

United Kingdom

1. Noteworthy practices for project preparation



EXISTING ENABLING ENVIRONMENT

IPA's role as a centre of excellence for project preparation

The Infrastructure and Projects Authority (IPA) defines the overarching framework for project preparation in the United Kingdom (UK). Guidance designed by IPA serves as the standards for contracting authorities to develop projects. IPA also undertakes quality assurance reviews for major projects, and supports capacity development and delivery support.



PUBLIC SECTOR CAPACITY FOR PROJECT PREPARATION

Institutionalising capacity enhancement through multiple interventions

Capacity development initiatives are central to the UK's project preparation landscape and are undertaken at the apex level by IPA. These are further supported by individual departments who conduct their own training and apprenticeship programs, aligned to the specific needs of the department.



PROJECT IDENTIFICATION AND CONCEPT DEFINITION

Multi-year plans and pipelines used to support an overarching long-term vision, and progress monitored by IPA to help strengthen accountability

The UK's National Infrastructure Assessment (NIA) provides a 30-year strategic vision for infrastructure development in the country. The vision is realised through the annual National Infrastructure Plan (NIP), a four-year pipeline of prioritised projects. Implementation of these pipelines is closely monitored and reported by IPA.



PROJECT IDENTIFICATION AND CONCEPT DEFINITION

Systematic processes to aid conceptualisation of major projects

IPA supports early stage project planning by providing tools that help identify major projects, to verify the holistic fit and synergy with overarching government policies. For example, the early development pool for major projects is monitored and reviewed by IPA, providing assurance for project development at the initiation stage. Further, the Project Initiation Routemap provides guidance on a structured approach to identifying and defining projects.



PROJECT FEASIBILITY AND STRUCTURING

Multi-dimensional approach to developing business cases, mapped to a comprehensive review process

Her Majesty's (HM) Treasury's Five Case Model encourages contracting authorities to evaluate project feasibility through five interdependent lenses. As the feasibility study progresses across different stages, the Office of Government Commerce's (OGC) Gateway Review process provides a 'peer review' mechanism to ensure that they can progress to the next stage.



PROJECT APPROVALS AND QUALITY ASSURANCE

Defined framework for quality assurance with requisite support tools

The UK's quality assurance framework is comprehensive, providing varying levels of scrutiny depending on project complexity, such as the IPA gateway review series for major projects, project validation reviews for early stage assurance for major projects, and project assessment reviews, which are tailored to the specific needs of a particularly complex project. These reviews can be conducted through HM Treasury panel meetings, and/or an expert team under the Major Projects Review Group could be commissioned.

2. Snapshot of project preparation activities

The UK has often been regarded as a pioneer of project delivery globally, providing a useful learning opportunity for developing countries embarking on the implementation of large projects.

Through its Private Finance Initiative (PFI), launched in 1992, the UK has delivered £56 billion of private sector capital investment in over 700 projects over two decades. Today, the government is implementing one of its most ambitious policy agendas ever – the current Government Major Projects Portfolio (GMPP) includes 143 projects worth over £455 billion (= US \$586 billion), across 17 departments. These projects are increasingly diverse in their nature, objectives and complexity: ranging from capital intensive infrastructure projects like High Speed Two (HS2) – a new high speed rail network linking the south and north of the UK – to major transformations like the Her Majesty (HM) Courts Reform, which will modernise the way people interface with the courts service.

INSTITUTIONAL FRAMEWORK

Project preparation activities in the UK are decentralised, with each line department and local government being responsible for their own project preparation as procuring authorities. Procuring authorities plan, structure and procure projects, and pay for the infrastructure services, either by collecting user charges or through their government budgets. Activities for project development are funded through the federal or local government budgets. Quite often, for major projects, special agencies are created that are provided with separate budgets.

For example, Crossrail Limited has been incorporated by Transport for London (TfL) to plan and implement the new railway lines in London. Once completed, the railway lines will be handed over to TfL for operations. Similarly, HS2, the railway linking London, Birmingham, the East Midlands, Leeds and Manchester, is being developed by High Speed Two (HS2) Limited, a company established by the UK Government.

