SCM Scoping Template

Should Cost Modelling



MAY 2021

Version 1.0

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# Context

## The requirement to produce a Should Cost Model (SCM) when making sourcing decisions and contracting outside suppliers for the delivery of **public services** is set out within the [Sourcing Playbook](https://www.gov.uk/government/publications/the-outsourcing-playbook) (see Chapter 3) and for **public works projects or programmes** within the [Construction Playbook](https://www.gov.uk/government/publications/the-construction-playbook) (see Chapter 5).

## The Sourcing and Construction Playbooks set out when contracting authorities should produce an SCM, which functions are responsible for them (see Ownership, Knowledge, Understanding and Awareness framework), and how SCMs fit within the procurement lifecycle. The accompanying [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook) provides high-level guidance on SCMs. It is part of a set of Cabinet Office guidance relating to SCMs:

* [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook) - outlines what SCMs are, when and why contracting authorities should produce them, and key considerations around developing and/or procuring them;

## **SCM Development Guidance** - provides contracting authorities with guidance on using internal resources to design, develop, test and manage SCMs; and

## **SCM Technical Build Guidance** - guidance, based on good practice principles for building SCMs. It is technical in nature and aimed at people who will be building SCMs.

## Practitioners should also consult existing good practice guidance including HM Treasury’s [Macpherson](https://www.gov.uk/government/publications/review-of-quality-assurance-of-government-models) report, [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government) and [Green Book](https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent).

## This Scoping Template is one of a number of practical Tools and Templates produced by Cabinet Office to support the development of SCMs and to help reinforce good practice approaches. These, together with the guidance set out above, are aligned to different phases/ stages of the model development lifecycle (see Figure 1).

## The guidance herein should be applied in a manner that is proportional to the risks associated with a specific SCM and its use. Whilst adherence to it is not mandated, it is recommended where there is nothing similar in use within the contracting authority.

## You should consult the Cabinet Office Sourcing Programme for further information or before planning an SCM for complex services, projects or programmes via sourcing.programme@cabinetoffice.gov.uk.

# Introduction

## The [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook) is relevant to SCMs that will be developed either internally within contracting authorities or with external assistance. It highlights important considerations in relation to planning and commissioning an SCM, including resource selection. It should be referred to before using this Scoping Template.

## This Scoping Template is used to guide and support the production of a model Scope. It poses a series of questions that look to drive a common understanding of what the SCM is required to do and how, in broad terms, its production will be achieved.

## Model scoping is not a one person, 30-minute, tick box exercise. It is an important activity that shapes the design of a model and is fundamental to producing an SCM that provides appropriate, high quality, insight. The right stakeholders should be identified and their input secured. They may span a broad range of disciplines, such as Finance, Commercial, Economic, Analytical, Operations, HR or Legal, and typically include one or more senior personnel. Scope production is invariably iterative, as information is uncovered, opinions are formed and agreements are reached.

## Whilst production of the model Scope may be led by the model developer it should be a collaborative activity involving multiple stakeholders, including the Model Senior Responsible Owner (Model SRO) who is ultimately responsible and accountable for it.

## An overview of the typical roles required to support the development of an SCM is available in Appendix I. Details on SCM resourcing are available in the [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook).

## The model Scope sets out why an SCM is required and what the SCM needs to do. As planning progresses, the model Scope will evolve into the model Specification. The model Specification (inc. Design), is the bridge between the model Scope and the model itself. It sets out how the model will be developed to meet the model Scope. Collectively, the model Specification (inc. Design) and Book of Assumptions / Data Log, will provide a record of the model logic and underpinning data and assumptions.

## Developing a model Scope is often best achieved through a workshop approach. A number of which may be required to progress the model Scope to a point when it can be agreed and formally signed-off (e.g. by the Model SRO). This is a key milestone ahead of embarking on more detailed activities, that include developing the model Specification (inc. Design) and setting out the activities required to deliver the SCM (see Figure 1). This Scoping Template can be used to guide and support the production of the model Scope throughout the process, including any workshops. Any future changes to the scope of the model should be formally agreed and model documentation (e.g. the model Specification) updated accordingly.

*\*Key documentation to produce included in square brackets ‘[ ]’ are optional, depending on requirements.*



\* Key documentation to produce included in square brackets ‘[ ]’ are optional, depending on requirements.

**Figure 1: Model Development Lifecycle** (Including SCM Governance Process Overview and Supporting Cabinet Office Guidance, Tools and Templates)

## This Scoping Template is divided into a number of sections:

## **Details:** This includes basic questions, such as the name of the project that the SCM relates to and who prepared this Scoping Template.

## **Overview:** This includes questions on the project background and the purpose of the SCM.

## **Project Management:** This includes questions on project and SCM delivery milestones and dependencies.

## **Outputs:** This includes questions on the nature and format of outputs to be produced by the SCM.

## **Logic:** This includes questions on the different delivery model options, their cost components, behaviours, and how they should be represented within the SCM.

## **Data:** This includes questions on the key data requirements and the processes required to obtain data.

## **Limitations:** This includes questions on the SCM’s limitations and aspects that are out of scope.

## **Periodicity:** This includes questions on the time period that the model will cover and the length of periods within the timeline.

## **Users:** This includes questions on the users of the SCM and their associated demands upon it.

## **Stakeholders and Governance:** This includes questions on the key stakeholders involved in developing and signing off development of the SCM.

## **Deliverables:** This includes questions on the key deliverables, the audience for them and their purpose.

## **Technical:** This includes questions on the software platform and environment that the SCM will be built and operated in.

## **QA and Testing:** This includes questions on the procedures and arrangements for Quality Assurance (QA) and testing of the SCM.

## **Sign-offs:** This includes questions on the sign-off authority for both the SCM and its associated documentation.

## **Implementation:** This includes questions on SCM implementation and use including change control and ongoing maintenance.

## **Information Handling:** This includes questions on the sensitivity of the SCM and associated measures and controls.

## SCMs vary in complexity and the time they take to create. The complexity of an SCM should be proportional to and reflective of the complexity and criticality of what is being sourced. A very simple SCM could be key cost drivers and assumptions captured in a spreadsheet, which may be appropriate for sourcing something that is low value, simple, and stable. In contrast, a complex SCM could be a detailed financial model, which may be appropriate for sourcing something that is high value or complex, and could take a number of months to prepare.

## For simple models that support low impact decisions the model Scope may be less detailed than for complex models. As such not all of the questions set out herein will be relevant to all SCMs. Similarly, given the bespoke nature of SCMs, it may be necessary to include other factors within the model Scope that are not covered by the questions set out in this Scoping Template.

## A consolidated list of scoping questions covering each of the above sections is available in Appendix II.

## This Scoping Template uses GCF branding for illustrative purposes. Please remove GCF branding and update to reflect the branding of your contracting authority prior to populating it.

## Consider the need to add Protective Markings to this Scoping Template ahead of populating it.

# Details

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Project Name:* | **What is the name of the project that will be supported by the SCM?** | 3.1 |
|  |
| 2 | *Prepared By:* | **Who has prepared and driven the population of this Scoping Template?** | 3.2 |
|  |
| 3 | *Prepared On:* | **What was the date that this Scoping Template was prepared on?** | 3.3 |
|  |
| 4 | *IMA Score:* | **What was the resultant score from the Initial Model Assessment?** | 3.4 |
|  |
| 5 | *Other:* | **Include any other information points relevant to this section** | 3.5 |
|  |

Guidance

The [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook) sets the requirement to produce a model Scope and provides guidance to support its production. It highlights important considerations in relation to planning and commissioning an SCM, including the requirement to undertake an Initial Model Assessment (IMA). The IMA (see Section 3.4), which should be undertaken prior to substantive model scoping, will inform the approach to SCM development, including QA and testing. It is designed to help manage development risks.

## What is the name of the project that will be supported by the SCM?

Enter the name of the project/procurement/decision that will be supported by the SCM that is detailed within this Scoping Template.

## Who has prepared and driven the population of this Scoping Template?

Enter the name of the person who is leading on the population of this Scoping Template. It is recommended that contact details for this person are also provided.

## What was the date that this Scoping Template was prepared on?

Enter the date that this Scoping Template was prepared on.

## What was the resultant score from the Initial Model Assessment?

The [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook) sets out the requirement to undertake an IMA to help gauge the risks associated with an SCM and inform appropriate and proportional QA and testing activities. An IMA Tool is available to support this assessment.

It is important that all key stakeholders are aware of the SCM’s risk profile as it will impact on their responsibilities and the performance of their roles.

Further details on the IMA and management of risks associated with the development and use of SCMs are included in the SCM Development Guidance.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Overview

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Background:* | **What is the background to the project that the SCM will support?** | 4.1 |
|  |
| 2 | *Sourcing:* | **What is being sourced or procured?** | 4.2 |
|  |
| 3 | *Delivery Options:* | **What are the delivery options under consideration?** | 4.3 |
|  |
| 4 | *Issue:* | **What decision or issue is the SCM intended to support or solve?** | 4.4 |
|  |
| 5 | *Value:* | **What is the approximate value of the project or decision that the SCM will support?** | 4.5 |
|  |
| 6 | *Reputation:* | **Is the reputational or regulatory impact of the project or decision that the SCM will support comparatively high?** | 4.6 |
|  |
| 7 | *SCM Purpose:* | **What does the SCM need to do/ show/ compare /analyse?** | 4.7 |
|  |
| 8 | *Bid Evaluation:* | **Will the SCM be used for bid evaluation purposes?** | 4.8 |
|  |
| 9 | *Tolerance:* | **How accurate does the SCM need to be?** | 4.9 |
|  |
| 10 | *Other:* | **Include any other information points relevant to this section.** | 4.10 |
|  |

Guidance

In addition to supporting the delivery model assessment (DMA) and helping to protect government from 'Low-Cost Bid Bias' (see [Sourcing Playbook](https://www.gov.uk/government/publications/the-outsourcing-playbook) and [Construction Playbook](https://www.gov.uk/government/publications/the-construction-playbook)), SCM's can provide support across the procurement lifecycle. This includes using the SCM to support Options Analysis, Cost Driver Analysis, Maximising Value for Money, Negotiation Support, Budget Setting, Project Performance Review and Contract Management. Articulating and agreeing why an SCM is required, what it is required to do, and how important it is, will substantially inform model development activities.

## What is the background to the project that the SCM will support?

Provide the context for the project/procurement that is driving the requirement for an SCM. Summarise why sourcing options are being looked at and what needs to be achieved. This will start to inform what the SCM may be required to do, show, compare or analyse. This may extend beyond cost and could, for example, include changes in FTE numbers, delivery times, efficiencies, benefits, carbon reduction, etc.

## What is being sourced or procured?

Provide details of what is being sourced or procured together with details of any current arrangements. Set out the key elements that make up the service or the key aspects of the project or programme and their approximate scale. This will start to inform the components of the model (see Section 7.1) and potential data requirements (see Section 8.1). Where clarity is lacking consider pausing model scoping activities. What is being sourced or procured needs to be defined before it can be modelled.

