

Value Toolkit Handbook

Version 2.2

February 2025



Version control

Version	Date	Approved	Status	Change Description
1.0	June 2021	RL	Draft	Issued for pilot testing phase
2.0	Sept 2022	IN	Draft	Issued for pilot Facilitator training
2.1	Mar 2023	IN	Final	Addition of SDG guidance and other minor updates - ready for first full issue
2.2	Feb2025	IN	Final	Updates for open source publication via Constructing Excellence

Contributors:

Ian Nicholson	Tim Chapman	Leonie Gombrich
Robert Illes	Alex Wallis-Evans	

Disclaimer

This disclaimer governs the use of this publication and by using this publication, you accept the terms of this disclaimer in full. The information contained within this publication does not constitute the provision of technical or legal advice by the Construction Innovation Hub or any of its members and any use made of the information within the publication is at the user's own discretion. This publication is provided "as is" and neither the Construction Innovation Hub nor any of its members accept liability for any errors within this publication or for any losses arising out of or in connection with the use or misuse of this publication. Nothing in this disclaimer will exclude any liability which cannot be executed or limited by law.

Part I Applying the Value Toolkit Process

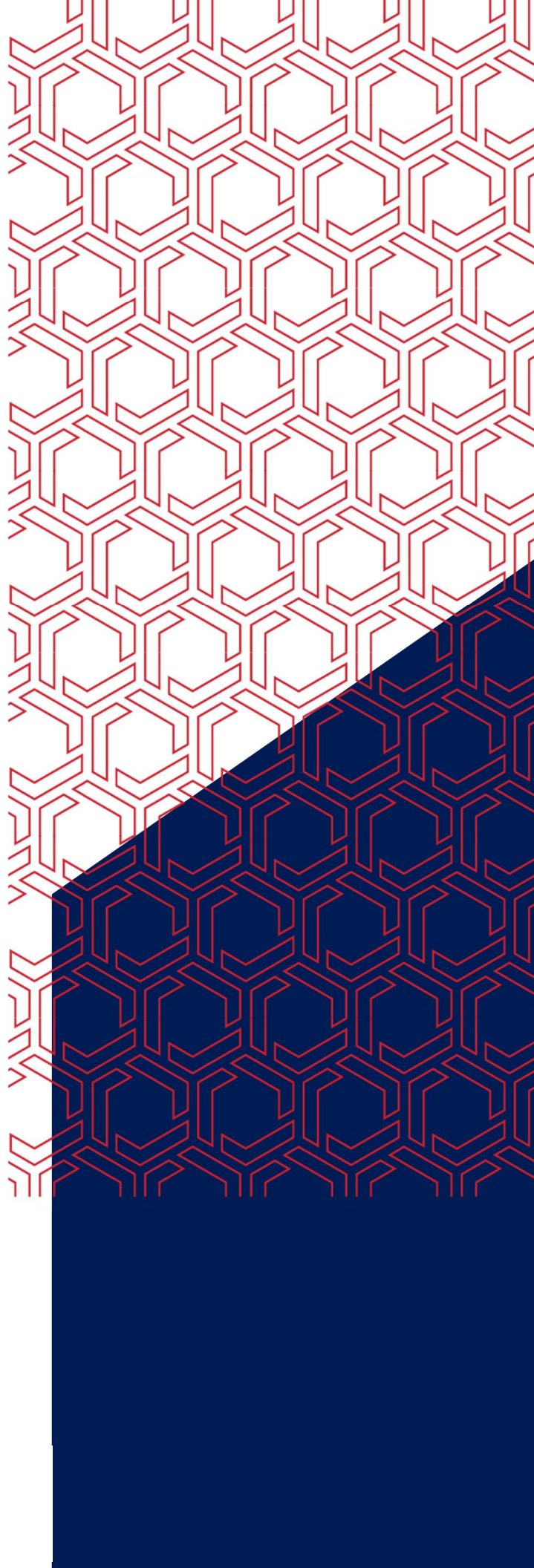
Part II Activity Summary Tables

Part III Appendices

Part I

Applying the Value Toolkit Process

Back to [beginning](#) of handbook.



Part I Contents

1.0	Introduction	7
1.1	What is the Value Toolkit?	7
1.2	How to use this handbook	9
1.3	The Value Definition Framework	10
1.4	Links to United Nations Sustainable Development Goals	11
1.5	The importance of the Client Approach	12
1.6	Reappraising risk in value-based decision making	13
1.7	Client's approach to Health & Safety	16
1.8	Resourcing the Value Toolkit	16
2.0	Need phase	18
2.1	Overview	18
2.2	Value Definition and Measurement	19
2.2.1	Identify stakeholders and commence engagement	19
2.2.2	Develop Strategic Objectives	19
2.2.3	Prioritise Strategic Objectives	24
2.2.4	KEY DELIVERABLE: Strategic Objective Profile	26
2.2.5	Evaluate options using high-level performance indicators	27
2.3	Client Approach	29
2.3.1	Form Strategic Team	29
2.3.2	Identify strategic risks	29
2.3.3	KEY DELIVERABLE: Client Profile	31
2.4	Business Case development: Need phase	33
3.0	Optioneering phase	35
3.1	Overview	35
3.2	Value Definition and Measurement	36
3.2.1	Develop Outcome Drivers	36
3.2.2	Prioritise Outcome Drivers	38
3.2.3	Rationalise Outcome Drivers	41
3.2.4	KEY DELIVERABLE: Value Profile	45
3.2.5	Identify Measures of Success	46
3.2.6	KEY DELIVERABLE: Optioneering Value Scorecard	51
3.2.7	Compare options	53
3.3	Client Approach	54
3.3.1	Form Concept Team	54
3.3.2	Appraise relative risks	54
3.3.3	Market consultations	55
3.3.4	Clarify scope and risk	55
3.3.5	Identify market factors	55
3.3.6	KEY DELIVERABLE: Delivery Model	56
3.4	Business Case development: Concept Design Optioneering	58
4.0	Design phase	60
4.1	Overview	60

4.2	Value Definition and Measurement	60
4.2.1	Refine Value Profile	60
4.2.2	KEY DELIVERABLE: Design Value Scorecard	61
4.2.3	Evaluate design solutions	62
4.2.4	KEY DELIVERABLE: Tender Value Scorecard	63
4.2.5	Compare tender options	65
4.3	Client Approach	66
4.3.1	Form Design Team	66
4.3.2	Refine risks	66
4.3.3	KEY DELIVERABLE: Commercial Strategy	67
4.3.4	Finalise risk management	68
4.3.5	Commence procurement of Delivery Organisation(s)	68
4.3.6	Make recommendations	68
4.4	Business Case development: Detailed Design	69
5.0	Delivery phase	70
5.1	Overview	70
5.2	Value Definition and Measurement	70
5.2.1	KEY DELIVERABLE: Delivery Value Scorecard	70
5.2.2	Validate Delivery performance	71
5.3	Client Approach	72
5.3.1	Award contract (MAT)	72
5.3.2	Active risk management	72
5.4	Business Case development: Delivery	73
6.0	Operation phase	74
6.1	Overview	74
6.2	Value Definition and Measurement	74
6.2.1	KEY DELIVERABLE: Operation Value Scorecard	74
6.2.2	Validate Operational performance	75
6.3	Client Approach	75
6.3.1	Final reward	75
6.4	Business Case development: Operation	76
7.0	References	77

1.0 Introduction

1.1 What is the Value Toolkit?

The Value Toolkit is a set of processes and guidance developed to help the construction industry – clients, funders, consultants, contractors and supply chain – to integrate a broader range of values in deciding project goals, procurement, design, delivery and operation. Using these processes enables the client to create an agreed Value Profile, unique to the project, that becomes integral to all project choices thereafter. The Value Toolkit is further intended to promote the ongoing trend of moving construction industry culture away from an adversarial, risk-averse mindset and towards mutual, value-based decision making. Additionally, the steps you take in using it will help you demonstrate compliance with BSI Flex 390 *Built environment: Value-based decision making – Specification*.

Using the Value Toolkit requires commitment and the allocation of resources, including properly skilled people. Wherever possible, familiar terminology is used, such as the terms found in the Government's Green Book. New terminology is used only for processes that are unique to the exercise of defining and monitoring value.

Most importantly, **the Value Toolkit is not a set of rules**. The processes it describes are flexible and iterative, intended to support discussion and agreement. In discussing value, difficult decisions have to be made. Prioritising values is hard, particularly when these are pitted against commercial decisions rather than seen as supporting them. Project teams are encouraged to approach the Value Toolkit as a resource that will help them improve their output, particularly if they are willing to consider whole-life value as part of the equation.

The phases and streams of the Value Toolkit

The activities detailed in the Value Toolkit are organised using the five phases of a typical investment lifecycle: Need, Optioneering, Design, Delivery and Operation. In the Value Toolkit, the end of each phase is marked with a milestone, at which point a key decision will have been made in preparation for the next phase.

It is important to note that it is not just about construction. The Value Toolkit can be used effectively in asset management, maintenance, repair, retrofit or product/service development. And remember, 'business as usual', or 'do nothing' is always an option if, say, some other intervention gives the best value and meets the need.

Figure 1 sets out a 'bird's eye' view of the Value Toolkit Integrated Process. The Toolkit's activities are organised into the two streams of 'Value Definition and Measurement' (turquoise) and 'Client Approach' (red). Key deliverables (diamonds) occur throughout the phases. We will drill down and examine the detail of all the activities in the Toolkit in the subsequent chapters.

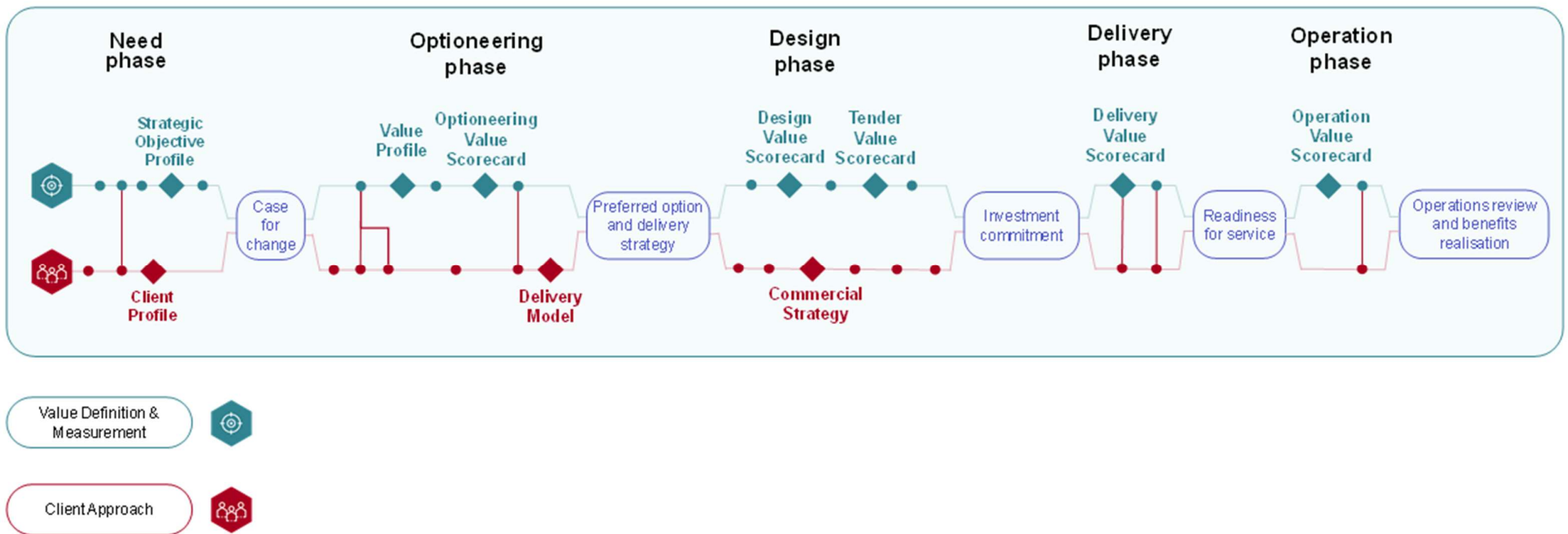


Figure 1 Integrated Process for using the Value Toolkit

This view of the Integrated Process shows the Value Toolkit's key deliverables (diamonds), in each of the two streams of: 'Value Definition and Measurement' (turquoise) and 'Client Approach' (red).

TOP TIP: The Value Toolkit can be used at a project or programme level. For simplicity, anywhere the term 'project' is used in this handbook, take it to mean that this can apply equally to a project or a programme.

1.2 How to use this handbook

This handbook will show you how to use the Value Toolkit, and give you insights on how to maximise its effectiveness. It is primarily targeted at **Value Toolkit Facilitators** – these are individuals appointed by the client and trained in the use of the Toolkit. Other audiences who will be interested in this handbook in its entirety or part are:

- **‘Client adopters’:** leaders and managers within client organisations who will work alongside consultants facilitating the Value Toolkit
- **Commercial professionals:** specialists in commercial disciplines such as quantity surveying, contracts and procurement who will have their focus client-side
- **Discipline experts:** any number of experts who will take ownership of specific outcomes and Metrics

Structure of the handbook

The handbook comprises three parts.

In **Part I Applying the Value Toolkit Process**, we set out, in-depth descriptions of the Integrated Process, its activity steps and key deliverables, along with insights and worked examples. You will also find references to other documents in the Value Toolkit suite of documents, tools and external sources.

In **Part II Activity Summary Tables**, you will find abridged descriptions of the activities and deliverables using a more process-oriented approach. Use these resources for quick reference to the sections you need and what each step requires in terms of inputs and outputs.

Part III Appendices firstly contains guidance relating to the Client Approach stream. Use this information to gain deeper insight into why you need to consider risk and commercial activities tightly in line with the Value Definition and Measurement processes. It also contains information underpinning the ‘bilinear’ mathematical model underpinning Value Scorecards.

The chapters in Part I Applying the Value Toolkit Process

The subsequent chapters here each follow the phases of the Value Toolkit. Each chapter starts with an overview which contains a more detailed excerpt of the Integrated Process diagram, statements of the purpose of the phase and the decision point / milestone reached at the end of that phase. Then there are two sections which, respectively, cover the activities and key deliverables in the Value Definition and Measurement, and Client Approach streams.

TOP TIPS are provided in highlighted call-outs to provide you with insights and useful information to help you hit the ground running with the Value Toolkit – in light blue for the Value Definition and Measurement stream and aspects to do with the core process...

...and in light pink for aspects related to the Client Approach stream including commercial elements, risk and the appointment of individuals, teams and organisations.

A further section is provided in each 'phase' chapter, highlighted in dark blue. This gives guidance on how to use the Toolkit if you are following Green Book and HM Treasury's business casing processes.

1.3 The Value Definition Framework

To incorporate value into the process of conceiving, designing, building and operating an asset, we need a common language with which to discuss the issues involved.

Discussions about value are difficult because the single term, 'value', covers such a wide range of different and sometimes conflicting ideas about what is 'valuable'. In contrast to financial value, which is defined numerically, the relative importance of such benefits as, for example, creating jobs, supporting future users in a low carbon lifestyle or allowing biodiversity to flourish, is far harder to assess in a universally accessible way.

The practical need for an agreed terminology for value is widely recognised and has been tackled by an international network, the Capitals Coalition. Their model is used among governments worldwide and across a range of corporate sectors. It is therefore the language adopted by the Value Toolkit for the construction industry. **Familiarity with this terminology is key to using the Value Toolkit.**

In the Capitals Coalition model, 'Capital' refers to anything that benefits humanity. The different types of Capital that are of value to humanity are sorted under four headings referred to as the 'Four Capitals'. They are: Natural, Human, Social and Produced Capital.

Table 1 below summarises under each heading those categories of value that might commonly be associated with a construction project. Each heading, or Capital, is colour coded. There are 17 categories, divided between the Four Capitals. **This is the Value Definition Framework that you will use throughout the Value Toolkit process.** It enables you to define, discuss and retain what is of value in the context of your specific project.

Table 1 Terminology for value in the Value Definition Framework

<p>Natural Capital</p> <p>The stock of renewable and non-renewable resources that combine to yield a flow of benefits to people.</p> <p>Values the natural environment, addresses solutions to climate impacts and provides benefits to society throughout the full life cycle of the built assets.</p> <ul style="list-style-type: none"> • Air • Climate • Water • Land • Resource Use • Biodiversity 	<p>Social Capital</p> <p>The networks, the shared norms, values and understanding that facilitate cooperation within and among groups.</p> <p>Refers to influence and consultation, equality and diversity, networks and connections as well as the changes people experience as a result of built assets.</p> <ul style="list-style-type: none"> • Involvement and influence • Equality and diversity • Networks and connections 
<p>Human Capital</p> <p>The knowledge, skills, competencies and attributes embodied in individuals that contribute to improved performance and wellbeing.</p> <p>Encompasses employment opportunities, skills development, individual health and wellbeing as well as an asset's capacity to influence these factors.</p> <ul style="list-style-type: none"> • Employment • Skills and knowledge • Health • Experience 	<p>Produced Capital</p> <p>The man-made goods as well as all financial assets that are used to produce goods and services consumed by society.</p> <p>Encompasses Capital cost, operational cost and revenue, covering the whole of the direct monetary spend on the project over its whole life. Also indicators of the efficiency and quality of design, construction and operational processes.</p> <ul style="list-style-type: none"> • Lifecycle costs • Financial return • Production • Resilience and security 

Health and Safety and value-based decision making

Health and safety must continue to be the highest priority for the industry. Despite recent improvements, construction remains a hazardous industry. Good health and safety outcomes are non-negotiable. They are not included within the Value Definition Framework as to do so could imply they may be traded against other outcomes. The Health and Wellbeing category in the framework is designed to focus on the wider health and wellbeing delivered through a project or programme investment.

You must consider construction-related health and safety risks in parallel with value-based outcomes. Guidance on this can be found on the [Health and Safety Executive's website](#).

1.4 Links to United Nations Sustainable Development Goals

The Sustainable Development Goals (SDGs), were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity¹. Associated with each goal are detailed, quantifiable targets for achieving sustainable development.

¹ <https://sdgs.un.org/goals>

Reporting on SDG progress is currently voluntary, but as a member state the UK has committed to delivering the SDGs. And although not legally binding, many clients and organisations have identified SDGs to which they believe their activities can contribute. All built environment projects will have a level of impact on at least one SDG, and many can contribute to multiple SDGs, helping to deliver a sustainable future.

The Value Toolkit can be used to help demonstrate a project's contribution to delivering the SDGs, should the client wish to do this. The client could use the SDGs to inform the project's Strategic Objectives, Outcome Drivers and Measures of Success. However, many Strategic Objectives will automatically align with the SDGs and so it is also possible to retrospectively align the Strategic Objectives to the SDGs.

A mapping exercise has been undertaken to identify how the SDG targets align with the 17 Value Categories. This is provided in Appendix F and can be used by the Facilitator to inform when and how SDGs could be incorporated into the project's Strategic Objectives. Throughout Part I of this Handbook, callout boxes will indicate important points in the Value Toolkit process where SDGs could be considered throughout the project's lifecycle, with further information being provided in Appendix F.

1.5 The importance of the Client Approach

The client is all-important in bringing value-based decision making into the construction industry.

If you are using this handbook, you are probably within the client organisation or are representing the client. The project you are planning is your project, designed to reach an outcome that you (or your stakeholders) require. Values are prioritised and assessed. If the project fails, you and your stakeholders will be materially affected by the failure, because, in addition to other fall-out, including financial, the need that the project was generated to answer will not be met.

The Value Toolkit's Integrated Process has been developed in response to this reality. Using the Toolkit increases the likelihood of project success, including financial and programme success. Value-based decision making is not an add-on, but an approach that brings better results in every area of project delivery.

The client's commitment is key. Without it, creating a Value Profile becomes a peripheral exercise. Buy-in from within the client organisation will need to come from the highest level, not least because the client will need to consider how you approach risk and delivery in order to achieve the project Mission in every aspect.

Feedback from industry indicates that the market is eager to provide value through innovation and mutuality, where clients are committed to rewarding this approach. The Value Toolkit can be used in any context to help define where a project or aspect of a project stands against a range of values, but that relatively simple function is not its ultimate purpose. Rather, it exists to support clients by evolving more successful practice in all areas of project development and delivery. In other words: using the Value Toolkit as it is intended will increase your likelihood of success.

1.6 Reappraising risk in value-based decision making

Projects all too often fail and when they do, aspirations for broader value are often jettisoned. To ensure projects realise their aspirations to create value, it is important that risks are properly managed.

Every client organisation will have an existing methodology for approaching risk, which they will have used in the past with varying degrees of success. The Value Toolkit has been designed to help projects succeed against a broader range of Metrics, and this creates an imperative to engage with risks and their control in a more nuanced way.

Increasing the importance of values other than cost fundamentally changes the project context, meaning that clients cannot rely on previous experience as a predictor of risks that will have to be managed. The emphasis on project outcomes introduces a new risk that the project fails to meet value-based Strategic Objectives. The project may be on time and on budget, but not fit for the wider purposes encapsulated in the Value Profile. Unlike the imperative to meet schedule and budget, which may be incentivised, penalised or insured against in a traditional, transactional arrangement, failure to fulfil other project values is a risk ultimately borne by the client and/or stakeholders, whatever the financial mechanisms involved.

At a higher level of aspiration, the aim of incorporating value-based decision making in construction is to improve the built environment in far-reaching ways – it is not simply to introduce another kind of measurement to the process. Throughout the project, clients will need to retain an appreciation of what the Value Toolkit is for in order to use it effectively. They will appreciate that to protect the values for which they are putting in so much effort, they will need to be alert to unknown risks that may arise, and be prepared to manage or mitigate these accordingly.

The new emphasis on Value Outcomes increases the opportunity for innovation from the market. Inevitably, innovation will also bring unknown risks alongside the potential for greater, more far-reaching benefits. The client's ability to manage risk actively and collaboratively is thus integral to reaping ultimately greater rewards.

For all these reasons, it is worthwhile for the client to consider how they may need to refresh or refine their approach to risk in this new context. Bearing in mind that risk management is a function of the Client Approach stream and not explicitly integral to the Value Definition and Measurement stream, recommendations are nonetheless made at key points in this handbook as to where management of risk is a significant factor in creating the context for success.

Ideally, the Value Toolkit Facilitator will represent the Value Toolkit at risk assessment workshops and profiling activities taking place in the Client Approach stream. Whether or not that level of integration is possible, the Facilitator will always need to keep the importance of risk in mind and use their judgement as to when and how to introduce the topic as the Strategic Team works through the Value Toolkit.

Value Toolkit Facilitators will thus need to remain aware of the implications of risk throughout the Value Definition and Measurement processes. To prepare them, a more comprehensive analysis of how the construction industry approaches risk and how these practices interact with the Value Toolkit is provided in [Appendix A Risk and the Value Toolkit](#).

Increasing resilience to risk

Studies of risk convincingly show that clients and project teams are disproportionately likely to underestimate the scale of threat to project delivery contained in unknown, rare and complex risks – and particularly, a combination of two or all of these. Additionally, risks that combine different types of threat – such as behavioural and technical risks that exacerbate one another – quickly become more dangerous if not anticipated at an early stage. The confidence generated by penalising or insuring against risk is misplaced, given that common and straightforward risks that can be mitigated financially are in any case less likely ultimately to jeopardise project value overall.

All too frequently, attempts to use contractual arrangements to defer or ‘dump’ risk can have the effect of discouraging not only innovation, but also timely warning from the people who identify a threat to the people positioned to do something about it: no-one likes to deliver bad news, particularly where there is a financial cost involved. Threats rapidly become more complex and harder to diffuse if the issue is not escalated to the appropriate level in time.

Far from being a counsel for despair, these demonstrable facts about risk point the way to a better planned, more active and collaborative approach to risk between client (at the decision making levels), consultants, contractor and supply chain. Thus, the Value Toolkit recommends that, to protect Value Outcomes, risk is considered as integral to project planning and re-evaluated regularly.

An active approach to risk management

There is currently a gap in the way that clients identify and manage risk. Typically, risks are identified based on previous experience or knowledge, therefore leaving scope for a huge array of potential unknown risks to occur. Every choice that is made during project development has an impact on the project risks involved, so it makes sense that these should be re-evaluated and managed accordingly.

The Value Toolkit enables clients to consider risk in terms of the Value Definition Framework (i.e. without limiting the appraisal to simply financial Capital), providing a broader landscape from which to identify both threats and opportunities.

In keeping with the Value Toolkit’s emphasis on the early stages of project planning, clients are encouraged to engage early with the market to gain a better understanding of the scale of risks that the market perceives. Risk engagement activities interface with the market consultation step in the Client Approach stream, explicitly linking this consultation with the selection of the Delivery Model. It is inevitable that new and previously unknown risks will be uncovered, and understanding of existing risks increased as client knowledge expands. This new information may then be assessed and monitored up until the Delivery Model is selected.

A more mature risk management approach will also consider alternative methods of assessing the impact of complex and rare technical and behavioural risks, and the Metrics by which non-monetary risks are to be measured.

Client organisations embarking on the Value Toolkit should therefore prepare to protect their investment in Value Outcomes by actively pursuing risk management throughout the development and delivery of the project.

Recommendations for maximising Value Outcomes

In summary, the following client commitments will set the project up for success in terms of achieving the ambitions of its Value Profile:

1. Ensure board involvement / high-level decision makers are involved in realising opportunities and scanning for associated risks from the earliest and into the later stages of project development.
2. Agree a project Mission that provides the context for successful delivery of value.
3. Involve consideration of risk and risk management when prioritising Strategic Objectives – what are the risks to those desired outcomes?
4. Review the Client Profile in terms of the Value Profile once this has been created – what is it about the client organisation that will help or hinder it in achieving the project's value goals?
5. Introduce market consultation as early in the project development process as is feasible, to better understand the relative risks to delivery in a full range of (perhaps radically different) options.
6. Consider the Value Profile as integral to the selection of the Delivery Model – again, which Delivery Model will best enable the management of risk to the desired Value Outcomes?
7. Ensure that a Commercial Strategy is developed with full regard for Value Outcomes.
8. Crystallise project or programme solution and assess risks accordingly.
9. Continue to hunt for fresh risks in regular workshops and always be alive to the changing situation.

1.7 Client's approach to Health & Safety

Clients also need to consider construction-related health and safety risks in parallel with value-based outcomes. The Construction (Design and Management) Regulations 2015 (CDM) makes Clients accountable for the impact their decisions and approach have on their project. This is because of the crucial influence they have over how projects are run. Clients have the contractual control, appoint designers and contractors and determine the money, time and other resources for a project.

You can find more information about delivering good health and safety project outcomes from the [HSE website](#). The active approach to health and safety management they encourage is complementary with the Value Toolkit. Investing proportionately more on pre- construction design and planning, as set out in this guide, will improve a project's health and safety management alongside driving better value outcomes.

1.8 Resourcing the Value Toolkit

Roles and responsibilities

Resourcing key roles and functions is essential to the success of the Value Toolkit, and is the client's central commitment to the process. In some cases, the people or organisations asked to fill these positions will already be responsible for aspects of the project that are part of the Client Approach stream of activity.

Where this occurs, they will be able to integrate information derived from value-based activities with decision making in other areas. This not only streamlines workload, but supports the ultimate purpose of the Value Toolkit: to embed value, so that projects in the built environment meet a greater range of policy and stakeholder aspirations. This will be particularly important over the lifespan of long and complex projects.

Value Toolkit Facilitator

The **Value Toolkit Facilitator** is the pivotal role for the successful use of the Value Toolkit. This person will be an experienced industry professional, appointed internally or via a consultancy, and will be trained in the use of the Value Toolkit. They will prepare for Value Toolkit workshops through liaison with people at the appropriate level of the client organisation and project team, as well as carrying out their own research, desk study and preparation of materials. They will follow through workshops with consolidation and communication of results and, crucially, ensure transfer of information throughout the project.

As the project progresses, the Facilitator will advise on the balance of experience and expertise required within the team for ongoing activities, and will be responsible for consulting with and engaging experts to advise on how value-based outcomes should be measured. They will own the Value Scorecards that are critical to the protection of Value Outcomes through to the end of the project.

Where relevant to value, the Value Toolkit Facilitator will prompt wider discussion of such aspects as risk, capacity and selection of Delivery Model to support the integration of Value Outcomes into decisions in

these other areas. Ideally, they will also be involved in Client Approach, sharing knowledge and advising of decisions being made concerning value.

In short, the Facilitator will be responsible for progress through every phase along the Value Definition and Measurement stream, and for relating these activities to developments along the Client Approach stream throughout the investment lifecycle.

The Facilitator must understand and be clear on who needs to be involved in the Value Toolkit, and when. Although there are distinct activity steps to be followed, the Facilitator should ensure everyone has a voice, and allow participants to naturally come to conclusions about where the value lies on their projects.

Strategic Team

The Strategic Team owns the implementation and governance of the Value Toolkit, drives the Value Toolkit process and develops the Core and Value Outcomes. A rounded competent team, likely to be a mix of client sponsors, in-house specialists, and external advisors including the Value Toolkit Facilitator. It will involve identifying what the market can offer and what services and roles are required, for example client augmentation, strategic advisory / solution definition. It could be a single person or multi-faceted team depending on the scale and nature of the project or programme.

Concept Team

The Concept Team is responsible for producing viable options that will deliver the both the client's required Core and Value Outcomes. The Concept Team will bring competent expert input to the project or programme, such as designers, cost-managers and other commercial specialists, social value practitioners, Human Capital practitioners and environmental specialists. The size and extent of the Concept Team will be determined by the nature, scale and complexity of the project or programme and where the project or programme fits in the overall investment lifecycle.