To guide the above-mentioned implementing agencies, the government has created two unique institutions; the Infrastructure and Projects Authority (IPA) and the National Infrastructure Commission (NIC). The IPA, reporting to Her Majesty's Treasury (HMT) and the Cabinet Office, has been formed to oversee general policy on project delivery and quality assurance of specific business case proposals.

Established in 2015 by the merger of Infrastructure UK (IUK) and the Major Projects Authority (MPA), IPA has a long history of managing and delivering major infrastructure projects through its founding institutions.

A merged IPA combines expertise in delivery, assurance and financing, helping to manage major infrastructure projects within one government entity – thus defined as 'the UK Government's **centre of expertise for infrastructure and major projects**'.

The IPA does not implement projects but instead focuses on the overall project delivery system, which includes the projects, people and processes that together create the right environment for successful delivery. It is part of a wider institutional framework for infrastructure planning and delivery. To help shape a vision for the future for the UK's economic infrastructure, the Treasury has created the National Infrastructure Commission (NIC). The NIC has prepared its first National Infrastructure Assessment (NIA) in 2018, which analyses the UK's long-term economic infrastructure needs, outlines a strategic vision over the next 30 years and sets out recommendations for how the identified needs should be met. The NIA will be tabled in Parliament and the NIC will monitor progress on the government's implementation. The NIC is a unique entity that has independent experts and industry leaders as its commissioners. Although funded by the Treasury, it functions at arm's length and provides independent advice and progress monitoring.

PROJECT PREPARATION LANDSCAPE

The HMT and IPA provide a variety of support tools to guide project preparation in the UK. While these are binding only on major projects that require HMT approval or projects that also solicit an independent review from IPA, most line agencies have aligned their project preparation activities in line with the best practice guidelines prescribed by HMT and IPA.

Project identification and concept definition.

Project identification at the line ministry and local government level is guided by the long-term vision for development prepared by the NIC, under the NIA. Typically, ministries have established dedicated teams that lead project conceptualisation activities.

Procuring authorities identify projects that meet national priorities, which are integrated through two long-term plans prepared by the IPA – the National Infrastructure and Construction Pipeline (NICP) and the National Infrastructure Delivery Plan (NIDP). The NICP unites planned public and private investments across all economic sectors, providing clarity on the infrastructure spending expected to be achieved over a five-year period. The NICP also tracks the progress of nationally significant projects identified in the earlier plans, and is updated on an annual basis. The NIDP builds on the NICP, detailing on how the UK Government aims to support the delivery of infrastructure projects identified under the NICP, with a dedicated pipeline of housing and social infrastructure projects. To support project identification, the UK's project preparation framework provides a multitude of tools:

The Early Development Pool (EDP) for major government projects and programs (in the GMPP):

Institutionalised by IPA, the EDP includes projects that could potentially join the GMPP in the future. Inclusion of nationally significant projects in the EDP enables IPA to provide hand-holding support at the project initiation stage itself.

The Project Initiation Routemap (PIR)

The PIR is a best practice guideline prescribed by IPA, which provides a structured approach to identifying and conceptualising projects through a collaborative approach with IPA. From 2018, all major projects are assessed for their need and suitability for applying the routemap to guide conceptualisation.

Stage 0 of the Five Case Model

The Five Case Model is a thinking framework recommended by the HMT, which defines a structured approach to developing business cases. Stage 0 of the Five Case Model outlines a method to help identify projects that verify the strategic necessity of the project or program.

Project feasibility and structuring. All line agencies must prepare business cases for their spending proposals. These cases are prepared according to a model which views proposals from five interdependent dimensions, prescribed by the Green Book of HMT – known as the Five Case Model. These five dimensions are: strategic, economic, commercial, financial and management. The business case evolves as the project preparation for the project progresses. For projects, a strategic outline case is prepared at the conceptualisation stage, thereafter an outline business case is prepared at the pre-feasibility stage, which

is followed by a more comprehensive full business case and its updates prior to implementation. Individual central government departments and local governments undertaking non-major projects are not bound by project preparation guidelines provided by HMT. However, recognising the benefit of a standardised approach to project preparation, most of these departments have designed their internal project processes on the basis of those for major projects.