## What are the delivery options under consideration?

Summarise the different potential delivery options and/or option combinations that are under consideration including where relevant details of intended operating models. This will start to inform the high-level design of the model and what options and/or scenarios will be included (see Section 7.3). Where clarity is lacking, it will result in an incomplete model Specification. If the model build is started prior to defining all delivery options there is an increased risk of build iterations and/or producing a model that is sub-optimal in design or does not produce the required outputs.

## What decision or issue is the SCM intended to support or solve?

The design of the SCM will be informed by the decision or issue that it is required to solve or support. For example, each of the five cases set out in the [Green Book](https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent), namely the Strategic, Economic, Commercial, Financial and Management cases will place different demands on the SCM. The Economic Case, for example, may require an SCM that calculates the total cost of multiple options whereas the Financial Case may require an SCM that calculates the cost of the preferred option but with greater granularity (e.g. monthly costs over time split between different cost categories such as capital and resource). Whilst SCMs can be designed to support multiple decisions, it is important to consider whether different demands are best met through different or iterated versions of the SCM.

## What is the approximate value of the project or decision that the SCM will support?

The value (and complexity) of a procurement will impact the design of the model and its associated QA and testing requirements. SCMs that support decisions with a significant business impact will require a high degree of comfort over the SCM. This extends beyond QA and testing to the design of the model itself. For example, more detailed and sophisticated analysis may be demanded from SCMs that support critical decisions (or from those that support complicated procurements). However, greater sophistication adds to development time and invariably brings a greater risk of error. There is therefore a balance to be struck and the development of SCMs should be driven by the principle of proportionality. Ahead of SCM development, the approximate value entered here will likely be a high-level estimate.

## Is the reputational or regulatory impact of the project or decision that the SCM will support comparatively high?

When assessing the potential impact of an SCM, consideration should extend beyond financial impact alone and include factors such as reputational, regulatory or legal impact. If these are atypical for a project of this value they should be noted and reflected in the IMA (see Section 3.4).

## What does the SCM need to do/ show/ compare /analyse?

SCMs have a wide range of potential uses. For example, they can provide an understanding of the costs associated with different delivery models, give insights into costs under different scenarios, inform potential delivery schedules, enable comparisons between target and actual costs, inform the selection of payment mechanisms, etc. Having a clear understanding of and setting out the SCM's primary purpose or purposes will help focus development activity.

## Will the SCM be used for bid evaluation purposes?

SCMs can only be used as formal evaluation criteria for final bids if they have been disclosed to bidders during the procurement. How the SCM will be used for the evaluation and how bids will be scored against the SCM must be clearly set out in the procurement documents (see [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook)).

## How accurate does the SCM need to be?

Consider what is an acceptable cost estimation tolerance. Notably this is likely to evolve as the decision progresses from Strategic through Outline to Full Business Case and may be driven by a range of factors. For example, the Playbook requirement to refer bids to the Continuous Commercial Improvement Team that are more than 10% lower than the Should Cost Model will likely inform the required tolerance at the bid evaluation stage (see Section 4.8).

Invariably, the required tolerance will impact the approach to cost estimation and, in-turn, the overall design of the model and the data required to power it. For example, a requirement for high fidelity cost estimates may favour a Benchmark or Bottom-Up approach, whereas if Rough Order of Magnitude (ROM) cost estimates are acceptable then Analogous or Parametric approaches may be applicable. Notably however, whilst Parametric approaches are typically suited to ROM costs, they can have greater fidelity than a Bottom-Up approach if models are well constructed and calibrated. See SCM Development Guidance for more information on cost estimating techniques.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Project Management

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Timescales:* | **What are the procurement and, in turn, model delivery timescales?** | 5.1 |
|  |
| 2 | *Milestones:* | **What are the key milestone dates for producing the model?** | 5.2 |
|  |
| 3 | *Dependencies:* | **Are there any known dependencies?** | 5.3 |
|  |
| 4 | *Risks:* | **What are the key SCM delivery risks?** | 5.4 |
|  |
| 5 | *Process:* | **How will model development be managed and what are the senior level sign-off points?** | 5.5 |
|  |
| 6 | *Other:* | **Include any other information points relevant to this section.** | 5.6 |
|  |

Guidance

It is important to set and agree milestones to help manage the risk of slippage. The activities required to deliver an SCM may not be apparent to all stakeholders and it is important that they are made transparent and planned accordingly. Sufficient time should be allowed for activities such as model planning; model design; data collection, data cleaning, data manipulation and data documentation; model build; model population; developer testing; User Acceptance Testing (UAT); formal QA and testing; model handover and training; etc. It is also important to consider dependencies between activities, including those that may be adjacent to SCM development, such as the DMA.

## What are the procurement and, in turn, model delivery timescales?

Timelines and milestones for the procurement will differ to those for the SCM but will inform them. Consider the key decision points and if and when they will need to be informed by the SCM. Consider how far in advance of these decision points modelling insights will be required. It is important to factor in sufficient time to undertake each of the core model development phases, namely plan, design, develop, test and use.

## What are the key milestone dates for producing the model?

## Key milestones typically include those associated with data availability; SCM availability (e.g. populated with real data, available for testing, deployed for use); and sign-off (e.g. of the model Scope, model Specification and QA Report). Notably there are key interdependencies between activities. For example, it may not be possible to conclude or potentially start model scoping until delivery model options are defined; it may not be possible to conclude testing until a (developed and) populated model is available; etc. As a broad 'rule of thumb', the time taken to produce a model should be split roughly equally between planning & designing, building and testing. Milestones associated with broader deliverables should also be considered as, for example, the model User Guide and Book of Assumptions / Data Log will be required ahead of formal QA and testing. See SCM Development Guidance for more details on model development phases and associated activities.

## Are there any known dependencies?

Timely delivery of the SCM may be dependent on availability of data or resources, on adjacent activities, or on other factors (and vice versa). For example, scoping the components of the service, project or programme may be dependent on the DMA and similarly the DMA may be dependent on outputs from the SCM. Through identification, followed by planning and monitoring, the associated delivery risks may be more effectively managed.

## What are the key SCM delivery risks?

If the SCM is not available at the point of need its value may be diminished and/or it may cause delay. Understanding the key delivery risks and their potential impact will enable them to be managed and/or mitigated.

## How will model development be managed and what are the senior level sign-off points?

Model development, as depicted in Figure 1, should follow a structured process with clearly defined activities, roles and responsibilities. In addition to setting out the key stakeholders and their responsibilities (see Section 12) it is important to agree and communicate the model development process that will be followed, including key senior stakeholder sign-off points.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Outputs

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Key Outputs:* | **What are the key outputs to be produced by the SCM?** | 6.1 |
|  |
| 2 | *Output Format:* | **What format should output reports be in and are samples available?** | 6.2 |
|  |
| 3 | *Conventions:* | **Do output reports need to comply with accounting or other standards?** | 6.3 |
|  |
| 4 | *Requirements:* | **What specific outputs or output formats are required for approvals?** | 6.4 |
|  |
| 5 | *KPIs & Ratios:* | **What KPIs or ratios are required and are definitions available?** | 6.5 |
|  |
| 6 | *Graphical Outputs:* | **Are graphs of charts required and, if so, what should they depict?** | 6.6 |
|  |
| 7 | *Dynamic Outputs:* | **How should dynamic model elements be presented in the outputs?** | 6.7 |
|  |
| 8 | *Other:* | **Include any other information points relevant to this section.** | 6.8 |
|  |

Guidance

Considering what SCM outputs are required to support the decision or to help solve the issue will inform the SCM's underlying logic and data requirements. Focussing on outputs ahead of inputs will help to reduce the risk of designing a model that is overly detailed and/or does not fully meet customer needs. Thorough consideration of model outputs during the model planning phase will help to reduce the risk of iterations once development has commenced. It is much easier and more efficient to iterate a plan than to iterate a model.

## What are the key outputs to be produced by the SCM?

Listing the key outputs required from the model helps to prioritise development activities and manage the risk that the model does not or is not capable of providing the required outputs. For example, key outputs may include Net Present Value (NPV), costs over time split between resource and capital, a variance analysis of should cost estimates versus supplier bids, cost of service versus cost of quality, etc.

## What format should output reports be in and are samples available?

How should outputs be presented. For example, what line items need to be shown and are there specific formatting requirements. Consider if there is a requirement for output reports that present different perspectives or summarise different sets of outputs. For example, a summary report, an executive dashboard or audience specific reports. Are samples available, for example, of outputs from existing models that this model should align with.

## Do output reports need to comply with accounting or other standards?

Consider if the outputs/reports need to comply with accounting standards for published statements or if a management account format will be acceptable.

## What specific outputs or output formats are required for approvals?

Consider if specific output tables, metrics or data 'cuts' are required for approvals (e.g. costs including and/or excluding VAT and/or inflation). Understanding approvals requirements from the outset will inform the model design and help manage the risk that the model does not or is not capable of providing outputs in the required format. Indicate if example output tables are available.

## What KPIs or ratios are required and are definitions available?

KPIs and ratios are useful to include in the SCM. They can be key outputs of the model and can also help to support QA and testing. For example, overheads as a percentage of total costs, capex to depreciation ratio or average call wait time. Detailing required and desirable KPIs and ratios will help to ensure that the components required to produce them will be generated by the model, including at an appropriate level of granularity. To avoid ambiguity the required KPIs should be clearly defined. Notably, if the project or programme includes KPIs that relate to the financial performance of suppliers it may be desirable to include them in the SCM to enable their testing under different scenarios.

## Are graphs or charts required and, if so, what should they depict?

Production of graphical outputs and dashboards can be time consuming and factoring their requirement will enable their delivery to be planned. Their last-minute inclusion would invariably require structural changes to the model and there is a risk that, if not scoped, the data required to power them may not have been produced by the model. Notably, graphical outputs can aid the identification of anomalies and, in turn, are of benefit to QA and testing activities.

## How should dynamic model elements be presented in the outputs?

A dynamic model is one that has settings or switches that enable it to be configured differently. For dynamic models it is important to consider how the outputs under different configurations need to be displayed, as this can have a fundamental impact on model design. For example, if the model is required to run multiple scenarios, consider if the outputs from the different scenarios need to be presented 'side-by-side' or if it is acceptable to have a single set of outputs that can be 'switched' depending on model settings.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Logic

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Cost Components:* | **What are the cost components of the service, project or programme being modelled?** | 7.1 |
|  |
| 2 | *Costing Techniques:* | **What is the approach to cost estimation?** | 7.2 |
|  |
| 3 | *Options & Scenarios:* | **What delivery model options and/or scenarios will be included in the model?** | 7.3 |
|  |
| 4 | *Pricing Approaches:* | **How will supplier pricing approaches be represented?** | 7.4 |
|  |
| 5 | *Cost Drivers:* | **What are the fixed and variable costs and how will they be driven?** | 7.5 |
|  |
| 6 | *Granularity:* | **How much detail is required for the different cost components in the model?** | 7.6 |
|  |
| 7 | *Calculations:* | **What other calculations or specialist modelling techniques are required?** | 7.7 |
|  |
| 8 | *Comparison Level:* | **At what level are comparisons between options or scenarios required?** | 7.8 |
|  |
| 9 | *Sensitivities:* | **Does the model need to run sensitivities and if so on what?** | 7.9 |
|  |
| 10 | *Inflation:* | **How will inflation be included within the model?** | 7.10 |
|  |
| 11 | *Taxation:* | **Does VAT or any other tax need to be included?** | 7.11 |
|  |
| 12 | *Currency:* | **What currency or currencies will the model be in?** | 7.12 |
|  |
| 13 | *Risk & Uncertainty:* | **How will risk and uncertainty be represented within the model?** | 7.13 |
|  |
| 14 | *Optimism Bias:* | **How will the model be calibrated for Optimism Bias?** | 7.14 |
|  |
| 15 | *Other:* | **Include any other information points relevant to this section.** | 7.15 |
|  |

Guidance

Detailed scoping helps to set the boundaries for what a model will and will not be able to do, including what decisions it can support. Considering this early on in the process will help to clarify the sourcing options under consideration. Identifying costs that could differentiate between potential delivery options and setting out the level of detail required to provide meaningful insights will also inform the DMA agenda. Whilst consideration of costs and modelling techniques will inform the design of the SCM, it will also provide direction on what data is necessary to power the model.

