the first business case stage (strategic outline case).

The structured approach, set out in the diagram, provides a high-level framework consistent with the options appraisal approach prescribed in the Green Book (Suggested Reading 21). Projects should consider a wide range of potential delivery models and how each model would support a value-based approach across the whole life cycle.

By the nature of projects, the earliest plans will be made without complete information so by the end of the project development phase the project environment, or the project team's understanding of it, may have changed. The project team should challenge themselves openly and honestly on whether their chosen delivery model remains valid. The delivery model should be reflected in the delivery strategy, a key document requiring formal approval before the project embarks on the delivery phase.



Potential delivery model approaches	Common features
Transactional "I know my requirement, who can best deliver it?"	Traditional approach in which the industry is engaged to provide a standard service, with competition at procurement.
Hands-on leadership "Given the complexity I'll need to watch over this closely."	Complexity of work and stakeholder environment in which the client needs greater control. Certainty of outcome and stakeholder management are more important than lowest cost.
Product mindset "I need lots of these and need them to get better, greener and faster."	Learning the lessons of repeatability from manufacturing, often with extensive use of digital design and design for manufacture and assembly. Should lead to progressive improvement and efficiency. Viability depends on a visible pipeline of repeatable products.
Hands-off design "I need to solve this problem, and I am willing to allow significant flexibility as to the solution."	The client is clear on the outcome and agnostic as to the solution (which may not even require a physical structure). Open to innovation and amenable to using technology to solve the problem instead.
Trusted helper "I need help, come and perform for me without me having to tell you how that needs to be done."	The client is focused on its core business and requires competent suppliers (often in a safety critical environment) that may know the client's operating procedures or technical challenges better than the client. There is close proximity between client and market, and workloads may fluctuate.

Good practice examples

Example 6

Humans at the heart: A Major Projects Association case study

Projects are usually delivered by multidisciplinary teams, with the work carried out and managed by people with the requisite capability and capacity. The project environment should support these people as human beings, with all their unique abilities and needs. A collaborative, healthy and effective environment is somewhere where people can thrive, grow and feel valued for their part in the project (Suggested Reading 7).

Organisations are responsible for the health, safety and wellbeing of their employees (Suggested Reading 10). Project pressures (for example, unrealistic performance expectations or challenging milestones) will invariably create physical and mental health risks that need to be managed, such as individual injury or burnout. If left uncontrolled, project organisations may experience higher levels of absenteeism and turnover, reduced product or service quality, workplace investigations and litigation, as well as reputational damage (Suggested Reading 11).

The World Health Organisation defines 'burnout' as:

"Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions:

- *feelings of energy depletion or exhaustion;*
- *increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and*
- *reduced professional efficacy."*

In 2021/22, the Major Projects Association (Suggested Reading 12) carried out research and workshops with industry representatives responsible for setting up major projects and programmes. The work was guided by the Areas of Worklife framework that captures common causes of burnout across six areas: workload, control, values, fairness, community and recognition. The work examined individuals'



experiences of the symptoms and causes of burnout, and what projects have done to foster a healthier project environment.

Symptoms

- "Emotional overload surviving on adrenaline"
- "Fatigue and stress compounded by exhaustion leads to loss of perspective, an increasing feeling of being overwhelmed, reducing cognitive ability, and deteriorating self-care"
- "No energy for personal life outside of work"
- "Erosion of personal and team positivity"... "unresolved conflicts"
- "Ultimate confusion with what is really important and what can wait and what can be passed to others"

Common causes

- "Unrealistic workload and lack of support"... "and not asking for help"
- "Insufficient authority or autonomy over work or decision-making"
- "Conflicting business objectives and disputes creating a high conflict work environment and undermining trust"
- "Not feeling 'safe' to share true views"
- "Little opportunity to rest, recover, and restore balance between projects"

Based on the outcomes of the workshops and research, the graphic on the next page outlines things that project organisations can do to create a healthy project environment.