Design Team

The Design Team is responsible for developing the client's preferred solutions to the stage where a delivery organisation(s) can be procured. The Design Team will consist of competent experts in the value categories together with experts in design disciplines and is likely to include architects, engineers, cost-managers, design integration, digital design, delivery optimisation and other commercial specialists, social value practitioners, Human Capital practitioners and environmental specialists.

2.0 Need phase

2.1 Overview

On completing the activities in the Need phase, clients can expect to have an agreed Mission based on the need, and a list of Strategic Objectives that are weighted and mapped to the Value Definition Framework for the project: the Strategic Objective Profile. The Strategic Objectives will support the achievement of the Mission and will derive from the Strategic Value Drivers – the policies, plans and legislation relevant to the project or programme – in combination with the stakeholder needs and goals.

This phase will begin with the appointment of the Strategic Team, which includes the Value Toolkit Facilitator. Other Client Approach activities, such as identifying the Mission, strategic risks and Client Profile, are discussed alongside the Value Definition and Measurement activities described below.

The milestone reached at the end of the Need phase will therefore be a well-researched, analysed and agreed case for change. This will include a shortlist of options to take forward, as well as a clearly articulated set of Strategic Objectives.

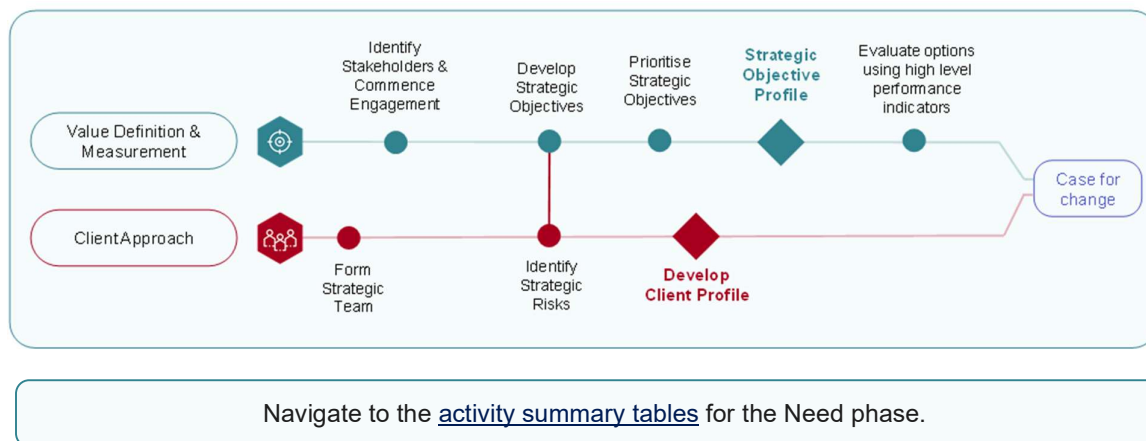


Figure 2 Value Toolkit activities in the Need phase

2.2 Value Definition and Measurement

2.2.1 Identify stakeholders and commence engagement

The Strategic Team will carry out a stakeholder mapping exercise with the purpose of engaging relevant stakeholders and stakeholder groups. This exercise will start at a high level and include identifying and collating any previous stakeholder engagement activities carried out by the client. Both internal and external stakeholders should be included.

- Internal (client) stakeholders:
 - Key decision makers
 - Policy and strategy teams who understand the policy landscape and can identify requirements of the project or programme
 - Project teams with experience of similar schemes and knowledge of the project-specific impacts and dependencies to be considered.
- External stakeholders who will benefit from or be affected by the project or programme, such as:
 - Local community
 - Supply chain
 - Wider stakeholder groups

The focus of the engagement plan must be to ensure that all values relevant to stakeholder needs and interests are identified and contribute to the drafting of the Mission and Strategic Objectives.

TOP TIP: The Value Toolkit Facilitator should consider conducting a number of ice-breaker activities in workshops, which could comprise asking participants to:

- state their level of experience with value-based decision making
- discuss what would be of value if they were buying some typical everyday items
- write down which Capital or Capitals they most closely align with

Activities like these are valuable in gauging the collective expertise and leanings of the group. They also make it clear if there are any biases, deficiencies or over-representation in any Capital or category – and if sustainability factors in at all. In any case, the Facilitator should use these opportunities to draw out open and transparent discussion – in any engagements – as to whether the decisions made in Toolkit activities have been unduly skewed by the nuances and idiosyncrasies of the participants. Often, groups arrive at the conclusion that they can come to a better set of value criteria by working together – the Facilitator should, as unobtrusively as possible – steer discussion in this direction.

2.2.2 Develop Strategic Objectives

Identifying the Mission: is a project needed?

The client's intention to make a change in the built environment will have arisen from a perceived need, or series of needs, that are not met by current arrangements. The project Mission encapsulates what

answering that need will achieve for the client and for the wider world. If a project is to be effective in maximising value to stakeholders, the Mission must be outcome-based rather than constructed around a predetermined solution.

If this seems obvious: it may not be. For clients used to thinking in terms of built solutions, a conscious change of perspective may be required to look at the possibility of promoting behaviour change, or think about adaptation or radical reuse, rather than pursue the known route to delivering a construction project. To ensure that the best solution is chosen at the next stage of project development – the Optioneering phase – the Mission must be such that it allows genuinely creative alternatives to be considered. Such alternatives might include promoting behavioural change or arranging for use of alternative facilities, for example, rather than a new construction project.

It is strongly recommended that the Value Toolkit is brought into use as soon a potential project need has become apparent – i.e. before the Mission has been identified. The first task for the Value Toolkit Facilitator will be to gain a thorough understanding of what lies behind the perceived need for the project. This will involve a period of research into:

- Stakeholder needs
- Strategic Value Drivers

These two areas of research are the source of the Strategic Objectives that will be agreed and prioritised by the Strategic Team, and thus provide the basis of the Value Profile for the project.

TOP TIP: In practice, it may be that the Mission is drafted before Value Toolkit activities begin. It will fall to the Value Toolkit Facilitator to judge how and when to introduce questions about an existing Mission, and to probe how the Strategic Team might refine and strengthen their own understanding of the original need that their project is required to address.

Strategic Value Drivers

Are there organisational, local, regional or national plans or strategies to which the client is committed, and which are relevant to the need this project aims to answer? What is the legislative, policy and procedural context in which the client is operating? What are the rules that they must follow?

These questions are aimed at identifying the Strategic Value Drivers that must be considered in the development, design and delivery of the project. Such drivers may also include previous documentation of stakeholder engagement: engagement plans, consultation reports, impact assessments and stakeholder analyses. They will involve both constraints and opportunities, and the Value Toolkit Facilitator will need to familiarise themselves with this landscape before entering into the first workshop with the Strategic Team.

In addition to identifying the Strategic Value Drivers, the Value Toolkit Facilitator will need to carry out an initial mapping exercise for these against the Value Definition Framework. The aim of this exercise is to enable the Facilitator to create a comprehensive record of Strategic Value Drivers and to gain a good general overview of how the Strategic Value Drivers relate to the Four Capitals and 17 categories.

The Facilitator may carry out all or part of the mapping exercise by themselves, or in consultation with various advisors, or in small groups, as appropriate to the scale and complexity of the project and the degree of expertise required to understand the drivers. This exercise will also help the Facilitator to ensure in advance of the first team workshop that they understand in detail what each of the Capitals and categories represents.

Strategic Value Drivers				Relevant Categories for Strategic Outcomes																	
What is important for built environment projects and assets in this project/programme?				Natural				Human				Social				Produced					
Type	Strategic Value Driver (referenced document)	Commitment / Recommendation / Objective (specified in the document)	Description	Air	Water	Land	Biodiversity	Climate	Resource Use	Employment	Skills & Knowledge	Health	Experience	Involvement & Influence	Equality & Diversity	Networks & Connections	Life Cycle Cost	Return	Production	Resilience & Security	
Regional	Roadmap to 2030 (Sustainability West Midlands)	Resource Efficiency	By 2030, achieve a household recycling rate of 55%, work with our stakeholders to encourage a reduction in plastic and other waste by minimising consumption in the first place and re-using and recycling what we do use						Y												
		Clean and Active Travel	We also recognise the issues of declining bus services in our rural heartlands, over-congested railways and unsafe cycling routes and SWM will work hard with our key stakeholders to make these methods of travel more viable to reduce the reliance on the car.																		
		Clean Air and Water	Less pollution, cleaner water for use and to stop biodiversity loss due to pollution	Y	Y	Y	Y														
		Natural Environment	We need to be striving to create a world where we leave the environment around us in a better state than we found it. Without a happy and healthy environment, our lives will become drastically different changing the way we live forever.	Y	Y	Y	Y	Y	Y												
		Sustainable Growth	We will work with our existing members who operate in the low carbon goods and services sector to scale up activities and share good practice.					Y													
		Social Equity and Health	Reduce gender pay inequality, reduce fuel poverty, equality in general							Y							Y				
		Sustainable Energy Use	We must continue to develop sustainable sources of energy that will power our lives moving forward.					Y													
		Adapting to Climate Change	We must be prepared for an ever-changing environment and adapt the way we live.																		

Figure 3 Example of collating and mapping Strategic Value Drivers

An example of a Strategic Value Driver would be the Government's Social Value Model, 2020, a model that supports social value throughout the procurement lifecycle. It sets out five themes with associated policy outcomes to be achieved, such as 'create new business, new jobs and new skills'. If the Social Value Model was identified as a Strategic Value Driver, then it would be collated and mapped as shown in Figure 3.

TOP TIP: In this part, applicable Strategic Value Drivers are elicited and listed. Commitments, recommendations or objectives specified *in the documents* are drawn out and mapped against the Value Definition Framework. These, along with the Mission are used to develop the Strategic Objectives.

Policies change, and they sometimes change fast. In all cases, the Facilitator must do some work in advance of workshops to check with relevant experts in the client organisation what the policy landscape looks like at that time. Remember, the Strategic Value Drivers are what the project is answerable to.

Defining Strategic Objectives

Strategic Objectives set out what the project is fundamentally required to achieve (Core Outcomes) plus important additional priorities and benefits that the client seeks to achieve through delivering the project (Value Outcomes). Some of the Core Outcomes will in any case be value-based; therefore, Core Outcomes and Value Outcomes are not mutually exclusive categories.

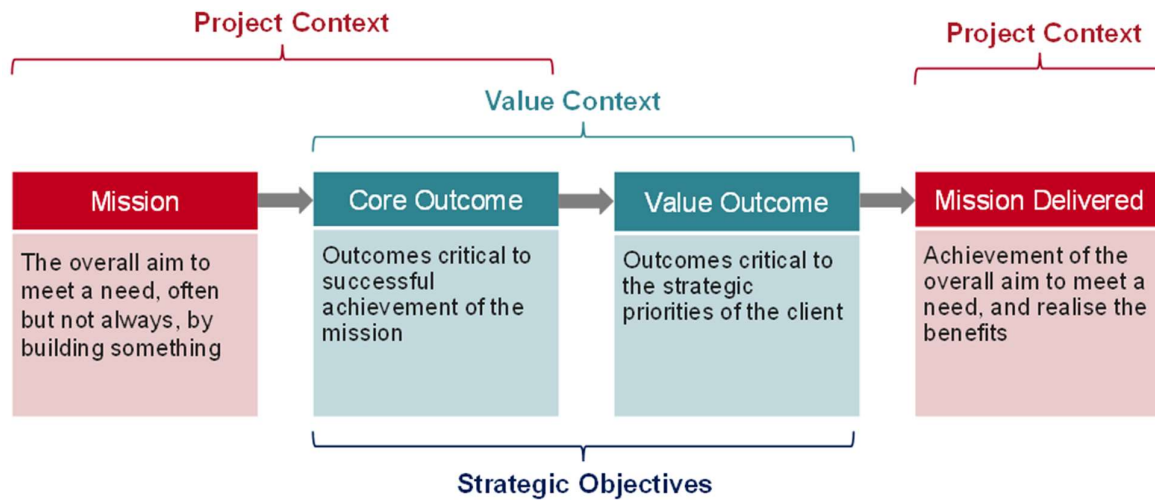


Figure 4 How Strategic Objectives relate to project context and value context

Even on extremely long and complex projects, there should not be more than 7-10 Strategic Objectives in the Strategic Objective Profile. Limiting the number of Strategic Objectives ensures that sufficient distinction can be made between the relative weights of different Strategic Objectives when they are prioritised.

Strategic Objectives will be defined, prioritised and mapped to the Value Definition Framework in a workshop or group setting. The Value Toolkit Facilitator will prepare for this workshop by developing in advance:

- A very good understanding of the Value Definition Framework itself, what each of the Capitals and categories stand for, and how they relate to the project
- Comprehensive understanding of stakeholders' desired Value Outcomes (high level)
- A list of Strategic Value Drivers and general understanding of where these map onto the Value Definition Framework
- Knowledge of the project Mission and whether or not this accurately reflects the Value Outcomes indicated by both stakeholders and drivers for the project

The Facilitator will additionally find it useful to investigate and prepare for:

- The balance of expertise available on the Strategic Team and whether there are any gaps in areas that are likely to be important, as indicated by the stakeholder values and the Strategic Value Drivers (and where these map onto the Value Definition Framework)
- When and how the client might consider risks to achieving their Strategic Objectives and integrate such risks in their risk assessment activities
- When and how the client might consider the fit between their organisation and the value goals they wish to achieve with this project

TOP TIP: In workshop environments, Facilitators must continually check back with the group and ask whether the list of outcomes actually reflects intentions. This is especially important if there are deficiencies in representation of expertise or discipline. For example, an absurd situation could arise if workshop participants solely comprise asset managers and no outcomes related to the construction phase are elicited, or vice versa.

If members of the Strategic Team have been involved in stakeholder engagement and Strategic Value Driver mapping exercises along with the Value Toolkit Facilitator, they may be aware of some or all of the suggested project outcomes before the group exercise begins. This foreknowledge will undoubtedly help the group overall to define, weight and map the Strategic Objectives; i.e. to create the Strategic Objective Profile.

The Strategic Team's first group task will be to capture the desired Core Outcomes and Value Outcomes (collectively: the Strategic Objectives). In this, they will be prompted and informed by the prior research carried out by the Value Toolkit Facilitator. The Facilitator will additionally guide discussion by relating each proposed outcome back to:

- The project Mission
- Stakeholder needs
- Strategic Value Drivers

No more than 10 Strategic Objectives should be developed and agreed: as a guide, 7-10 is optimal.

Define Strategic Objectives		
What is important for built environment projects and assets in this Programme?		
Ref	Strategic Objectives <i>From Business Case, Organisational Policy, Stakeholder Engagement...</i>	SO Category
SO-1	Increase Capacity	Core Outcome
SO-2	Maximise Educational Attainment	Core Outcome
SO-3	Improve Health and Wellbeing	Core Outcome
SO-4	Increase Resilience	Core Outcome
SO-5	Prepare for Net Zero	Value Outcome
SO-6	Protect and Enhance Biodiversity	Value Outcome
SO-7	Sustainable use of resources	Value Outcome
SO-8	Maximising Social Value	Value Outcome
SO-9	Tackling Inequality	Value Outcome

Figure 5 Example list of Strategic Objectives

TOP TIP: As outlined in Section 1.3, good health and safety outcomes are non-negotiable. They are not included within the Value Definition Framework as to do so could imply they may be traded against other outcomes. Clients need to consider construction-related risks in parallel with value-based outcomes

TOP TIP: Identifying Client SDG priorities. Many clients have begun incorporating SDGs into their Environmental, Social and Governance (ESG) policies. They may have already identified a shortlist of SDGs that they believe their organisation can best influence. At this stage, where a client is seeking to address SDGs, the Facilitator could discuss priority SDGs with the client's corporate team to align the project's Strategic Objectives to the clients ESG priorities.

2.2.3 Prioritise Strategic Objectives

Rating the importance of each Strategic Objective using the pairwise comparison tool

Having identified the Core and Value Outcomes, the Strategic Team must prioritise them. It is recommended that the analytic hierarchy process, also known as the pairwise comparison method is used for this process.

Any gaps in the Strategic Team's areas of knowledge must be addressed at this early stage, as the judgements involved in prioritising Strategic Objectives may require a broad range of expertise.

As part of the prioritisation process, it may well be revealed that some of the outcomes are not sufficiently relevant to the project's Mission to be included in the Strategic Objective Profile. A very low weighting calls into question whether that outcome should be included. These are decisions that the Strategic Team should take at this point, using all the information that they hold.

Define Strategic Objectives				
What is important for built environment projects and assets in this Programme?				
Ref	Strategic Objectives From Business Case, Organisational Policy, Stakeholder Engagement...	SO Category	Weighting	
Increase Capacity	is Significantly Less important than	Maximise Educational Attainment		
	is Significantly Less important than	Improve Health and Wellbeing		
	is Less important than	Increase Resilience		
	is Equal to	Prepare for Net Zero		
	is Equal to	Protect and Enhance Biodiversity		
	is Slightly Less important than	Sustainable use of resources		
	is Equal to	Maximising Social Value		
	is Much Less important than	Tackling Inequality		
SO-1	Increase Capacity	Core Outcome	3.43%	
SO-2	Maximise Educational Attainment	Core Outcome	21.68%	
SO-3	Improve Health and Wellbeing	Core Outcome	11.32%	
SO-4	Increase Resilience	Core Outcome	5.92%	
SO-5	Prepare for Net Zero	Value Outcome	6.95%	
SO-6	Protect and Enhance Biodiversity	Value Outcome	6.51%	
SO-7	Sustainable use of resources	Value Outcome	10.02%	
SO-8	Maximising Social Value	Value Outcome	10.60%	
SO-9	Tackling Inequality	Value Outcome	23.57%	

Figure 6 Example of the pairwise process and a list of weighted Strategic Objectives

TOP TIP: The pairwise comparison tool has been provided for Facilitators to undertake a robust pair-by-pair importance comparison of all the Strategic Objectives. In this tool, each Strategic Objective is compared with all the others, and a rating of which one is more important is assigned for every pair. Priority weightings of the Strategic Objectives are automatically calculated in the tool. Depending on the project, Facilitators may choose to do this task in isolation, followed by gaining consensus in a workshop. Otherwise, Facilitators may choose to allow relevant stakeholders access to the tool so they may all individually complete the task; again followed by a workshop to gain consensus.

Mapping Strategic Objectives to the Value Definition Framework

The next task for the Strategic Team is to map the prioritised Strategic Objectives against the Value Definition Framework. No ranking or numerical value need be given, and there is no limit to the number of applicable categories for each Strategic Objective. Working through the list, Capital by Capital, the team should decide which categories that Strategic Objective is relevant to. The team should keep this process as simple as possible: there is no benefit in attempting to stretch the definition of the category or the intention of the objective to achieve a fit.

Define Strategic Objectives				Strategic Objective Mapping																
What is important for built environment projects and assets in this Programme?				Relevant Categories for Strategic Objectives																
Ref	Strategic Objectives <small>From Business Case, Organisational Policy, Stakeholder Engagement...</small>	SO Category	Weighting	Natural				Human				Social			Produced					
				Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills & Knowledge	Health	Experience	Involvement & Influence	Equality & Diversity	Networks & Connections	Life Cycle Cost	Return	Production	Resilience & Security
SO-1	Increase Capacity	Core Outcome	3.43%														Y		Y	
SO-2	Maximise Educational Attainment	Core Outcome	21.68%							Y	Y									
SO-3	Improve Health and Wellbeing	Core Outcome	11.32%					Y				Y								
SO-4	Increase Resilience	Core Outcome	5.92%												Y					Y
SO-5	Prepare for Net Zero	Value Outcome	6.95%	Y	Y			Y												Y
SO-6	Protect and Enhance Biodiversity	Value Outcome	6.51%						Y											
SO-7	Sustainable use of resources	Value Outcome	10.02%			Y		Y												
SO-8	Maximising Social Value	Value Outcome	10.60%							Y										
SO-9	Tackling Inequality	Value Outcome	23.57%							Y		Y			Y					

Figure 7 Example of Strategic Objectives mapped to the Value Definition Framework

TOP TIP: As with prioritising the Strategic Objectives, the mapping process should generate discussion as an integral part of the activity. The Facilitator will be aware that the team's discussion is itself purposeful and is at the core of the Value Toolkit's intention, and will encourage the team in considering the implications of how the Strategic Objectives are categorised.

TOP TIP: The tasks of rating the importance of the Strategic Objectives and mapping them against the Value Definition Framework can be undertaken in any order. Some audiences may feel it more beneficial to map them to the Value Definition Framework before undertaking the rating. This illustrates that some steps in the overall Integrated Process may need to be iterative,

If it becomes clear that further expertise is needed to understand the intent of any of the objectives, this should be sought before a final decision is made. If either the discussion or the results indicate that some of the weightings assigned to the Strategic Objectives need adjusting, then the necessary adjustment should be discussed and made.

When all of the 7-10 Strategic Objectives are fully mapped against the Value Definition Framework, it will start to become visually clear towards which of the Four Capitals the project is weighted. High priority Capitals may have many category boxes marked on the Value Definition Framework, although the weightings will be a better indication of the priority. If any one of the Four Capitals – Human, Social, Environmental and Produced – turns out to be prominently under-represented, or indeed over-represented at this stage, the Value Toolkit Facilitator should raise this with the Strategic Team to ensure that nothing has been missed.

There may be completely logical and legitimate reasons for an imbalance: it is not necessary or practicable that every project will serve every one of the Four Capitals equally. However, gaps can arise for less legitimate reasons, such as a lack of expert advice or advocacy in one Capital area, and the Value Definition Process should be used to flag such imbalances so that the client can take steps to correct them.

Finally, in the course of this discussion, the Value Toolkit Facilitator should take every opportunity to encourage the client to consider the relationship of the Strategic Objectives to their organisation's:

- approach to risk
- Client Profile.

Activities relevant to these two areas will be undertaken as part of the Client Approach stream during the same project phase, and the participants in those activities will need to be fully informed about the Value Definition and Measurement activities as relevant to their decisions. If members of the Strategic Team are involved in both streams of activity during this phase, this will help to keep the achievement of the Strategic Objectives central to every area of project planning.

2.2.4 KEY DELIVERABLE: Strategic Objective Profile

Iterative check of the completed Strategic Objective Profile

When the Value Definition Framework mapping is complete, the Value Toolkit Facilitator should give it a final review in the light of the discussions that have taken place.

- Is the priority given to each Strategic Objective still correct, or should there be adjustments made to the weighting?
- Are there the right number of Strategic Objectives with which to go forward? Is this quantity sufficient for the project and/ or feasible for the client organisation?
- If any one Capital appears to have been under-served, are there good reasons or does the imbalance need to be dealt with (e.g. by consulting a subject matter expert in the under-served area)?

This exercise can be carried out by the Value Toolkit Facilitator with or without other members of the Strategic Team, as appropriate to circumstances. However, the aim is to go forward with a robust and achievable Strategic Objective Profile, arrived at by consensus, as this will provide the foundation for the Outcome Drivers to be identified in the next phase of project development.

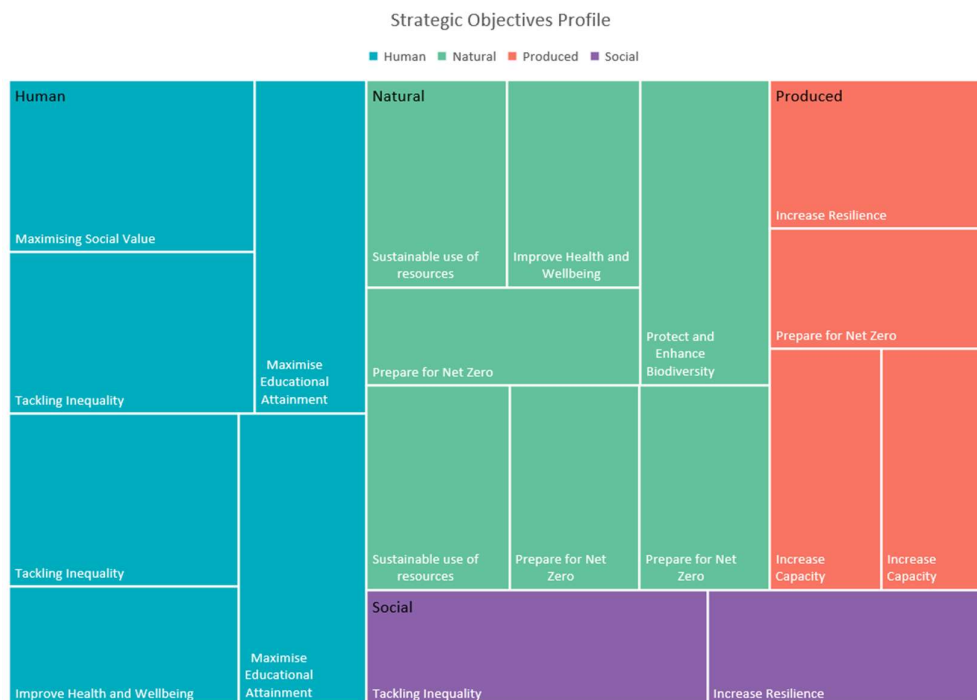


Figure 8 Example of a completed Strategic Objective Profile

TOP TIP: The example of a Strategic Objective Profile above shows the relative importance of each Strategic Objective (listed on the left) to every project-relevant category within each of the Four Capitals (listed on the right). The relative thickness of the lines connecting the two sides of the diagram give an instant visual indication of the relative importance of each Strategic Objective under each Capital.

2.2.5 Evaluate options using high-level performance indicators

During the Need phase, high-level performance indicators may be set to help decide whether there is a case for change, and whether a project or programme of work is the intervention required. This is an optional step that will be relevant in some contexts and not others.

The high-level performance indicators selected must align with Strategic Objectives in the Strategic Objective Profile, but need not cover all of them. The performance indicators will be selected only for those areas that are material to making decisions about the relative benefits of a long-list of project options.

At this stage, there is likely to be little data available to enable the benefits of the long-list of options to be measured with any precision. Therefore, although Metrics that can be measured are desirable, it is

acceptable that they should be either qualitative, or less rigorous than those used in the more formal evaluation and monitoring that takes place in later phases.

Define Strategic Objectives				
What is important for built environment projects and assets in this Programme?				
Ref	Strategic Objectives <i>From Business Case, Organisational Policy, Stakeholder Engagement...</i>	High-level Performance Indicators <i>How the client currently/plans to measure success against Strategic Objectives</i>	SO Category	Weighting
SO-1	Increase Capacity	More Schools and Universities	Core Outcome	3.43%
SO-2	Maximise Educational Attainment	Better Teaching	Core Outcome	21.68%
SO-3	Improve Health and Wellbeing	Learner wellbeing, healthy environment	Core Outcome	11.32%
SO-4	Increase Resilience	Utilisation, Downtime	Core Outcome	5.92%
SO-5	Prepare for Net Zero	Operational Carbon, Embodied Carbon	Value Outcome	6.95%
SO-6	Protect and Enhance Biodiversity	Estate Biodiversity Points	Value Outcome	6.51%
SO-7	Sustainable use of resources	Lower consumption & sustainable sourcing	Value Outcome	10.02%
SO-8	Maximising Social Value	Economic uplift	Value Outcome	10.60%
SO-9	Tackling Inequality	Gender, Neurological, Minority Groups	Value Outcome	23.57%

Figure 9 Example of high-level performance indicators as related to Strategic Objectives

2.3 Client Approach

2.3.1 Form Strategic Team

From the earliest possible stage, implementation and governance of the Value Toolkit will be the responsibility of a **Strategic Team**, which will include the Value Toolkit Facilitator. This team will remain in place throughout the entire investment lifecycle. The team must have direct access to the client board and be of a level of seniority and expertise to warrant the board's trust and reliance.

The Strategic Team is likely to consist of clients, their in-house experts, and external advisors. Depending on the scale and complexity of both project and client organisation, there is likely to be overlap between membership of the Strategic Team and project teams – indeed, this is likely to be the case for all teams involved in the Value Toolkit. If possible, members of the Strategic Team should be involved in setting the project Mission and engaging with stakeholders. At later project stages, it is likely that legal and procurement specialists will be needed on the team.

At the start of every new project phase and the appointment of every team, it is critical that the Value Toolkit outputs – Strategic Objectives, Value Profile and Value Scorecards – are transferred to the new personnel, with adequate training and explanation in how to use them, and why they are important. This will be the responsibility of the Value Toolkit Facilitator and Strategic Team. To protect the Strategic Objectives and capitalise on the client's early investment in value, the client therefore needs to provide high-level personnel with decision making capacity to be part of the Strategic Team throughout the project.

The Strategic Team is formed and engaged during the Need phase and is active in primary Value Toolkit processes for the duration of the project or programme. It facilitates the appointment of the Concept Team at the beginning of the Optioneering phase, Design Team at the beginning of the Design phase and Delivery Organisations at the end of Design phase. The primary Strategic Team's effort commences from the beginning of the Need phase into the Optioneering phase, and with major contributions during the Delivery and Operation phases across the entire Value Toolkit Integrated Process.

2.3.2 Identify strategic risks

During the Need phase, and particularly as the Strategic Objectives are identified, the client will need to consider the strategic risks involved and begin to plan their ongoing risk management strategy accordingly. Including the Value Toolkit Facilitator in this activity will ensure good communication of the content of discussions about Strategic Objectives vs. strategic risks, and how they interact and may be planned for.