## What are the cost components of the service, project or programme being modelled?

Capture the comprehensive range of cost components associated with each of the delivery options being modelled. For services this may, for example, include:

* The costs to deliver and/or transform a service (e.g. people, licences and utilities and any Capital Expenditure such as space/property, equipment); and
* The costs of the service itself (e.g. cloud storage costs).

An understanding of the operating models for each delivery option being considered will help to identify key cost components to be modelled.

For public works projects or programmes this may, for example, include:

* Design, land acquisition and sight preparation costs (e.g. professional services, demolition, ground works);
* Construction and equipment costs (e.g. people, plant, materials, MMC, HVAC); and
* Through-life and end-of-life costs (e.g. operating, maintenance, decommissioning).

Cost components are also likely to include broader business costs, such as overheads, management fees, indexation, profit and other costs.

Notably cost components may differ significantly between delivery options and understanding these differences is required before a model can be developed.

SCM inputs (in particular in relation to outsourced options) are typically reflective of defined contractual performance standards. Inputs should be considered for their alignment with the defined performance standards.

The example cost components listed above are not exhaustive.

## What is the approach to cost estimation?

Outline the primary approach to cost estimation that will be employed by the model. The requirement for high fidelity cost estimates may favour a Benchmark or Bottom-Up approach, whereas if Rough Order of Magnitude (ROM) cost estimates are acceptable then Analogous or Parametric approaches may be applicable. See SCM Development Guidance for more information on cost estimating techniques.

More granular cost estimates typically demand more data, raise the complexity of the model, and increase the effort required to build and test it. Considerations are likely to include the availability of data, the time available to produce the model and, importantly, the acceptable cost estimation tolerance. Notably, the requirement will likely differ and evolve as the decision progresses from Strategic through Outline to Full Business Case.

## What delivery model options and/or scenarios will be included in the model?

Different delivery model options may have different cost components and cost drivers and may even vary in scope. Early consideration of options, sub-options and scenarios that the model may need to represent will inform the design of the model and its associated data requirements.

Whilst it may not always be possible, designing a single model that is capable of meeting all of these requirements will reduce the risk of having to run scenarios or options in duplicate versions of the model. Invariably, having multiple models increases the administrative burden, the QA and testing effort and, notably, raises the risk of error.

## How will supplier pricing approaches be represented?

If making comparisons between options it is important to consider and make explicit where differences lie and how this will impact comparisons. For example, In-House options may not include profit or bonuses. Consider, based on sector, industry, and competitive market, what approach suppliers may take to pricing and how this will be reflected in the SCM. For example, how will profit be defined and what is the expected costing approach (e.g. cost plus or risk premium-based costing). Also consider that suppliers may have the ability to share costs across a number of services, projects or programmes and this may impact how, for example, the required number of FTEs are defined.

## What are the fixed and variable costs and how will they be driven?

Categorise the behaviour and drivers for each cost component. The [Green Book](https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent) identifies four broad categories, including Fixed (e.g. overheads); Semi-Fixed (e.g. step); Variable (e.g. volumetric); and Semi Variable. Consider if simplifications may be appropriate for modelling purposes. Notably, determining appropriate cost drivers over longer time periods can be challenging and, if required, the associated risks should be captured and evaluated (see Section 7.13).

## How much detail is required for the different cost components in the model?

It is important to understand and set an appropriate level of detail for the SCM, noting that greater detail will likely be required for models that support decisions with high impact (see Section 3.4). For each component, set out the level of detail or granularity required. Simple models based on an initial delivery model option definition and key cost drivers may be appropriate during the early stages of the decision-making process and procurement process. As the procurement process progresses and the service, project or programme requirements are refined and greater confidence is required, SCMs may need to become more detailed and the data within them more robust. Consider if the data is available to support the level of detail, whether the level of detail is necessary and whether it could be added at a later stage. For example, following down selection of options, the model may require further development to allow for greater insight into component costs and potentially their evaluation as part of supplier selection (subject to disclosing the SCM to bidders).

## What other calculations or specialist modelling techniques are required?

Consider what other calculations the model is required to perform. For example, consider if there is a requirement for Tax, Pension, Econometric, Statistical, Financial, or Accounting calculations. Consider if there are any contracting authority or government requirements that need to be considered and accommodated. Consider if there is a requirement to model benefits, efficiencies, profit or other factors related to delivery options. Calculations will need to be defined as part of the model Specification and input may be required from Subject Matter Experts (SMEs) to both inform and help test calculation approaches.

## At what level are comparisons between options or scenarios required?

Understanding the level at which comparisons need to be made between scenarios or options will inform the design of the model. For example, consider if comparisons are required at the total level, cost component or sub component level. Consider if comparisons need to be made at the real or nominal level, to be inclusive or exclusive of irrecoverable VAT, to include apportioned overheads, etc. Whilst the model may include these components, if the comparison requirements are not appropriately considered, there is a risk, as costs are built up and aggregated, that the model will not be configured to support them.

## Does the model need to run sensitivities and if so on what?

A well-designed model, that is constructed in line with good practice, will be easier to adapt to run sensitivities than one that is not. However, unless sensitivities are considered from the outset, there is a risk of substantial re-work and/or a model that is sub-optimal in design if they are added after model development has commenced. With reference to the model’s assumptions, consider if there are any that will or may need to be changeable. Consider if there will be a need to switch or toggle between discrete data points/assumptions or if there will be a need to cycle through a range of values or increments.

## How will inflation be included within the model?

The requirement to include inflation extends beyond a simple yes/no answer and will impact the design of the model. For example, if included, consider if there is a requirement to show outputs with and without the impact of inflation and whether this extends to all outputs. Consider the economic conditions/price base underpinning the input data and whether or not data will need to be normalised ahead of use. Consider if different inflation rates are required for different model elements and how will they be categorised. Consider whether Subject Matter Expertise may be required to determine the most appropriate index and/or proportion of costs to which a particular index applies. Consider the need to include tolerance bands or run sensitivities on indexation (see Section 7.9).

## Does VAT or any other tax need to be included?

If VAT or other taxes need to be calculated and included within the model, the approach to calculating them will need to be included in the model Specification. If comprehensive, as opposed to simple or approximate, calculations are required then Subject Matter Expertise may be required to help design and/or to test the calculations. Consider whether the impact of taxation needs to be broken out and, if so, for which outputs.

## What currency or currencies will the model be in?

If multiple currencies are to be employed, the model Specification will need to set out how and where in the calculation chain currency conversion will be handled. Consider what currency or currencies the model’s inputs may be denominated in and if there is a requirement to display outputs in multiple currencies. For model’s that have balance sheets the approach taken to modelling foreign exchange can add significant complexity and Subject Matter Expertise will likely be needed. The requirement, or otherwise, to include foreign exchange should be considered early as it will impact the design of the model, the time taken to produce it, and add to data requirements.

## How will risk and uncertainty be represented within the model?

Should Cost Models, as with other models, are a representation of the real world, which is subject to risk and uncertainty. Failing to appropriately consider risk and uncertainty may render a model unfit for purpose (see [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government)). When scoping a model, it is important to set out the techniques, such as Monte Carlo simulation, that will be employed to model risk and uncertainty as it will inform both model design and the potential need for specialist input. Consider the impact of both uncertainty and risk and how this will need to be modelled. For example, if the impact is on cost, schedule or both and how the impact will occur (e.g. point in time, recurring, phased). Consideration should also be given to how risk and uncertainty will be treated across different delivery model options.

## How will the model be calibrated for Optimism Bias?

The [Green Book](https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent) recommends adjusting for Optimism Bias by increasing cost estimates by a set percentage to reflect evidence of underestimation from previous similar interventions. It also notes that adjustments should be made based on an organisation’s own evidence base for historical levels of Optimism Bias or, in the absence of this, generic values. It also notes that the initial Optimism Bias estimate should not be “locked in” but can be reduced as an appraisal develops and the cost of specific risks are identified. The application of Optimism Bias will require specialist input and how it will be performed should be detailed within the model Specification. Before starting model development, it should be established whether Optimism Bias will be undertaken as a stand-alone analysis or calculated within the model as this will impact model design.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Data

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Key Inputs:* | **What are the key model input data and assumptions requirements?** | 8.1 |
|  |
| 2 | *Uncertainty & Risk:* | **What uncertainties and risks will be represented within the model?** | 8.2 |
|  |
| 3 | *Data Risks:* | **Are any key challenges and/or risks associated with the data?** | 8.3 |
|  |
| 4 | *Data Sources:* | **What are the sources of the required data and assumptions?** | 8.4 |
|  |
| 5 | *Collection Process:* | **What is the process for collecting the data and assumptions?** | 8.5 |
|  |
| 6 | *Data Gaps:* | **What, if any, are the data gaps and how will they be filled?** | 8.6 |
|  |
| 7 | *Data Quality:* | **How reliable is data and if any data needs to be matured what is the process for this?** | 8.7 |
|  |
| 8 | *Data Format:* | **What format will the data be in when it is obtained?** | 8.8 |
|  |
| 9 | *Data Processing:* | **Will the data need to be analysed or manipulated for use?** | 8.9 |
|  |
| 10 | *Multi-Source:* | **Is there a single source for each data set or are there several?** | 8.10 |
|  |
| 11 | *Data Stability:* | **How often will data change during development and after delivery?** | 8.11 |
|  |
| 12 | *Sample Data:* | **Is sample data available to support development and preliminary testing?** | 8.12 |
|  |
| 13 | *Data Volumes:* | **How much data is going to go into the model?** | 8.13 |
|  |
| 14 | *Data Validation:* | **What, if any, validation checks on the data are required?** | 8.14 |
|  |
| 15 | *Other:* | **Include any other information points relevant to this section.** | 8.15 |
|  |

Guidance

Focusing on data availability and data quality during the model planning phase will shape SCM development. Where appropriate quality data is not or may not be available, it provides early awareness to develop alternative approaches to modelling or plans to source, develop or mature data to the required level for the model. Designing a model around data that is unavailable may necessitate changes after development has commenced or even render it unfit for purpose. This is likely to result in wasted effort and delay.