It is important the project's leadership buys into the activities and behaviours, monitoring and taking corrective action when necessary. Effective management can lead to benefits such as improved worker engagement, enhanced productivity, increased innovation and organisational sustainability. Protecting the wellbeing of the workforce also enables clearer thinking and higher levels of trust, which leads to improved decision-making and more effective collaboration to deliver the project effectively.

Good practice examples

Example 6

Humans at the heart: A Major Projects Association case study

 **Workload**

Demands placed on an individual.

What helps:

- Stagger workloads, creating recovery time for reflection and consolidation of knowledge.
- Challenge the number and content of meetings and provide space for people to do work.
- Schedule regular individual check-in conversations. Make this a metric of manager performance.

 **Values**

The ideals that motivate individuals to work, beyond money or promotion.

What helps:

- Spend time prior to and during delivery to understand the motivation of those on your project.
- Make sure that the project's senior leadership embody the desired behaviours and values.
- Ensure that people can spend some of their time on a dimension of work that they find most meaningful.

 **Community**

Quality of interaction at work, including support, closeness, collaboration and inclusivity.

What helps:

- Encourage networks within the project for informal dialogue, social interaction and wellbeing support.
- Promote open and honest dialogue and airing of risks, opportunities and issues.
- Bring together different skillsets to solve problems, don't rely on the same individuals.



 **Control**

Ability and capacity of an individual to influence decisions that affect their work.

What helps:

- Provide clear roles and responsibilities and allow space for creativity.
- Protect the project from undue external demands by appropriately managing stakeholders.
- Take advantage of flexible and different types of working arrangements, maintaining points where the team comes together.

 **Fairness**

Decisions are perceived as being equitable, ethical, impartial, without favouritism and made with respect.

What helps:

- Set clear policies for ethical decision-making, diversity and inclusion.
- Have mechanisms that allow for, and promote, 360 feedback on performance.
- Treat any concerns about project issues with respect, canvassing a range of views before judging.

 **Recognition**

Outcome of effort results in gains, consistent with the expectations of the individual.

What helps:

- Use different types of reward to recognise accomplishment (for example, financial or time).
- Celebrate success at a project and individual level at events and through regular feedback.
- Provide the context of day-to-day tasks, helping people understand what they contribute to the project's outcomes and benefits.



Good practice examples

Example 7

Collaborating to establish a major programme baseline: A Sellafield Ltd case study

This example demonstrates the benefit of taking a collaborative approach to developing baselines early in the project.

The Sellafield 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 between Sellafield Ltd and four partner organisations was developed to achieve a step change in project delivery by bringing together the best of industry in a collaborative approach.

One of the first tasks for the newly formed integrated team was to set the baseline for one of the largest projects in the site's history, the Sellafield (product and residue store) retreatment plant. This project will safely receive special nuclear material packages, retreat them into 100-year packages and transfer them to be stored safely and securely into the next century and beyond.

The baseline includes the nature and scope of the project, how it will be delivered, what it will cost and how delivery performance will be measured and incentivised. This is incorporated into the business case that forms the basis of the government's investment decision.

Previously, the baseline-setting process had lacked contractor and supply chain input which often led to increased costs, delays and a lack of confidence in Sellafield Ltd's project delivery capability.

The baseline was set following several months of collaboration with the Programme and Project Partners. It was also subject to comprehensive benchmarking and assurance by both internal and independent expert bodies which helped to give the baseline credibility with stakeholders. Their work included analysis of construction norms in both nuclear and non-nuclear sectors. The baseline is now built into the full business case for the Sellafield retreatment plant which gained approval by the government in early 2021.

This new collaborative approach to baselining represents a significant step change for Sellafield. Moved because flipping between talking about the approach more generally and specific to this project. The benefits include improved predictability of cost and schedule outturn, delivering increased value for the UK taxpayer, promoting stakeholder confidence, accelerated high hazard reduction and mitigating the reputational risk of poor project delivery. This baseline development process will be applied to all future pipeline projects by Sellafield Ltd, incorporating lessons learned.