Risk identification and management should be carried out, going forward, by a mixed team incorporating decision makers, commercial, design and delivery personnel, reporting directly to client leadership. This team will be charged with keeping abreast of the evolving, holistic, risk landscape for the whole project, constantly scanning for the appearance of unexpected threats to the project and ensuring that any key risks that could lead to the project failing to achieve its goals are mapped, identified, investigated and actively mitigated. Being part of the Strategic Team will in any case give the client a much greater awareness of the overall landscape of risk and opportunity.

It is recommended that threats and opportunities workshops are undertaken periodically to refresh, update and ensure a common understanding throughout the client leadership of how each risk is being treated. Risk management workshops of this nature should take place before every major project milestone/decision point as a minimum, and ideally not less than twice annually. Their remit is illustrated in Figure 10 below.

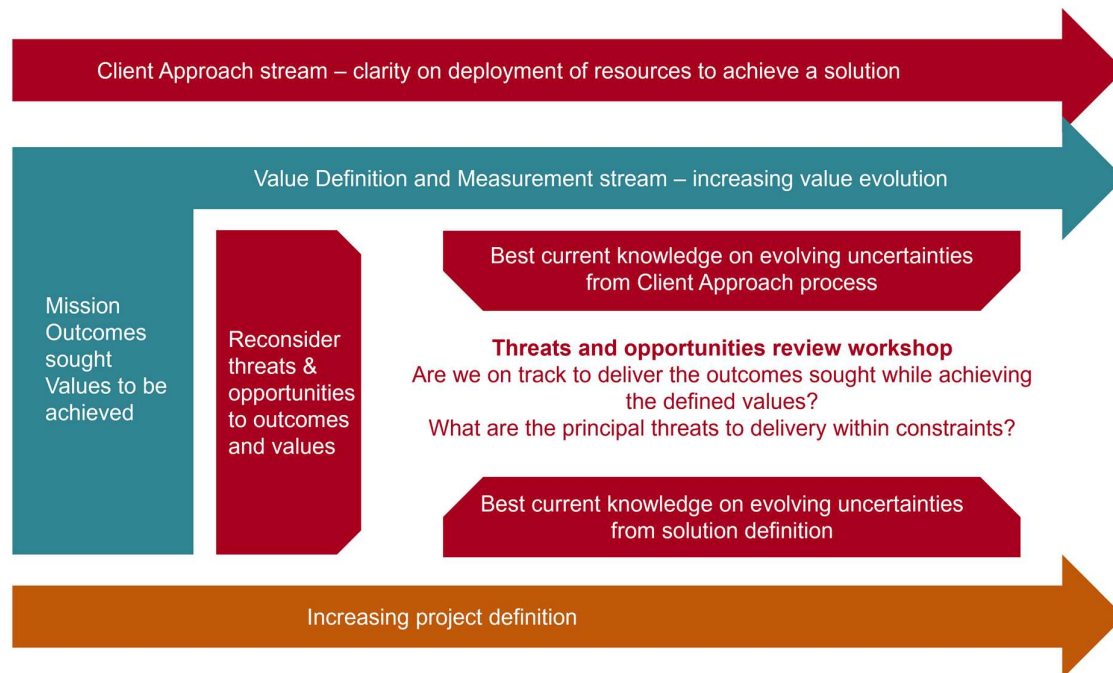


Figure 10 Threats and opportunities workshop

The brief of the workshop should be to evaluate a wide range of risks and opportunities, and take time to come to a consensus for the project's best plan to effectively deal with each of the more significant ones. Advance work by the risk team will be necessary to arrive at the workshop with a well-organised agenda.

In the earlier project planning phases – which may be long – the risk workshop can usefully incorporate foresighting techniques, such as the 'premortem' in which the team works backwards from an imagined future in which the project has failed. Each participant creates an individual narrative as to why this happened and then compares results with the rest of the team. This kind of exercise helps the team to avoid the pitfalls of 'group exercises think' in attempting to identify risks that have not yet materialised.

Information arising from in-depth exercises of this nature will both feed and be fed by the work that is carried out along the Value Definition and Measurement stream.

TOP TIP: Doing the Value Toolkit does not mean you need two risk registers – one for the Toolkit and one for the project. There is always only one risk register developed and one risk management process undertaken.

2.3.3 KEY DELIVERABLE: Client Profile

Towards the end of the Need phase, or at the beginning of the Optioneering phase, there will be clients that benefit from carrying out an analysis of their own organisation in preparation for the project they are about to undertake. This is the Client Profile, and it involves looking at current client characteristics and the project or programme deliverability environment.

The Client Profile is informed by such factors as the organisation's existing values, how many projects it can or is scheduled to undertake, its capacity, its other activities and responsibilities, how it is funded, and how long it has been in operation in its current form. It helps clients to understand more about their organisation's ability to meet the Strategic Objectives, both as it operates currently and as it would wish to operate in future.

The exercise of client profiling will often help to forge a leadership group – particularly one that has not previously worked together – into a united team by enabling them to integrate their different perceptions and experience productively. This is extremely useful not only in terms of agreeing a Mission and (later) selecting the optimum Delivery Model, but also for decisions to be made about the relative weighting of Strategic Objectives. Thus, there is a synergy between activities in the Client Approach stream and the Value Definition and Measurement stream.

New organisations, or organisations undertaking a type of project that is new to them, may more readily recognise the purpose a Client Profile will serve for them in setting the project up for success. However, the process of creating a Client Profile also provides experienced and well-established organisations with an opportunity to explore how strategic changes may help them to do things better.

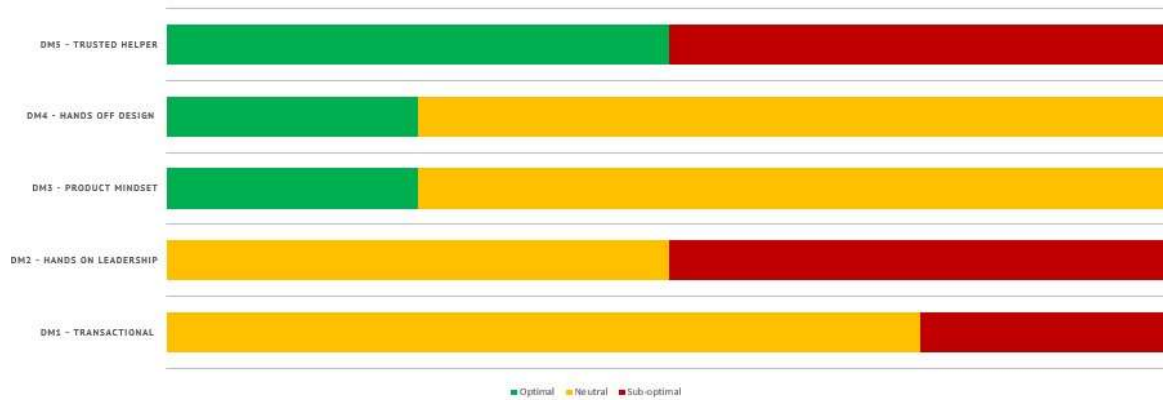
Client profiling therefore requires a skilled facilitator and should not be rushed. Discoveries made in the process of assessing the Client Profile often prove as useful to the project as the specifics that are under analysis.

Furthermore, Client Profile interacts strongly with choice of Delivery Model, which itself is key to delivering on the project's Value Profile. While the Client Profile is just one of several factors at play in selecting the optimum Delivery Model for the project, a discrepancy between the expected Delivery Model and the one that appears to be the best fit for the Client Profile may serve as an early warning of other aspects of the organisation and/or stakeholder environment that need to be managed if the project is to be successful.

While client profiling does not fall within the remit of the Value Toolkit Facilitator, it is nonetheless useful for the Facilitator to liaise proactively with the client representatives involved. The Facilitator will have information about the project's Strategic Objectives that are valuable to the client in analysing its organisation, and good understanding of the Client Profile will help the Facilitator to direct the Strategic Team towards areas of client weakness and strength that may affect Value Outcomes.

Finally, those personnel responsible for risk on behalf of the client will benefit from early identification of both threats to strategic outcomes and opportunities for improving those outcomes, deriving from the client's own strengths and weaknesses.

For more detail about the Client Profile, please read [Appendix B Client Profiling and the Value Toolkit](#).



Situation	Test	Statement	Yes / No	DM1 - Transactional	DM2 - Hands on Leadership	DM3 - Product Mindset	DM4 - Hands off Design	DM5 - Trusted Helper
				0	0	1	1	2
Legacy	Test 1: Corporate Memory/ Corporate Potential	The client operating model does not enable the client to take an active and hands-on role in the management of its assets (policies, processes, systems). The client operating model makes it dependent on others to function effectively.	Yes	2	3	2	2	1
		The client operating model enables the client to take a partially active and hands-on role in the management of its assets (policies, processes, systems). The client operating model makes it fairly dependent on others to function effectively.	No					
		The client operating model enables the client to take an active and hands-on role in the management of its assets (policies, processes, systems). The client operating model makes it fairly autonomous and only partially dependent on others.	Yes	2	2	2	2	3
		The client operating model enables the client to take an active and hands-on role in the management of its assets (policies, processes, systems). The client operating model empowers the client organisation to be entirely autonomous if it so desires.	Yes	2	2	2	2	3
		The client's make vs buy behavioural culture can be described as 'a recent corporate history of a high degree of supplier involvement to function effectively.'	No					
		The client's make vs buy behavioural culture can be described as 'a recent corporate history of a moderate degree of supplier involvement to function effectively.'	No					
		The client's make vs buy behavioural culture can be described as 'a recent corporate history of a low degree of supplier involvement to function effectively.'	No					

Figure 11 Excerpt from the Client Profile Tool

2.4 Business Case development: Need phase

When following the HM Treasury's Green Book and 'Five Case Model' processes, all of the steps within the Value Toolkit Need phase will be considered so there are no specific additional steps required. It should be noted however that some of the terminology is slightly different.

Although there are no Value Toolkit-specific steps in this stage, there are some steps where the Value Toolkit requires a specific method to be used to ensure alignment with the process in later phases. As a result the benefits of having a Value Toolkit Facilitator involved in this stage should not be underestimated and these early discussions will also provide important context for use of the Value Toolkit in later phases.

The primary output from the Green Book process in the Need phase is preparation of the Strategic Outline Case (SOC). The SOC will establish the case for change and provide a 'preferred way forward' for senior management's approval prior to going onto the more detailed planning stage.

In preparation for the SOC, the Strategic Team will undertake a strategic assessment to confirm how the project supports national, regional, local or organisational policies, initiatives and targets; fits within the organisation's business strategy and plans; and aligns with other projects and programmes in the organisation's strategic portfolio. This process aligns with the Value Toolkit preparatory step of identifying and mapping Strategic Value Drivers to the Value Definition Framework. This mapping is then used to define the project's Mission and to identify the 7-10 investment objectives that will form the Strategic Objectives (Core and Value Outcomes). This is likely to be an iterative process including engagement with stakeholders. From this mapping and consultation, the Strategic Team will be able to make the case for change, including agreeing the strategic context; determining the investment objectives (Strategic Objectives), existing arrangements and business needs; determining the potential scope for the project; and determining the project benefits, risks, constraints and dependencies.

The Green Book suggests several methods for prioritising the investment objectives. The Value Toolkit recommends the analytic hierarchy process (AHP), also known as pairwise comparison, as an objective means to determine the relative priority of the Strategic Objectives. This approach allows the weighting to be used in further phases of the Value Toolkit. The Value Toolkit includes a simple spreadsheet which enables the pairwise comparison to be completed by multiple participants.

Once the Strategic Objectives have been prioritised, a Strategic Objective Profile is produced which provides a graphical representation of what value means to the client through a mapping of the Strategic Objectives onto the Value Definition Framework.

The high-level KPIs created as part of the definition of the investment objectives (Strategic Objectives) can be used alongside their weightings to assist in evaluating the relative benefits of different options, and identifying the shortlisted options recommended to be taken forward into Concept Design Optioneering.

These outputs from the Value Toolkit can be used in the SOC to demonstrate the need for change.

At the end of this phase, there must be a clear understanding of the critical path for the delivery of the programmes and projects within the organisation's strategic portfolio, including anticipated outcomes,

outputs, milestones, timescales, benefits and risks. Moreover, there must be a detailed understanding of the business needs and service opportunities that the project is seeking to address.

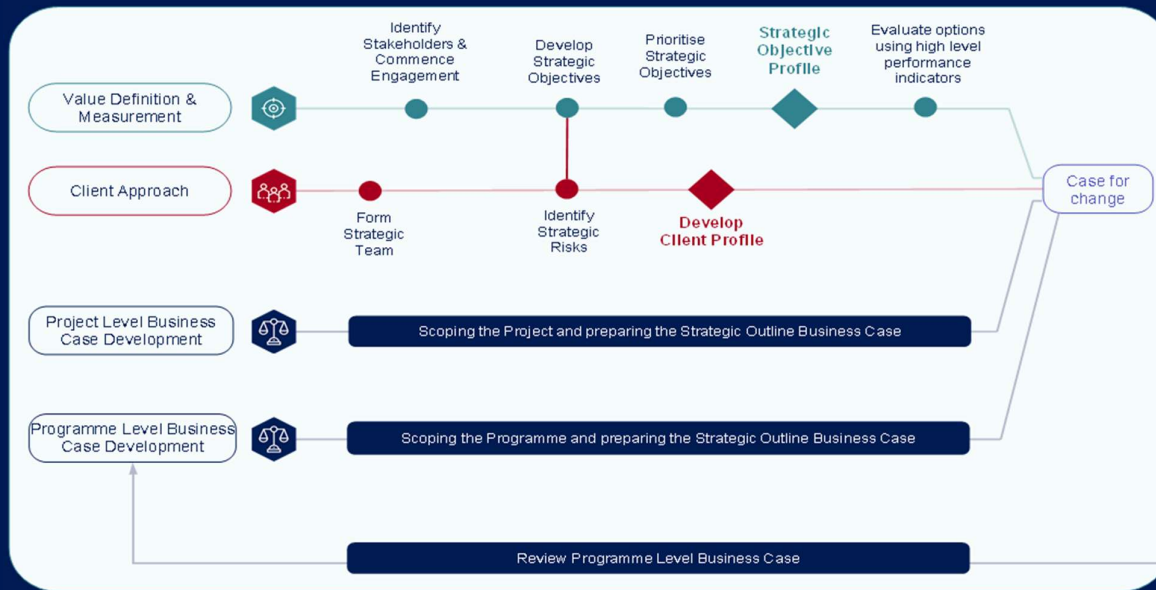


Figure 12 Need phase activities with Green Book overlay

3.0 Optioneering phase

3.1 Overview

The client uses this phase to examine the pros and cons of a short list of options for achieving the Strategic Objectives that were agreed in the Need phase. If at any point, circumstances change or new information is uncovered that means any of the Strategic Objectives or indeed, the need itself may have changed, then the Strategic Team should revisit the steps outlined in the previous chapter.

The Optioneering phase may be long. It is complete only when the best viable option for achieving the Mission has been identified.

By the end of this phase, the client will have identified the Outcome Drivers for each Strategic Objective in each category, and used these to create a Value Profile. The Value Profile provides a visual representation of the agreed and calculated hierarchy of values for the project. This is used as the basis for Value Scorecards that facilitate monitoring and measuring progress against the Value Outcomes through the life of the project. Critically, they inform every choice, including the selection of the Delivery Organisation(s), to keep the Value Profile at the heart of project design, delivery and use.

After the Value Profile is agreed, Measures of Success for each Outcome Driver are developed. These provide the Metrics, Targets and Performance Ranges for specific Value Scorecards that will be developed during Optioneering and in each subsequent phase to support a wide range of value-based decisions.

Client Approach activities in this phase begin with the appointment of the Concept Team. As the phase progresses, the implications for Client Approach include the need to appraise risks relative to the Outcome Drivers, and to begin market consultation to assess their viability.

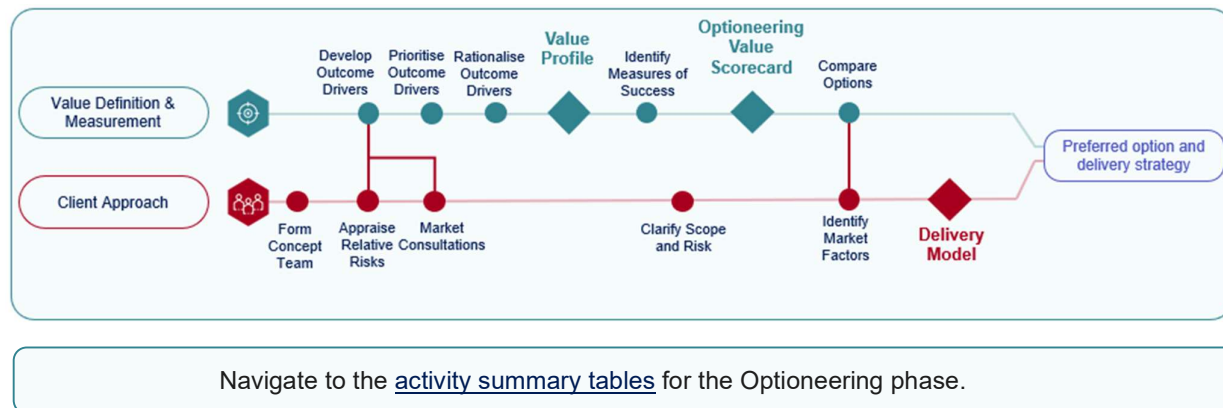


Figure 13 Value Toolkit activities in the Optioneering phase

3.2 Value Definition and Measurement

3.2.1 Develop Outcome Drivers

From the Strategic Team's previous activities, the client holds a weighted list of Strategic Objectives for the project (the Strategic Objective Profile). These consist of the Core and Value Outcomes required to achieve the Mission and meet the client's strategic priorities. How are these outcomes to be achieved?

This is what Outcome Drivers are: the means of achieving the Strategic Objectives. They are tactical statements of *how* each Strategic Objective is to be achieved in the context of the project, written in terms that are useful and familiar to the designers, engineers and delivery teams who will be taking the project forward.

Outcome Drivers must be:

- Within the client's influence
- Measurable
- Non-prescriptive as to means of delivery

The Strategic Team retains responsibility for the Value Toolkit process, working with the Concept Team to provide the technical perspectives necessary for developing the Outcome Drivers. The Concept Team will include consultants and experts from external organisations, sufficient to identify and assess Outcome Drivers for the shortlisted options. On large or complex projects, the Concept Team may therefore be extensive.

Mapping Outcome Drivers to Strategic Objectives

For every category mapped to one or more Strategic Objectives, the team will need to identify a way to achieve the objective(s) in that category. This is the Outcome Driver, and it may be used to achieve one or several Strategic Objectives.

The Value Toolkit Facilitator should prompt participants to identify Outcome Drivers that:

1. **Relate to a change in the Capital** – whether contributing a benefit or mitigating a negative impact, rather than relating to an output (i.e. something that is done, without reference to its impact).
2. **Allow for a variety of solutions** – to avoid constraining choice of options too early in project development, the Outcome Driver should be related to the intended change rather than to a specific solution. For example, an outcome related to low whole-life carbon (i.e. an impact) is preferable to an outcome requiring the use of solar panels (i.e. an output).
3. **Relate to the Strategic Objective** – In considering the category where the impact or outcome is required, the team should continue to bear in mind the Strategic Objective that relates to that category.
4. **Are measurable** – It should be possible to measure the Outcome Driver in a way that allows a Performance Range to be set. Any outcomes that can only be measured as a yes/no answer are better suited to inclusion in technical performance requirements.

5. **Are achievable** – within the sphere of influence of the client as part of that project or programme.
6. **Cover delivery and/or use phases** – the outcomes should be related to the long-term operation of the solution, as well as its short-term delivery.

When the exercise is complete, there must be an Outcome Driver for every category to which a Strategic Objective has been mapped. Some Outcome Drivers will apply to more than one Strategic Objective.

Although much about project design and delivery is still to be decided, Outcome Drivers must be specific enough to allow design and delivery teams to use them to develop Metrics and Value Scorecards. Remember – the purpose of the Value Toolkit is to support discussion and decisions surrounding value, not to tick the boxes.

It may take some time to identify meaningful Outcome Drivers for every category relevant to the Strategic Objectives, and expert advice will almost certainly be needed. The Value Toolkit Facilitator must therefore ensure that experts in the relevant categories across all Four Capitals participate in the workshop at which Outcome Drivers are identified. The Facilitator should support and prompt participants throughout the process of identifying Outcome Drivers to make sure that they bear in mind:

- The continuity in rationale from Mission to Strategic Value Driver to Strategic Objective to Outcome Driver
- The necessity to be able to find a meaningful Metric with which to assess the Outcome Driver going forward
- The process of development is intended to be iterative, particularly at these early stages, and if inconsistencies are discovered or circumstances change, the right approach is to revisit earlier decisions rather than twist the process to fit in with tasks that were set earlier and are no longer fit-for-purpose.

The eventual list of Outcome Drivers at this stage should number no more than 15-20, and be distributed between the relevant Capitals and categories of the Value Definition Framework.

TOP TIP: Outcome Drivers and SDG Targets Each SDG is supported by a set of targets that describe the specific areas of development needing attention to achieve the SDG. The SDGs can be used to help guide the project to become a more sustainable development. SDG targets can be used as an Outcome Driver. The SDG targets shortlist provided in Appendix F can be reviewed to identify those relevant to the project.

Alternatively, the project's Outcome Drivers can be retrospectively aligned to SDG targets. For any project seeking to add value, it is likely that the identified outcome drivers will automatically align or partially align to a target. A template has been provided in Appendix F for facilitators to review the outcome drivers and determine if it is contributing to an SDG target.

STRATEGIC OBJECTIVES From Business Case, Organisational Policy, Stakeholder Engagement...		Value Definition Framework																		
		Natural						Human				Social				Produced				
		Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement & Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience & Security		
Core Outcomes	Increase Capacity							Y	Y	Y					Y		Y	Y		
	Maximise Educational Attainment																			
	Improve Health and Wellbeing				Y					Y	Y									
	Increase Resilience											Y						Y		
Value Outcomes	Prepare for Net Zero					Y	Y											Y		
	Protect and Enhance Biodiversity						Y													
	Sustainable use of resources			Y		Y	Y													
	Maximising Social Value							Y												
	Tackling Inequality							Y		Y	Y		Y							
		Minimise air pollution through delivery	Design for net zero carbon in operation	Minimise the embodied carbon of the asset	Ensure low water consumption through construction and operation	Manage resources in an efficient and sustainable manner, where waste is minimised and resources are safeguarded to meet future needs	Ensure sufficient waste management capacity and an adequate supply of minerals are made available to meet our needs to 2030	Protect and Enhance Biodiversity across the site	Provide sustainable employment opportunities for students	Target spend to maximise economic impact	Provide relevant training opportunities for students	Provide an environment which maximises the wellbeing of all in the community	Protect and enhance the wellbeing of disadvantaged		Increase the diversity of the workforce in relation to gender and minority groups	Create an efficient asset that minimises lifecycle costs	Maximise productivity in delivery to accelerate additional capacity	Standard, repeatable design that minimises duplication of effort across the estate portfolio	Embed climate resilience into the design of the asset	Design for ease of repair and adaptability
		Outcome Drivers																		

Figure 14 Relating Outcome Drivers to Strategic Objectives using the Value Definition Framework

TOP TIP: Anywhere a Strategic Objective is mapped against a category, workshop participants must develop an Outcome Driver statement. In the example above, 'Prepare for Net Zero' is mapped against the Natural Capital categories of 'Air' and 'Climate'. Therefore, an Outcome Driver has been written for 'Air', and in this case, it was felt that two Outcome Drivers were needed for 'Climate'. These relate to two different phases of the project: Design and Operation. This process must be repeated for all applicable categories.

3.2.2 Prioritise Outcome Drivers

Prioritising Outcome Drivers is a critical step that must not be rushed or undertaken on the basis of supposition, wishful thinking or other bias, whether positive or negative. Expert advice should be sought to support the team in assigning the weightings from which the Value Profile is generated.

As outlined in the Client Approach section, input should come from the client's risk assessors and from the market, as well as the Concept Team, subject matter experts and consultants with experience of similar projects or programmes.

The Team will assign a rating between 1 and 5 to each Outcome Driver, based on the potential of the Outcome Driver to *influence the Strategic Objective in that particular category and in the context of this particular project*.

A score of 1 = least capacity to influence; 5 = most capacity to influence.

Table 2 Rating Outcome Drivers on their capacity to influence the Strategic Objective

Low influence (1)	High influence (5)
The Outcome Driver has limited or tangential control over achieving the objective.	The Outcome Driver has complete control over achieving the objective.
For example, an Outcome Driver on creating opportunities for employing ex-offenders is of limited influence to the client achieving their objective to reduce re-offending.	For example, an Outcome Driver on carbon reduction will have a high alignment with an objective of achieving net zero target.

STRATEGIC OBJECTIVES From Business Case, Organisational Policy, Stakeholder Engagement...		Value Definition Framework																			
		Natural						Human						Social			Produced				
		Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement & Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience & Security			
Core Outcomes	Increase Capacity							2	1	2						3		3			
	Maximise Educational Attainment																		3		
	Improve Health and Wellbeing					1				3	1										
	Increase Resilience												2						1		
Value Outcomes	Prepare for Net Zero	1	4	3		2	1												2		
	Protect and Enhance Biodiversity							3											3		
	Sustainable use of resources			2		3	3														
	Maximising Social Value								3												
	Tackling Inequality							1													
		Minimise air pollution through delivery	Design for net zero carbon in operation	Minimise the embodied carbon of the asset	Ensure low water consumption through construction and operation	Manage resources in an efficient and sustainable manner, where waste is minimised and resources are safeguarded to meet future needs	Ensure sufficient waste management capacity and an adequate supply of minerals are made available to meet our needs to 2030	Protect and Enhance Biodiversity across the site	Provide sustainable employment opportunities for students	Target spend to maximise economic impact	Provide relevant training opportunities for students	Provide an environment which maximises the wellbeing of all in the community	Protect and enhance the well-being of disadvantaged		Increase the diversity of the workforce in relation to gender and minority groups	Create an efficient asset that minimises lifecycle costs		Maximise productivity in delivery to accurate additional capacity	Standard, repeatable design that minimises duplication of effort across the estate portfolio	Embed climate resilience into the design of the asset	Design for ease of repair and adaptability
		Outcome Drivers																			

Figure 15 Example of rating of Outcome Drivers' ability to influence Strategic Objectives

TOP TIP: To build on the example described in Figure 14 earlier, Figure 15 (above) shows how the Outcome Driver, 'Minimise embodied carbon', has been rated at 3/5 in its ability to influence the Strategic Objective, 'Prepare for Net Zero'. The Outcome Driver, 'Design for Net Zero' has been rated 4/5 in its ability to influence the same Strategic Objective, whereas 'Minimise air pollution through delivery' is rated only 1/5. Repeat this 1-5 rating process for every Outcome Driver against every Strategic Objective to which it is aligned.

It is recommended that prioritising is a workshop-based exercise to facilitate discussion and build consensus. If the group is large, it may be beneficial to ask individuals to do their own prioritisation prior to the workshop. The Value Toolkit Facilitator will have prepared by gathering as much relevant expertise, whether through research or the presence of experts at the workshop, to enable all Outcome Drivers to be meaningfully discussed and prioritised.

When every Outcome Driver has been assigned a rating against every Strategic Objective to which it applies, the final weighting of the Outcome Driver will be automatically calculated. The final weighting will be a combination of the weight of the Strategic Objective and the rating of the Outcome Driver. In other words:

- An Outcome Driver with the maximum influence (5) over the highest priority Strategic Objective will have maximum priority.
- An Outcome Driver with maximum influence (5) over the lowest priority Strategic Objective will have much lower priority.
- An Outcome Driver with minimum influence (1) over the lowest priority Strategic Objective will have lowest priority of all.