## What are the key model input data and assumptions requirements?

Identify what data will be required, for example, capitation rates, staff numbers, inflation indices, etc. This will enable early initiation of data collection activities and, by inference, will begin to inform the required calculations (and vice versa).

## What uncertainties and risks will be represented within the model?

Failing to appropriately consider uncertainty and risk may render a model unfit for purpose (see [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government)). Identify the risks and the data and assumptions that are subject to uncertainty. Identify which risks and uncertainties need to be represented by the model and, in-turn, the associated data requirements (e.g. for minimum, most likely and maximum values). The impact of uncertainty and risks materialising should be carefully considered as it is likely to inform the model’s logic and design. For example, risks may have a point, recurring or phased financial impact and, together with uncertainty, may also have an impact on schedule. Positive impact risks (or opportunities) should also be captured. Note, they may impact model logic flow when calculating Optimism Bias (see [Green Book](https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent) for further details on Optimism Bias).

Notably, Subject Matter Expertise may be required both to specify how risk and uncertainty should be modelled and to implement the requirements within the model. This may include market testing.

## Are any key challenges and/or risks associated with the data?

For each key data requirement consider whether there are any anticipated challenges and risks. Consider this in a broad context. For example, sourcing or obtaining the data, its expected maturity (and will it be sufficient) and any manipulation of the data that may be required. Understanding and documenting risks and challenges associated with data will help to ensure that effective mitigations can be put in place.

## What are the sources of the required data and assumptions?

For each data requirement, identify where the data will come from. For example, the finance function, supplier returns, market research, etc.

## What is the process for collecting the data and assumptions?

For each data requirement, consider how it will be collected.

## What, if any, are the data gaps and how will they be filled?

Where data is not readily available or there are gaps in it, it is important to consider what assumptions will need to be made in the model and where they are going to be used.

## How reliable is data and if any data needs to be matured what is the process for this?

The reliability or maturity of data may vary from a low to a high level. For example, data based on the opinion of a single Subject Matter Expert through supplier estimates to validated historical costs. When considering where to focus efforts to mature data, consideration should be given to both the current maturity of data and the impact that the data has on costs. Focussing efforts on data with the lowest maturity that has the highest impact on costs is likely to have the greatest overall impact. Consider how the data will be matured. For example, through broadening input from Subject Matter Experts or using alternative sources, such as suppliers.

## What format will the data be in when it is obtained?

Early appreciation of data formats will inform the structure of model inputs and/or the data pre-processing requirements. For example, it may be in PDF or CSV format and require conversion for use in the model.

## Will the data need to be analysed or manipulated for use?

Understanding the extent of any required data-pre-processing will enable it to be appropriately planned and managed, including any associated risks. For example, monthly data may need to be rolled-up to annual data, seasonality profiles may need to be produced from historical data, it may need to be normalised, etc.

## Is there a single source for each data set or are there several?

There may be a requirement to run sensitivities in the model based on alternative data sources (see Section 7.9). Equally, alternative sources may support testing or provide a back-up alternative.

## How often will data change during development and after delivery?

The frequency of updates to model inputs will impact both the design of the model and the way that change is managed and controlled. For data that is changed frequently it may be appropriate to, for example, delineate it from other data inputs, it may require process and workflow design, or it may warrant the inclusion of automation to help expedite and make the process more robust. An example of frequent updates would be a monthly roll-forward of supplier actuals or volume forecasts.

## Is sample data available to support development and preliminary testing?

Access to sample or quasi-realistic data can improve the effectiveness of in-flight developer testing, the configuration of in-model checks, and reduce the risk of iterations later in model development. Notably, it may not be possible to perform effective testing of the model in the absence of real data.

## How much data is going to go into the model?

Consider how big the various data sets are. For example, those relating to financial, volumetric, operational, headcount, etc. The requirement to model with large volumes of data may impact the design of the model or the selection of the software tool (e.g. Spreadsheet-based or Database-based – see Section 14.3).

## What, if any, validation checks on the data are required?

Consider what checks will be performed on the data, ahead of formal QA and testing, as it is collected and the model is populated. Akin to developer testing, undertaking ongoing data validation can help expedite the QA and testing process and reduce the risk of delay. Examples include re-running of reports to confirm consistency, assessing the maturity of data as it is collected using a standard framework, comparing data with that from alternative sources, clearing and reloading data whilst monitoring output changes, etc. See SCM Development Guidance for more details on validation and other types of QA and testing.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Limitations

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Out of Scope:* | **What potential model aspects are considered to be out of scope?** | 9.1 |
|  |
| 2 | *Limitations:* | **What are the limitations to the model and its potential use?** | 9.2 |
|  |
| 3 | *Other:* | **Include any other information points relevant to this section.** | 9.3 |
|  |

Guidance

Being clear on and agreeing what the SCM will do as well as what it will not do reduces the risk of requirements being misinterpreted and a model being produced that is not fit for purpose. It helps to bridge expectation gaps and enables a more focussed discussion around development priorities. For example, these may be categorised as ‘must-have’, ‘nice-to-have’, and ‘discarded’. When considering what to list, it is important to consider areas that may have been discussed or could be expected to be within scope. **Notably, limitations and out of scope areas will emerge as the model Scope is developed. They should be noted and revisited towards the end of the planning phase and, moreover, during model design and build phases.**

## What potential model aspects are considered to be out of scope?

Bounding the scope of a model by explicitly stating what is out of scope increases the shared understanding of the model's planned capabilities. It both helps to ensure that requirements are met and that effort is not wasted in developing aspects that are not required to support the decision. For example, it may be agreed that, whilst relevant, recruitment costs would not differ sufficiently between options to warrant their inclusion.

## What are the limitations to the model and its potential use?

Whilst some limitations may result from bounds to the SCM's scope, others should be explicitly identified. For example, overhead costs may be included but they may not be apportioned to individual cost components or employee costs may be included although they may not be appropriate for detailed pension contribution analysis. Limitations will also apply to what the model should not be used for. For example, overhead costs may be included and sufficiently robust but may only be valid within a particular volume range. Notably, limitations, should be highlighted within model documentation, such as the model Specification and User Guide, and should also be considered for inclusion within the model itself (see Section 15.9).

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Periodicity

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Time Period:* | **What forecast time period should the model cover?** | 10.1 |
|  |
| 2 | *Time Increment:* | **Does the model need to be annual, monthly or other?** | 10.2 |
|  |
| 3 | *Historical Periods:* | **How many periods of historical data should be included?** | 10.3 |
|  |
| 4 | *Period Dates:* | **What are the applicable period end dates?** | 10.4 |
|  |
| 5 | *Key Dates:* | **What are the important dates in the model?** | 10.5 |
|  |
| 6 | *Other:* | **Include any other information points relevant to this section.** | 10.6 |
|  |

Guidance

Longer and more granular timelines may increase data requirements, increase development time and invariably they will increase the overall size of the model. However, changing the timeline once development has commenced may consume significant effort and can increase the risk of error. The timeline should therefore be appropriately considered, and agreement reached, before commencing model development.

## What forecast time period should the model cover?

Consider the time period over which the whole life cost needs to be calculated (e.g. a 10 year period). Consider the rate of change (e.g. technological) and whether longer term forecasts have value or could be misleading. Consider if the model needs to cover periods prior to the contract or beyond the design life. Notably, if there is a potential future requirement for a longer model timeline it is generally advisable to cover this timeline from the outset of model development.

## Does the model need to be annual, monthly or other?

Consider if the model needs to be monthly, quarterly, semi-annual, annual or other (e.g. based on 4-4-5 weeks that are often employed in the retail sector). Increasing the level of granularity (e.g. from annual to monthly) will increase the size of the model and may impact the time it takes to develop and test. Notably however, if there is a potential future requirement for greater granularity, it is generally advisable to reflect it and to aggregate to longer periods (e.g. aggregating a monthly timeline to an annual view) than to attempt to disaggregate to shorter periods. When scoping the required periodicity, due consideration should also be given to the data that will feed the model and, in-turn, any associated implications.

## How many periods of historical data should be included?

Consider if there is a need to show or utilise historical trends, for example to undertake variance analysis with forecast periods or to use historical data to drive seasonality.

## What are the applicable period end dates?

Consider if calendar, financial and/or contract years are required. For financial years, consider if they are based on ‘01Apr-31Mar’ or if there are supplier specific dates. Consider if input data and assumptions will align with the periods in the model or if adjustments may be required. Consider if there is a requirement for different period perspectives. For example, if contract years are not aligned with financial years.

## What are the important dates in the model?

Consider if there are any key dates that will either impact the model or that are particularly relevant to model outputs. For example, forecast start date, contract let date, transition date, in-service date, contract end date, end-of-life date.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Users

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *SCM Users:* | **Who will operate or interact with the model and what is the purpose of their interaction?** | 11.1 |
|  |
| 2 | *User Needs:* | **Do the requirements differ by user and what interface is required for each user?** | 11.2 |
|  |
| 3 | *Future Users:* | **If the model will be used after the project is complete who will be the new user(s)?** | 11.3 |
|  |
| 4 | *Other:* | **Include any other information points relevant to this section.** | 11.4 |
|  |

Guidance

Identifying and engaging with end users during the planning phase will better enable their needs to be understood and factored into model development. This will help manage the risk of iterations after development has commenced or not meeting user requirements.

## Who will operate or interact with the model and what is the purpose of their interaction?

SCM users may include those operating or running the model, those providing or refreshing data or those collating outputs from the model. Understanding who will interact with the model and their reason for doing so is the first step in being able to help ensure their needs are appropriately met. Models with multiple users will invariably need to be tailored and managed differently to those that have a single user. If users include someone other than the model developer, there will likely be a need for a User Guide together with model familiarisation and/or training on how to operate the model. In addition to running the model, model operators may also be required to interpret the results and take on board day-to-day responsibilities such as file management.

## Do the requirements differ by user and what interface is required for each user?

Within different user groups, such as those who provide data, individuals may have different requirements that could impact model design. For example, where data providers are only concerned with specific data sets, it may be appropriate to organise them on dedicated sheets or input areas. Similarly, senior stakeholders may require summary outputs, whereas others may be more detail focussed.