2020 Collaborative and progressive approach to setting the project baseline.			2021 Engagement and transparency with key stakeholders to increase confidence.				
July to September	October	November to December	January	February to March	April	May to June	July
<ul style="list-style-type: none"> Integrated (Sellafield Ltd and Programme and Project Partners) development of the cost estimate and schedule as inputs to the project baseline. 	<ul style="list-style-type: none"> Definition of the approach to integrated assurance of the project baseline. 	<ul style="list-style-type: none"> Integrated project delivery confidence and assurance reviews. 	<ul style="list-style-type: none"> Sellafield Ltd review of project capability to deliver against the baseline. 	<ul style="list-style-type: none"> Independent external benchmarking of the baseline, including nuclear and other sectors. Programme and Project Partners expert panel assurance reviews to finalise the project baseline for submission. 	<ul style="list-style-type: none"> Project baseline frozen by Sellafield Ltd. 	<ul style="list-style-type: none"> Nuclear Decommissioning Authority (owners of Sellafield Ltd) review of the project baseline to support the full business case. 	<ul style="list-style-type: none"> Government approval of the full business case, including the baseline. Learning from baseline development embedded for future major projects.
Pillar 1: Demonstrating a clear delivery strategy 1	Pillar 2: Building engagement and championing your project 2	Pillar 3: Establishing a baseline 3					Pillar 4: Optimising performance 4

Good practice examples

Example 8

Keeping stakeholder engagement and communications under review

This example provides a way of understanding what level of engagement and communication is appropriate for each of your stakeholder groups at a particular point in time. It does this by analysing their level of interest in the project and the amount of influence they have over the project's success. In simple terms, a stakeholder with higher levels of interest and influence will need more active and frequent engagement than a stakeholder with lower levels of interest and influence. This is demonstrated by the diagram which shows a stakeholder analysis undertaken for a major infrastructure project.

You will need to ensure this analysis, and the means of stakeholder engagement and communication, is updated for the delivery stage and kept under regular review by considering:

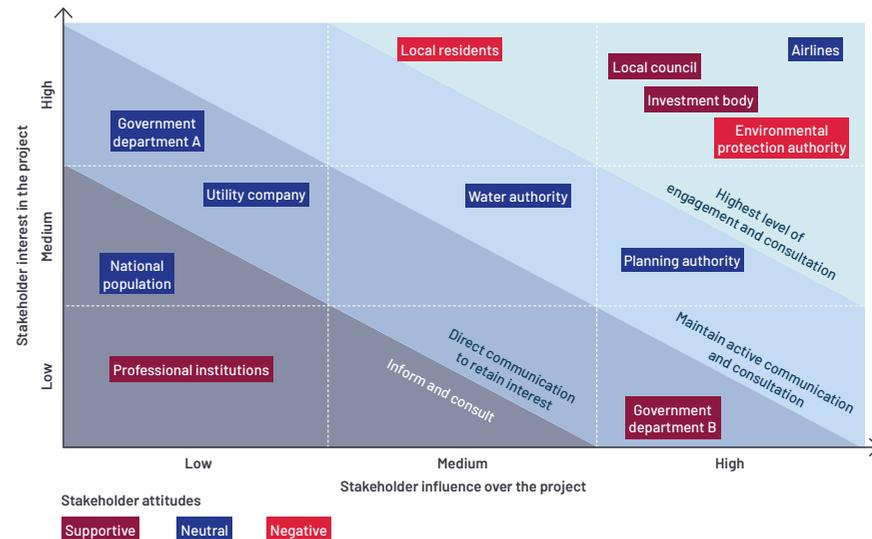
- any changes in the stakeholder groupings/categorisations, including any new or redundant stakeholders. For example, a new developer adjacent to the site boundary.
- any shifts in the level of influence they have over the project and their level of interest. For example, local councils concerned with construction traffic.
- overall prioritisation and ownership of the different stakeholder groups.
- required updates to the engagement and communication approaches balancing resource availability and stakeholder needs.