Value Definition Framework																			
Ref	Strategic Objectives	High-level Performance Indicators	SO Category	Weight	Weighted Strategic Objectives														
					Natural	Human	Social	Produced											
					AI	Clim	Wtr	Lan	Resource Use	Biodiversity	Employment	Skills & Knowledge	Health	Experience & Engagement	Influence	Equality & Diversity	Networks & Connections	Life Cycle Cost	Return
SO-1	Increase Capacity	More Schools and Universities	Core Outcome	8.90%														3	3
SO-2	Maximise Educational Attainment	Better Teaching	Core Outcome	12.36%							2	1	2						
SO-3	Improve Health and Wellbeing	Self-Harm, Violence	Core Outcome	3.15%					1				3	1					
SO-4	Increase Resilience	Utilisation, Downtime	Core Outcome	10.34%												2			1
SO-5	Prepare for Net Zero	Operational Carbon, Embodied Carbon	Value Outcome	8.82%	1	4	3		2	1									2
SO-6	Protect and Enhance Biodiversity	Estate Biodiversity Points	Value Outcome	13.03%						3									
SO-7	Sustainable use of resources	Lower consumption & sustainable sourcing	Value Outcome	3.63%			2		3	3									
SO-8	Maximising Social Value	Economic uplift	Value Outcome	13.37%							3								
SO-9	Tackling Inequality	Gender, Neurological, Minority Groups	Value Outcome	13.03%							1		1	2		1			
					1-5 influence scores of Outcome Drivers														
					Minimise air pollution through delivery														
					Design for net zero carbon in operation														
					Minimise the embodied carbon of the asset														
					Ensure low water consumption through construction and														
					Manage resources in an efficient and sustainable manner														
					Protect and enhance biodiversity across the site														
					Provide sufficient waste management capacity and an efficient														
					Provide sustainable employment opportunities for stakeholders														
					Target spend to maximise economic impact														
					Provide relevant training opportunities for students														
					Provide an environment which maximises the wellbeing of stakeholders														
					Protect and enhance the well-being of disadvantaged stakeholders														
					Increase the diversity of the workforce in relation to gender														
					Encourage greater DEI - teaching students about social														
					Create an efficient asset that minimises lifecycle costs														
					Maximise productivity in delivery to generate additional														
					Embed climate resilience into the design of the asset														
					Design for ease of repair and adaptability														
					Outcome Drivers														
					0.09	0.35	0.24	0.19	0.00	0.54	0.39	0.25	0.67	0.25	0.41	0.35	0.00	0.00	0.00
					1.5%	6.0%	4.5%	3.3%	0.0%	9.5%	6.4%	4.2%	11.4%	4.2%	6.9%	6.0%	0.0%	0.0%	0.0%
					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
					1.5%	6.0%	4.5%	3.3%	0.0%	9.5%	6.4%	4.2%	11.4%	4.2%	6.9%	6.0%	0.0%	0.0%	0.0%
					1.5%	6.0%	4.5%	3.3%	0.0%	9.5%	6.4%	4.2%	11.4%	4.2%	6.9%	6.0%	0.0%	0.0%	0.0%
					1.4%	10.4%	8.8%	6.6%	0.0%	15.8%	10.5%	6.9%	17.8%	6.9%	10.5%	9.0%	0.0%	0.0%	0.0%
					37.78%														
					32.66%														
					5.93%														
					23.63%														

Figure 16 Example of how the ratings of individual Outcome Drivers against weighted Strategic Objectives are distributed between categories and Capitals in the Value Profile

TOP TIP: In workshop environments, allowing all participants to write 1-5 numbers on stickers and then placing them on a large wall display is often effective, firstly at giving everyone a voice and secondly to see if there is naturally a consensus, or whether considerable discussion is needed. In any case, the Facilitator will use this information and record the final numbers, usually straight afterwards, or during a break if timings allow.

The resulting prioritised list of Outcome Drivers is the draft Value Profile for the project... but there is one further step to go: rationalisation.

3.2.3 Rationalise Outcome Drivers

It is unlikely that Outcome Drivers will be directly duplicated during development, but it is possible that some overlap could occur. For example, an Outcome Driver on improving air quality could overlap with an Outcome Driver for reducing carbon. It is therefore wise to review and ensure these overlaps do not result in double-counting. Review may begin before the prioritising exercise and should certainly be completed afterwards, once the Outcome Drivers have been fully prioritised.

Some Outcome Drivers will have attained such low scores that a decision will need to be taken as to whether they are of strategic importance to the project. These Outcome Drivers will be aimed at achieving lower priority strategic outcomes, which they will have been judged to have a low ability to influence. If the number of Outcome Drivers tends towards or exceeds a maximum of 20, there is all the more reason to remove the lowest-ranked among them.

During rationalisation, the team should also identify whether any Outcome Drivers are or could be in conflict with one another. For example, 'maximising local labour' could conflict with 'use high levels of factory-manufactured components'. In such cases, the Facilitator should encourage the team to discuss the conflict and arrive at a consensus in the context of how these incompatible Outcome Drivers relate to the strategic priorities of the project.

When an Outcome Driver has been excluded from the Value Profile, it is marked as inactive and a justification given to maintain transparency in the decision making process. Inactive Outcome Drivers should still be recorded and made available for review in future decision stages. It is possible that some should become minimum requirements in other technical briefs or contract documents rather than influencing the Value Profile. When an Outcome Driver is removed, the weightings for all the remaining Outcome Drivers are automatically recalculated to add up to 100%.

Rationalisation example

For the client delivering a retrofit and refurbishment housing programme, an initial list of Outcome Drivers was developed and rated. It then became apparent that some of these Outcome Drivers may not be meaningful and proportionate in comparison to the others.

Table 3 shows a selection of the Outcome Drivers, along with their corresponding weighting.

Table 3 Example Outcome Drivers

Capital	Category	Outcome Driver	Outcome Driver Weighting	Active
Natural	Resource Use	Low levels of waste produced during construction	2%	Yes
Human	Skills and Knowledge	Provision of experience and skills on retrofit programmes for local colleges	4%	Yes
Human	Experience	Quality of working from home experience is improved through retrofit design	7%	Yes
Social	Involvement and Influence	Level of detailed engagement with local community and key stakeholders in strategy, planning and design development	7%	Yes
Produced	Production	Deliver high quality, efficient construction practices and product standards	5%	Yes
Produced	Life Cycle Cost	Capital cost aligned with the industry standard benchmark, which can be met within business plan	9%	Yes

To rationalise, it may be decided that if an Outcome Drivers falls below a minimum weighting they then could be considered below the threshold of relevance for a project or programme. Since a Value Profile is the weighted sum of multiple Outcome Drivers, it is useful to make sure that all are worth including. In the example above, the client may wish to highlight Outcome Drivers with a weighting lower than, say 3%. This would mean that only one of them ('Low levels of waste produced during construction') is below that 3% limit, and, therefore, that Outcome Drivers is ruled out due to the inability to justify its relevance compared to other Outcome Drivers. **Note: this number is just an example and not a recommended level – clients can choose to rationalise against any percentage they choose.**

Table 4 Example of rationalised Outcome Drivers

Capital	Category	Outcome Statement	Outcome Statement Weighting	Active	Justification
Natural	Resource Use	Low levels of waste produced during construction	2%	No	Below 3% limit
Human	Skills and Knowledge	Provision of experience and skills on retrofit programmes for local colleges	4%	Yes	
Human	Experience	Quality of working from home experience is improved through retrofit design	7%	Yes	
Social	Involvement and Influence	Level of detailed engagement with local community and key stakeholders in strategy, planning and design development	7%	Yes	
Produced	Production	Deliver high quality, efficient construction practices and product standards	5%	Yes	
Produced	Life Cycle Cost	Capital cost aligned with the industry standard benchmark, which can be met within business plan	9%	Yes	

3.2.4 KEY DELIVERABLE: Value Profile

Iterative check of the completed Value Profile

The completed list of prioritised and rationalised Outcome Drivers constitutes the project's Value Profile.

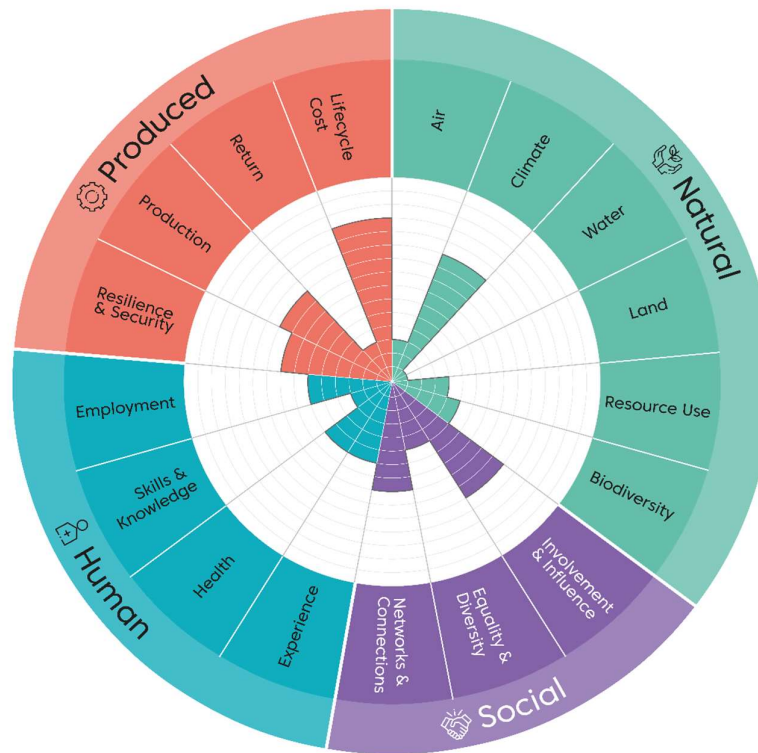


Figure 17 The Value Profile represented as a roundel

The Value Profile roundel makes the project's value priorities instantly comprehensible in visual form. It can be used to demonstrate in many different contexts the results of all the discussion, consultation and decision making that have gone into assessing and setting the values on which the project can and will deliver.

However, it should be remembered that at this point, the Value Profile is not set in stone. As with all the tools and processes with which the Concept and Strategic Teams will now be familiar, it remains flexible to circumstance and can be tweaked or reprioritised as necessary by revisiting earlier stages in its development if the project need changes.

Most importantly, the Value Profile summarises the value distribution of the Outcome Drivers on which the Measures of Success are developed and decided. These will be recorded and measured using Value Scorecards, which carry the project values through the rest of the Optioneering phase into Design, Tender, Delivery and Operation.

TOP TIP: Now that the Value Profile has been developed, the Facilitator should check with all workshop participants that the result really reflects what is valued on the project or programme. Furthermore, participants should compare the weightings in the Value Profile with those in the Strategic Objective Profile to see if there is broad alignment or any variance.

In any case, stakeholder consensus is vital if the Value Profile is to be meaningful in subsequent phases. The Facilitator should check the results are aligned with the flow from project Mission, to Strategic Value Drivers, to Strategic Objectives to Outcome Drivers, and how this all sits in relation to the Value Definition Framework and the Capitals and categories prioritised.

3.2.5 Identify Measures of Success

Measures of Success are defined for every Outcome Driver and category in the Value Profile. Because the process for developing the Value Profile is robust, all the Core and Value Outcomes required of the project are thus captured in the Value Profile and Measures of Success.

TOP TIP: Measures of Success essentially set out answers to the questions:

- What would good look like?
- How will we know the Strategic Objectives and outcomes have been achieved?

Measures of Success comprise the following:

- A list of Outcome Drivers and their relative weights, from the Value Profile
- A Metric for each Outcome Driver
- Targets and Performance Ranges for each Metric

STEP 1.1 Input from Value Profile				Step 1.3 Metric Information		Step 1.4 Performance Ranges		
				Metric Name	Units			
Capital	Category	Outcome Driver	Weighting	Metric Name	What is the unit of measurement?	Min Performance	Target Performance	Max Performance
Natural	Air	Minimise air pollution through delivery	1.2%	Proportion clean plant	%	10	30	40
Natural	Climate	Design for net zero carbon in operation	4.9%	Operational carbon	kgCO2/m2/yr	30	0.1	0
Natural	Climate	Minimise the embodied carbon of the asset	3.6%	Embodied carbon	kgCO2/m2	900	622	450
Natural	Water	Ensure low water consumption through construction and operation	3.5%	Water use in construction	Litres per £100k	15000	10000	5000
Natural	Resource Use	Manage resources in an efficient and sustainable manner, where waste is minimised and resources are safeguarded to meet future needs	9.7%	BREEAM MAT01/02	Credits	6	8	11
Natural	Resource Use	Ensure sufficient waste management capacity and an adequate supply of minerals are made available to meet our needs to 2030	6.5%	BREEAM WST01/02/06	Credits	5	6	8
Natural	Biodiversity	Protect and Enhance Biodiversity across the site	3.4%	Biodiversity net gain	%	10	12	15
Human	Employment	Provide sustainable employment opportunities for students	7.6%	Jobs created	No. per £500k spend	5	10	15
Human	Employment	Target spend to maximise economic impact	13.5%	Spend with SMEs/VCSEs/BAME & female owned	%	5	15	18
Human	Skills & Knowledge	Provide relevant training opportunities for students	7.6%	Weeks spent on meaningful work placements	No.	345	490	690
Human	Health	Provide an environment which maximises the wellbeing of all in the community	10.1%	BREEAM HEA07 & POLO4	Credits	1	2	3
Human	Health	Protect and enhance the well-being of disadvantaged	10.2%	Quality of Adjusted Life years	WTP Value	4	5	6
Social	Equality & Diversity	Increase the diversity of the workforce in relation to gender and minority groups	6.2%	Proportion of females in the workforce	%	12	40	50
Produced	Life Cycle Cost	Create an efficient asset that minimises lifecycle costs	1.8%	LCC & Service Life Planning (from BREEAM NC)	£k/m2	5	4	3.5
Produced	Production	Maximise productivity in delivery to accelerate additional capacity	1.8%	Construction programme period	Weeks	78	77	68
Produced	Production	Standard, repeatable design that minimises duplication of effort across the estate portfolio	1.8%	Repeatable Designs	£k/student place	17	15.5	14
Produced	Resilience & Security	Embed climate resilience into the design of the asset	4.7%	Flood and surface water management (BREEAM NC)	Credits	3	4	5
Produced	Resilience & Security	Design for ease of repair and adaptability	2.1%	Availability of asset for use	% availability	85	95	100

Figure 18 Example of Measures of Success

To establish appropriate Measures of Success against every Outcome Driver, the Value Toolkit Facilitator will require the input of relevant experts on the Concept Team and externally. Measures of Success must be such that they point towards the ultimate goal of the Outcome Driver. They must be agreed and set during the Optioneering phase and before comparison of options can take place. Measures of Success must also be capable of providing an appropriate Metric, Target and Performance Ranges against which to validate the achievement of the Outcome Driver at or beyond the end of the project, as well as at earlier project stages.

It is acknowledged that there is unlikely to be sufficient data available to measure against these Metrics in the early phases. In such cases, they can be substituted with relevant proxy Metrics in subsequent Value Scorecards.

Ideally, Targets and Performance Ranges should also be defined when setting Measures of Success. However, this might not be possible with any degree of accuracy before concept design has been completed.

The Measures of Success should be revisited and the Targets and Performance Ranges refined as needed after each Value Scorecard is used to ensure that decisions made are reflected in the final outcome.

TOP TIP: Measures of Success and SDGs If any of the project's Strategic Objectives have been derived directly from SDG targets, then the Measure of Success should closely align to the related SDG indicator. Many of the SDG indicators reflect the national level focus of the SDGs, and therefore may not be appropriate for project specific impacts. The Facilitator and design team should work collaboratively and use professional judgement to create custom indicators that suit the scale and type of project. This is further described in Appendix F.

Identifying Metrics

The Value Toolkit Facilitator will consult with the relevant team members and external experts in every applicable category to ensure that appropriate Metrics are chosen for each Outcome Driver. Further, the Facilitator will make sure that all members of the Strategic Team and Concept Team have oversight of the full range of primary Metrics that have been set.

When choosing Metrics, the following factors should be considered:

1. Is this the most appropriate Metric to deliver information about the success of the Outcome Driver in meeting the Strategic Objective? Although the Value Toolkit Facilitator will be drawing on established expertise, they may need to remind the experts to retain the connection with what the Outcome Driver is for, and therefore what needs to be measured. The Value Profile describes outcomes and impacts, and these can be more difficult to assess than outputs or inputs.
2. If the Metric cannot be used from the start to measure outcomes or impacts, is there an output or input that could be measured as a proxy until the outcome or impact of the Outcome Driver becomes measurable?
3. Is data collection/measurement easy or complicated for this Metric? Is it a new or an established method? If new, what underlies the confidence that collection of data will be achievable? Have the appropriate steps been taken to facilitate measurement in the future? With up to 20 Outcome Drivers to measure, the collection of data should not present too great a challenge in terms of resource, cost or complexity if it is to be practical.
4. Are any other tools being used for which similar data collection is required e.g. BREEAM or National TOMS? Is there an opportunity to align the Metrics used for various purposes while retaining the specific relevance to each? A review of Constructing Excellence [Performance Measurement Group](#) could aid this.
5. Who will collect the data to enable the Value Toolkit Facilitator to populate the Value Scorecards?
6. Who will own and/or retain the data, and has the relevant legislation been researched and the legality of its retention and use established?

7. Is this Metric appropriate to measuring a range of performance, or does it generate a 'yes/no' response? If the latter, then it is likely to be more appropriate to a specification than to performance against a value.
8. Has it or can it be benchmarked, to facilitate the setting of a Performance Range at an appropriate level?
9. Whether or not SDGs have informed the project's Strategic Objectives, they provide an excellent blueprint for sustainable development. The SDG targets relevant to the built environment outlined in Appendix F have associated indicators which could be reviewed to provide further inspiration for suitable Measures of Success

Setting Performance Ranges

Performance Ranges are required to articulate the tradeable nature of each Outcome Driver and should be discussed as part of the process of identifying Metrics. However, to set the appropriate Performance Range for each Value Scorecard, the Value Toolkit Facilitator will need to ensure that the experts identify existing industry, geographical and organisational benchmark data as relevant to the context of the project.

Three parameters are needed for each Outcome Driver:

- **Minimum Performance** – below this, performance is non-compliant
- **Target Performance** – reflecting the client's reasonable and appropriate aspiration
- **Maximum Performance** – the highest achievement against a Metric believed to be likely or perhaps possible, above which, credit will not given

Initial Performance Ranges may be set within broad parameters and refined as the project continues and more precise information about possible and likely performance becomes available. Where information about possible Performance Range is very hard to establish, the Value Toolkit Facilitator could enter a baseline and forecast a possible Target or Maximum, refining this later. Targets should be realistic but aspirational and again, should be refined based on performance in previous phases as the project progresses.

Once all Performance Ranges have been set, the Value Toolkit Facilitator should lead a review with key client decision makers and the team relevant to the project phase to ensure the overall scorecard is relevant and achievable.

Collecting and aggregating data relating to performance against Value Outcomes is a considerable benefit of using the Value Toolkit, as this will enable both the client and the industry to benchmark performance in these areas more readily on future projects.

Performance Range Sensitivity

When you are intending to use the Value Scorecard for evaluation of different options, it is strongly recommended that a sensitivity analysis on the Performance Ranges is undertaken prior to use. This will ensure that the mix of Performance Ranges and Outcome Driver weightings do not produce unexpected or unintended outcomes.

For instance, considering the four scenarios in Figure 19:

- an Outcome Driver that is highly weighted but has a narrow performance range (e.g. OD4) will have a higher number of points per increment in the performance range.
- a low weighted Outcome driver with a wide performance range (e.g. OD3) will produce a very low number of points per increment in the performance range.
- In contrast, OD1 which has a low weighting and narrow performance range, and OD2 with a high weighting and a wide Performance Range, both ensure that changes in performance are reflected with a commensurate change in the number of points.

The scenario in OD3 means that significant changes in performance may only derive a minimal change in points. Whereas a minimal change in performance in OD4 may derive a significant change in points that is not commensurate with the change in performance.

Where possible, scenarios such as OD3 and OD4 should be avoided because they can indirectly change the weighting of the Outcome Driver.

Outcome Driver	Metric	Weight	Minimum	Target	Maximum	Min Points	Target Points	Max Points
OD1: Low weight/ tight range	BREEAM Credit	2.5%	1	2	3	12.5	25	37.5
OD2: High weight/ wide range	% reduction	15%	20	50	75	75	150	225
OD3: Low weight/ wide range	% reduction	2.5%	20	50	75	12.5	25	37.5
OD4: High weight/tight range	BREEAM Credit	15%	1	2	3	75	150	225

Figure 19: Examples illustrating sensitivity of Performance Ranges

Adapting the Measures of Success for use in creating Value Scorecards

Creation of Value Scorecards for specific uses is achieved by adapting the Measures of Success.

Within the Value Toolkit, Value Scorecards are used for four main purposes: comparing options, optimising solutions, tendering, and validating performance. A Value Scorecard can, however, be used at any number of different decision points.

The power of the Value Scorecard is in providing a strong and flexible evaluation tool that protects value at every phase of the lifecycle. This is how the Value Toolkit enables the client to demonstrate it has delivered on its Strategic Objectives at the end of the project.

To create a Value Scorecard:

- First, each Outcome Driver should be reviewed to establish if it can be progressed in that particular phase or not. If an Outcome Driver cannot be progressed, it should be switched off in the Value Scorecard and not measured. Note that turning off Outcome Drivers means that the weighting of each Outcome Driver is recalculated so that the total weight is always 100%. This will not rearrange the priority of the Outcomes Drivers.
- Second, each Metric should be reviewed to ensure measurement against it is achievable in this phase; in other words, is data available at that time to measure outcomes or impacts? If not, a proxy Metric that measures either output or input should be selected instead.
- Third, the Performance Range data should be reviewed. If this was not specified when Measures of Success were defined, it needs to be completed now so that the Value Scorecard can be used. If a proxy Metric has been used, the Performance Range must be revised to suit the new Metric.

3.2.6 KEY DELIVERABLE: Optioneering Value Scorecard

The process for developing any Value Scorecard follows the same steps as set out in Section 0 Identify Measures of Success, '[Adapting the Measures of Success for use in creating Value Scorecards](#)'. Refer to that section for the principles on how to:

- Decide whether an Outcome Driver can be progressed in that phase or for that Value Scorecard
- Confirm Metrics, or choose proxies
- Confirm Targets and Performance Ranges

The Optioneering Value Scorecard is used to compare the shortlisted options in the Optioneering phase. Before testing options against the Optioneering Value Scorecard, the Concept Team must support and advise the Value Toolkit Facilitator in gathering the necessary data to complete the performance forecasts, and in agreeing which Outcome Drivers should be turned off at this stage.

			Step 2.2 Metric Information	Step 2.4 Select Performance Ranges					Step 2.5 - Scorecard Points		
			Metric Name						500,000	1000,000	1500,000
Capital	Category	Outcome Driver	Metric Name	Outcome Driver Weighting	Rebased Outcome Driver Weighting	Min Performance	Target Performance	Max Performance	Min Points	Target Points	Max Points
Natural	Air	Minimise air pollution through delivery	Proportion clean	1.21%	1.94%	10	30	40	9,707	19,414	29,121
Natural	Climate	Design for net zero carbon in operation	Operational carbon	4.86%	7.77%	30	0.1	0	38,828	77,657	116,485
Natural	Climate	Minimise the embodied carbon of the asset	Embodied carbon	3.64%	5.82%	900	622	450	29,121	58,243	87,364
Natural	Water	Ensure low water consumption through construction and operation	Water use in cons	3.50%	5.60%	15000	10000	5000	28,000	56,000	84,000
Natural	Resource Use	Manage resources in an efficient and sustainable manner, where waste is minimised and resources are safeguarded to meet future needs	BREEAM MAT0	9.66%	15.45%	6	8	11	77,232	154,464	231,696
Natural	Resource Use	Ensure sufficient waste management capacity and an adequate supply of minerals are made available to meet our needs to 2030	BREEAM WST0	6.47%	10.34%	5	6	8	51,707	103,415	155,122
Natural	Biodiversity	Protect and Enhance Biodiversity across the site	Biodiversity net g	3.41%	5.46%	10	12	15	27,280	54,560	81,840
Human	Employment	Provide sustainable employment opportunities for students	Jobs created	7.58%	12.12%	5	10	15	60,539	121,078	181,617
Human	Employment	Target spend to maximise economic impact	Spend with SMEs	13.47%	21.54%						
Human	Skills & Knowledge	Provide relevant training opportunities for students	Weeks spent on t	7.58%	12.12%						
Human	Health	Provide an environment which maximises the wellbeing of all in the community	BREEAM HEA0	10.06%	16.08%	1	2	3	80,385	160,770	241,155
Human	Health	Protect and enhance the well-being of disadvantaged	Quality of Adjuste	10.22%	16.34%						
Social	Equality & Diversity	Increase the diversity of the workforce in relation to gender and minority	Proportion of fem	6.13%	9.90%						
Produced	Life Cycle Cost	Create an efficient asset that minimises lifecycle costs	LCC & Service Lif	1.80%	2.88%	5	4	3.5	14,396	28,793	43,189
Produced	Production	Maximise productivity in delivery to accelerate additional capacity	Construction pro	1.80%	2.88%	78	77	68	14,396	28,793	43,189
Produced	Production	Standard, repeatable design that minimises duplication of effort across the estate portfolio	Repeatable Desig	1.80%	2.88%	16.5	15.5	14	14,396	28,793	43,189
Produced	Resilience & Security	Embed climate resilience into the design of the asset	Flood and surfac	4.68%	7.48%	3	4	5	37,338	74,675	112,013
Produced	Resilience & Security	Design for ease of repair and adaptability	Availability of ass	2.07%	3.31%	85	95	100	16,553	33,105	49,658

Figure 19 Example of an Optioneering Value Scorecard

TOP TIP: In the above example, some Metrics are 'switched off', because they cannot be progressed during this phase. Note that the example includes some proxy Metrics consisting of forecast values.

3.2.7 Compare options

When comparing options, each option should be measured against each Metric and the value entered into the Optioneering Value Scorecard. This enables each option to be compared for its overall value score,

In this, the Value Toolkit Facilitator should liaise as closely as is practicable with the client in ensuring that the risks involved are similarly assessed. If there are unexpected solutions, or certain innovative aspects of solutions, that perform so well on the Value Scorecard that they are clear contenders to go forward to detailed design, the client must be ready in their other functions – particularly risk assessment and market consultation – to take advantage of such developments.

If these aspects of Client Approach have been neglected up until this point, there is a serious risk of failure to meet value goals and a great deal of wasted effort and resource.

TOP TIP: Value Scorecards use a ‘bilinear’ mathematical model to convert Performance Ranges and real measurements into a system of points. The priority weightings of the Outcome Drivers in the Value Profile are also factored into this – e.g. a higher weighted Outcome Driver has more points available. This is done automatically in the scorecards – the Facilitator need only record the actual measurements in the units specified for the Metrics on the scorecard.

Looking at a Value Scorecard as a whole:

- 1,000 points are scored if all applicable Outcome Drivers meet Target Performance
- 500 points are scored if all applicable Outcome Drivers meet Minimum Performance
- 1,500 points are scored if all applicable Outcome Drivers meet Maximum Performance

No additional benefit is scored if an Outcome Driver performance exceeds Maximum. Any Outcome Driver scoring less than Minimum Performance may be deemed a non-compliance. If Outcome Drivers are switched off in a scorecard, the total is always re-baselined to allow the above calculation.

Refer to [Appendix E for details on how this mathematical model works](#).

3.3 Client Approach

3.3.1 Form Concept Team

Early in the Optioneering phase of the project cycle, the Strategic Team will be involved in selecting and appointing a **Concept Team**. Collectively, this team will need to have the capability to develop suitable concept solutions based on the outcomes identified in the Value Profile. The size and profile of the Concept Team will therefore be determined by the nature, scale and complexity of the project. On a large and/or complex project, the Concept Team may be very large.

The primary effort of the Concept Team is at the Optioneering phase. The Concept Team will be involved in the selection and formation of the Design Team. In some cases the Concept Team could take on the design function. The Concept Team will interact with the Strategic Team, often led by the Value Toolkit Facilitator.

TOP TIP: Appointing the Concept Team may be effected through use of a Value Scorecard. The *Tender Evaluation Guidance* includes a suggestion for how to incorporate Strategic Objectives into the tender process..

3.3.2 Appraise relative risks

When developing Outcome Drivers, the client will want to identify any impacts on risks to the project – and vice versa. Having identified strategic risks (risks to the project at Mission / Strategic Objective level) in the previous phase, the client should remain aware of the potential risks carried by the proposed Outcome Drivers, as well as opportunities opened up by the Outcome Drivers under discussion.

The same experts who are called upon to advise the Strategic and Concept Teams about suitable Outcome Drivers will be of use to the client who is seeking to maximise opportunity and manage out risk. Similarly, comparing the risks and opportunities offered by different possible Outcome Drivers will inform decisions about which is the most appropriate choice.

In practice, although there are client representatives involved in developing Outcome Drivers, it will fall to the Value Toolkit Facilitator to liaise with the client in keeping awareness of risk on the agenda during these discussions. Similarly, as the person assigned responsibility for protecting value throughout the project development process, the Facilitator should make sure that the client is fully aware of the Outcome Drivers that have been selected, and encourage them to assess the risks that might be associated.

If the client has carried out a profiling exercise as recommended in the previous phase, they will have a robust appreciation of how their organisational characteristics give them capacity or otherwise in managing risk associated with their chosen means of pursuing the Strategic Objectives.

3.3.3 Market consultations

One of the central tenets of value-based decision making is to invest more strategically in project planning to reduce the risk of waste, redundancy and failure later in the process, or in use of the asset. For this reason, it is strongly recommended that the client begin consulting the market as part of the knowledge-gathering associated with prioritising Outcome Drivers – early market engagement and contractor involvement.

The information gained from the market at this stage will help to provide evidence as to whether assumptions about achievability and influence are likely to be correct. Such research may also result in information about market innovations that could support Outcome Drivers, thus increasing their ‘influence’ score.

As with the assessment and management of risk, the Value Toolkit Facilitator will need to keep themselves informed of the client’s progress in this area, and ensure that the client is considering the potential implications of Outcome Drivers that have been mapped to the Value Definition Framework. This information, in combination with the Client Profile, will influence the choice of Delivery Model for successful delivery of the project.

The implications of the Delivery Model on delivering the Value Profile is discussed in Section 3.3.6 Delivery Model and also in [Appendix C Selection of Delivery Model](#).

3.3.4 Clarify scope and risk

Regular risk assessment and ongoing risk management are key recommendations of the Value Toolkit. At this stage, however, additional work must be put into clarifying how risks will be bundled and assigned where they will best be managed between the client and the market. Risks will vary depending on the option that is ultimately chosen, and this will also be an active part of the client’s consideration of different Delivery Models.