## If the model will be used after the project is complete who will be the new user(s)?

Identifying future stakeholders provides an opportunity for their needs to be considered whilst the model is being planned, rather than after it has been developed.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Stakeholders and Governance

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Model SRO:* | **Who is the Model Senior Responsible Owner?** | 12.1 |
|  |
| 2 | *Model Customer:* | **Who has commissioned the model and who is the model being built for?** | 12.2 |
|  |
| 3 | *Model Developer:* | **Who is responsible for building the model and undertaking self-testing?** | 12.3 |
|  |
| 4 | *Quality Assurers:* | **Who will undertake each of the various aspects of model QA and testing?** | 12.4 |
|  |
| 5 | *SMEs:* | **Who will provide Subject Matter Expertise to inform model development?** | 12.5 |
|  |
| 6 | *Model Architect:* | **Who is responsible for overseeing and managing production of the model?** | 12.6 |
|  |
| 7 | *Data Collection:* | **Who is responsible for managing the collation of data and assumptions?** | 12.7 |
|  |
| 8 | *Data Manipulation:* | **Who is responsible for performing any data pre-processing requirements?** | 12.8 |
|  |
| 9 | *Data Population:* | **Who is responsible for inputting data and assumptions into the model?** | 12.9 |
|  |
| 10 | *Other:* | **Include any other information points relevant to this section.** | 12.10 |
|  |

Guidance

This Scoping Template will help to inform resource requirements, which should be included within the Delivery Plan. Notably, resources are often subject to change over time and any changes should be appropriately communicated. Where possible, resource continuity, especially for the model developer role, should be maintained (see Appendix I for typical SCM roles).

For all models it is necessary to have Suitably Qualified and Experienced Personnel with sufficient time and support available to perform their responsibilities. These two factors, time and resourcing, play key roles in developing robust models in a manner that is informed by good practice and manages risks. When identifying resources for each of the roles, some of whom may perform multiple roles, consider if they are sufficiently skilled, available when required, can commit sufficient time and have the support required to perform their role. Where internal resources are insufficient or unavailable, external service providers may be best placed to deliver all, or part, of an SCM. See [SCM Guidance Note](https://www.gov.uk/government/publications/the-outsourcing-playbook) for more details on resourcing and procuring external support. Further information on roles and responsibilities is also available in the SCM Development Guidance and the [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government).

## Who is the Model Senior Responsible Owner?

The Model Senior Responsible Owner (Model SRO) will take overall responsibility and accountability for the SCM and its use, including its governance and QA and testing processes throughout its lifecycle. The Model SRO needs to be cognisant of their responsibilities with regards to the SCM and, moreover, will need to have confidence in the SCM and its outputs, sufficient to sign them off for use.

## Who has commissioned the model and who is the model being built for?

Model customers should input to the model Scope as well as the model Specification (inc. Design) and provide confirmation that the planned model will support decision-making requirements ahead of model development. They should also input to the SCM Delivery Plan and confirm that the overall timescales are in-line with requirements. Consider whether all customers, and not just those who have commissioned the model, have been identified (e.g. future customers). If customers are unclear, or have not been engaged during model planning, there is a risk that the model will not meet its requirements.

## Who is responsible for building the model and undertaking self-testing?

The key role of the model developer is that of:

* Building the model in line with requirements and good practice guidelines (see SCM Technical Build Guidance); and
* Undertaking self-testing of the model throughout development and prior to release for formal QA and testing (see SCM Development Guidance).

The model developer may also drive production of the model Specification (inc. Design) and input to the Data Plan, QA Plan and Delivery Plan. In these cases, the model developer would be required to update model documentation to reflect any agreed changes to the model Scope or model Specification. Other responsibilities may include:

* Populating the model with data to support self-testing, formal QA and testing and for handover and release of the SCM for use;
* Working with quality assurers to implement changes required to address issues identified as part of formal QA and testing processes;
* Producing the model User Guide and, if required, handover training materials and the model Technical Guide or Developer Guide;
* Undertaking demonstrations and familiarisation sessions as required and producing interim results to support in-flight QA and testing; and
* Implementing any file management procedures that may be applicable during the development of the SCM.

## Who will undertake each of the various aspects of model QA and testing?

Whilst some roles may be performed by the same person, a distinction should be maintained between individuals responsible for developing models and those who will undertake testing. Model quality assurers will be responsible for undertaking testing and producing the required documentation such as QA Reports and Test Memos. They will also need to liaise with the model developer to explain identified issues, where further clarity is needed, and to undertake re-reviews following changes made by the model developer. Notably, effective testing generally requires the application of different types of tests. For example, those that are more data focussed such as Validation or those that are more technically focussed such as Verification. These tests demand very different skills and invariably testing will need to be performed by and coordinated between different individuals. It is also important to determine who will undertake other aspects of QA (e.g. oversight of the model development process). See SCM Development Guidance for more details on QA and testing.

## Who will provide Subject Matter Expertise to inform model development?

Input from Subject Matter Experts (SMEs) may be required in a broad number of areas. For example, to define the delivery model options and support production of the model Scope or to inform appropriate calculation methodologies that will be set out within the model Specification. Individuals responsible for financial input should be suitably qualified and/or experienced, as should those providing any kind of tax, pensions, legal, statistical, econometric or other types of specialist input. Where advanced modelling techniques are required, specialist input should also be considered. See [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government) for further details on the requirement for suitably qualified and experienced personnel.

## Who is responsible for overseeing and managing production of the model?

For many models, the role of model architect will be performed by the model developer. However, for complex models in particular, it is beneficial to separate model architect and model developer roles. A model architect can provide experience, perspective and challenge. This will invariably drive the quality of the resultant model. The model architect will usually lead the model design and take responsibility for the associated documentation. This will include agreeing any required changes during development. The model architect will also oversee the model development process, provide technical and design support, and provide challenge during build and through formal QA and testing activities.

## Who is responsible for managing the collation of data and assumptions?

Data providers are responsible for obtaining the data required to power the model, which may be from sources external to the contracting authority (e.g. suppliers). They will typically input to relevant aspects of the Data Plan, including the provisional timescales and risks. They will also update key stakeholders on progress and any required changes to the Data Plan or Delivery Plan. They may also take responsibility for producing and updating the Book of Assumptions / Data Log with key information pertaining to the collected data.

## Who is responsible for performing any data pre-processing requirements?

Data often needs to be manipulated in some way before it can be used within a model. For example, it may require normalisation, currency conversion or more complex manipulation. Those responsible for data manipulation will typically undertake and document any analysis or pre-processing of the data that may be required to align it with the needs of the model. Depending on the nature and complexity of data manipulation, the analysis files (e.g. feeder models) may need to be scoped, specified, designed and developed. Their QA and testing and governance and controls should be explicitly considered.

## Who is responsible for inputting data and assumptions into the model?

The model developer will invariably load data into the model throughout development in order to undertake self-testing. This may be dummy or real data. However, it is important to establish and agree who will be responsible for populating the model with data, particularly where significant volumes of data and/or frequent data updates are expected. Notably, details of how to refresh model data should be included within the model User Guide.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Deliverables

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Key Deliverables:* | **What are the key deliverables (SCM, model Specification, User Guide, BoA / DL, QA Report, Technical Guide, Training)?** | 13.1 |
|  |
| 2 | *Deliverables Scope:* | **What is the purpose of and who are the stakeholders for deliverables (other than the SCM)?** | 13.2 |
|  |
| 3 | *Other:* | **Include any other information points relevant to this section.** | 13.3 |
|  |

Guidance

Through focussing on the SCM, other associated deliverables are often overlooked. Stipulating deliverables up-front will help to ensure that their delivery is appropriately planned and managed. The SCM itself will be scoped through this Scoping Template. However, for other deliverables, it may be necessary to consider their scope more broadly, and potentially within a separate document. For example, if training materials are required, the scope will likely need to address the audience or audiences; the format; delivery mechanism(s); the content itself; etc.

## What are the key deliverables (SCM, model Specification, User Guide, BoA / DL, QA Report, Technical Guide, Training)?

Deliverables may include, although may not be limited to: The SCM; Outputs from the SCM (but not the SCM itself); model Specification (inc. Design); model User Guide; model Technical Guide or Developer Guide; Book of Assumptions / Data Log; QA Report(s); Training Materials; Feeder or Data Manipulation Files.

## What is the purpose of and who are the stakeholders for deliverables (other than the SCM)?

For deliverables other than the SCM, which is scoped herein, the purpose and intended audience should be clarified. Consider the extent to which deliverables other than the SCM may need to be scoped in detail. For example, to cover aspects such as the format of deliverables.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Technical

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Enduring Use:* | **Is the SCM for one-time use, ongoing use or re-use?** | 14.1 |
|  |
| 2 | *Software Platform:* | **What software and software version will the model be built in?** | 14.2 |
|  |
| 3 | *Software Suitability:* | **Is the software platform the most appropriate platform?** | 14.3 |
|  |
| 4 | *Size & Performance:* | **Are there file size restrictions or performance requirements?** | 14.4 |
|  |
| 5 | *VBA:* | **Are there any restrictions on the use of macros or VBA?** | 14.5 |
|  |
| 6 | *Add-Ins:* | **Are any custom or non-standard add-ins required?** | 14.6 |
|  |
| 7 | *System Integration:* | **Will the model need to link to other files or applications?** | 14.7 |
|  |
| 8 | *Standards:* | **Does the model need to conform to specific standards?** | 14.8 |
|  |
| 9 | *Templates:* | **Are there any templates on which to base development?** | 14.9 |
|  |
| 10 | *Examples:* | **Has modelling of this type been undertaken previously and, if so, are the files available?** | 14.10 |
|  |
| 11 | *LFE:* | **Are there any ‘Learning From Experience’ points that need to be considered?** | 14.11 |
|  |
| 12 | *Other:* | **Include any other information points relevant to this section.** | 14.12 |
|  |

Guidance

Documenting the cost components of the model, the techniques it will use and the volume of data it will consume, will allow for selection of an appropriate tool. Whilst many SCMs will be developed using Microsoft Excel, it is not always a suitable platform. For example, if data volumes are significant and cannot be reduced then a database platform may be more appropriate.

## Is the SCM for one-time use, ongoing use or re-use?

Whether the model is intended for single use (e.g. a 'throw away'), enduring use (e.g. a 'contract management' model) or re-use (e.g. a 'generic' model) can have a substantial impact on its design. For example, an SCM that is or may be adapted for use as an ongoing contract management model may need to support updates for actuals, which can add to design complexity. Models that are expected to have enduring use may justify an increased investment in overall design and included features (e.g. automation). By establishing this up-front, the SCM can be designed and planned accordingly. Notably, even models intended for one-time use may require adaptation and could even have utility in the future, even if it is not immediately apparent at the present time. Hence, including features that add little to development effort, such as insertion rows/columns (see SCM Technical Build Guidance), will enhance their flexibility, adaptability and make them more 'future proofed'.

## What software and software version will the model be built in?

Clarifying the software platform (e.g. MS Excel) as well as the software version and the operating environment (e.g. Windows or Mac) will help to reduce the risk of producing an SCM that cannot be operated in its intended environment.

## Is the software platform the most appropriate platform?

MS Excel is often the go-to software platform for SCMs. However, it, along with other platforms, may not be the most appropriate. For example, if data volumes are large, skills are lacking, or there are licensing restrictions. Potential shortcomings should be set out in this Scoping Template and confirmed as acceptable before proceeding with SCM development. Due consideration should be given to SCM Users, including the software available to them, its compatibility with the developer's software, the environment the SCM will be used in (e.g. there may be performance or file size limits), and, notably, their level of proficiency with the software platform.