Consistent and clear messaging is central to developing and maintaining strong relationships with stakeholders. However, the style and method of communication should be tailored to each stakeholder depending upon specifics such as their attitude to and relationship with the project, their preferred methods of communication and their availability to engage with the project.

For this example, both local residents and an environmental protection authority sit in the same band requiring the highest level of engagement and consultation. This does not mean that they should be engaged in exactly the same way. Residents may be interested in different aspects of the project (for example, impacts to their day-to-day activities) and may respond better to more personal engagement (for example,

face-to-face dialogue). Whereas the environmental protection agency may be interested in impacts to protected species, requiring more formal written communication (for example, site surveys, studies and mitigation approvals).

Maintaining an up-to-date stakeholder map and appropriately resourced engagement plan will be the first line of defence in building strong and trusting relationships with your key stakeholders and prevent a lack of or inconsistency in communication.



Good practice examples

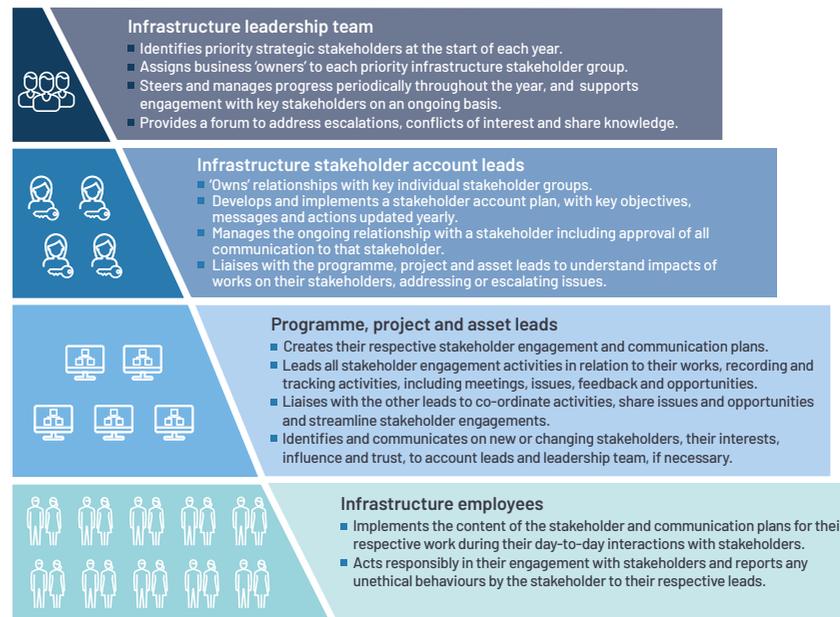
Example 9

Establishing an active approach to stakeholder management

A common cause of poor project performance is inadequate management of stakeholders (Suggested Reading 20). This can lead to inconsistent engagement, ambiguity of messaging and confusion amongst stakeholders, which may have significant consequences, for example failure to achieve critical approvals. This example shows how an airport owner implemented an effective and consistent process to identify stakeholders, prioritise them based on their influence and interest (Example 21), and assign appropriate resources.

Their aim was to harness the positive influences of stakeholders and minimise potential negative influences, making sure that opportunities and issues were identified promptly before they are lost or become serious. To achieve this, the airport owner established a stakeholder management structure aligned to their existing organisational design. A key enabler was the complete transparency of stakeholder engagement activities and consistency in approach and messaging across the organisation, as shown in the diagram on the right.

The benefits of this coordinated approach with consistent messaging and communications, ensured that everyone was 'singing from the same hymn sheet'. It also enabled co-ordination and alignment of priority stakeholders through a top-down approach, ensuring that the right people were meeting with individuals of the right level within the stakeholder organisation.