Project approvals and quality assurance. The Her Majesty's Treasury (HMT) recommends specific guidelines for independent review of all new major projects requiring HMT and IPA approvals:

OGC Gateway Review™

The UK has instituted a comprehensive and mandatory peer review process at key decision points in the project lifecycle to enhance the quality of project preparation and to set government expectations in project delivery. The Office of Government Commerce (OGC) Gateway Review™ process was introduced in 2000 after several project failures in the UK and the reevaluation of the government's effectiveness in projects and program delivery.

Major Projects Review Group (MPRG)

Sponsored by HMT, the IPA coordinates the MPRG, which is an independent group of experts from the government and private sector. The MPRG challenges projects on deliverability, affordability and value for money at key points in the HMT approvals process and as required at other key decision points during a project's lifecycle.

IPA Quality Reviews

In addition, the IPA has enhanced the quality review process with a range of different independent assurance reviews. Depending on the project cost and the department's track record of executing projects of similar complexity, these reviews range from formal gateways to more bespoke 'critical friend' reviews.

HOW IS IPA MAKING A DIFFERENCE IN PUBLIC SECTOR PROJECT DELIVERY?

The IPA, including its predecessor entities such as the MPA and IUK, have contributed remarkably to enhancing the project preparation ecosystem in the UK. Major contributions include:

- **Setting project standards and good practice guidance:** This includes documentation related to all major aspects of project preparation and project evaluation, such as project initiation routemaps, independent assurance methodology and other technical guidance documents and templates.
- **Infrastructure delivery support:** IPA has a team of commercial specialists that provide direction to the government and its agencies on all aspects of infrastructure delivery. The specialists can be deployed alongside the senior leaders and project teams to strengthen client capability. IPA also provides HMT and the Cabinet Office with commercial advice on business case approvals for specific projects.
- **Training and leadership development:** Based on the recognition that great project leaders deliver great projects, IPA has partnered with Oxford Saïd Business School to create the Major Projects Leadership Academy (MPLA). MPLA aims to improve the ability of senior civil servants to lead major projects and is regarded as the gold standard for project leadership training. It improves senior civil servants' ability to lead major projects with the aim of creating a cadre of world-class project leaders. Over 400 professionals have enrolled in the MPLA, and 250 have graduated to date. The MPLA received a Silver Award from the European Foundation for Management Development (EFMD) for their Excellence in Practice Awards, in the category of professional development. In addition, there are other project leadership training, apprenticeship and future leaders' programs that have been launched by IPA.
- **Project leadership development:** The IPA plays an important role in equipping project leaders with the right skills, training and capabilities to deliver infrastructure projects. In 2017, the IPA launched the Project Delivery Capability Framework (PDCF), which outlines a common language for the profession and defined career paths to help manage their careers. This framework is now being used by all major departments to help drive professionalism. In addition, the Government Online Skills Tool (GOST) supports the rollout of PDCF by allowing individuals to assess their skills and competencies against any project role, and to identify appropriate development options. It is currently being used by over 4,000 project professionals across government, and this number will grow following full rollout.
- **Independent quality assurance:** IPA uses independent experts for peer review and quality assurance of projects at critical stages, against a clear set of project standards. During 2017-18, the IPA conducted 230 independent assurance reviews on the Government Major Projects Portfolio (GMPP) projects. The IPA has created an assurance review pool of over 1,600 independent assurance reviewers from across government and industry.
- **Performance review:** The IPA undertakes the Infrastructure Performance Review to identify ways the government, working with industry, can improve the quality, cost and performance of UK infrastructure, building on the Infrastructure Cost Review 2010–2014. At the upstream end, the IPA supports the preparation of the National Infrastructure Development Plan, which brings together all of the government's infrastructure delivery priorities over the next five years; and the National Infrastructure Construction Pipeline, which is a forward-looking pipeline of planned projects and programs in economic and social infrastructure and housing.