## Are there file size restrictions or performance requirements?

Having a clear up-front understanding of constraints or requirements may influence model design and will help to reduce the risk of producing an SCM that cannot be used as required. For example, the SCM may be subject to a file size limit (e.g. a SharePoint restriction). There may also be a requirement for a model to calculate within a specific time period (particularly relevant for models that employ Monte Carlo simulation).

## Are there any restrictions on the use of macros or VBA?

Understanding whether there are any restrictions in relation to the use of VBA or macros may impact the model Specification (inc. Design). For example, if VBA is disallowed or its use restricted to outside of the calculation chain (see SCM Technical Build Guidance). If VBA is to be employed it will need to be appropriately specified, developed in line with good practice and undergo independent QA and testing by someone with the requisite skills and experience.

## Are any custom or non-standard add-ins required?

Models may be developed such that they rely on non-standard add-ins. In MS Excel these may, for example, include the Analysis Tool Pack, Solver or Monte Carlo simulation add-ins. Understanding this up-front will help reduce the risk that a model is developed that cannot be used in the target operating environment owing to the unavailability of add-ins (e.g. owing to licensing or IT restrictions).

## Will the model need to link to other files or applications?

There may be a need for SCMs to connect to or interact with other files or applications. For example, Microsoft Project, Finance Systems, Databases or Feeder Models. Interfaces will need to be considered when developing the model Specification (inc. Design). Measures may also need to be put in place to realise them (e.g. access permissions, licensing, training) and to help mitigate delivery risk.

## Does the model need to conform to specific standards?

There should be a clear understanding of conventions or standards that the SCM should adhere to. Depending on their scope, they may impact model model Specification (inc. Design) and will almost certainly impact model build. For example, consider if the model needs to be developed in line with the SCM Technical Build Guidance or if there are guidelines in place within the contracting authority. Consider if there are established styles that the model should adhere to (e.g. inputs delineated by specific cell colours).

## Are there any templates on which to base development?

Where available, templates can expedite model development, drive consistency of style and reinforce good practice. Identifying templates early on (or even example models to inform style preferences) will help ensure they are available when required and may also inform the model Specification.

The Sourcing Programme has developed an SCM Build Template for use by contracting authorities.

## Has modelling of this type been undertaken previously and if so are the files available?

Exiting model's may be able to inform the development of this SCM, including the model Scope and the model Specification (inc. Design). They may also be suitable for re-use or adaptation. See SCM Development Guidance for more details on re-using or adapting SCMs.

## Are there any ‘Learning From Experience’ points that need to be considered?

Understanding and taking on board both positive and negative views in relation to previous models may help to drive ongoing improvement and benefit the development of this SCM. Learnings may also inform broader aspects in relation to this SCM, such as challenges associated with data collection and how they were overcome.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# QA and Testing

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *QA Procedures:* | **What specific QA and testing activities will be required?** | 15.1 |
|  |
| 2 | *QA Tools:* | **Are testing activities constrained by a lack of available tooling?** | 15.2 |
|  |
| 3 | *QA Framework:* | **Is there a QA framework that the model will need to follow?** | 15.3 |
|  |
| 4 | *UAT:* | **Have the individuals who will undertake UAT been identified?** | 15.4 |
|  |
| 5 | *3rd Party QA and Testing:* | **Is QA and testing by an independent external 3rd party required?** | 15.5 |
|  |
| 6 | *QA Resources:* | **Have all of the different QA and testing resources been secured?** | 15.6 |
|  |
| 7 | *QA Time:* | **Has sufficient time been allocated to undertake QA and testing?** | 15.7 |
|  |
| 8 | *Approvals Needs:* | **What are the requirements of any scrutiny or approvals processes?** | 15.8 |
|  |
| 9 | *Referencing QA:* | **How will QA and testing be referenced within the model?** | 15.9 |
|  |
| 10 | *Other:* | **Include any other information points relevant to this section.** | 15.10 |
|  |

Guidance

Managing the risks associated with SCMs, including through formal QA and testing, is an essential activity. Setting out in a QA Plan and agreeing the processes and activities to govern and control the SCM over its lifecycle, including what controls should be applied and tests performed, will help to ensure its fitness for purpose. The selection of governance and control measures to be applied to the SCM over its lifecycle should be informed by the Initial Model Assessment (IMA). However, there is no one-size-fits all approach and the outputs from the IMA (see Section 3.4) should be appropriately tailored. For example, it is important to consider whether the risk profile of the SCM is impacted by its novelty, level of advanced features and functions, or whether the procurement activity has been undertaken before. See SCM Development Guidance and [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government) for further details on QA and testing.

## What specific QA and testing activities will be required?

The required QA and testing activities, including the formal tests that will be performed on the model, should be agreed and planned up front. These should be informed by the IMA and tailored to this SCM (see Section 3.4). For example, consider if Verification, Validation, including Analytical Review and Commercial Review, User Acceptance Testing or other forms of QA and testing are appropriate. The level of assurance required over the model's output will drive associated governance and control activities, including in relation to QA and testing. This will typically be driven by the impact of the decision that the model supports. However, other factors will impact this. For example, if the outputs of the model can be confirmed with reference to an alternative source then the focus of QA and testing may shift. An overview of different types of QA and testing is provided in the SCM Development Guidance.

## Are testing activities constrained by a lack of available tooling?

Specific types of tests may not be included in the QA Plan for the SCM because of a lack of available tooling. For example, tooling to support Verification and Analytical Review. Consider if the availability of tooling is hampering the ability to perform an appropriate and proportional level testing, such as that suggested by the IMA Tool (see Section 3.4).

## Is there a QA framework that the model will need to follow?

Models that are classed as Business Critical or include material of a sensitive nature, such as classified information or Personally identifiable information (PII), may fall under specific QA and governance frameworks. They may also fall under QA frameworks associated with the Business Case that they support. Transparency over QA and governance frameworks will help to ensure that requirements are met and that QA, governance and control activities are appropriately planned and aligned.

## Have the individuals who will undertake UAT been identified?

User Acceptance Testing (UAT) is commonplace although may not be necessary in all situations. For example, if there is no requirement to hand over the SCM. Invariably users will have preferences or requirements that may demand model design changes. If those who will undertake UAT are identified from the outset, their requirements can be taken on board during the model planning phase and, if appropriate, as the model is being developed. This will help to reduce model rework and the associated risk of delay and errors from change. Their early identification will also support forward planning and help ensure they are available at the point of need.

## Is QA and testing by an independent external 3rd party required?

Some contracting authorities routinely require that certain types of models are subject to QA and testing by 3rd parties. This includes QA and testing by independent specialist teams both within contracting authorities and external to them (e.g. from the private sector). Understanding whether and, moreover, what aspects of QA and testing will be undertaken by 3rd parties will inform the Delivery Plan and help to reduce the risk of key aspects of QA and testing from being overlooked. When engaging 3rd parties, it is important to consider which aspects of QA and testing they are both willing to and are suitably qualified and experienced to undertake. For example, Validation, which is a key aspect of model testing, is not always available from those who offer model Verification or logic testing services.

## Have all of the different QA and testing resources been secured?

Different types of QA and testing invariably require different skills and demand differing levels of effort. Consider each specific QA and testing activity, for example, Verification and Validation, including Analytical Review and Commercial Review, and the associated capability and capacity of resource. In addition to considering whether quality assurers are appropriately skilled and experienced and have sufficient capacity, it is also important to ensure that they are sufficiently independent of model development. See SCM Development Guidance and [Aqua Book](https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government) for further details on QA and testing.

## Has sufficient time been allocated to undertake QA and testing?

The time taken to perform QA and testing is often under estimated. This can increase the risk of delay or drive QA and testing compromises. As a broad 'rule of thumb', allocating around 1/3rd of development time for formal QA and testing would not be unrealistic. The remaining 2/3rds being split equally between planning and designing, and building the SCM. The time allocated to undertake each of the tests should be sufficient for them do be performed adequately and should include an allowance for multiple ‘review cycles’. These may be required where model developers have not appropriately resolved issues raised by the quality assurer or have introduced new issues as a result of changes. Notably, given the prevalence of errors within models, allowing for a single ‘review cycle’ is unlikely to be sufficient.

## What are the requirements of any scrutiny or approvals processes?

Internal approval processes may include requirements in relation to the QA and testing of SCMs. For example, they may stipulate a requirement for certain types of model to be subject to specific types of tests and, moreover, who is required to undertake them. Where identified they should be factored into the QA Plan.

## How will QA and testing be referenced within the model?

Documenting the performance of QA and testing is an important activity that provides an audit trail and record of its performance. QA Reports should highlight key findings including, although not limited to, a summary of the tests performed, any unresolved issues or limitations associated with the model and/or its use, and any limitations in relation to the QA and testing itself (e.g. scope of QA and testing activities). Testing should be repeatable and QA Reports should be backed-up by Test Memos where supplementary detail is required in order to enable an independent person to re-perform the tests. It is necessary to consider how QA documentation will be referenced from within the model and whether it is necessary to summarise QA Reports within the model itself. This is particularly important where QA and testing has limitations, for example where Validation is required at a later stage for generic models or templates.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Sign-offs

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *SCM Plan Sign-off:* | **Who needs to sign-off on the model Scope and model Specification?** | 16.1 |
|  |
| 2 | *QA Sign-off:* | **Who will sign-off the QA Plan and the performance of QA and testing?** | 16.2 |
|  |
| 3 | *SCM Use Sign-off:* | **Who needs to sign-off the model for implementation and use?** | 16.3 |
|  |
| 4 | *Other:* | **Include any other information points relevant to this section.** | 16.4 |
|  |

Guidance

It is important to set out and agree who needs to sign-off or who has delegated authority to sign-off key milestones. This will help to ensure that their needs can be considered early in the model development lifecycle, that they are aware of their responsibilities, that they are kept informed of key milestones and, significantly, that models are not progressed until appropriate authority has been obtained. All sign-offs should be fully documented with an associated audit trail.

## Who needs to sign-off on the model Scope and model Specification?

Consider who will need to sign-off on (i) approach; (ii) data sources; and (iii) format of outputs. If the Model Senior Responsible Owner (Model SRO) is distant from this activity, consider how their agreement will be secured given that the Model SRO ultimately has overall responsibility and accountability for development (and use) of the SCM.

## Who will sign-off the QA Plan and the performance of QA and testing?

Consider who will need to sign-off on (i) the sufficiency of planned QA and testing activities; (ii) the performance of planned QA and testing activities to an appropriate level; and (iii) the acceptability of any unaddressed shortcomings identified during QA and testing. If the Model Senior Responsible Owner (Model SRO) is distant from this activity, consider how their agreement will be secured given the Model SRO ultimately has overall responsibility and accountability for development (and use) of the SCM.