3.3.5 Identify market factors

As concept design nears completion with the choice (after scoring) of an option to go forward to detailed design, the client will identify market factors that will affect the way that option is likely to be delivered. These will include:

- **Timing** – are there likely to be long lead-times or scarce specialist services required?
- **Capability** – can the market provide the level of performance or innovation that will be needed, and how will that affect the number or range of suppliers involved?
- **Capacity** – how is the wider market positioned to provide for the project in the light of local, regional, national or global demand, and how much knowledge has the client gathered about this?
- **Availability** – are there any issues concerning materials or equipment?
- **Ecosystem design potential** – what combination of skills and specialisms from different areas is required to come together to deliver any and all aspects of the chosen option, and how easy will it be to capitalise on the opportunity of doing so?

These considerations are discussed in more detail in [Appendix C Selection of Delivery Model](#).

3.3.6 KEY DELIVERABLE: Delivery Model

The client's selection of a Delivery Model is a critical decision in terms of setting the project up for success. Although this activity falls outside the processes offered by the Value Toolkit, it is included in the *Construction Playbook* and is likely to be instrumental in achieving the Strategic Objectives (Table 5). Therefore, it is extremely important that the choice is value-driven if the project is ultimately to benefit from all the investment of time and resource expended on the Value Toolkit.

Most importantly, as with every other process outlined in the Value Toolkit, the choice of Delivery Model should be deliberate and informed. After sufficient research and consultation, it may indeed be decided that it makes sense for the client to use a Delivery Model with which they are already familiar. If this is the choice that is made, it needs to be made actively and to be consistent with the overall rationale of embedding value.

It should further be emphasised that the selection of the Delivery Model is independent of the form of contract chosen, with the Delivery Model being more fundamental to success.

In summary, the Delivery Model that the client chooses must be viable – i.e. one that the client can manage and the market will provide – but in terms of the Value Toolkit, the client should be seeking one that is optimal – i.e. the best choice possible for achieving the client's highest value aspirations for the project.

The Value Toolkit Facilitator therefore needs to be aware of choices that are being made and support these with information about their relevance to achieving the project's Strategic Objectives.

Table 5 Summary of Delivery Models per Construction Playbook 2020

STRATEGIC APPROACH
1: Transactional "I know my requirement, who can best deliver it?"
2: Hands-on leadership "Given the complexity I'll need to watch over this closely."
3: Product mindset "I need lots of these and need them to get better, greener and faster."
4: Hands-off design "I need to solve this problem, and I am willing to allow significant flexibility as to the solution."
5. Trusted helper "I need help, come and perform for me without me having to tell you how that needs to be done."

For detailed, step-by-step analysis of the factors involved in selecting the optimum Delivery Model, please refer to [Appendix C Selection of Delivery Model](#).

What drives the choice of Delivery Model?

The choice of Delivery Model determines the split of roles and responsibilities between the client and the market post-contract award. Therefore, the factors that the client must consider in order to make the right decision are:

- Client attitude and approach to risk and opportunity as part of project delivery – what kinds of risk are anticipated during delivery, given the type and complexity of project, how much risk does the client seek to package and allocate to the contractor, and what will this mean in terms of day-to-day oversight of the project and associated flexibility to deal with risk early and/or capitalise on opportunity?
- The Client Profile – the current client characteristics and project deliverability environment determined through client profiling during the Need phase, or otherwise known to the client.
- Market factors – what options does the market offer the client and to what degree is the market able to meet the Value Profile of the project?

Coordination of Delivery Model selection activities with the Value Definition and Measurement stream

As with the honing of the project's Value Profile and Value Scorecards, the activities involved in selecting the Delivery Model are iterative and ongoing.

The market consultation that is a necessary step in establishing the priority of Outcome Drivers will similarly feed into the client's decision making process for establishing which Delivery Model is likely to suit which project option best, in addition to the factors listed above.

This process will continue throughout the choice of Measures of Success and associated Performance Ranges, and the selection of options for comparison using the Optioneering Value Scorecard. It is therefore important that the Strategic Team / Concept Team involved in Value Definition and Measurement activities, and the client's project team or personnel involved in scoping risk are fully aware of one another's decisions and the implications of these.

3.4 Business Case development: Concept Design Optioneering

The Concept Design Optioneering phase of the Value Toolkit incorporates the process of developing the Outline Business Case (OBC) within the Five Case Model and Green Book. The purpose of the OBC is to plan the scheme and identify the investment option which optimises value for money, prepare the scheme for procurement and put in place the necessary funding and management arrangements for the successful delivery of the scheme. To achieve this, the Strategic Team must revisit the SOC and confirm the short list, prepare economic appraisals for short list options, and undertake a benefits and risk appraisal, in order to select a preferred option for the investment. As such, a mathematical model is developed for the investment appraisal, comparing Net Present Social Value (NPSV) and Benefits Costs Ratio (BCR) for the shortlisted options.

To enable this process for the OBC to be completed there is a significant precursor stage of developing the concept design for each of the options, obviously with effort focusing more on the rational/viable alternative options to Business as Usual and Do Minimum. This is where the Value Toolkit process adds significant value to the business case process, with the Optioneering Value Scorecard being a vital component.

Within this phase there are two distinct stages of optioneering, design optioneering and investment appraisal as shown in Figure . For example, let's assume that the SOC's shortlist comprised:

- Option A – 'Business as Usual'
- Option B – 'Do Minimum'
- Option C – Another rational and viable option

The Concept Team commences developing Concept Design Optioneering for Options B and C. Focusing on Option C, the Concept Team will likely consider a number of different sub-options, for example, a range of building typologies that will fulfil the need.

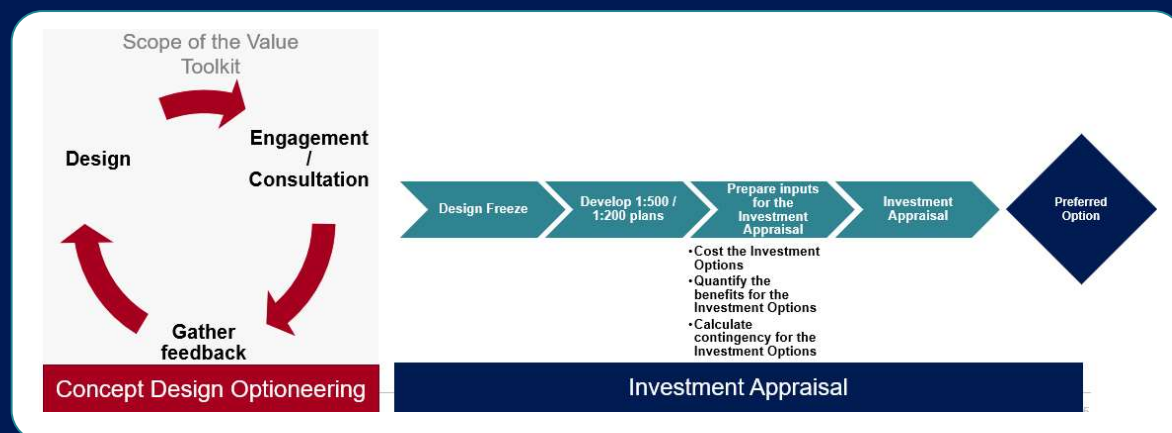


Figure 20 The two distinct stages of the Concept Design Optioneering phase

The Optioneering Value Scorecard should be used to optimise these sub-options and determine which one of them will be taken forward as Option C for the Green Book's investment appraisal process. As part of this, the 'Business as Usual' and 'Do Minimum' options should also be scored using the Optioneering Value Scorecard to demonstrate the added value that the Option C alternative adds.

Once the designs are frozen for the options being taken forward into investment appraisal, the Concept Team develops the concept design plans and elevations for those options. Elemental cost plans are developed for options A to C, and quantified benefits profiles (using the Value Scorecard) developed for the span of each options life. A Cost Benefit Analysis or Cost-Efficiency Analysis is developed and a preferred option selected.

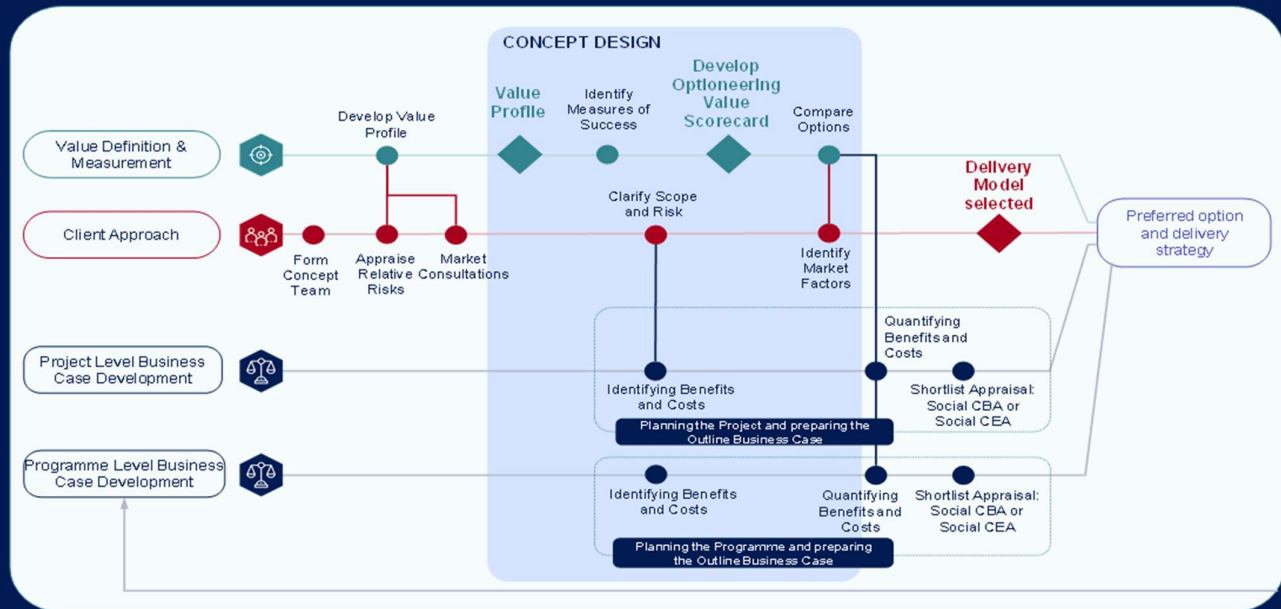


Figure 21 Concept Design Optioneering phase with Green Book overlay

4.0 Design phase

4.1 Overview

In the Design phase a preferred option will be developed in sufficient detail to allow Delivery Organisations to be procured. This may be concept or detailed design, depending on the Delivery Model selected.

The client will develop and use a Design Value Scorecard to evaluate the design option. In parallel, commercial and procurement teams will refine and finalise risk management, and develop the Commercial Strategy. A Tender Value Scorecard will be used to support evaluation of tenders. Commercial and procurement teams will undertake procurement events and make recommendations for award to Delivery Organisation(s).

By the end of this phase, a decision to make the investment commitment to proceed to Delivery will be made.

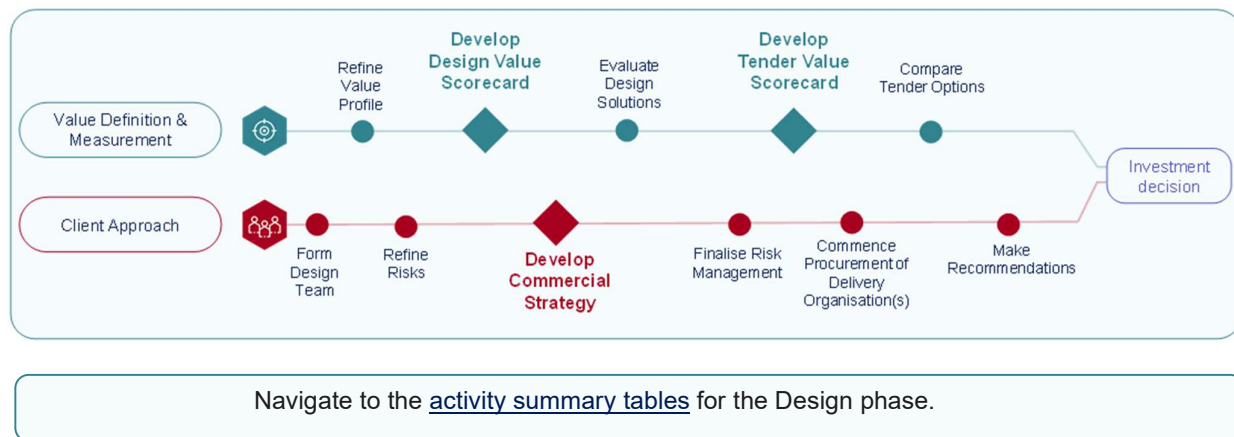


Figure 22 Value Toolkit activities in the Design phase

4.2 Value Definition and Measurement

4.2.1 Refine Value Profile

If at any point in the development of the project the priority or relevance of the Outcome Drivers needs to be reconsidered – perhaps due to a change in the need, the Strategic Value Drivers or the Strategic Objectives – then this must be recalculated by returning to an earlier stage in the process and re-working the Value Profile, taking new circumstances into consideration. During the Optioneering phase – which may be long – the possible direction of the project is still fluid and arriving at the right solution is the highest priority. The Value Toolkit's purpose is to facilitate this, not to lock in any one solution too early in the process.

In addition to general awareness of any changes in the project or value contexts during project development, the Value Profile should be formally refined after the preferred option has been chosen and between detailed design and procurement. This is particularly important if the Optioneering or Design phases have been protracted and/or complex.

It is critical that the solution that goes forward to tender is based on a robust, up-to-date Value Profile. Further, arriving at a detailed design for the solution will provide the Strategic Team with a great deal of information that was not available during the Need or early Optioneering phases. This will enable them to ensure that the Outcome Drivers in particular are relevant and fit-for-purpose, and make adjustments according. Additionally, it may be appropriate to consult stakeholders and revisit their input at later stages as details of the project design become more clear.

TOP TIP: It is wise to consider reviewing the Value Profile at the beginning of the Design phase. However, the Value Profile should be reviewed *in any phase* whenever considered relevant, due to a change or one of the reasons as set out above.

4.2.2 KEY DELIVERABLE: Design Value Scorecard

The process for developing any Value Scorecard follows the same steps as set out in Section 0 Identify Measures of Success, '[Adapting the Measures of Success for use in creating Value Scorecards](#)'. Refer to that section for the principles on how to:

- Decide whether an Outcome Driver can be progressed in that phase or for that Value Scorecard
- Confirm Metrics, or choose proxies
- Confirm Targets and Performance Ranges

This Value Scorecard is most likely to be developed in the Design phase, when a single solution is being developed in sufficient detail to allow Delivery Organisation(s) to be procured. The Design Value Scorecard may relate to concept or full detailed design, depending on the Delivery Model selected.

			Step 2.2 Metric Information	Step 2.4 Select Performance Ranges						Step 2.5 - Scorecard Points		
			Metric Name							500,000	1000,000	1500,000
Capital	Category	Outcome Driver	What is the metric name?	Outcome Driver Weighting	Rebased Outcome Driver Weighting	Metric Sign	Min Performance	Target Performance	Max Performance	Min Points	Target Points	Max Points
Natural	Air	Minimise air pollution through delivery	Proportion clean plant	12%	15%	+	10	30	40	7,956	15,911	23,867
Natural	Climate	Design for net zero carbon in operation	Operational carbon	4.86%	6.36%	-	30	0.1	0	31,822	63,644	95,467
Natural	Climate	Minimise the embodied carbon of the asset	Embodied carbon	3.64%	4.77%	-	900	622	450	23,867	47,733	71,600
Natural	Water	Ensure low water consumption through construction and operation	Water use in construction	3.50%	4.59%	-	15000	10000	5000	22,948	45,896	68,843
Natural	Resource Use	Manage resources in an efficient and sustainable manner, where waste is minimised and resources are safeguarded to meet future needs	BREEAM MAT01/02	9.66%	12.66%	+	6	8	11	63,296	126,593	189,889
Natural	Resource Use	Ensure sufficient waste management capacity and an adequate supply of materials are made available to meet our needs to 2030	BREEAM V3/ST01/02/06	6.47%	8.48%	+	5	6	8	42,377	84,754	127,132
Natural	Biodiversity	Protect and Enhance Biodiversity across the site	Biodiversity net gain	3.41%	4.47%	+	10	12	15	22,358	44,715	67,073
Human	Employment	Provide sustainable employment opportunities for students	Jobs created	7.58%	9.93%	+	5	10	15	49,664	99,328	148,993
Human	Employment	Target spend to maximise economic impact	SME+VCSE+B AME & female	12.47%	17.65%	+						
Human	Skills & Knowledge	Provide relevant training opportunities for students	Volts spent on meaningful work placements	7.58%	9.93%	+	345	490	690	49,664	99,328	148,993
Human	Health	Provide an environment which maximises the wellbeing of all in the estate	BREEAM HEA01 & POL4	10.06%	13.18%	+	1	2	3	65,980	131,961	197,941
Human	Health	Protect and enhance the well-being of disadvantaged	Adjusted Life years	10.22%	13.39%	+						
Social	Equality & Diversity	Increase the diversity of the workforce in relation to gender and minority ethnicity	Proportion of handicaps in the workforce	6.19%	8.19%	+	12	40	50	40,556	81,112	121,667
Produced	Life Cycle Cost	Create an efficient asset that minimises lifecycle costs	Life Planning (from BREEAM NC)	1.80%	2.36%	-	5	4	3.5	11,799	23,598	35,396
Produced	Production	Maximize productivity in delivery to accelerate additional capacity	Construction programme period	1.80%	2.36%	-	78	77	68	11,799	23,598	35,396
Produced	Production	Standard, repeatable design that minimises duplication of effort across the estate portfolio	Repeatable Design	1.80%	2.36%	-	16.5	15.5	14	11,799	23,598	35,396
Produced	Resilience & Security	Embed climate resilience into the design of the asset	Design water management (BREEAM NC)	4.68%	6.12%	+	3	4	5	30,650	61,299	91,949
Produced	Resilience & Security	Design for ease of repair and adaptability	Availability of asset for use	2.07%	2.76%	+	85	95	100	13,566	27,132	40,699

Figure 23 Example of a Design Value Scorecard

4.2.3 Evaluate design solutions

The design option will be measured against the Design Value Scorecard and then reviewed in each design review meeting. This embeds value-based decision making into the design development, enabling the Design Team to see where they need to focus efforts to improve value.

The primary purpose of the Design Value Scorecard is to ensure that the final design solution can achieve the Strategic Objectives in the best way possible. It should therefore be used by the Design Team as an evaluation tool throughout the design process. It is highly recommended that each Metric is measured or forecast for each design review meeting. This will identify any particular Outcome Drivers that are performing poorly and therefore need specific attention to ensure value can be optimised. It is a common criticism that value can be diluted during the Design phase, as the primary focus of the team is on the technical design elements. Making the Design Value Scorecard a formal part of the design review process will ensure that value continues to be considered as a core part of decision making throughout the phase and thus ensures that value is maintained and enhanced rather than diluted.

4.2.4 KEY DELIVERABLE: Tender Value Scorecard

The process for developing any Value Scorecard follows the same steps as set out in Section 0 Identify Measures of Success, '[Adapting the Measures of Success for use in creating Value Scorecards](#)'. Refer to that section for the principles on how to:

- Decide whether an Outcome Driver can be progressed in that phase or for that Value Scorecard
- Confirm Metrics, or choose proxies
- Confirm Targets and Performance Ranges

The Tender Value Scorecard is used to compare different bids, so it is in many respects is similar to the Optioneering Value Scorecard used to compare options. However, because it is used in a procurement exercise there are additional requirements that must be met. These are described in the *Tender Evaluation Guidance*. The purpose of embedding the Value Scorecard into the invitation to tender is to give bidders the opportunity to demonstrate how they can achieve the Strategic Objectives and contribute to value overall. The guidance also provides recommendations on how to embed the Tender Value Scorecard with the price and technical competence elements of bid evaluation.

TOP TIP: The Tender Value Scorecard is expanded to include two additional sections, which allows it to be used as the primary means for evaluating a tender. The Tender Value Scorecard – in its entirety – is used to measure the 'total value' a bidder can bring to the job.

- Strategic Objectives:** applicable Metrics and Performance Ranges coming directly out of the Value Toolkit process
- Price:** the commercial submission
- Competence:** rolling up the technical submission, answering the question of the client's confidence in the bidder's ability to deliver

Value Toolkit	Metric	Weight	Min	Target	Max	Bidder A	Bidder B	Bidder C	Weightings for 'value' parts per Value Profile
	Nat 1	2.0%	10	20	30				
	Nat 2	1.0%	5	10	15				
	Nat 3	1.0%	5	10	15				
	Hum 1	4.0%	20	40	60				
	Hum 2	3.0%	15	30	45				
	Hum 3	1.0%	5	10	15				
	Soc 1	3.0%	15	30	45				
	Soc 2	4.0%	20	40	60				
	Soc 3	5.0%	25	50	75				
	Prod 1	2.0%	10	20	30				
	Prod 2	2.0%	10	20	30				
	Prod 3	2.0%	10	20	30				
	Tender Price	20.0%	100	200	300				
	Competence	50.0%	250	500	750				
Totals		100.0%	500	1000	1500	0	0	0	

Metric	Weight	Min	Target	Max	Bidder A	Bidder B	Bidder C	Overall section weights governed by procurement rules & strategy for project
Strategic Objectives	30.0%	150	300	450				
Tender Price	20.0%	100	200	300				
Competence	50.0%	250	500	750				
Totals	100.0%	500	1000	1500	0	0	0	

4.2.5 Compare tender options

Refer to the *Tender Evaluation Guidance* for how to use the Tender Value Scorecard to compare tender options.

When the tender options have been evaluated against the Tender Value Scorecard, the project moves towards contract award and Delivery.

4.3 Client Approach

4.3.1 Form Design Team

In preparation for the Design phase, the Strategic Team will manage the process of selecting and appointing the **Design Team** – possibly an extension of the Concept Team, depending on the Delivery Model selected. The Design Team will incorporate experts across all relevant categories of value, and is likely to include designers, cost-managers, social value practitioners and environmental specialists.

The extent of the Design Team function will be determined by the Delivery Model. If the chosen Delivery Model is one which transfers design responsibility to a constructor or sub-contractor the Design Team function may be very limited and could be an extension of the Concept Team function. If a more hands-on Delivery Model is chosen, the Design Team will be much more extensive and may be appointed independently of the Concept Team.

The Design Team is responsible for using its expertise to develop project design to the stage at which there is sufficient information available to begin procurement. Members of the Design Team will therefore need to understand what previously-developed Value Outcomes mean and how they interrelate. They will further need to understand the Value Scorecards that have been developed for their project area and how these are to be used. Nonetheless, the Value Toolkit Facilitator must be vigilant in ensuring the transfer of knowledge about the process, and the rationale behind the decisions that have been made, through to this phase.

Reference to the Value Profile and the Design Value Scorecard under development will help the Strategic Team to analyse and recruit the full range of expertise required for the Design Team.

TOP TIP: Appointing the Design Team may be effected through use of a specific Value Scorecard. At this stage, Measures of Success will be sufficiently evolved to allow the development of such a Value Scorecard. The scorecard would set out all the relevant value aspirations for the project and detailed competencies, duties and so on required by the Design Team for that project.

The steps involved in developing such a scorecard would be similar to those for developing a Tender Value Scorecard. For further information, refer to the *Tender Evaluation Guidance*.

4.3.2 Refine risks

If the client has been following the Value Toolkit's recommendations throughout, regular risk assessment and management workshops will by now be an established feature of the project development process, perhaps with the participation of the Value Toolkit Facilitator. Information and opportunities identified by decision makers attending the risk workshops will have been fed back into the Value Definition and Measurement activities, supporting the selection of the most viable option. Consultation of the market and improved knowledge of the client organisation's own characteristics will have informed both the choice of Delivery Model and the strategy for risk management going forward. Ideally, commercial and procurement professionals will have been part of this risk management team at least since the Optioneering phase, and they will approach the development of the Commercial Strategy with a good appreciation of what the adoption of the Value Toolkit means for Client Approach overall.

At this point in the process, risks will need to be refined before they are apportioned as part of the Commercial Strategy, and a model of rewards and incentives developed before invitation to tender. Additional consideration will need to be given to the possible unknown risks arising in the future, and how these are to be tackled depending on their complexity and nature.

Risk remains a critical aspect of the Commercial Strategy, but the Value Toolkit advocates an approach to risk management that moves away from attempts to dump risk and towards a more holistic appreciation of who truly carries the risk if project values are not met. This approach strongly advocates that the client remains a particularly active partner in managing risks during delivery where these could disproportionately affect the achievement of value goals as well as the more traditional ones of 'on time and budget'.

4.3.3 KEY DELIVERABLE: Commercial Strategy

The client's previous activities from the Client Approach stream – investing in the active assessment and management of risk, developing good understanding the Client Profile and selecting an appropriate Delivery Model to meet project aspirations – feed into the development of a Commercial Strategy that protects Value Outcomes through to the completion of the project.

The Commercial Strategy for projects in the built environment is complex and the projects themselves are often bespoke, increasing unknown risks to deliverability. Project delivery involves multiple factors to do with availability of materials, skills and services (regionally, nationally and internationally); scheduling and timescales; digital and technical complexity; disruption to services and/ or revenue; public scrutiny; highly complicated interdependencies; and the potential for high profile catastrophe, to name a few. It is perhaps unsurprising if there is a tendency towards hyper caution on the part of legal professionals involved, and an inclination to place high priority on apportioning risk away from the client.

However, using the Value Toolkit will already have supported the development of a more robust project founded on better client understanding of what is required. This puts the commercial and procurement team in a stronger and more confident position from which to develop the Commercial Strategy. The project's Value Profile and associated Outcome Drivers should be understood as an asset in themselves rather than an impediment to realising commercial value.

The Value Toolkit Facilitator will play a critical role in keeping the Value Profile at the heart of the Commercial Strategy, as will appropriate training for the commercial professionals involved.

A good Commercial Strategy promotes integration and coordination between the numerous parties that may be needed to achieve delivery and makes plain through clear and rational incentives 'what's in it for everyone' involved. The Delivery Model selected is necessarily a primary factor in how the works will be packaged and incentivised, and the type of contract(s) that will be the best fit for both client and project. Many contemporary forms of contract are available and will serve: it is not the purpose of this handbook, nor the Value Toolkit, to endorse or select any as most appropriate.

The development of the Commercial Strategy in the value context is explained more fully in [Appendix D, Commercial Strategy](#).

4.3.4 Finalise risk management

Finalising risk management is a key input to ensure risk is properly defined in tender documents.

For further information refer to the [activity summary tables](#) and [Appendix A Risk and the Value Toolkit](#).

4.3.5 Commence procurement of Delivery Organisation(s)

This step defines a milestone of actually issuing the tender documents to bidders.

For further information, refer to the [activity summary tables](#) and *Tender Evaluation Guidance*.

4.3.6 Make recommendations

For further information, refer to the [activity summary tables](#) and *Tender Evaluation Guidance*.

TOP TIP: The steps 'finalise risk management, 'commence procurement of Delivery Organisation(s)' and 'make recommendations' are some of the things that need to be in place and are components of a tender.

4.4 Business Case development: Detailed Design

As in the Concept Design Optioneering stage, the scope of the Value Toolkit supports a structured decision making process in order to identify the design option which delivers the optimum value. In this Detailed Design phase the Value Toolkit supports the business case process in two primary ways. Firstly, it supports the development of the design of the preferred option for ready for the procurement exercise. Secondly it then enables an objective method of evaluating tenders on the basis of their relative value.

During the design development, the Design Value Scorecard should be used to evaluate the design as it evolves to identify areas where further optimisation is needed to achieve the Target Performance. It is recommended that the Design Value Scorecard is used as part of the routine design review process undertaken by the Design Team.

Once the design has been frozen for the purposes of tendering, the Tender Value Scorecard should be created to communicate to bidding organisations the level of performance required to achieve the Strategic Objectives. It should also be embedded into the tender evaluation process as part of the Green Book's Best and Final Offers (BAFOs) process, which ultimately concludes in a recommendation being made as part of the Full Business Case.

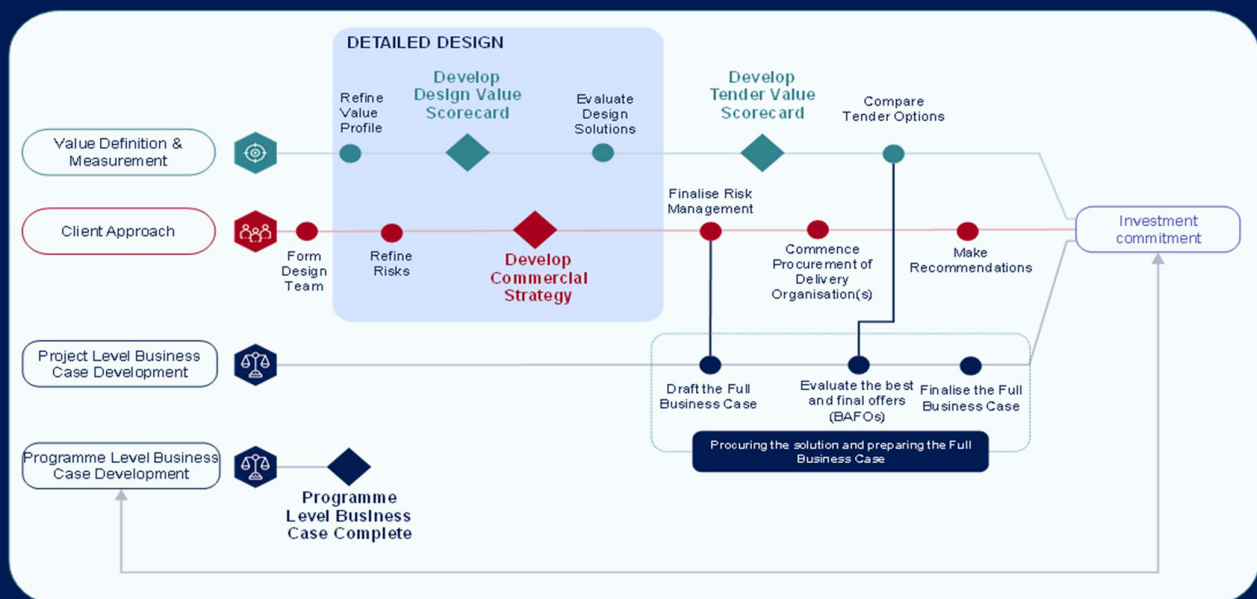


Figure 25 Detailed Design phase with Green Book overlay

5.0 Delivery phase

5.1 Overview

The Delivery phase commences when the contract is awarded and work to deliver the solution commences, including any further design work.