3. Guidance for project preparation

Guidance	THE GREEN BOOK, FIVE CASE MODEL
Owner	Her Majesty's Treasury (HMT)
Project development stage	Feasibility study
Details	<p>The Five Case Model guidance provides an approach to preparing business cases for infrastructure projects. All major projects must design rationales for undertaking a project through dimensions defined in the Five Case Business Model – strategic, economic, commercial, financial and management. The business case, along with the impact assessment reports, are required to be put through a long-list option analysis for delivery, followed by a short-list appraisal on the principles of cost-benefit analysis.</p> <p>Link for further details: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/469317/green_book_guidance_public_sector_business_cases_2015_update.pdf</p>
Guidance	GATEWAY REVIEW PROCESS
Owner	Office of Government Commerce (OGC)
Project development stage	Quality assurance
Details	<p>The Gateway Review process aims to deliver a 'peer review' of projects at critical stages in their lifecycle, to provide assurance that they can progress successfully to the next stage. The Gateway Review Process covers six 'Gates', numbered from 0 to 5. These gateways cover aspects from strategic assessment of the program to examining the full business case of the project, as well as monitoring the operations of a project. Principles of the Green Book are incorporated in Gates 1 and 2. For all major projects, HMT approvals are required at Gates 1, 2 and 3.</p> <p>Link for further details: https://www.gov.uk/government/publications/ogc-gateway-review-0-strategic-assessment-guidance-and-templates</p>
Guidance	INTEGRATED ASSURANCE AND APPROVALS PLAN
Owner	Infrastructure and Projects Authority (IPA)
Project development stage	Quality assurance
Details	<p>These guidelines define the assurance options to be undertaken for a major project, such as: Project Validation Review (PVR) for a major policy initiative; OGC Gate 0 for major programs whose individual project components may not be considered 'major'; OGC Gates 1 – 5 for major projects being delivered through a standard methodology; and Project Assessment Review (PAR), which is tailored to a project's needs. Depending on the project cost and the department's track record of executing projects of similar complexity, major projects must seek assurance from the HMT Spending Team and IPA through one of these routes, at various stages of the project.</p> <p>Link for further details: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/638198/guide_to_implementing_integrated_assurance.odt</p>

Guidance	PROJECT INITIATION ROUTEMAP
Owner	Infrastructure and Projects Authority (IPA)
Project development stage	Project initiation
Details	<p>The Project Initiation Routemap is a structured approach to setting up projects for success and is the IPA's primary tool in supporting the initiation of projects across government.</p> <p>Link for further details: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/529311/</p>
Guidance	PROJECT DELIVERY CAPABILITY FRAMEWORK
Owner	Infrastructure and Projects Authority (IPA)
Project development stage	Institutional capacity development
Details	<p>The framework provides a description of the job roles, capabilities and learning initiatives for professionals involved in project delivery. Using this framework, project delivery professionals can map their career path, identify the skills required to deliver their job, and chart out and monitor a course for development through learning initiatives.</p> <p>Link for further details: https://www.gov.uk/government/publications/project-delivery-capability-framework-for-civil-servants</p>
Guidance	GOVERNMENT ONLINE SKILLS TOOL
Owner	Infrastructure and Projects Authority (IPA)
Project development stage	Institutional capacity development
Details	<p>The GOST has been developed alongside the Project Delivery Capability Framework (PDCF). It helps project delivery professionals to assess their current skill set, identify what skills they need for future career aspirations, and build a development plan to support different types of learning, including on-the-job learning and continuous professional development.</p> <p>Link for further details: https://www.gov.uk/government/publications/project-delivery-capability-framework-for-civil-servants</p>
Guidance	EARLY ASSESSMENT AND SIFTING TOOL
Owner	Department of Transport
Project development stage	Appraisal
Details	<p>The Early Assessment and Sifting Tool is a decision support tool developed to evaluate and appraise options for infrastructure development. It provides decision-makers with relevant, high-level information to help them form an early view of how options perform and compare.</p> <p>Link for further details: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4474/east.xls</p>

4. Project case example: Thames Tideway Tunnel

PROJECT BRIEF

The Thames Tideway Tunnel is an interceptor sewer being constructed in central London to control the 39 million tonnes of untreated sewerage that flows in to the Thames River on an annual basis.