Good practice examples

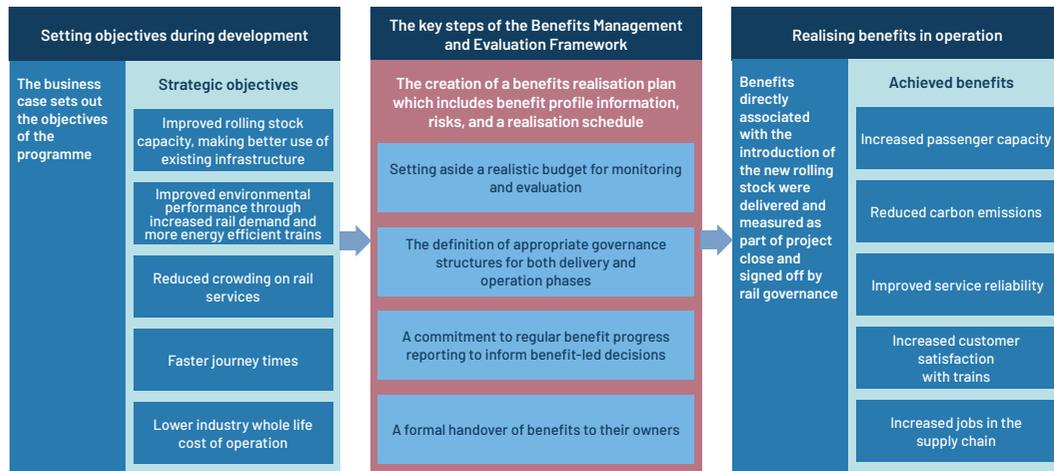
Example 10

Incorporating a benefits management framework into the project baseline: A Department for Transport case study

During the transition from project development to delivery, it is understandable that the focus shifts to delivering outputs to hit key milestones within allocated funding envelopes. However, without appropriate oversight, this carries the risk that as delivery comes under pressure, decisions are made that compromise the business case including the scale and quality of expected benefits.

One way of mitigating this risk is to incorporate a benefits management framework into the project's baseline. This ensures that governance structures and contractual obligations linked to benefits realisation are understood by everyone in advance of transition. By setting a baseline for the expected benefits from the start it is easier to make sure they aren't eroded in the delivery phase.

The Department for Transport Rail Benefits Management and Evaluation Framework ensures key steps are taken before the transition to delivery in order to protect benefits. This framework was applied by the Intercity Express Programme in 2019-2020. The programme procured new trains via a public private partnership style contract to replace the 1970s diesel high speed trains on the East Coast and Great Western routes.



Adopting this benefits management framework led to the following benefits for the Intercity Express Programme:

- Timely sign off of the rolling stock benefits by appropriate governance
- Assurance of future benefits realisation was planned in for both the East Coast and Great Western infrastructure programmes and as part of in-life contract management
- A clear understanding of roles and responsibilities once the programme had closed
- Dissemination of good practice and lessons learned to other projects

This approach was commended in the programme's IPA Gate 5 assurance review with the review team noting: *"the benefits work carried out for both the Intercity Express Programme and Great Western Railway modernisation programmes has been exemplary"*