A Delivery Value Scorecard is developed and used to validate Delivery performance against the Value Profile and Strategic Objectives. The question, ‘is the value being delivered?’ is asked. Progress is monitored to record outcomes realised in Delivery, and to refine outcomes that will relate to Operation. An active approach to risk management is undertaken throughout, in accordance with work in previous phases.

At the end of the phase, the decision of whether the project or asset is ready for service is asked and addressed, pursuant to moving into Operation.

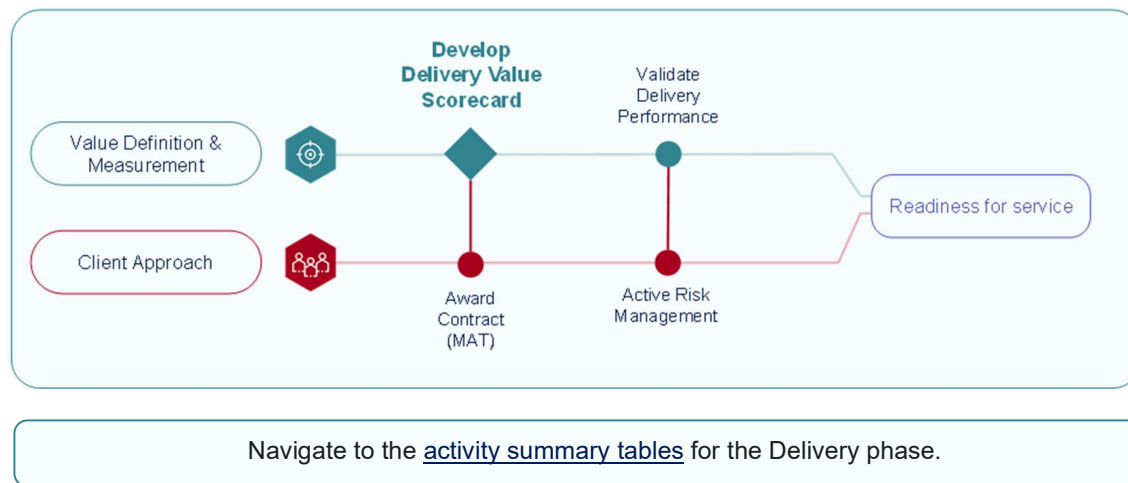


Figure 26 Value Toolkit activities in the Delivery phase

5.2 Value Definition and Measurement

5.2.1 KEY DELIVERABLE: Delivery Value Scorecard

The Value Toolkit Facilitator will again supervise the development of a Delivery Value Scorecard, selecting the relevant Outcome Drivers, Metrics and Performance Ranges. In reality this Value Scorecard will be very similar to the Tender Value Scorecard with the only major difference being the Target Performance values being amended to reflect the commitments from the successful tenderer.

				Step 2.2 Metric Information	Step 2.4 Select Performance Ranges						Step 2.5 - Scorecard Points		
				Metric Name							500.000	1000.000	1500.000
Capital	Category	Plot Area	Outcome Driver	What is the metric name?	Outcome Driver Weighting	Rebased Outcome Driver Weighting	Metric Sign	Min Performance	Target Performance	Max Performance	Min Points	Target Points	Max Points
Natural	Air		Minimise air pollution through delivery	Proportion clean plant	1.2%	1.28%	+	10	30	40	6.381	12.762	19.143
Natural	Climate		Design for net zero carbon in operation	Operational carbon	4.86%	5.10%	-						
Natural	Climate		Minimise the embodied carbon of the asset	Embodied carbon	3.64%	3.83%	-	900	622	450	19.143	38.286	57.429
Natural	Water		Ensure low water consumption through construction and operation	Water use in construction	3.50%	3.68%	-	15000	10000	5000	18.406	36.812	55.218
Natural	Resource Use		Manage resources in an efficient and sustainable manner, where waste is minimised and resources are safeguarded to meet future needs	BREEAM MAT0902	9.66%	10.15%	+	6	8	11	50.769	101.538	152.307
Natural	Resource Use		Ensure sufficient waste management capacity and an adequate supply of minerals are made available to meet our needs to 2030	BREEAM VST090206	6.47%	6.80%	+	5	6	8	33.990	67.980	101.970
Natural	Biodiversity		Protect and Enhance Biodiversity across the site	Biodiversity net gain	3.4%	3.59%	+	10	12	15	17.933	35.866	53.798
Human	Employment		Provide sustainable employment opportunities for students	Jobs created	7.58%	7.97%	+	5	10	15	39.635	79.670	119.505
Human	Employment		Target spend to maximise economic impact	Spend with SMEs/VCS&S/ BAME & female owned	13.47%	14.16%	+	5	15	18	70.787	141.574	212.361
Human	Skills & Knowledge		Provide relevant training opportunities for students	Weeks spent on meaningful work	7.58%	7.97%	+	345	490	690	39.635	79.670	119.505
Human	Health		Provide an environment which maximises the wellbeing of all in the	BREEAM HEA07 &	10.06%	10.57%	+	1	2	3	52.942	105.684	158.525
Human	Health		Protect and enhance the well-being of disadvantaged	Quality of Adjusted Life years	10.22%	10.74%	+	4	5	6	53.694	107.388	161.083
Social	Equality & Diversity		Increase the diversity of the workforce in relation to gender and minority groups	Proportion of females in the workforce	6.19%	6.5%	+	12	40	50	32.529	65.058	97.588
Produced	Life Cycle Cost		Create an efficient asset that minimises lifecycle costs	LCC & Service Life Planning (from BREEAM NC)	1.80%	1.89%	-	5	4	3.5	9.464	18.927	28.391
Produced	Production		Maximise productivity in delivery to accelerate additional capacity	Construction programme period	1.80%	1.89%	-	78	77	68	9.464	18.927	28.391
Produced	Production		Standard, repeatable design that minimises duplication of effort across the estate portfolio	Repeatable Designs	1.80%	1.89%	-	16.5	15.5	14	9.464	18.927	28.391
Produced	Resilience & Security		Embed climate resilience into the design of the asset	Flood and surface water management (BREEAM NC)	4.68%	4.92%	+	3	4	5	24.584	49.167	73.751
Produced	Resilience & Security		Design for ease of repair and adaptability	Availability of asset for use	2.07%	2.18%	+	85	95	100	10.881	21.762	32.643

Figure 27: Example of a Delivery Value Scorecard

5.2.2 Validate Delivery performance

The Delivery Value Scorecard will be primarily used to demonstrate that the Delivery Organisation is performing as it promised. Therefore, it will be used at the end of the contract period, but can also be used periodically throughout the life of the contract. Note, however, that the Delivery Value Scorecard is not a replacement for more regular monitoring of contractual KPIs of which there are likely to be many within the contract.

It is worth noting once more that the data captured as part of this exercise may prove extremely important to the development of concurrent and future projects, particularly in any areas where a shortage of data currently hampers value-based decisions. These can be anything from carbon reduction measures to user behaviour to the social impact of asset provision. Difficulties encountered by the Facilitator and original Strategic and Concept Teams in identifying appropriate output drivers and Metrics may give useful clues as to where robust data is least easily found and therefore most valuable, where it is permitted to share it.

5.3 Client Approach

5.3.1 Award contract (MAT)

Awarding the contract on the basis of the most advantageous tender (MAT) is a milestone after which Delivery can commence. The successful tenderer's commitments as expressed in its Tender Value Scorecard are made into contractual commitments.

For further information, refer to the *Tender Evaluation Guidance*.

5.3.2 Active risk management

The client will continue to monitor and actively manage risk during the Delivery phase. In particular, it must be recognised that any changes required by the client of the Delivery Organisation post-contract award are likely to be disproportionately costly and time consuming. These therefore constitute risks to delivery and should be avoided unless external events absolutely dictate their necessity. The client must remain alert to any threats to the Mission that may arise and actively mitigate against them, in collaboration with the Delivery Organisation if appropriate. This approach will also mean that the client is ready to seize opportunities that arise – unexpected events are not always bad news.

Preparation for change, readiness and opening

During Delivery, the client must make capacity to prepare for operational readiness and opening of the asset. This may involve establishing a change readiness team with appropriate knowledge and expertise. The team will engage with key stakeholders, including those within the client organisation. As the asset nears delivery, the client will have an operational readiness plan prepared with roles for key participants, including virtual or actual rehearsal of opening and operations running in parallel to delivery. Finally, the opening of the asset must be carefully choreographed, often running in stages.

For all of these purposes, the Value Toolkit Facilitator must actively liaise with the client and stakeholders to make information about progress against the project's Value Profile useful to all key personnel. After all, the Strategic Objectives at the heart of the project are substantially based on stakeholder engagement and need, and success in these areas is key to achieving successful operation and thus generating the good news that comes with success.

It is highly unlikely that the Value Toolkit Facilitator function will be performed by the same person throughout all project phases, and particularly from tendering through Delivery to Operation. Therefore it will be the responsibility of the client's Strategic Team to ensure that the Value Toolkit Facilitator role is filled and the responsibilities held by that key role are ongoing.

5.4 Business Case development: Delivery

After approval of the Full Business Case the project moves into its implementation phase. At this point the purpose of the Value Toolkit, is to help validate performance and ensure that the value (Strategic Objectives) defined in the Need phase are actually delivered. This is done through the use of Delivery and Operation Value Scorecards. The Delivery Value Scorecard will identify whether or not the contract(s) achieve their contractual requirements, whilst the Operation Value Scorecard will validate the performance of the project once in use, which could take a number of years to fully validate. They both align to the Green Book process of monitoring and evaluation.

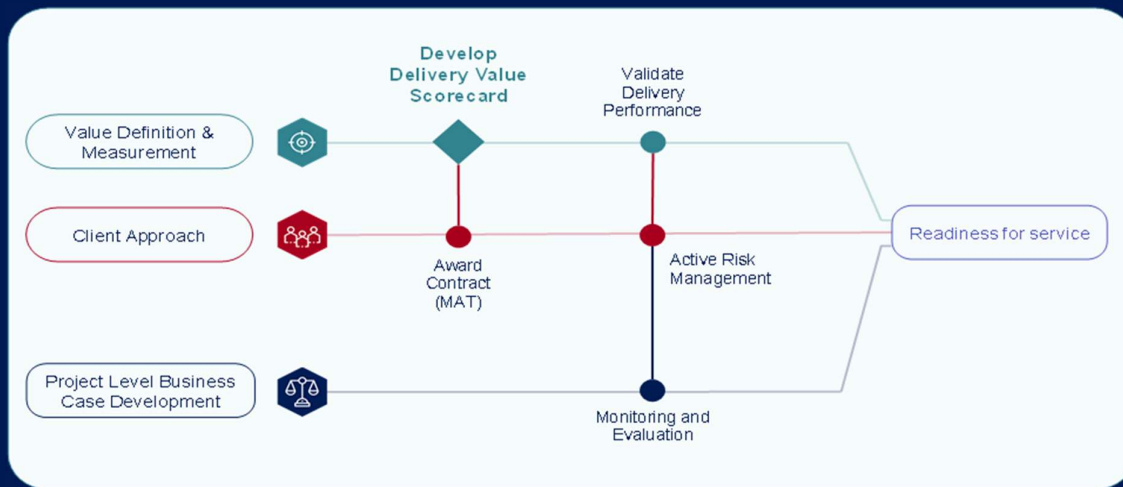


Figure 28 Delivery phase with Green Book overlay

6.0 Operation phase

6.1 Overview

In the Operation phase, the solution or asset will be used, both during and beyond the original contract period.

An Operation Value Scorecard is developed and used to validate operational performance against the Value Profile and Strategic Objectives. The questions of whether the solution or asset is operating as intended and realising its benefits are asked. By the end of the phase, operations review and benefits realisation exercises will have been carried out. Final reward is made to the contractor(s).

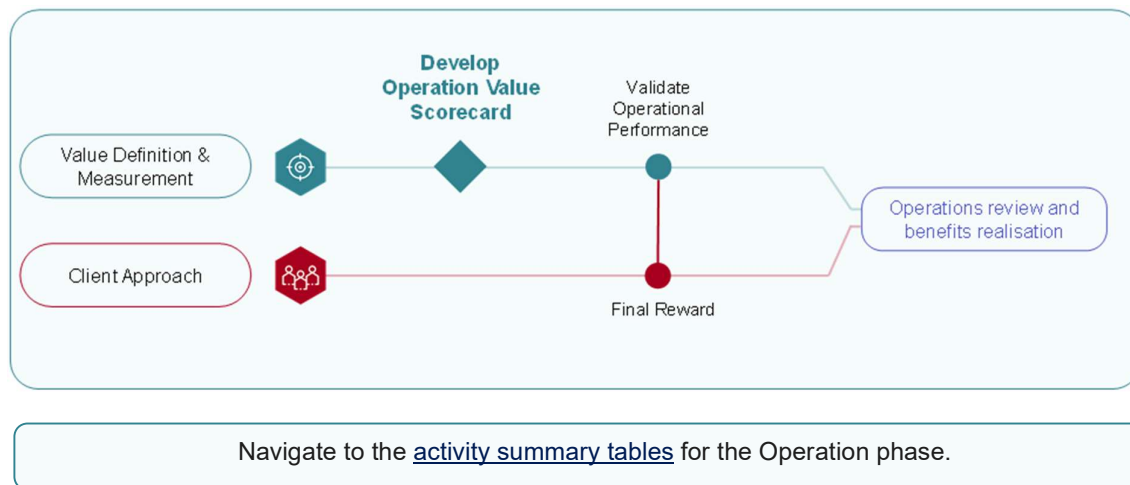


Figure 29 Value Toolkit activities in the Delivery phase

6.2 Value Definition and Measurement

6.2.1 KEY DELIVERABLE: Operation Value Scorecard

Post-contract, Operation Value Scorecards should be developed to continue to review performance against the Value Profile during the first years of operating the asset to demonstrate benefits realisation. This phase may well be aligned with the Government Soft Landings approach. Some of the Strategic Objectives will in any case have been aimed at the project's longer-term impacts and the Operation Value Scorecard will reflect and monitor these.

As for previous Value Scorecards, Operation Value Scorecards must be developed with the same kind of expert recommendations for each Outcome Driver. These will now be able to draw upon considerable data acquired over the course of Delivery, ensuring that the Metrics used and Performance Ranges set remain accurate and relevant.

6.2.2 Validate Operational performance

At this stage, the Value Toolkit Facilitator should revisit the stakeholders goals, the requirements of the Strategic Value Drivers and the features offered by the new asset and feed back to the client to adjust the Value Profile for ongoing or future projects in a programme of projects, if needed.

In reviewing lessons learned over the course of the project, the Strategic Team will wish to trace progress from the original Mission and Strategic Objective Profile through the original Value Profile and performance as evidenced in the data recorded on Value Scorecards over the life of the project.

6.3 Client Approach

6.3.1 Final reward

On the Client Approach stream of activity, a post-analysis of the interacting processes of risk assessment and management, client profiling, selection of Delivery Organisation and Commercial Strategy will also provide useful lessons about how and where the delivery of value was best supported.

Depending on the Delivery Model, form of contract and any applicable incentivisation clauses, a final review of performance against the Value Profile might be required prior to releasing the final payment to the Delivery Organisation(s), and Design Team.

6.4 Business Case development: Operation

After approval of the Full Business Case the project moves into its implementation phase. At this point the purpose of the Value Toolkit, is to help validate performance and ensure that the value (Strategic Objectives) defined in the Need phase are actually delivered. This is done through the use of Delivery and Operation Value Scorecards. The Delivery Value Scorecard will identify whether or not the contract(s) achieve their contractual requirements, whilst the Operation Value Scorecard will validate the performance of the project once in use, which could take a number of years to fully validate. They both align to the Green Book process of monitoring and evaluation.



Figure 30 Operation phase with Green Book overlay

7.0 References

Value Toolkit suite of documents and tools

Glossary of Terms

Tender Evaluation Guidance

Value Definition Framework

Value Toolkit handbook (this document)

Value Toolkit Overview

Client Profile tool

Pairwise comparison tool

Strategic Value Drivers tool

Value Toolkit end-to-end process spreadsheet

Other useful references

BSI Flex 390 Built environment: Value-based decision making – Specification

Construction Playbook, 2020

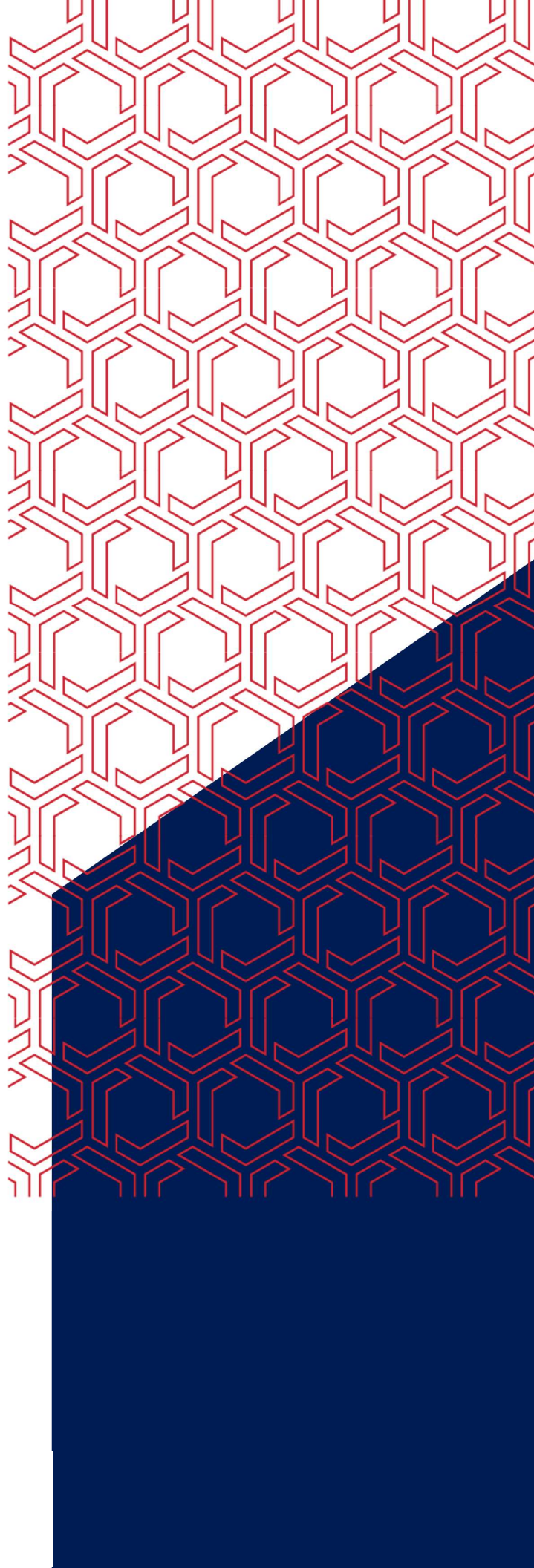
Procurement Act, 2023

The Construction (Design and Management) Regulations 2015

Part II

Activity Summary Tables

Back to [beginning](#) of handbook.



Need phase

Value Definition and Measurement

Aspect	Description
Activity Step	Identify Stakeholders & Commence Engagement
Purpose	To establish the needs of the stakeholders involved and affected by the project – externally and internally.
Process	<p>This is largely an information gathering step.</p> <p>Earliest engagement should be carried out as part of the Need phase and should be repeated and developed throughout the life of the project wherever the Value Profile and outcomes are being reviewed.</p> <p>Engagement should include the following:</p> <ul style="list-style-type: none"> • Internal stakeholders: <ul style="list-style-type: none"> ○ policy and strategy teams that can inform the policy landscape to identify requirements on the project or programme, ○ key decision makers, and ○ experienced internal project teams to provide learning from previous similar schemes and project-specific impacts and dependencies to be considered. • External stakeholders: <ul style="list-style-type: none"> ○ external stakeholders that will benefit from or be affected by the project or programme, such as: <ul style="list-style-type: none"> ▪ Local community ▪ Supply chain, and ▪ Wider stakeholder groups <p>How: The process of gathering information would best suit a workshop or meeting style of approach. Surveys may also be used to capture wider feedback from external or internal stakeholders.</p> <p>Who: External stakeholders should include a representative selection of the community as well as more formal or other external organisations. Internal stakeholders should include the key decision makers.</p>
Inputs	Stakeholder mapping and plan for engagement.
Outputs	Feedback from discussions with internal and external stakeholders, project debriefs or client preferences. The feedback should provide the needs, concerns, and constraints from stakeholders.
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet

Aspect	Description
Activity Step	Develop Strategic Objectives
Purpose	To develop Strategic Objectives that fairly reflect the aims and ambitions of the client and stakeholders, comprising Core Outcomes and Value Outcomes.
Process	<p>Identification of the external and internal influences that drive the consideration of specific value categories for the project or programme. They are then developed into a small number of key outcomes that the client is looking to achieve. This mix of Core Outcomes and Value Outcomes are brought together to represent the 7-10 Strategic Objectives.</p> <p>How: This is a facilitated process with the Strategic Team and other key influencers.</p> <p>It starts by bringing together Strategic Value Drivers: the various documents, statements and policies from the client and stakeholder groups, to understand <u>what</u> the key values are.</p> <p>In turn, the Mission of the client is developed based on the key values identified. This should be aspirational while brief, encompassing the overall aims and goals of the project or programme.</p> <p>Once Mission is identified, a number of Core and Value Outcomes are developed. Core Outcomes should be developed in-line with key documents and policies for example HM Treasury Priority Outcomes via PVP, Investment Outcomes via POP or an agreed Business Case. Value Outcomes should be developed from Organisation Values and Policy, or Local Policy and Drivers.</p> <p>Finally, each Strategic Objective should be assigned to the appropriate Capitals/categories in the Value Definition Framework, to give a preliminary 'profile' which is prioritised during the next step.</p> <p>Who: Project teams with understanding of the project or programme. Trained Value Toolkit Facilitators must ensure a robust mapping to the Value Definition Framework is completed to illustrate which categories align with particular Strategic Objectives.</p>
Inputs	<p>Feedback from Stakeholder Engagement</p> <p>Key documents and policies relating to desired outcomes, investment outcomes, business cases, local policy, organisational policy etc.</p>
Outputs	A list of 7-10 Strategic Objectives
Supporting Tools and Further Guidance	<p>Value Definition Framework</p> <p>Strategic Value Driver Mapping spreadsheet, for Facilitator use</p> <p>Value Toolkit end-to-end process spreadsheet</p>

Aspect	Description
Activity Step	Prioritise Strategic Objectives
Purpose	To assign relative importance of Strategic Objectives against each other to develop a detailed and weighted Strategic Objective Profile.
Process	<p>This step aims to determine the relative importance of the Strategic Objectives to gain a truer understanding of the client's preferences.</p> <p>How: This weighting process can be undertaken in a number of different ways, depending on client group preference and the nature of the project. Some options for prioritisation include:</p> <p><u>Pairwise comparison process (preferred):</u> This is the recommended approach as it follows a structured process of comparing each Strategic Objective against all others. In this step the participants are asked to score a preference between each combination or 'pair' of Strategic Objectives on a 9-point scale – from "Absolute preference for Objective A" (-4), through "Equal Preference" (0) and to "Absolute preference for Objective B" (+4).</p> <p>The completed participant preference scores are aggregated together to bring together a set of percentage weightings balanced across the participating representatives. These final weightings can then be input directly into the Value Toolkit end-to-end process spreadsheet.</p> <p><u>Manual direct input (%):</u> This method allows for manual direct input of percentage weightings for each of the Strategic Objectives, summing to a total of 100%. This approach is not recommended, as a prioritisation process (such as the one described above) is useful to help the client understand and redevelop the Strategic Objectives. Manual direct input is only advised to be used in example cases for training purposes.</p> <p>A workshop is recommended to help build consensus, whilst methodically considering each Strategic Objective and its priority. Consideration should be given to views of stakeholders as part of the alignment of Strategic Objectives to the criteria used. Strategic Objectives should be rationalised and reviewed.</p> <p>Who: Representatives from policy and project delivery teams in the Client organisation. Key decision makers should be consulted</p>
Inputs	Strategic Objectives – These objectives are 'what' you want to achieve
Outputs	<p>A percentage weighting score for each Strategic Objective</p> <p>A clear indication of how the Strategic Objectives map to the Capitals and categories of the Value Definition Framework</p>
Supporting Tools and Further Guidance	<p>Value Definition Framework</p> <p>Pairwise Comparison Tool</p> <p>Value Toolkit end-to-end process spreadsheet</p>

Aspect	Description
KEY DELIVERABLE	Strategic Objective Profile
Purpose	To review the profile generated and ensure that the Strategic Team is happy with the progress so far
Process	<p>This is largely an information review step. Engagement should include the following:</p> <ul style="list-style-type: none"> • Review defined Strategic Objectives • Ensure satisfaction with the weightings of each Strategic Objective • Ensure that the process mapping of the Strategic Objectives to the Capitals and categories meet what the Strategic Team is looking for <p>How: Strategic Team members should review the Strategic Objectives, before holding a workshop review session with the client and relevant stakeholders to confirm the approach</p>
Inputs	Developed and Prioritised Strategic Objectives – These objectives are 'what' you want to achieve
Outputs	A Strategic Objective Profile that meets what the Strategic Team is looking for, which can now be used in developing Outcome Drivers
Supporting Tools and Further Guidance	<p>Value Definition Framework</p> <p>Value Toolkit end-to-end process spreadsheet</p>

Aspect	Description
Activity Step	Evaluate options using high-level performance indicators
Purpose	To review the identified high-level potential solutions against the Strategic Objective Profile, to identify the options that provide the best opportunities for achieving the Strategic Objective Profile and that should be taken forward into concept design or the Optioneering phase
Process	<p>How: The Strategic Team should identify a high-level performance indicator for each Strategic Objective that illustrates what success might look like. These indicators may be those developed as part of the business case process, particularly if the HM Treasury Green Book process is being used – what factors might influence this option, how you might measure it, and what 'good' might look like. This will help encourage discussion and evolution of the proposed options, but also start to help the team to think about influencing factors and the Outcome Drivers (which occur later in the process).</p> <p>These high-level performance indicators can be used for constructive discussion and comparison against each of the high-level potential solutions, as such they do not need to be detailed quantified Metrics. Qualitative measures are just as useful in aiding discussions at this early stage.</p> <p>Who: Strategic Team members with understanding of the project or programme, supported by Value Toolkit Facilitator</p>
Inputs	Feedback from stakeholder groups, Defined Strategic Objectives
Outputs	A high-level review of early options
Supporting Tools and Further Guidance	Strategic Objective Profile Value Definition Framework

Navigate back to [Part I, Need phase chapter](#).

Client Approach

Aspect	Description
Activity Step	Form Strategic Team
Purpose	Identification of the Strategic Team is essential as it is responsible for the implementation and governance of the Value Toolkit process
Process	<p>The Value Toolkit is designed to empower clients and policy makers implement value-based decision making in their work. As a result, the Value Toolkit is not something that should be used by one party, or person, in isolation of the rest. It promotes collaboration, challenge and transparent decision making and should be used by all parties involved in a project or programme.</p> <p>Strategic Team: This team is responsible for the implementation and governance of the Value Toolkit process and is likely to be a combination of client sponsors, their in-house experts, and external advisors. They should be established at the earliest stage possible, ideally in the Need phase. Their role then continues throughout the whole Value Toolkit process. As the process continues, it is likely that this team will need to be augmented with legal and procurement specialists to form a procurement team.</p> <p>A Value Toolkit Facilitator will be appointed within this team to facilitate and manage the Value Toolkit process throughout the project lifecycle. This team will unite the various parts of the client around a common vision for the Mission and the Core and Value Outcomes, so the ability align strategic stakeholders is a major requirement for this stage.</p>
Inputs	Discussions with a combination of client sponsors, their in-house experts, and external advisors.
Outputs	<p>A set Strategic Team. As the process continues, it is likely that this team will need to be augmented with legal and procurement specialists to form a procurement team.</p> <p>Appointed Value Toolkit Facilitator.</p>
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet

Aspect	Description
Activity Step	Identify Strategic Risks
Purpose	To identify the potential strategic risks associated with the Mission, outcomes sought and the Strategic Objective Profile. Consider risks in terms of opportunities to maximise value as well as minimise threats.
Process	Identification of strategic risks associated with the emerging Mission, project outcomes and the Value Profile. Consult with the market to help identify strategic risks that may have a marked effect on the choices in order to arrive at a single preferred solution. Who: Client/Strategic Team
Inputs	Client's Mission and the Strategic Objectives.
Outputs	Initial identification of strategic risks associated with the Strategic Objective Profile.
Supporting Tools and Further Guidance	Appendix A Risk and the Value Toolkit

Aspect	Description
KEY DELIVERABLE	Client Profile
Purpose	To determine the Client Profile which identifies where a client can most optimally 'perform' as part of a complex set of delivery players, where it should avoid undertaking roles and responsibilities and the 'gap' between where it is today and would like to be in the future.
Process	Undertake assessment of current client characteristics and project deliverability environment to understand the change that needs to occur for the client to achieve their optimal Delivery Model for the project or programme. The client may consider using the Client Profile Tool to assist with establishing the Client Profile. Who: Client/Strategic Team
Inputs	Understanding of the client organisation and project/programme.
Outputs	Identification of the range of appropriate Delivery Models based on the Client Profile.
Supporting Tools and Further Guidance	Client Profile Tool

Navigate back to [Part I, Need phase chapter](#).