## Who needs to sign-off the model for implementation and use?

A model that has been developed in-line with the model Specification and that has had its QA and testing signed-off does not automatically mean it is appropriate to use. Models are developed for a specific purpose and requirements can change over time. They also have inherent limitations, which may also include shortcomings identified during QA and testing that may not have been addressed. Where limitations exist, it is important to consider whether sufficient steps to bring them to the attention of model operators have been made, such as documenting them within the model itself (see Sections 9.2 and 15.9). These and other broad factors should be carefully considered before signing-off a model for implementation and use. If the Model Senior Responsible Owner (Model SRO) is distant from this activity, consider how their agreement will be secured given the Model SRO ultimately has overall responsibility and accountability for development (and use) of the SCM.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Implementation

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Version Control:* | **What are the version control guidelines and procedures?** | 17.1 |
|  |
| 2 | *Change Control:* | **What are the change control guidelines and procedures?** | 17.2 |
|  |
| 3 | *Handover:* | **Who will the model be handed over to and what are the planned handover procedures?** | 17.3 |
|  |
| 4 | *SCM Longevity:* | **How often and for how long will the model be used?** | 17.4 |
|  |
| 5 | *SCM Maintenance:* | **Will SCM maintenance be required and, if so, for how long?** | 17.5 |
|  |
| 6 | *Other:* | **Include any other information points relevant to this section.** | 17.6 |
|  |

Guidance

Early consideration of SCM implementation will help to ensure a smooth transition from development to use, and help to manage some of the associated risks. Furthermore, considerations such as version and change control are relevant during SCM development and not just when the SCM is in use. The SCM Development Guidance provides further details on the management of SCMs.

## What are the version control guidelines and procedures?

Version control, including naming conventions and frequency of re-versioning, is important throughout SCM development. This is also important in the context of QA and testing. As the SCM transitions to use, the importance of effective version control increases further. Established version control conventions should be adopted from the outset or developed and agreed as part of model planning activities.

## What are the change control guidelines and procedures?

Change control is relevant to SCMs during development and will become increasingly important as the SCM transitions to use. For example, how will changes to the model Specification or to its input data and assumptions be managed and controlled. Whilst some aspects may be managed through effective version control, this alone may not be sufficient.

## Who will the model be handed over to and what are the planned handover procedures?

Agreeing early on who the model will be handed over to and the associated handover activities will help facilitate a smooth transition from development to use. This is particularly important if the model will be used, including operated and refreshed with new data, by someone other than the model developer. For example, consider:

* If any form of user training will be required and, if so, how, where, when and to whom will it be provided;
* If materials, such as a presentation, will be required to support the training or if the model User Guide will suffice; and
* If ongoing support will be required, what type of support may be required and how long it will be required for.

## How often and for how long will the model be used?

In addition to design considerations, the management of an SCM will be influenced by how often and how long it will be used. For example, enduring, re-usable or generic models may require:

* More rigorous and ongoing QA and testing as their impact may be compounded over time;
* A model User Guide and, potentially, additional training materials or instruction;
* A model Technical Guide or Developer Guide in order to provide a deeper understanding of their construction and to support change; and
* Ongoing maintenance and the application of tailored governance and control measures.

By establishing this up-front, the SCM and its management can be planned accordingly.

## Will SCM maintenance be required and, if so, for how long?

SCMs that will be re-used or used on an ongoing basis are likely to require maintenance. This may include structural changes, such as the addition of new features or outputs, refinement of labelling, updates to the model User Guide, etc. It is important that model documentation, such as the model Specification, is updated to reflect any changes and that appropriate change control procedures, including those associated with re-testing, are in place. Where possible, securing access to the original developer to undertake maintenance will help to reduce some of the risks associated with model changes. Notably, these types of SCM would also benefit from a model Technical Guide or Developer Guide. By establishing maintenance requirements up-front, the SCM and its management can be planned accordingly.

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Information Handling

Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Handling:* | **Are there any security and/or confidentiality restrictions on the model?** | 18.1 |
|  |
| 2 | *IP:* | **Are there any Intellectual Property points that need to be considered?** | 18.2 |
|  |
| 3 | *Suppliers:* | **If the model will be shared with suppliers have the associated risks been considered?** | 18.3 |
|  |
| 4 | *External:* | **If third parties are involved are there any specific requirements?** | 18.4 |
|  |
| 5 | *Other:* | **Include any other information points relevant to this section.** | 18.5 |
|  |

Guidance

Given the potentially sensitive nature of data that can be included within SCMs, together with their ease of distribution, it is important to consider any special requirements or controls up-front. Considerations in relation to the SCM should extend to development versions as well as data, feeder files or documentation associated with the SCM.

## Are there any security and/or confidentiality restrictions on the model?

Consider if there are any security, commercial, GDPR or other sensitivities. It is important to consider if these are or may be heightened by bringing data together in a model (i.e. if the whole is greater than the sum of the parts). Consider whether protective or other markings are required. Consider if there are data access and storage requirements and/or restrictions. Consider if there are any personnel or distribution requirements or restrictions (e.g. in relation to security clearance).

## Are there any Intellectual Property points that need to be considered?

As many SCMs will be internal to contracting authorities, the need to consider Intellectual Property (IP) may be limited. However, there may be situations (e.g. occasions where models are shared with third parties) when the protection of IP, including disclaimers, needs to be explicitly considered.

## If the model will be shared with suppliers have the associated risks been considered?

Before sharing the model with suppliers, the associated risks should be carefully considered. For example, providing an SCM that sets out a delivery model could lead the supplier in a particular direction and stifle innovation or it could weaken the negotiating position.

## If third parties are involved are there any specific requirements?

Where third parties are involved further provisions may be required. For example, consider if Non-Disclosure Agreements ("NDAs"), Security Aspects Letters ("SALs") or disclaimers are required. Consider if there are any IT equipment, data storage, processing, transfer, distribution or other requirements or restrictions. Consider if there are any location-specific requirements (e.g. development activity restricted to a specific location).

## Include any other information points relevant to this section.

This is a free data capture field where any other information points relevant to this section can be included.

# Appendix I: Typical SCM Roles

|  |  |
| --- | --- |
| **Role** | **Typical Responsibilities** |
| *Model**Developer* | * Driving production of the model Specification (inc. Design), Data, QA and Delivery Plans, and seeking their approval and sign-off ahead of model development.
* Updating the model Scope, Specification (inc Design) and other documentation to reflect any agreed changes.
* Building the SCM in line with requirements and good practice guidance.
* Populating the SCM with data for self-testing and to support formal QA and testing, handover and release of the SCM for use.
* Producing and updating the Book of Assumptions / Data Log with key information pertaining to the collected data.
* Undertaking self-testing of the SCM throughout development and prior to release for formal QA and testing.
* Working with Quality Assurers to implement changes required to address issues identified as part of QA and testing processes.
* Producing the model User Guide and, if required, handover training materials and the model Technical or Developer Guide.
* Undertaking demonstrations and familiarisation sessions as required and producing interim results to support in-flight QA and testing.
* Implementing any file management procedures that may be applicable during the development of the SCM.
 |
| *Model SRO* | * Model Senior Responsible Owner who takes overall responsibility for the SCM and its use, including its QA and testing and governance throughout its lifecycle.
 |
| *Model Customers* | * Inputting to the model Scope and Specification and confirming the suitability of the model’s design to support decision-making requirements.
* Inputting to the Delivery Plan and confirming that the overall timescales are in-line with requirements.
 |
| *Model Operator* | * Undertake familiarisation and/or training as required to operate the model.
* Implementing the required file management processes and procedures.
* Running the model to produce the required outputs and to interpret the result.
* Refreshing the input data as required to run the model and produce the outputs.
 |
| *Model Architect* | * Leading the model design and taking responsibility for the associated model documentation, including agreeing any required changes during development.
* Overseeing the model development process and providing technical and design support and challenge during build.
 |
| *Data Providers* | * Inputting to all relevant aspects of the Data Plan including the provisional timescales and risks.
* Sourcing the data required by the model and undertaking any data pre-processing that may be required.
* Updating key stakeholders on progress and any required changes to the Data and Delivery Plans.
 |
| *Quality Assurers* | * Undertaking QA and testing and producing associated documentation, such as QA Reports and Test Memos.
* Liaising with the Model Developer to explain identified issues where further clarity is needed and undertaking re-testing, as required.
 |

# Appendix II: Consolidated Questions

Details

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Details Questions** | **Ref** |
| 1 | *Project Name:* | **What is the name of the project that will be supported by the SCM?** | 3.1 |
|  |
| 2 | *Prepared By:* | **Who has prepared and driven the population of this Scoping Template?** | 3.2 |
|  |
| 3 | *Prepared On:* | **What was the date that this Scoping Template was prepared on?** | 3.3 |
|  |
| 4 | *IMA Score:* | **What was the resultant score from the Initial Model Assessment?** | 3.4 |
|  |
| 5 | *Other:* | **Include any other information points relevant to this section** | 3.5 |
|  |

Overview

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Overview Questions** | **Ref** |
| 1 | *Background:* | **What is the background to the project that the SCM will support?** | 4.1 |
|  |
| 2 | *Issue:* | **What is being sourced or procured?** | 4.2 |
|  |
| 3 | *Issue:* | **What are the delivery options under consideration?** | 4.3 |
|  |
| 4 | *Issue:* | **What decision or issue is the SCM intended to support or solve?** | 4.4 |
|  |
| 5 | *Value:* | **What is the approximate value of the project or decision that the SCM will support?** | 4.5 |
|  |
| 6 | *Reputation:* | **Is the reputational or regulatory impact of the project or decision that the SCM will support comparatively high?** | 4.6 |
|  |
| 7 | *SCM Purpose:* | **What does the SCM need to do/ show/ compare /analyse?** | 4.7 |
|  |
| 8 | *Bid Evaluation:* | **Will the SCM be used for bid evaluation purposes?** | 4.8 |
|  |
| 9 | *Tolerance:* | **How accurate does the SCM need to be?** | 4.9 |
|  |
| 10 | *Other:* | **Include any other information points relevant to this section.** | 4.10 |
|  |

Project Management

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Project Management Questions** | **Ref** |
| 1 | *Timescales:* | **What are the procurement and, in turn, model delivery timescales?** | 5.1 |
|  |
| 2 | *Milestones:* | **What are the key milestone dates for producing the model?** | 5.2 |
|  |
| 3 | *Dependencies:* | **Are there any known dependencies?** | 5.4 |
|  |
| 4 | *Risks:* | **What are the key SCM delivery risks?** | 5.5 |
|  |
| 5 | *Process:* | **How will model development be managed and what are the senior level sign-off points?** | 5.6 |
|  |
| 6 | *Other:* | **Include any other information points relevant to this section.** | 5.7 |
|  |

Outputs

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Outputs Questions** | **Ref** |
| 1 | *Key Outputs:* | **What are the key outputs to be produced by the SCM?** | 6.1 |
|  |
| 2 | *Output Format:* | **What format should output reports be in and are samples available?** | 6.2 |
|  |
| 3 | *Conventions:* | **Do output reports need to comply with accounting or other standards?** | 6.3 |
|  |
| 4 | *Requirements:* | **What specific outputs or output formats are required for approvals?** | 6.4 |
|  |
| 5 | *KPIs & Ratios:* | **What KPIs or ratios are required and are definitions available?** | 6.5 |
|  |
| 6 | *Graphical Outputs:* | **Are graphs or charts required and, if so, what should they depict?** | 6.6 |
|  |
| 7 | *Dynamic Outputs:* | **How should dynamic model elements be presented in the outputs?** | 6.7 |
|  |
| 8 | *Other:* | **Include any other information points relevant to this section.** | 6.8 |
|  |