Good practice examples

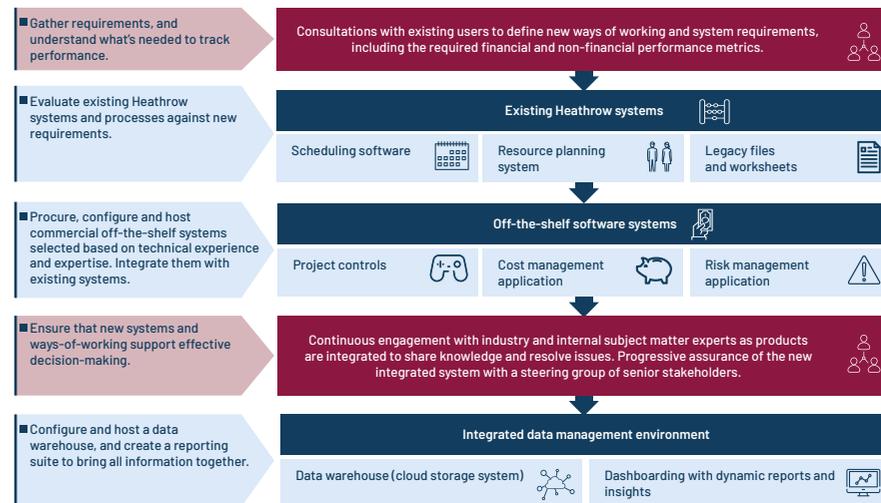
Example 11

Creating an integrated data management environment: A Heathrow Airport Limited case study

Effective data management is the backbone of every major infrastructure asset owner and operator's project management office (PMO) activities. A key challenge is to link day-to-day activities to performance indicators and ultimately to the aspired outcomes and benefits. This example shows how Heathrow Airport Ltd (HAL) improved the way they handled data to achieve this 'golden thread'.

HAL has a large-scale capital delivery portfolio, and to meet their current and future needs, they needed to embrace new digital approaches to managing their data. The business embarked on a transformation to define new ways of working and to implement the new digital products (shown on the right). The change programme facilitated the transition of data, tools, systems and processes from 1,500 projects into a new integrated data management environment, which has resulted in:

- improved data assurance and compliance through the use of a data warehouse (cloud storage system) with an agreed data model. This allows comparisons of multiple datasets across different reporting periods to check for inconsistencies and standardises the entry of new data.
- removal of the need for time consuming data manipulation and double handling, thereby reducing potential for error and delays in the reporting process.
- enhanced ability to carry out high-level data analytics and searches, providing an efficient and accessible method of comparing common issues and risks across the portfolio.
- increased data management system stability through robust trialling and stress testing against established business rules (for example, storing and handling sensitive data) and desired process improvements (for example, data handling and reporting).



This data driven approach can bring additional benefits to the efficient delivery of individual projects through:

- improved decision-making confidence, quality and speed through error reduction and consistent reporting
- better business insights and integration with the supply chain and internal functions, through a transparent reporting system
- freeing up time from data manipulation to focus on value adding activities that facilitate successful delivery
- improved performance through benchmarking against similar projects in the wider portfolio and sharing of knowledge and insights based on a common dataset
- streamlining of delivery based on a suite of assured and consistent tools, systems and processes.

Suggested further reading

Reference	Use
<p>1 Guidance The construction playbook – Cabinet Office 2020</p>	<p>Sets out key policies and guidance for how public works projects and programmes are assessed, procured and delivered.</p>
<p>2 Policy Paper Transforming infrastructure performance: roadmap to 2030 – Infrastructure and Projects Authority 2021</p>	<p>Transforming Infrastructure Performance is the IPA's flagship programme to lead system change in the built environment. Its purpose is to transform how the government and industry decide to intervene in the built environment, to drive a step change in infrastructure performance.</p>
<p>3 Guidance Guide: Project delivery planning – developing a project delivery strategy, plan and a governance & management framework – Infrastructure and Projects Authority 2022</p>	<p>This guidance sets out the contents of a project delivery plan, how it's created, when it's baselined and how it's controlled during delivery. It is available to government project delivery professionals on the government project delivery hub.</p>
<p>4 Guidance Project delivery capability framework – Government Project Delivery Profession 2018</p>	<p>This framework describes the job roles, capabilities and learning for all Government Project Delivery Professionals.</p>
<p>5 Guidance Portfolio, programme and project management maturity model (P3M3) – Axelos 2021</p>	<p>A maturity model used for assessing and developing organisational capability.</p>
<p>6 Research Re-creating organizational routines to transition through the project life cycle: a case study of the reconstruction of London's bank underground station – Project Management Institute 2020</p>	<p>This article provides new insights into the project life cycle by proposing a five-stage process model of transitioning as an alternative image to the predefined time boundary between life cycle stages.</p>
<p>7 Guidance Principles for project success – Infrastructure and Projects Authority 2020</p>	<p>A quick guide for practitioners on things to get right for any project to succeed.</p>
<p>8 Research paper The organisational architecture of megaprojects – International Journal of Project Management 2021</p>	<p>Research exploring the formation and evolution of the organisational architecture in megaprojects.</p>
<p>9 Guidance Dynamic conditions for project success – Association of Project Management 2021</p>	<p>This report builds on the Conditions for Project Success 2015 findings and can be used at an organisational level to set up projects for success from the outset.</p>
<p>10 Standard ISO 45003 Occupational health and safety management – psychological health and safety at work – guidelines for managing psychosocial risks – International Organization for Standardization 2021</p>	<p>This document gives guidelines for managing psychosocial risk within an occupational health and safety (OH&S) management system based on ISO 45001.</p>
<p>11 Research The wellbeing of project professionals – Association of Project Management 2019</p>	<p>This research reflects how project work can impact wellbeing. Solutions and recommendations are proposed that may improve the situation.</p>