The project was conceptualised in 2000 as a response to the European Commission's Urban Waste Water Treatment Directive, which required the UK to address its non-compliance with the directive's requirements. The sewer tunnel runs 25 kilometres long, from Acton in West London to Abbey Mills in East London, intercepting 34 combined sewer outflows (CSOs).

The project was successfully bid out in 2016, and is privately financed by the Bazalgette consortium, supported by the UK Government's fiscal support package, to mitigate the project risks and make the project viable for private financing.

The planning of this project is a reflection of the UK's inter-agency coordination. The Department of Environment, Food & Rural Affairs (DEFRA), responsible for the overall policy on water and sewerage in the UK, worked closely with Thames Water, a private company responsible for sewerage infrastructure in London, to develop a solution for the overflows. While Thames Water undertook the planning, design and tendering of the project, it was also supported by IUK (later IPA)¹ owing to its major project status.

The Water Services Regulatory Authority (Ofwat) was the independent economic regulator to determine the charges to be borne by the customers of Thames Water for funding the tunnel construction.

Further details on the project can be found on:

<https://www.tideway.london/> and
https://github-webtools.s3.amazonaws.com/umbraco/media/1602/gih_showcaseprojects_thames-tideway.pdf

QUICK FACTS



VALUE
(IN US \$ BILLION)

5.4*



STATUS

Under construction



PROJECT OWNERSHIP

Thames Water



SOURCE OF PROJECT
PREPARATORY FINANCING

**Thames Water internal
accruals**



SUPPORT AGENCIES

IPA, DEFRA

¹ IUK merged with the MPA in 2015 to become the IPA. For the purpose of this case study, the terms IUK and IPA have been used interchangeably, noting that all capabilities of the IUK to support and appraise projects were moved under the IPA umbrella.

*Estimated Exchange Rate: £1 = US \$1.29 (as of November 2018)

PROJECT TIMELINE

- Mar-00 Thames Tideway Strategic Study commissioned
- Mar-05 Report on Thames Tideway Strategic Study completed and presented
- Dec-06 Thames Water publishes detailed analysis on shortlisted options
- Mar-07 DEFRA announced selection of preferred option
- Aug-10 Thames Water Needs Report ratifies selected option
- Sep-10 First round of public consultations launched; IUK commences support to DEFRA
- Nov-11 Second round of public consultations launched
- Oct-12 Final round of public consultation ends
- Nov-12 Infrastructure market participant consultations launched
- Dec-12 Project enters the GMPP
- Feb-13 Thames Water submits planning application
- Sep-13 Preparation of strategic business case; Assurance review 1 by IUK
- Apr-14 Tender of shortlisted contractors by Thames Water for construction contracts
- Sep-14 Preparation of outline business case; Assurance review 2 by IUK
- Sep-14 Ministers grant Development Consent for the project
- Aug-15 Ofwat granted Bazalgette Tunnel Limited a regulatory licence; Government Support Package agreed; project achieved financial close.
- Dec-15 Preparation of full business case; Assurance review 3 by IUK/IPA
- Jan-16 Construction work commences
- 2023 Planned commencement of operations

LEARNINGS FOR PROJECT PREPARATION

1. Support from IUK / IPA for project development

The Thames Tideway Tunnel is not a government project and would therefore not normally be subject to IPA oversight and monitoring. However, given the scale and nature of the project, it was decided that IPA would provide oversight and assurance for the set-up of the project.