Optioneering phase

Value Definition and Measurement

Aspect	Description
Task	Develop Outcome Drivers
Purpose	To develop 'SMART' objectives that describe specific things the team can do to actively influence and achieve the previously identified Strategic Objectives.
Process	<p>The Strategic Objectives identified in the previous step are achieved via the Outcome Drivers for the project or programme. Where Strategic Objectives are the <i>What</i>, Outcome Drivers are the <i>How</i>.</p> <p>How: This is a facilitated process to develop what the Concept Team can do to ensure the Strategic Objectives can be achieved. The Facilitator will work through each value category and develop a SMART objective that aligns to the Strategic Objectives mapped to that category. Note that it may be necessary to write more than one Outcome Driver to satisfactorily cover all Strategic Objectives mapped in a specific category. Note also that not every category needs to have an Outcome Driver.</p> <p>These Outcome Drivers can then be used by the client to track their progress against the Strategic Objectives.</p> <p>Who: Experienced decision makers with overarching strategic views and an understanding of the project or programme, supported by the Value Toolkit Facilitator. Those involved in stakeholder engagement</p>
Inputs	Strategic Objectives mapped to the Value Definition Framework.
Outputs	A list of Outcome Drivers that are relevant to the context and scale of the project or programme.
Supporting Tools and Further Guidance	<p>Value Definition Framework</p> <p>Value Toolkit end-to-end process spreadsheet</p>

Aspect	Description
Task	Prioritise Outcome Drivers
Purpose	To provide an informed basis for prioritising Outcome Drivers and attribute a weighting for each Outcome Driver that can be used in the development of a Value Profile
Process	<p>This is a two-step process. First each Outcome Driver is rated for its alignment to each mapped Strategic Objective. Then the rating is multiplied by the corresponding weighting of the Strategic Objective (and summed together) to give the weighting for the Outcome Driver.</p> <p>How: Each Outcome Driver/Strategic Objective link should be considered in turn to establish how much influence the Outcome Driver will have on achievement of the Strategic Objective. It is recommended that a simple 1-5 scale is used ranging from 1 for low influence to 5 for high influence. A workshop is recommended to help build consensus. Consideration should be given to views of stakeholders as part of the alignment of Outcome Drivers to the criteria used.</p> <p>Once this is complete, each Outcome Driver rating is multiplied by the weighting of its corresponding Strategic Objective. Where there are multiple Strategic Objectives mapped to an Outcome Driver, they are all summed to give an overall weighting for the Outcome Driver.</p>

	Who: Experienced decision makers with overarching strategic views and an understanding of the project or programme, supported by Value Toolkit Facilitator
Inputs (includes input from other aspects and previous steps)	Strategic Objective Profile – These objectives are 'what' you want to achieve, mapped against the Value Definition Framework Outcome Drivers derived from previous step, which illustrate 'how' you are going to achieve the Strategic Objectives
Outputs	A percentage weighting score for each Outcome Driver A preliminary weighted Value Profile
Supporting Tools and Further Guidance	Value Definition Framework Value Toolkit end-to-end process spreadsheet

Aspect	Description
Task	Rationalise Outcome Drivers
The purpose of the step	To ensure that the list of Outcome Drivers included in the Value Profile is achievable, proportionate, and meaningful for the scope and context of the project or programme. The aim is to deliver a consensus opinion on which outcomes to take forward within the Value Profile.
What is done at this step	<p>Outcome Drivers are selected for inclusion in the Value Profile. The basis for exclusion of any Outcome Drivers shall be justified with supporting explanation.</p> <p>How: Criteria for exclusion and inclusion of prioritised Outcome Drivers should be agreed by the client. The following are suggested as a minimum:</p> <ul style="list-style-type: none"> • Relative priority of the Outcome Driver (e.g. any with a weighting of less than 1% could be removed) • Removing any potential conflicts or double-counting between Outcome Drivers • Ensuring the Outcome Driver is achievable. <p>The weighting and priorities are recalculated and redistributed proportionally across the remaining Outcome Drivers, to form a full and detailed rationalised Value Profile for use throughout the next phases.</p> <p>Who: Representatives from policy and project delivery teams in the client organisation. Key decision makers should be consulted.</p>
Inputs	Prioritised Outcome Drivers
Outputs	Final Value Profile
Supporting Tools Available	Value Definition Framework Value Toolkit end-to-end process spreadsheet

Aspect	Description
KEY DELIVERABLE	Value Profile
Purpose	To review the Value Profile generated and ensure that the Strategic Team is happy with the progress so far.
Process	<p>This is largely an information review step. Engagement should include the following:</p> <ul style="list-style-type: none"> • Review Value Profile developed • Ensure satisfaction with the weightings of the Outcome Drivers • Ensure that the process mapping of the Strategic Objectives to the Capitals and categories meet what the Strategic Team is looking for. <p>How: Strategic Team members should review the Value Profile, before holding a workshop review session with the client and stakeholders to confirm the approach.</p>
Inputs	Reviewed and confirmed Value Profile
Outputs	A Value Profile that meets what the Strategic Team is looking for, which can now be used to measure value through the use of Measures of Success and Value Scorecards.
Supporting Tools and Further Guidance	<p>Value Definition Framework</p> <p>Value Toolkit end-to-end process spreadsheet</p>

Aspect	Description
Activity Step	Identify Measures of Success
Purpose	To identify the targets or goals that need to be met for the Outcome Drivers in order for the project to be deemed a success.
Process	<p>There are two stages involved in defining the Measures of Success. They are:</p> <ul style="list-style-type: none"> - Set Metrics - Set Performance Ranges <p>Defining these Measures of Success will enable development of Value Scorecards for the subsequent phases, and enable the client team to measure progress, compare options, and develop tender comparisons.</p> <p>How: Collaboration and discussion with subject matter experts will be key in identifying the Metrics and Performance Ranges for each Outcome Driver. Key steps include:</p> <ul style="list-style-type: none"> • Think about what success for each Outcome Driver looks like (i.e. how will you know it has been achieved) • Consider how it will be measured during the project • State when the Outcome Driver will be realised (e.g. end of construction, or after 2 years' operation) • Identify and define Metrics, including name, description, units and method of measurement • Whenever feasible at this early stage agree performance constraints, targets (e.g. Performance Target for embodied carbon = 450kgCO₂e/m²), and Minimum and Maximum Performance <p>Who: Subject matter experts covering all Outcome Drivers support by the Value Toolkit Facilitator and client decision makers.</p>
Inputs	<p>Fully developed Outcome Drivers</p> <p>Value Profile</p>
Outputs	Defined Measures of Success and Performance Ranges for each Outcome Driver
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet

Aspect	Description
KEY DELIVERABLE	Optioneering Value Scorecard
Purpose	To develop a Value Scorecard to be used to evaluate options and identify the preferred option to be taken forward into the Design phase.
Process	<p>In this step all Metrics and Performance Ranges identified in the Measures of Success step are reviewed to ensure they are influenceable and measurable during this phase. This will be a facilitated process where collaboration and discussion will be essential. Key steps include:</p> <p>How:</p> <ul style="list-style-type: none"> Review all Outcome Drivers. Where an Outcome Driver cannot be progressed during this phase it can be 'switched off': <ul style="list-style-type: none"> No further information will be needed for this Outcome Driver in this phase The weightings of the remaining Outcome Drivers will automatically rebase so that they are upscaled and the total sum of the weightings will equal 100% These Outcome Drivers will not be considered when comparing options in this Value Scorecard Review Metrics for each of the Outcome Drivers considered relevant for this phase. If the Metric previously defined for this Outcome Driver is not able to be measured at this stage then a proxy Metric should be identified along with appropriate Performance Ranges. Identify which data sources are required. <p>Once developed, the Value Scorecard should be used to gather the data against each Metric to enable performance to be assessed in the next step.</p> <p>Note: Value Scorecards are developed at the Optioneering and Design phases to compare options against the Value Profile. As the design develops and more information becomes available, the Value Scorecard inputs are likely to change at each decision stage. These will include which of the Outcome Drivers are relevant, and what Metrics and Performance Ranges are used to measure each applicable Outcome Driver.</p> <p>Who: Value Toolkit Facilitator in discussion with subject matter experts and the Concept Team.</p>
Inputs	Fully developed Outcome Drivers, with Performance Ranges defined.
Outputs	A developed Value Scorecard for the Optioneering phase comparison
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet

Aspect	Description
Activity Step	Compare Options
Purpose	To compare solutions based on their ability to deliver value against the Value Profile.
Process	<p>The performance achieved by each option against each Outcome Driver selected in the Optioneering Value Scorecard is compared to identify the relative value of each option.</p> <p>How:</p> <p>The performance value of each Outcome Driver in the Optioneering Value Scorecard is calculated for each option, and the value entered in the Value Toolkit end-to-end process spreadsheet.</p> <p>Each performance value is then converted to points to create a score against the Value Profile. The scoring model uses a bilinear scoring system, with a linear score progression applied between Minimum and Target Performance, and between Target and Maximum Performance.</p> <p>Once the performance values have been entered, The Value Toolkit end-to-end process spreadsheet will automatically show the score generated.</p> <ul style="list-style-type: none"> Additionally, the Value Toolkit end-to-end process spreadsheet will show whether the performance score is below Minimum, below Target, at Target, above Target or above the Maximum Performance <p>Once all values have been entered the relative performance of each option can be compared to understand which options score highest by comparing the total score for each option (i.e. how many points does each option deliver).</p> <p>Outputs from option comparison can also help inform a refinement of Outcome Drivers, Metrics and Performance Ranges for later phases.</p> <p>Who: Comparison of options will be undertaken by the Concept Team using the Metrics provided in the Value Scorecard. The calculation of the relative points is automated within the Value Toolkit end-to-end process spreadsheet.</p>
Inputs	Value Scorecard containing relevant Outcome Drivers, Metrics and Performance Ranges.
Outputs	Options comparison results in terms of a completed Value Scorecard.
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet includes functionality to allow options comparison including interrogation of relative performance.

Navigate back to [Part I, Optioneering phase chapter](#).

Client Approach

Aspect	Description
Activity Step	Form Concept Team
Purpose	Creation of a team to understand what the outcomes and Strategic Objectives identified in the Value Profile mean, to create a wide range of suitable competing options and to decide which option is likely to be optimal in order to realise the outcomes sought.
Process	<p>Concept Team: The members of this team collectively need to understand what the outcomes identified in the Value Profile mean, how they interrelate, and have the capability to develop suitable concept solutions.</p> <p>As a result, the size and extent of the Concept Team will be determined by the nature, scale, and complexity of the project or programme – including the breadth of options considered. This team should be formed early in the Optioneering phase and will likely be selected by the Strategic Team.</p>
Inputs	Information gathered in the process so far so that the Strategic Team can select a suitable Concept Team.
Outputs	A team who can create value in the next steps of the process
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Appraise relative risks
Purpose	<p>To identify the potential project or programme risks as well as opportunities associated with the different solution options.</p> <p>Consider risks in terms of opportunities to maximise Value Profile as well as threats.</p>
Process	<p>Identification of the potential project or programme risks associated with the different solution options.</p> <p>Consult with market to help identify project or programme risks.</p> <p>Who: Client / Concept Team</p>
Inputs	<p>Client's Mission, project outcomes sought and Value Profile.</p> <p>Initial solution options.</p> <p>Advice from the market – see Market Consultation</p>
Outputs	Identification of initial project or programme risks associated with the different solution options.
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Market consultations
Purpose	To identify potential project or programme risks and opportunities from the perspective of the market with regard to the various options being considered. This includes consideration of the Strategic Objectives.
Process	<p>Early consultation with critical parts of the market / supply chain in order to better understand the key issues to input into risk assessment and identify key issues with the emerging Value Profile. The focus should be on how the client will achieve their project outcomes alongside the sought values and identify feasibility of proposed solution options</p> <p>Who: Client / Concept Team</p>
Inputs	<p>Client's Mission and the Strategic Objective Profile</p> <p>Client's Value Profile</p> <p>Initial solution options</p>
Outputs	The market's view on potential project or programme risks and opportunities in achieving the Strategic Objectives.
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Clarify scope and risk
Purpose	The aim of this step is to produce the scope for each of the main options being considered, with their inherent risks, based in conjunction with feedback from the market.
Process	<p>Work up each of the options, understanding the significant constraints and derive the broad scope. Liaise with the market to understand any critical considerations.</p> <p>Designers to work out broad form for each option.</p> <p>Based on project and Value Outcomes and benefits sought, create scorecards to appraise each of the options.</p> <p>Who: Concept Team</p>
Inputs	<p>Value Profile</p> <p>Feedback from market</p> <p>Understanding of various solution options</p>
Outputs	Scope of work and appraisal of risk for each solution option
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Identify market factors
Purpose	<p>The aim of this step is to understand how early market indicators shape the optimal market role in the Delivery Model and any key constraints in the evolution of solutions. It involves consideration of the market dynamics that shape and inform the options for delivering the Mission alongside the Value Profile and how these factors, and the strength of market appetite, impact the risk and delivery options. It is also an opportunity to test the emerging preferred Delivery Model choice from the output of the Client Profile.</p> <p>Market factors can include timing, capability, capacity, availability, ecosystem design potential. A simple example is identifying very long lead items on which the whole programme will later depend.</p>
Process	<p>Early consultation with the market to input project or programme risk assessment and to market test appetite and capacity to engage with the proposed Delivery Model.</p> <p>Who: Concept Team</p>
Inputs	<p>Scope and risk for each solution option</p> <p>An initial assessment of the preferred Delivery Model based on the Client Profile.</p>
Outputs	Early indication of market appetite to undertake a range of potential roles and feedback on the proposed Delivery Model.
Supporting Tools and Further Guidance	

Aspect	Description
KEY DELIVERABLE	Delivery Model
Purpose	The aim of this step is to select the optimal Delivery Model option. This consideration of how the whole team should be best deployed must be carried out before consideration of forms of contract, incentives etc., in a break with established processes. As an example, all of the listed Delivery Models can be fitted into a Design and Build contractual approach.
Process	<p>Selection of the most suitable Delivery Model based upon outputs from confirmed scope, Value Profile, assessment of risk, client type and market factors.</p> <p>Full understanding of each of the preceding Client Approach steps is required to inform judgement on selection of Delivery Model.</p> <p>Who: Concept team make recommendations to Client.</p>
Inputs (includes input from other aspects and previous steps)	<p>Value Profile</p> <p>Client Profile</p> <p>Risk assessment and understanding of client's risk appetite.</p> <p>Market factors.</p> <p>Various solution options.</p>
Outputs	Optimal Delivery Model for desired outcome.
Supporting Tools and Further Guidance	

Navigate back to [Part I, Optioneering phase chapter](#).

Design phase

Value Definition and Measurement

Aspect	Description
Activity Step	Refine Value Profile
Purpose	To update the Value Profile to reflect the short list of options or single design option being considered.
Process	<p>The preceding steps are to be reviewed and updated as necessary as the options are narrowed, in particular:</p> <ul style="list-style-type: none"> Stakeholder engagement should evolve as the options are developed and the appropriate Outcome Drivers (Natural, Social and Human in particular) can be refined further as a result. As the level of detail is increased through the development process the Outcome Drivers can be refined. If any changes are made to the Outcome Drivers then their alignment to the assessment criteria will need to be reviewed and possibly adjusted. If the assessment criteria have been weighted, then these should not be adjusted unless there is a specific reason to. <p>How: An iterative approach should be taken during Optioneering as the options are developed and the level of detail is increased. Workshops, meetings, or updated surveys may all be used to refine the Value Profile.</p> <p>Where an Outcome Driver has been achieved, or its performance has become a direct requirement (i.e. its performance is no longer tradeable) it should be removed from the Value Profile.</p> <p>Who: Key decision makers, stakeholders and Design Team members all need to input to the process with guidance from the Value Toolkit Facilitator.</p>
Inputs	<p>Additional context information related to the development of the solution, including any updated scope of works / brief information and decisions made during Optioneering and Design phases..</p> <p>Value Profile</p>
Outputs	Updated Value Profile
Supporting Tools and Further Guidance	Repeat of previous steps with Value Toolkit end-to-end process spreadsheet and associated tools for each step.

Aspect	Description
KEY DELIVERABLE	Design Value Scorecard
Purpose	To develop a Value Scorecard to be used during the design to ensure the design is optimised to maximise the value achieved.
Process	<p>A new Value Scorecard should be developed that reflects updates to the Outcome Drivers made as a result of refinement during the Optioneering phase.</p> <p>How:</p> <p>The Optioneering Value Scorecard and Measures of Success should be reviewed to identify Outcome Drivers that are either no longer able to be progressed in this phase, or those that can now be progressed. The Design Value Scorecard will reflect these changes.</p> <p>Depending on the range of options that were considered in the Optioneering phase, it is possible that some Outcome Drivers will no longer be relevant for the selected design option.</p> <p>After this the steps in Develop Optioneering Value Scorecard should be followed.</p> <p>Once developed the Design Value Scorecard should be used to gather the data against each Metric to enable performance to be assessed in the next step.</p>
Inputs	Fully developed Outcome Drivers, with Performance Ranges defined.
Outputs	A developed Value Scorecard for the Design phase evaluation
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet

Aspect	Description
Activity Step	Evaluate design solution(s)
Purpose	To evaluate the selected design solution(s) based on their ability to deliver value against the Value Profile.
Process	<p>The performance for each Outcome Driver selected in the Design Value Scorecard is calculated at each design review milestone to identify opportunities to improve the value being delivered.</p> <p>How: As during Optioneering phase, the performance value of each applicable Outcome Driver is converted to points to create a score. Opportunities to further improve the score can be identified by looking at where each Outcome Driver sits within the Performance Range (i.e. is it above or below Target Performance?)</p> <p>Outputs from options comparison may also inform a refinement of Performance Ranges and the Metrics required for later stages.</p> <p>Who: the Design Team involved in developing the solution should review detailed options against the Design Value Scorecard to inform design decisions and demonstrate how value is optimised during detailed design.</p>
Inputs	Value Scorecard containing relevant Outcome Drivers, Metrics and Performance Ranges
Outputs	Design review results in terms of completed Value Scorecard.
Supporting Tools and Further Guidance	Value Toolkit end-to-end process spreadsheet includes functionality to allow design review based on the performance against Outcome Drivers.

Aspect	Description
KEY DELIVERABLE	Tender Value Scorecard
Purpose	To develop a Value Scorecard during Design phase against which bids can be evaluated.
Process	<p>The aim of comparison at this stage is to assess tender offers based on their ability to deliver value against the Value Profile.</p> <p>Updated Outcome Drivers are reviewed, and the Value Profile development process is reviewed and updated. This includes a review and update of Metrics and Performance Ranges.</p> <p>How: This step follows the same process as the development of the Design Value Scorecard. However, it should be noted that it is likely that by this stage many variables within the Value Profile may have been firmed up, so the number of Outcome Drivers is likely to be smaller.</p> <p>The Tender Value Scorecard is expanded to comprise three sections:</p> <ol style="list-style-type: none"> Strategic Objectives: Metrics and Performance Ranges directly relating to applicable Outcome Drivers from the Value Toolkit Tender Price: section to capture commercial bid submissions Confidence in delivery / competence: section to capture technical bid submission questions such as quality, health and safety, past experience, key persons and the like – fundamentally assessing whether the bidder is competent and experienced to deliver the Strategic Objectives. <p>Once the Tender Value Scorecard has been issued to the procurement team, no further changes should be made to the Outcome Drivers, Metrics or Performance Ranges.</p> <p>Who: The procurement team supported by the Strategic Team and Value Toolkit Facilitator.</p>
Inputs	Fully developed Outcome Drivers, with Performance Ranges defined.
Outputs	A developed Value Scorecard for the evaluation of tender bids.
Supporting Tools and Further Guidance	<p>Value Toolkit end-to-end process spreadsheet</p> <p>Tender Evaluation Guidance</p>

Aspect	Description
Activity Step	Compare tender options
The purpose of the step	To use the Tender Value Scorecard to compare each tender offer based on its ability to deliver value against the Value Profile as published in the ITT. The approach to comparing performance of tenders against the Value Profile needs to be defined as part of the tender documentation in order to ensure transparency.
What is done at this step	<p>How: As with the Compare Options step, the performance achieved by each offer against each Outcome Driver are converted to points to create a score. An appropriate methodology, as set out in the Commercial Strategy, for the evaluation of price and competence / confidence of delivery questions will be set and followed by the procurement team.</p> <p>Who: The procurement team, supported by the Design Team for technical support, review the points achieved by each tender for the Value Profile and combine with any other criteria set in the tender documents. The Commercial Strategy and tender documentation should detail the evidence requirements to substantiate the offering by each tenderer.</p>
Inputs	Performance requirements of each tender offer to be compared for all Outcome Drivers.
Outputs	Comparison of Tender Value Scorecard offered by each tenderer. The key output at this stage is to provide a comparison of all the tenderers.
Supporting Tools Available	<p>Value Toolkit end-to-end process spreadsheet includes functionality to allow options comparison based on the performance of options against Outcome Drivers</p> <p>Tender Evaluation Guidance</p>

Navigate back to [Part I, Design phase chapter](#).

Client Approach

Aspect	Description
Activity Step	Form Design Team
Purpose	This team is responsible for using their expertise in the Value Definition Framework to develop the design solution.
Process	<p>Design Team: This team will use their expertise in the to develop the design solution to the stage where there is sufficient information available to commence procurement of the Delivery Organisation(s).</p> <p>As a result, the Design Team must be made up of individuals and companies that understand what the outcomes mean and how they interrelate, and have the capability to develop solutions which will deliver the desired outcomes. The Design Team will include experts across the value categories and is likely to include designers, cost-managers, social value practitioners, and environmental specialists. The Strategic Team will manage the process of selecting and appointing the Design Team in the Design phase. The extent of their role will be determined by the Delivery Model selected and could be an extension of the Concept Team. The information collected in earlier stages should allow the appointed Design Team to be much more effective and come up with better solutions.</p>
Inputs	Information gathered in the process so far so that the Strategic Team can select a suitable Design Team.
Outputs	A team who can create value in the next steps of the process
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Refine risks
Purpose	To refine the risk assessment based upon the selection of a single design solution.
Process	<p>Refinement of the risk assessment based upon the selection of a single design solution.</p> <ul style="list-style-type: none"> • Use knowledge of selected design solution to further refine risk • Use refined Value Profile to further refine risk • Outputs from the refined assessment are also used to inform refinement of Value Profile • Hold 'Threats and Opportunities' workshop to update the risk landscape <p>Who: Design Team, Value Toolkit Facilitator</p>
Inputs	<p>Understanding of the selected design option</p> <p>Understanding of the designated work packages</p> <p>Refined Value Profile based upon selection of single design solution</p>
Outputs	Refined risk assessment
Supporting Tools and Further Guidance	

Aspect	Description
KEY DELIVERABLE	Commercial Strategy
Purpose	The aim of this step is to confirm the design of the Commercial Strategy.
Process	<p>Consideration of refined Value Profile and risk assessment to input design of Commercial Strategy. The key steps in the development of the Commercial Strategy are as follows:</p> <ol style="list-style-type: none"> 1. Scope and packaging Breaks down the role of the market into deliverable packages of work and define the following for each package. <ul style="list-style-type: none"> - The outcomes required aligned to the Value Profile - The deployment model for each package of work - The risk apportionment 2. Rewards and Incentives For each package the following decisions are made: <ul style="list-style-type: none"> - Choice of reward model from input/output/outcome - Choice of incentivisation mechanism from financial, repeat business or data monetisation. 3. Develop contract strategy Once the previous two steps have been completed an appropriate contract model can be selected which reflects the commercial intent. <p>Who: Concept Team to make recommendations to client.</p>
Inputs	<p>Understanding of refined Value Profile</p> <p>Understanding of refined risk assessment</p> <p>Understanding of the Delivery Model</p>
Outputs	A fit-for-purpose Commercial Strategy.
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Finalise risk management
Purpose	To clarify all of the final risks and how they will be managed during Delivery phase, confirming that the chosen Commercial Strategy fully allocates risk management.
Process	Review all identified delivery risks and confirm the correct procedures have been implemented into the Commercial Strategy to manage them during delivery. Ensure board-level engagement and support, so that the more complex risks remain in sight of the board. Who: Client/Design Team
Inputs	Understanding of the refined risk assessment and risk allocations from the Commercial Strategy.
Outputs	Confirmed risk management system
Supporting Tools and Further Guidance	Appendix A Risk and the Value Toolkit

Aspect	Description
Activity Step	Commence procurement of delivery organisation(s)
Purpose	The purpose of this step is to apply the Commercial Strategy and to commence the process of entering into contract with the Delivery Organisation.
Process	On determination of the Commercial Strategy, the procurement of Delivery Organisation can commence. The Commercial Strategy outlines the contract type and rewards incentives that will be applied. Develop Value Scorecards to appraise tender options. Who: Procurement team
Inputs	Commercial Strategy Tender Value Scorecards
Outputs	Issued ITT
Supporting Tools and Further Guidance	Tender Evaluation Guidance

Aspect	Description
Activity Step	Make recommendations
Purpose	To make recommendations on the best possible Delivery Organisations to go with.
Process	<p>Review all identified delivery risks and confirm the correct procedures have been implemented into the Commercial Strategy to manage them during Delivery phase.</p> <p>Evaluate Tender Value Scorecards from bidders to identify best offers.</p> <p>Information to be reviewed:</p> <ul style="list-style-type: none"> • Risk assessment • Commercial Strategy • Delivery Model • Ability of organisation to stop risks from occurring and mitigating them if they do • Tender Value Scorecards
Inputs	<p>Value Profile</p> <p>Commercial Strategy</p> <p>Delivery Model</p> <p>Completed Tender Value Scorecards</p>
Outputs	A completed review of data to show the best available option from the remaining Delivery Organisations
Supporting Tools and Further Guidance	Tender Evaluation Guidance

Navigate back to [Part I, Design phase chapter](#).

Delivery phase

Value Definition and Measurement

Aspect	Description
KEY DELIVERABLE	Delivery Value Scorecard
Purpose	To develop a Value Scorecard to be used to assess performance during and at the end of the Delivery phase
Process	<p>How: This step should very closely resemble the Tender Value Scorecard development process. The only changes should be updating the Target Performance values to reflect the proposed performance offered by the successful tenderer, as well as any other changes that may have been agreed during the procurement process.</p> <p>As the Delivery phase progresses, the performance of the Delivery Organisation(s) will be assessed against each of the applicable Outcome Drivers, using the Metrics set out in the Delivery Value Scorecard.</p> <p>Who: The procurement team supported by the Strategic Team and Value Toolkit Facilitator.</p>
Inputs	<p>Tender Value Scorecard</p> <p>Performance commitments from selected tenderer</p> <p>Additional context information related to the development of the solution, including any updated scope of works / brief information.</p>
Outputs	Delivery Value Scorecard
Supporting Tools and Further Guidance	Repeat of previous steps with Value Toolkit end-to-end process spreadsheet and associated tools for each step.

Aspect	Description
Activity Step	Validate Delivery performance
Purpose	To measure performance during and at the end of the Delivery phase.
Process	<p>Validating the delivery performance allows the Strategic Team to assess the actual performance of the Delivery Organisation(s) compared to the performance set out in the contract. Regular joint validation exercises with the Delivery Organisation(s) will allow them to take any necessary corrective action and will also allow any contractual incentivisation mechanisms to be applied.</p> <p>How: As with other phases, the performance of each applicable Outcome Driver is converted to points to create a score.</p> <p>It is recommended that this monitoring should be done periodically during the life of the contract, e.g. every 3-6 months to enable corrective actions to be taken if necessary.</p> <p>It must be noted that as the Value Profile only includes a small number of critical outcomes, this process is different to routine contractual performance reviews that will be undertaken monthly using a much wider set of KPIs.</p> <p>The results of monitoring completed in these stages should be verified and comply with any assurance requirements. To verify results for Human and Social outcomes, further stakeholder engagement is likely to be required.</p> <p>At the end of the Delivery phase (and during, where possible), the Strategic Team will confirm to the client that the outcomes and value that has been achieved for those Outcome Drivers related to the Delivery phase.</p> <ul style="list-style-type: none"> - This will give the client a picture of the efficacy of the solution and the Delivery Organisation(s) at this moment in time. This may be the basis for triggering contractual incentivisation mechanisms, although these may extend well into the Operation phase, depending on the Commercial Strategy implemented. - The value at handover will give the client a reference point against which ongoing operational performance can be measured, and an opportunity to feed learnings from one project into subsequent projects. - The Delivery Organisation(s) will continue to have contractual obligations into the Operation phase and monitoring of performance against the Value Index should continue with the relevant Metrics. <p>Lessons learnt through the Delivery and Operation phases should be used to feedback into other projects and programmes that are using the Value Toolkit. In particular, any unintended impacts (positive or negative), beyond the scope of contractual obligations, identified through the stakeholder engagement should be fed into the review/updating of the Value Profile.</p> <p>Who: Procurement team, Project Manager and Director as well as other members of the Strategic Team as needed.</p>
Inputs	<p>Delivery Value Scorecard</p> <p>Performance data from regular contractual monitoring.</p>
Outputs	<p>Performance level being achieved during delivery.</p> <p>Lessons learnt</p>
Supporting Tools and Further Guidance	Repeat of previous steps with Value Toolkit end-to-end process spreadsheet and associated tools for each step.