Logic

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *Cost Components:* | **What are the cost components of the service, project or programme being modelled?** | 7.1 |
|  |
| 2 | *Costing Techniques:* | **What is the approach to cost estimation?** | 7.2 |
|  |
| 3 | *Options & Scenarios:* | **What delivery model options and/or scenarios will be included in the model?** | 7.3 |
|  |
| 4 | *Pricing Approaches:* | **How will supplier pricing approaches be represented?** | 7.4 |
|  |
| 5 | *Cost Drivers:* | **What are the fixed and variable costs and how will they be driven?** | 7.5 |
|  |
| 6 | *Granularity:* | **How much detail is required for the different cost components in the model?** | 7.6 |
|  |
| 7 | *Calculations:* | **What other calculations or specialist modelling techniques are required?** | 7.7 |
|  |
| 8 | *Comparison Level:* | **At what level are comparisons between options or scenarios required?** | 7.8 |
|  |
| 9 | *Sensitivities:* | **Does the model need to run sensitivities and if so on what?** | 7.9 |
|  |
| 10 | *Inflation:* | **How will inflation be included within the model?** | 7.10 |
|  |
| 11 | *Taxation:* | **Does VAT or any other tax need to be included?** | 7.11 |
|  |
| 12 | *Currency:* | **What currency or currencies will the model be in?** | 7.12 |
|  |
| 13 | *Risk & Uncertainty:* | **How will risk and uncertainty be represented within the model?** | 7.13 |
|  |
| 14 | *Optimism Bias:* | **How will the model be calibrated for Optimism Bias?** | 7.14 |
|  |
| 15 | *Other:* | **Include any other information points relevant to this section.** | 7.15 |
|  |

Data

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Data Questions** | **Ref** |
| 1 | *Key Inputs:* | **What are the key model input data and assumptions requirements?** | 8.1 |
|  |
| 2 | *Uncertainty & Risk:* | **What uncertainties and risks will be represented within the model?** | 8.2 |
|  |
| 3 | *Data Risks:* | **Are any key challenges and/or risks associated with the data?** | 8.3 |
|  |
| 4 | *Data Sources:* | **What are the sources of the required data and assumptions?** | 8.4 |
|  |
| 5 | *Collection Process:* | **What is the process for collecting the data and assumptions?** | 8.5 |
|  |
| 6 | *Data Gaps:* | **What, if any, are the data gaps and how will they be filled?** | 8.6 |
|  |
| 7 | *Data Quality:* | **How reliable is data and if any data needs to be matured what is the process for this?** | 8.7 |
|  |
| 8 | *Data Format:* | **What format will the data be in when it is obtained?** | 8.8 |
|  |
| 9 | *Data Processing:* | **Will the data need to be analysed or manipulated for use?** | 8.9 |
|  |
| 10 | *Multi-Source:* | **Is there a single source for each data set or are there several?** | 8.10 |
|  |
| 11 | *Data Stability:* | **How often will data change during development and after delivery?** | 8.11 |
|  |
| 12 | *Sample Data:* | **Is sample data available to support development and preliminary testing?** | 8.12 |
|  |
| 13 | *Data Volumes:* | **How much data is going to go into the model?** | 8.13 |
|  |
| 14 | *Data Validation:* | **What, if any, validation checks on the data are required?** | 8.14 |
|  |
| 15 | *Other:* | **Include any other information points relevant to this section.** | 8.15 |
|  |

Limitations

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Limitations Questions** | **Ref** |
| 1 | *Out of Scope:* | **What potential model aspects are considered to be out of scope?** | 9.1 |
|  |
| 2 | *Limitations:* | **What are the limitations to the model and its potential use?** | 9.2 |
|  |
| 3 | *Other:* | **Include any other information points relevant to this section.** | 9.3 |
|  |

Periodicity

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Periodicity Questions** | **Ref** |
| 1 | *Time Period:* | **What forecast time period should the model cover?** | 10.1 |
|  |
| 2 | *Time Increment:* | **Does the model need to be annual, monthly or other?** | 10.2 |
|  |
| 3 | *Historical Periods:* | **How many periods of historical data should be included?** | 10.3 |
|  |
| 4 | *Period Dates:* | **What are the applicable period end dates?** | 10.4 |
|  |
| 5 | *Key Dates:* | **What are the important dates in the model?** | 10.5 |
|  |
| 6 | *Other:* | **Include any other information points relevant to this section.** | 10.6 |
|  |

Users

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Users Questions** | **Ref** |
| 1 | *SCM Users:* | **Who will operate or interact with the model and what is the purpose of their interaction?** | 11.1 |
|  |
| 2 | *User Needs:* | **Do the requirements differ by user and what interface is required for each user?** | 11.2 |
|  |
| 3 | *Future Users:* | **If the model will be used after the project is complete who will be the new user(s)?** | 11.3 |
|  |
| 4 | *Other:* | **Include any other information points relevant to this section.** | 11.4 |
|  |

Stakeholders and Governance

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Stakeholders and Governance Questions** | **Ref** |
| 1 | *Model SRO:* | **Who is the Model Senior Responsible Owner?** | 12.1 |
|  |
| 2 | *Model Customer:* | **Who has commissioned the model and who is the model being built for?** | 12.2 |
|  |
| 3 | *Model Developer:* | **Who is responsible for building the model and undertaking self-testing?** | 12.3 |
|  |
| 4 | *Model Quality Assurers:* | **Who will undertake each of the various aspects of model QA and testing?** | 12.4 |
|  |
| 5 | *SMEs:* | **Who will provide Subject Matter Expertise to inform model development?** | 12.5 |
|  |
| 6 | *Model Architect:* | **Who is responsible for overseeing and managing production of the model?** | 12.6 |
|  |
| 7 | *Data Collection:* | **Who is responsible for managing the collation of data and assumptions?** | 12.7 |
|  |
| 8 | *Data Manipulation:* | **Who is responsible for performing any data pre-processing requirements?** | 12.8 |
|  |
| 9 | *Data Population:* | **Who is responsible for inputting data and assumptions into the model?** | 12.9 |
|  |
| 10 | *Other:* | **Include any other information points relevant to this section.** | 12.10 |
|  |

Deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Deliverables Questions** | **Ref** |
| 1 | *Key Deliverables:* | **What are the key deliverables (SCM, model Specification, User Guide, BoA / DL, QA Report, Technical Guide, Training)?** | 13.1 |
|  |
| 2 | *Deliverables Scope:* | **What is the purpose of and who are the stakeholders for deliverables (other than the SCM)?** | 13.2 |
|  |
| 3 | *Other:* | **Include any other information points relevant to this section.** | 13.3 |
|  |

Technical Questions

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Technical Questions** | **Ref** |
| 1 | *Enduring Use:* | **Is the SCM for one-time use, ongoing use or re-use?** | 14.1 |
|  |
| 2 | *Software Platform:* | **What software and software version will the model be built in?** | 14.2 |
|  |
| 3 | *Software Suitability:* | **Is the software platform the most appropriate platform?** | 14.3 |
|  |
| 4 | *Size & Performance:* | **Are there file size restrictions or performance requirements?** | 14.4 |
|  |
| 5 | *VBA:* | **Are there any restrictions on the use of macros or VBA?** | 14.5 |
|  |
| 6 | *Add-Ins:* | **Are any custom or non-standard add-ins required?** | 14.6 |
|  |
| 7 | *System Integration:* | **Will the model need to link to other files or applications?** | 14.7 |
|  |
| 8 | *Standards:* | **Does the model need to conform to specific standards?** | 14.8 |
|  |
| 9 | *Templates:* | **Are there any templates on which to base development?** | 14.9 |
|  |
| 10 | *Examples:* | **Has modelling of this type been undertaken previously and, if so, are the files available?** | 14.10 |
|  |
| 11 | *LFE:* | **Are there any ‘Learning From Experience’ points that need to be considered?** | 14.11 |
|  |
| 12 | *Other:* | **Include any other information points relevant to this section.** | 14.12 |
|  |

QA and Testing

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Question** | **Ref** |
| 1 | *QA Procedures:* | **What specific QA and testing activities will be required?** | 15.1 |
|  |
| 2 | *QA Tools:* | **Are testing activities constrained by a lack of available tooling?** | 15.2 |
|  |
| 3 | *QA Framework:* | **Is there a QA framework that the model will need to follow?** | 15.3 |
|  |
| 4 | *UAT:* | **Have the individuals who will undertake UAT been identified?** | 15.4 |
|  |
| 5 | *3rd Party QA and Testing:* | **Is QA and testing by an independent external 3rd party required?** | 15.5 |
|  |
| 6 | *QA Resources:* | **Have all of the different QA and testing resources been secured?** | 15.6 |
|  |
| 7 | *QA Time:* | **Has sufficient time been allocated to undertake QA and testing?** | 15.7 |
|  |
| 8 | *Approvals Needs:* | **What are the requirements of any scrutiny or approvals processes?** | 15.8 |
|  |
| 9 | *Referencing QA:* | **How will QA and testing be referenced within the model?** | 15.9 |
|  |
| 10 | *Other:* | **Include any other information points relevant to this section.** | 15.10 |
|  |

Sign-offs

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Sign-offs Questions** | **Ref** |
| 1 | *SCM Plan Sign-off:* | **Who needs to sign-off on the model Scope and model Specification?** | 16.1 |
|  |
| 2 | *QA Sign-off:* | **Who will sign-off the QA Plan and the performance of QA and testing?** | 16.2 |
|  |
| 3 | *SCM Use Sign-off:* | **Who needs to sign-off the model for implementation and use?** | 16.3 |
|  |
| 4 | *Other:* | **Include any other information points relevant to this section.** | 16.4 |
|  |

Implementation

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Implementation Questions** | **Ref** |
| 1 | *Version Control:* | **What are the version control guidelines and procedures?** | 17.1 |
|  |
| 2 | *Change Control:* | **What are the change control guidelines and procedures?** | 17.2 |
|  |
| 3 | *Handover:* | **Who will the model be handed over to and what are the planned handover procedures?** | 17.3 |
|  |
| 4 | *SCM Longevity:* | **How often and for how long will the model be used?** | 17.4 |
|  |
| 5 | *SCM Maintenance:* | **Will SCM maintenance be required and, if so, for how long?** | 17.5 |
|  |
| 6 | *Other:* | **Include any other information points relevant to this section.** | 17.6 |
|  |

Information Handling

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Information Handling Questions** | **Ref** |
| 1 | *Handling:* | **Are there any security and/or confidentiality restrictions on the model?** | 18.1 |
|  |
| 2 | *IP:* | **Are there any Intellectual Property points that need to be considered?** | 18.2 |
|  |
| 3 | *Suppliers:* | **If the model will be shared with suppliers have the associated risks been considered?** | 18.3 |
|  |
| 4 | *External:* | **If third parties are involved are there any specific requirements?** | 18.4 |
|  |
| 5 | *Other:* | **Include any other information points relevant to this section.** | 18.5 |
|  |



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