IPA provided regular support to the project from its conception in April 2012, when the project was admitted to the GMPP. The areas of assistance provided by IPA included:

- Providing direct support in designing the delivery structure and contingent financial support package by the Government of the UK to make the project attractive for private financing.
- Independent quality assurance reviews with specialist periodic inputs, in line with the OGC Gateway Review Process.
- Assistance on policy-related matters, including acquiring ministerial approval and passing of the National Policy Statement of Waste Water, a critical legislation for parliamentary approval of the project.
- Continued support to DEFRA through long-term secondment for providing expert input.

2. Independent options analysis to choose the best option for delivery

Aligned to IPA's Five Case Model, a series of studies were commissioned in three phases to identify potential solutions to London's sewer outflow challenge. These studies, conducted by a team of inter-departmental expert groups, ensured that a comprehensive appraisal of a broad range of options (including the most cost-effective combination of measures), using cost-benefit analysis, was carried out in accordance with HMT's Green Book guidance.

- ***The Thames Tideway Strategic Study (2000-2005).*** In this first phase, Thames Water commissioned a task force chaired by an independent expert to conduct the Thames Tideway Strategic Study. To identify options, the task force drew on the views of numerous stakeholders, including the Environment Agency, DEFRA, the Greater London Authority and Ofwat. The study identified eight possible options and further conducted feasibility and cost-benefit analysis for each of these.

- *The Thames Tideway Advisory Group (2005-2006)*. Building on the options identified under the Strategic Study, DEFRA commissioned a working group to evaluate the findings of the report. The working group further shortlisted three options for detailed evaluation, on the basis of which the existing full tunnel option was identified as the most suitable solution.
- *The Needs Report (2009-10)*. Thames Water's Needs Report further ratified that the Tideway Tunnel continued to remain the most cost-effective solution for achieving the statutory environmental obligations.

3. Clarity in outcome translating to defined objectives

The Thames Tideway Tunnel project was designed to meet a specific set of clearly defined goals – to reduce the sewage pollution being discharged into the River Thames, in line with European Commission directives for environmental conservation. To support this, DEFRA's departmental strategic objectives were translated in to specific criteria on the basis of which identified options for project delivery were evaluated. These objectives defined the measures for minimum satisfactory performance for the sewer tunnel, derived from the negative effects likely to eventuate in the absence of a solution.

To select the optimal solution for the problem, the lowest-cost solution, which met all three criteria, was selected.

The criteria has now evolved into a defined framework for monitoring the project progress and outcome by independent technical assessors empaneled by DEFRA.

4. Extensive public-private engagement at the planning stage

Thames Water carried out two extensive public consultations to refine the route for the Thames Tideway Tunnel. The first round of public consultation took place between September 2010 and January 2011, and the second between November 2011 and February 2012. It also conducted a third targeted consultation on four specific sites between June 2012 and July 2012. Thames Water subsequently revised its plans and submitted its planning application for a Development Consent Order (DCO) to the Planning Inspectorate on 28 February 2013.

5. Strong leadership team comprising trained project managers

Thames Tideway Tunnel's project team was supported by a long-term secondment from IPA to provide ongoing expert input to overcome the challenges in project development. Further, several members of the project team, including the Senior Responsible Officer, were graduates of the government's Major Projects Leadership Academy (MPLA). The experience of the project team in dealing with major projects within IPA and supported training helped shape their approach to management of the project, particularly in the areas of public engagement and stakeholder management.

6. Applied learning from past experiences

While cost estimates for the tunnel increased progressively from 2007, owing to changes in scope and design, experience from the Lee Tunnel, a similar project in the UK, was used to bring about better understanding and rationalisation of cost estimates. Further, the project benefitted significantly from IPA's experience in dealing with similar large-scale projects under Crossrail and High Speed Rail 2, ensuring more detailed upfront planning than is usual for a PPP project at the pre-commissioning stage itself. For instance, unlike the traditional design and build approach for PPP projects, detailed design plans for the project were developed prior to commencement of the tender procedure, under the oversight of Ofwat.