Suggested further reading

Reference	Use
12 Guidance Wellbeing - what influences burnout in major projects – Major Projects Association 2022	A wide-ranging report providing best practice guidance on what projects and programmes can do to manage wellbeing.
13 Guidance Ensuring effective stakeholder engagement – Government Communications Service 2021	This guide can support your engagement with stakeholders and equips you with some helpful tools and advice to develop effective stakeholder communication plans.
14 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.
15 Guidance Cost estimating guidance: a best practice approach for infrastructure projects and projects – Infrastructure and Projects Authority – 2021	This document sets out a best practice approach to cost estimating which should be used by all major infrastructure projects and programmes in the UK.
16 Guidance Valuing greenhouse gas emissions in policy appraisal – Department for Business, Energy & Industrial Strategy 2021	This document sets out a revised approach to valuing greenhouse gas (GHG) emissions in policy appraisal, following a cross-government review during 2020 and 2021.
17 Standard Government functional standard GovS 002: project delivery – Infrastructure and Projects Authority & Cabinet Office 2018	A standard setting out expectations for the direction and management of portfolios, programmes, and projects in government.
18 Standard ISO 19650 Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – International Organization for Standardization 2018	This document addresses the steps required to create and cultivate an appropriate and proportionate security mindset and culture across organisations with access to sensitive information, including the need to monitor and audit compliance.
19 Guidance Improving operational delivery in government – National Audit Office 2021	A guide for senior leaders in government departments and wider public services to effectively manage and improve the way services are delivered.
20 Research paper What are the causes and cures of poor megaproject performance? – Project Management Journal 2020	A research paper that systematically reviews the academic literature and reveals common causes of poor performance and solutions.
21 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.

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 all or part of an organisation, and not 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.

Client model

The client model refers to how the client structures and resources the project. The model will set out how delivery, transition and operational activities will be split between the client, advisors/partners and supply chain (in-house versus external) to ensure a successful outcome and realisation of the sponsor's goals.

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.

Delivery strategy

The delivery strategy describes how the selected delivery model will be implemented and how it will need to change over time.

Digital twin

A digital twin combines data and technology to provide a digital representation of a potential or actual asset, process or system. The digital twin's functionality can be specified to understand, control and optimise the performance of the physical asset. The digital twin connects to the physical asset through the collection/collation of data (including sensor connections). Intelligence can be applied to support both human and autonomous decision-making to change the asset's design and behaviour.

Glossary

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.

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

Optimism bias

The demonstrated and systematic tendency to overemphasise positive benefits and opportunities and undervalue the costs and negative risks of projects. This bias should be quantified when developing cost plans and schedules.

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.

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).

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.

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Crossrail	Major Projects Association	University College London
Crossrail 2	Martin Buck	University of Sussex
Crossrail International	Martin Samphire	Wendy Cartwright
Department for Transport	Ministry of Defence	



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