Navigate back to [Part I, Delivery phase chapter](#).

Client Approach

Aspect	Description
Activity Step	Award Contract (MAT = Most Advantageous Tender)
Purpose	To award a contract to the Delivery Organisation with the best Delivery Model and Commercial Strategy to meet the client's Core and Value Outcomes
Process	Review all identified delivery risks and confirm the correct procedures have been implemented into the Commercial Strategy to manage them during delivery. <ul style="list-style-type: none"> • Send contract offer to the preferred choice • Develop Delivery Value Scorecard
Inputs	Value Profile Commercial Strategy Delivery Model
Outputs	A completed contract offer to Delivery Organisation of choice Developed Delivery Value Scorecard
Supporting Tools and Further Guidance	

Aspect	Description
Activity Step	Active risk management
The purpose of the step	To continuously review risk management processes and undertake proactive decision making during the Delivery phase.
What is done at this step	Coordination of risk activities across teams to support a more integrated risk management approach. <ul style="list-style-type: none"> • Active mitigation of risk. • Encourage openness about risk to enable transparency throughout organisation hierarchy. • Apply concepts and methodologies which focus on the management of a range of value-based risks. • Promote risk awareness and encourage teams to share knowledge in order to identify any potential deviations from plan early on. Focus on prevention rather than cure. • Hold 'Threats and Opportunities' workshops at appropriate intervals and update the risk landscape. • Validate delivery performance from evaluation of scorecards. • Always ensure Board oversight and vision. Who: Client/ Contractor/ Design Team
Inputs	Refined risk assessment and risk management processes Completed Delivery Value Scorecard
Outputs	Involved and informed risk management process
Supporting Tools Available	Appendix A Risk and the Value Toolkit

Navigate back to [Part I, Delivery phase chapter](#).

Operation phase

Value Definition and Measurement

Aspect	Description
KEY DELIVERABLE	Operation Value Scorecard
Purpose	To develop a Value Scorecard to be used to assess performance during the Operation phase.
Process	<p>A new Value Scorecard should be developed that reflects the Outcome Drivers, Metrics and Performance Ranges used during the design process to achieve operational performance of the asset. If the asset is being operated by a third party under contract then the Operation Value Scorecard should also be used as a contractual performance tool</p> <p>How: This step follows the same process as the development of the Delivery Value Scorecard. It will be based on Design phase Outcome Drivers and Metrics but with updates for any changes implemented during Delivery phase.</p> <p>At regular intervals as the Operation phase progresses the performance will be assessed against each of the applicable Outcome Drivers, using the Metrics set out in the Operation Value Scorecard.</p> <p>Who: Client operations team, and procurement team (if being operated under contract) with support from the Value Toolkit Facilitator.</p>
Inputs	<p>Design Value Scorecard,</p> <p>Delivery Value Scorecard including any changes made to the design during Delivery phase.</p>
Outputs	Operation Value Scorecard
Supporting Tools and Further Guidance	Repeat of previous steps with Value Toolkit end-to-end process spreadsheet and associated tools for each step.

Aspect	Description
Step	Validate Operational performance
Purpose	To measure performance during the Operation phase to demonstrate that the benefits outlined in the Value Profile have been realised.
Process	<p>Validating the operational performance allows the Strategic Team to assess the actual performance of the asset, and any third party operators, compared to the Design Value Scorecard. If the asset is being operated by a third party operator then regular joint validation exercises with them will allow any necessary corrective action to be taken. It will also allow any contractual incentivisation mechanisms to be applied.</p> <p>How: As with other phases, the performance of each applicable Outcome Driver is converted to points using the mathematical model, to create a score.</p> <p>Monitoring of performance against the Operation Value Scorecard should continue with the relevant Metrics to validate the delivered performance as well as to capture the long-term outcomes for as long as is needed to demonstrate the benefits have been (or will not be) achieved. This is an important activity to be able to demonstrate the value-based outcomes generated on a project or programme of work.</p> <p>In addition depending on the nature of the project or programme it may be necessary to also continue to monitor performance of the Delivery Organisation(s) into the Operation phase.</p> <p>To verify results for Human and Social outcomes, further stakeholder engagement is likely to be required. Lessons learnt through the Delivery and Operation phases should be used to feedback into other projects and programmes that are using the Value Toolkit. In particular, any unintended impacts (positive or negative), beyond the scope of contractual obligations, identified through the stakeholder engagement should be fed into the review/updating of the Value Profile.</p> <p>Who: Client operations team, and procurement team (if being operated under contract) with support from the Value Toolkit Facilitator.</p>
Inputs	<p>Operation Value Scorecard</p> <p>Performance levels from regular operational monitoring.</p>
Outputs	<p>Performance level being achieved during Operation</p> <p>Lessons learnt.</p>
Supporting Tools and Further Guidance	

Navigate back to [Part I, Operation phase chapter](#).

Client Approach

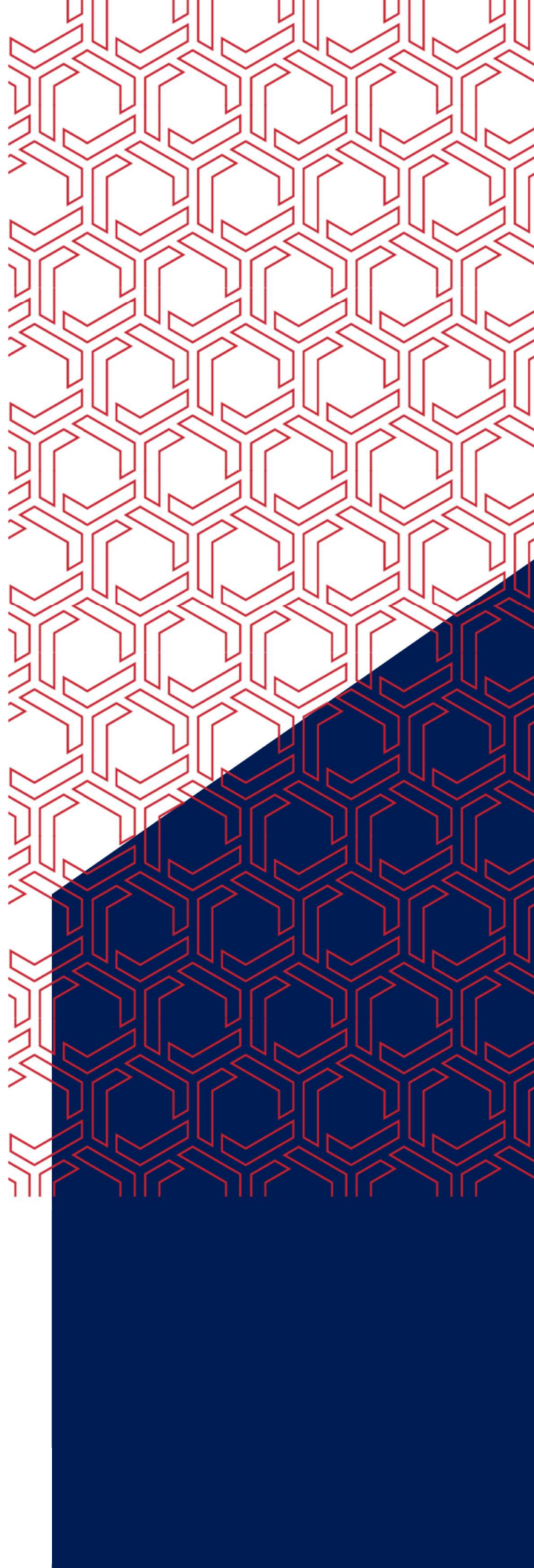
Aspect	Description
Activity Step	Final reward
Purpose	To prepare the final reward statement to issue to the Delivery Organisation.
Process	<p>Review of Operation Value Scorecards to validate operational performance.</p> <p>Preparation of the final reward statement to issue to the contactor.</p> <p>Who: The Strategic Team oversees and facilitates this step and take overall ownership of the process, although other team members (e.g. Project Managers etc.) may be involved depending on the size, complexity and type of project.</p>
Inputs	Operation Value Scorecards
Outputs	Final reward statement to issue to the Delivery Organisation.
Supporting Tools and Further Guidance	

Navigate back to [Part I, Operation phase chapter](#).

Part III

Appendices

Back to [beginning](#) of handbook.



Part III Contents

Appendix A Risk and the Value Toolkit	112
Appendix B Client Profiling and the Value Toolkit	128
Appendix C Selection of Delivery Model	133
Appendix D Commercial Strategy	142
Appendix E Value Scorecard mathematical model	147
Appendix F: Overview of the United Nations Sustainable Development Goals	151

Appendix A Risk and the Value Toolkit

This appendix seeks to provide more detail about current attitudes to risk and risk mitigation across the industry, and how these need to change to better support value goals. It should be emphasised that by taking the time to reappraise, understand and manage risk more actively, clients position themselves to achieve better project outcomes overall.

The current approach to risk in construction projects

Projects can go wrong in many ways. Due to their complexity, large construction projects far too often go wrong even by the narrow definition of coming in late and over budget. And they go wrong in many other ways, too: failing to work as intended, or failing to achieve the wider objectives or values sought by the client. The Value Toolkit helps with this issue at every level. By enabling clients to encapsulate a wide range of values through to Delivery and Operation, it ensures that success can be judged by a full range of values – including time and budget. The potential for success is therefore far greater from the start.

Once a project has been launched, change is the enemy of successful delivery: distracting project teams, altering well-thought-through plans and necessitating much rework. By helping clients to identify the project's true aims – its Mission and Strategic Objectives – early on in the process, the Value Toolkit enables them to define the scope and ambition of the project with a degree of accuracy that will limit subsequent client-initiated change. If client teams are clear about Strategic Objective at the outset and have the understanding to choose the Delivery Model most suitable to achieving them, there will be many more successful projects.

Clients are not the only source of change, however. Risks materialise: things happen, usually unexpectedly, generated by human or environmental issues, and the project or programme must react. These risks also need to be understood and controlled more comprehensively to enable successful delivery of projects in terms of time, budget and value.

Often traditional approaches to risk management lead to risk aversion and dumping. It is the aim of the Value Toolkit's Client Approach stream to address these problems. A much broader range of risks may thus be assessed in more sophisticated ways, reducing the likelihood that the client does not achieve their ultimate goals.

The Value Toolkit's recommendations enable risk to be dealt with as *it relates to a project's full potential*.

Broadening the discussion about risk

A comprehensive discussion of risk requires diverse terms for the concepts involved. In broadening the discussion of how risks are identified and dealt with, this document draws on the following concepts:

- **Risk currency:** Risks that threaten a project's Value Profile are not necessarily translatable into financial consequences. Other currencies will be involved, and this must be acknowledged.
- **Risk complexity:** Most risks encountered on modern projects involve serious behavioural, political and technical complexities, or a combination of these. Such risks need to be dealt with in

more sophisticated ways that involve moving risk management from a linear approach to a multi-dimensional appreciation and awareness of risk.

- **Risk elevation:** The whole project team right up to board level needs to be actively engaged in dealing with risks and managing them transparently. Boards must not be taken by surprise by the culmination of risks they did not see coming. For many risks, only the board will have the breadth of vision to understand their significance; thus, they are also best placed to identify and manage them.
- **Risk mindset:** Risk management involves being aware of and dealing with both threats and opportunities as they arise. An actively involved board is in a strong position to recognise opportunities and seize them nimbly.
- **Risk portfolio:** Many of the risks involved in delivering infrastructure and built environment investments are common across sectors (e.g. construction inflation, skills constraints, planning system) and are best mitigated by a cross sector response from government departments, industry as a collective, or by HM Treasury. The consistent assessment and monitoring of portfolio level risks would allow greater visibility and enable government to take informed policy decisions to deal with them.

Levels of risk: project, programme and portfolio

Clarity about the project Mission is essential to risk assessment, because risks derive their significance from what the client is trying to achieve.

The Infrastructure and Projects Authority (IPA) report, Transforming infrastructure performance (2017) sets out the vital importance of clarity of outcomes. It further stresses that the only way an asset owner can make significant improvements is by considering a much wider range of success factors.

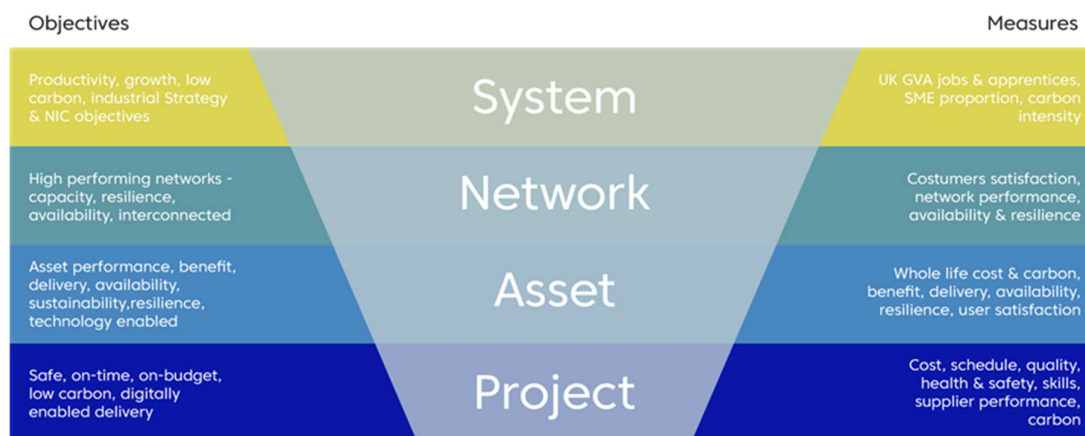


Figure 1 Tiered success factors and measures (after IPA Transforming Infrastructure Performance report)

The figure above shows the different levels at which successful outcomes need to be achieved. Given the systemic nature of infrastructure, such projects must be considered at every level shown.

Current definitions of risk

This section presents a definition of risk in accordance with recognised guidelines. ISO 31000:2018 (Risk management - Guidelines) makes the following definitions:

- Risk is the 'effect of uncertainty on objectives' and thus allows for both opportunities and threats;
- Risk management is the 'coordinated activities to direct and control an organisation with regard to risk'.

This guidance goes on to define 'effective risk management' as needing to be:

- Built into all the organisation's activities
- Structured and comprehensive, customised, inclusive and dynamic
- Based on the best available information
- Alive to human and cultural factors
- Subject to continual improvement.

It defines risks according to risk sources (or hazards), potential events, their consequences, and their likelihoods.

Illustrative example 1: What risk terminology means in practice

A rupture in the earth's crust along a plane of weakness (source) may allow a severe earthquake to be triggered (event). This occurs frequently (likelihood) but only strikes a forest (consequences), so is relatively benign.

An earthquake that could strike a city would be a very severe risk.

Therefore:

Risk severity = likelihood x consequences

There are several other British and global risk management standards, referenced at the end of this appendix.

Understanding the significance of risk consequences

To understand risk management properly, consideration must be given both to the management of risk and to who will carry the cost of any consequences if the risk materialises. These two important considerations are often mistakenly conflated whereas in practice they are completely distinct, as follows:

- **Manage the risk**, i.e. try to prevent it from materialising – Best achieved by whoever is most competent in the area, and thus also most prescient about probable impacts.
- **Own the consequences**, i.e. there needs to be a mechanism for allocating ownership of the consequences should the risk materialise. Such transfer of risk may be partial – e.g. to keep the client's premium costs manageable, a supplier may accept the consequences of a risk up to a certain amount, which is then capped. Or the supplier may accept the direct financial impact, but not other consequences including the broader effect on the programme.

Illustrative example 2: The difference between risk management and ownership of consequences

We usually delegate management of ill health to a doctor (or healthcare service), although to varying degrees we manage our own health, too. We expect the doctor to have high professional standards, both in the extent of their expertise and in applying it zealously to look after us. We also recognise that one day we will die, so the risk of death is ultimately 100%.

We may blame the doctor for the consequences of our ill health if they use their expertise badly. But we should not blame the doctor for the fact we became ill (indeed, we may have ignored advice about our health). Furthermore, if the doctor knew we would blame them for our illness, would they act better in our interests? Probably not: doctors in highly litigious environments practice very defensive medicine, making decisions on the basis of what is least likely to result in blame for them. This not only ends up being more expensive, but also means that doing the best thing for the patient is secondary, in the practitioner's eyes, to avoiding blame.

We have to accept that, as the patient, we will own the consequences ourselves.

The practice of risk management needs to be much more rigorous in appreciating the difference between risk management and ownership of consequences. Example 2 shows how the incentives we set up for key suppliers can be counterproductive to our aims, especially if risk management is conflated with the allocation of consequences. Over-reliance on suppliers' Professional Indemnity Insurance can leave the client exposed, because it only covers negligence – whereas there are often risks for which no-one can be blamed, or blamed alone. Outputs increasingly derive from many suppliers and in such a complex environment, many more of the risks will be complex too.

Risk delegation is expensive. Suppliers put a high price on taking responsibility for risks that may be magnified by consequences they aren't positioned to control or mitigate. This means that clients may pay handsomely for transferring risks even though, if things do go wrong, they themselves may ultimately bear the consequences. Over-delegation also leaves the client more likely to be blind-sided by events. Rational clients know they must remain risk-aware, with high visibility over those factors most crucial to project or programme success.

Insurance, rather than delegation, is a valid option for the risk-averse client. However, active risk management will still be imperative: if the policy is to be effective, insurers will seek evidence that risks were very actively managed.

At the end of the day, the client owns all risks, no matter how thorough a lawyer has been in drafting contracts or how much money has changed hands. The bigger risks – those most difficult to deal with – have consequences that more often revert to the client, irrespective of allocation. Wise clients know this. Rational clients do not look to contracts and insurance policies alone to deal with risk.

Dealing with risk in terms of consequence

As ISO 31000 defines, risks are a subset of uncertainty. A common fallacy in risk management is to treat all risks in the same way as if they were resolvable, with a simple ranking based on consequences x likelihood, usually both ranked on a scale of 1 to 5, and a familiar matrix to show what is tolerable and what is less tolerable.

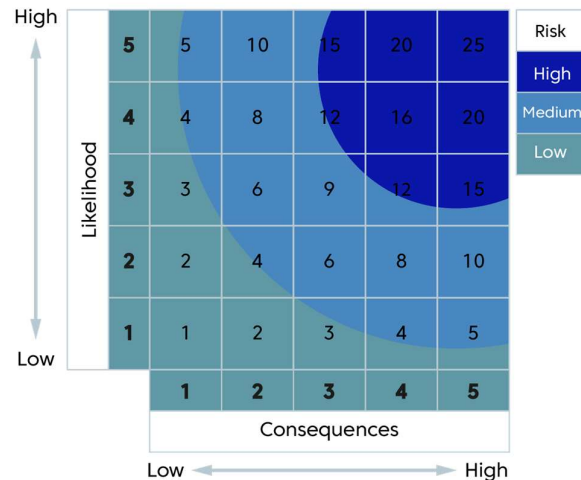


Figure 2 Standard risk matrix ranking risks by consequences x likelihood

This makes risk management look simple. All the initially identified risks go into a spreadsheet, and effort goes into addressing those with a higher ranking – often with a likely cost that is factored by its likelihood. The simplicity of this approach fundamentally misjudges the nature of the risks. To summarise the flaws:

- Not all risks are known at the outset.²
- Therefore, no risk list is ever complete, no matter how well the issues are brainstormed initially.
- Especially on bigger projects and programmes of work, not all risks are even discoverable at the outset, as many aspects are only defined years after the initial risk workshop.
- Some risks come about because of how the project is set up and run:
 - if the budget is too low and the programme too short at the outset, then it is likely that these will be exceeded;
 - if the wrong Delivery Model is used, the Commercial Model incentivises the wrong behaviour or the Procurement Transaction selects less capable suppliers or introduces additional complexity, then resilience is lost and the team is less able to respond effectively to issues when they arise.
- The way the project is organised and managed can lead to risks being dealt with less capably and can significantly inflate the consequences when certain risks materialise.
- Some risks by their very nature will be more of a threat to the successful realisation of particular outcomes, and so to the Value Profile. Such risks deserve more attention, irrespective of ranking.

² the famous quote from Donald Rumsfeld sums it up: "Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones" (2002)—his emphasis on the latter being most difficult is especially notable.

It is important always to think about risks in terms of their consequences. Some risks have relatively simple consequences which may just need money to address, whereas others may be so profound as to derail an entire project.

Illustrative example 3: The importance of risks derives from the severity of their consequences

If I buy the wrong excavator, the worst consequence is that I need to buy the right excavator later and I have wasted money on an excavator I don't need. The right one is probably available relatively quickly, so the effects of the mistake are predictable and easy to mitigate, possibly by spending contingency held in a risk pot.

If I buy the wrong tunnel boring machine (TBM) and only discover mid tunnel drive that I should have bought a different one, then the cost and time implications of halting tunnelling, stabilising the tunnel face (if that is even possible), dismantling the machine and withdrawing it, procuring a new machine (years) and re-boring the tunnel will almost certainly utterly destroy the project.

Therefore, the *consequences* of making the wrong purchasing decision are far more profound in the case of the TBM than of the excavator. The risk of buying the wrong excavator has consequences so severe that no risk pot could ever cover it. Recognising the magnitude of the consequence should drive investment in the right expertise very early on as the only way to minimise this risk.

Ultimately, the budget to build the Crossrail project in London has approached £20billion, and a TBM of the sort needed for Crossrail costs approximately £20million.

Risks must also be considered in terms of unintended consequences. Poor choice of Delivery Model, Commercial Strategy and approach to procurement all have adverse consequences that are directly related to misunderstanding their importance to the effective management of risk. Every choice of success Metric or incentivisation of a particular value may be gamed by suppliers in unexpected ways. Therefore, great awareness is needed in aligning suppliers with the value goals of the client.

Illustrative example 4: Poorly planned incentives carry the risk of unintended consequences

A client's Strategic Objectives include the promotion of small local suppliers. However, poorly planned engagement with those suppliers ends up biased towards a subset of local firms, unintentionally excluding others. Instead of stimulating the local economy, the project stokes local divisions with adverse effects on the community. In this case, achieving a simple Metric intended to promote community engagement effectively undermines it instead.

Generally, in risk management, resilience – the ability to recover from adversity or misfortune – provides far better protection against risk than attempted prescience. In terms of an organisation or project, resilience needs careful thought and is usually achieved by appropriate investment.

Typical approaches to dealing with risk

The table below defines and summarises the commonly used approaches to dealing with risk.

APM “Project risk analysis and management”	Treatment 4 Ts	Comment / applicability
Accept	Tolerate	This response is only appropriate to risks that can be dealt with if they arise – straightforward or “normal” risks.
Transfer	Transfer	Transfer of risk is never a full response. When used, it needs to be planned thoughtfully and to recognise that the client always ultimately owns the risk.
Reduce	Treat	Active mitigation is the appropriate response for most significant risks.
Avoid	Terminate	Avoidance is reduction in its most extreme form. It is important for the most dangerous risks but can very seldom be achieved absolutely.

Table 1 Risk management responses

Clients must remain aware that ultimately they will have to own any emerging risks. This is especially important for reputational risks, where a supplier may not be as concerned as the client will be. For these most significant risks, it is important that the client retains oversight and control, even where risk transfer has been attempted.

For the biggest and most complex risks, the client may wish to select a Delivery Model that maximises their direct control. In a very complex stakeholder environment with many critical parties that can easily derail the project, the client should seek greater, rather than less, involvement in how risks are dealt with. As discussed in previous sections, transfer of risk rarely works for anything but the simplest consequences, where it may sometimes be used as a way of delineating who owns the (straightforward, often financial) consequence. ‘Avoid’ and ‘terminate’ are valid approaches to risk management but are seldom completely effective; therefore, there will still be a need to reduce/ treat the residual risk in these categories.

Therefore, the four typical responses outlined in the table above can be consolidated as follows:

- **Accept** (tolerate) – includes risk management but may not involve active mitigation – and the risk pot / contingency approach is valid. This is only for straightforward risks, which can be addressed financially without damage in other project areas. For such risks, active mitigation is invariably a good investment.
- **Reduce** (treat) – especially where the risks are complex, behavioural, political, technical or a combination of these. Here, active mitigation must be undertaken in advance with proper investment to reduce the risk.

Active risk management that uses investment wisely is very likely to lead to savings in the outturn cost, resulting from a far more reliable programme. Investment means spending the right amount at the right time to achieve the required outcome – not spending more overall, or spending to achieve an outcome that is better than required.

It should never be forgotten that the flipside of risk is opportunity. Active risk management positions the client to **identify** and **exploit** the possibility of opportunity; **enhance** the situation to make opportunity more likely to arise; **accept** opportunity that arrives unexpectedly; or **share**, as sometimes opportunity will only come about as a result of positive collaboration with others.

Role of consultants and contractors in managing risk

Much of the expertise that will be needed to make prescient risk management decisions lies with suppliers. A key aspect of market engagement should therefore focus on exploring the full range of risks and how they relate to the client's Value Profile.

As part of this approach, suppliers need to be equipped to discuss potential options for the treatment of risk and develop a deeper understanding of how such risks may affect the client's selection of the Delivery Model and Commercial Strategy.

A useful example is the management of ground risk, for which the industry has evolved some models but where surprises still occur far too often. Ground risks are explored using the following standard reports:

- **Desk study** – the first, early stage of risk awareness for this major risk source. For a comparatively small investment, desk study can reveal a huge number of the sorts of risk that may affect the project. The common practice of competing on price for the desk study may result in a false economy: this valuable study should not be so cursorily done that it becomes worthless.
- **Ground investigation** – This is used to investigate and mitigate the earlier-identified risks by drilling boreholes and digging pits. Too often, the ground investigation is treated as a mini project, so that going over budget in the process of locating a vast, unknown hazard (such as an old mine shaft) is seen as a failure, rather than a success and lucky escape.
- **Geotechnical Baseline Report** – the contractual means for defining what should be expected and unexpected between the client and contractor – what NEC4 defines as “which an experienced contractor would have judged, at the date of the contract, had such a small chance of occurring that it would have been unreasonable to allow for them” – so not a summary of what has been found in the ground, but definition of conditions that should be expected.

Illustrative example 5: Contractor's use of a Geotechnical Baseline Report in to inform levels of risk

For a major tunnel drive under a city, there is always the risk of encountering old piles or wells, or even live piles holding up a current building. Such clashes are expensive and very disruptive. Even after exhaustive desk study and detailed ground investigation find no evidence of such a clash, the risk remains as it will be impossible to check the as-constructed toe level of every pile in a city. The report may state on the basis of experience from similar projects that the contractor should allow for two such events occurring. The contractor can accept this risk and price for those two events, the risk is explicit and delegated and the contractor must decide how they will deal with it.

If the contractor believes that too shallow an alignment has been picked for the tunnel route and the likelihood of the risk occurring is high, they will price accordingly. Conversely, having considered all the information, the contractor may believe that the likelihood of the risk occurring is very low, and may not price for it at all.

The client should remain aware that although the direct consequences of the risk occurring are passed on to the contractor, the implications for the whole project may be severe. The tunnel boring machine failing to arrive at an adjacent station under construction may interrupt another contractor's sequence of works – with knock-on effects for the whole programme of works.

These examples are given to illustrate the need for major risks to be actively mitigated by the whole project team. It is hoped that the Client Approach activities advocated by the Value Toolkit will enable many non-technical risks to be better assessed. These are often overlooked threats to the successful completion of the project and delivery of the Value Outcomes sought by the client.

Risk currency

The traditional risk currency is money: risk is usually seen in terms of cost or programme (which is itself translated into costs).

The Value Toolkit advocates strongly that risks should be seen much more completely in the sense (from ISO 31000) of the 'effect of uncertainty on objectives'. Many of those objectives will be part of the Value Profile. Such objectives cannot necessarily be expressed financially, but failure to meet them will represent a great loss to the project or programme, its participants, its sponsor and ultimately to society as a whole. Value Scorecards will present more sophisticated Metrics against which these objectives can be seen to succeed or fail.

This document proposes that risk should be measured in three ways:

- **Cost and time (traditional)** – these measures remain, and the notion of a contingency is still applicable for some risks, particularly as the project proceeds and risks become better known.
- **Threats to outcomes** – bigger risks that may involve technical and/ or behavioural complexities, such as loss of key stakeholders' trust to a degree that threatens the project.
- **Threat of values not being achieved** – for such risks, the Metrics developed in Value Scorecards become part of the risk currency.

Importance of board involvement

The materialisation of risks is one of the most critical issues for the board, so it is important that the client's project board - and potentially main board - are fully informed and involved.

It has been shown that on many large projects, those carrying out day-to-day project activities have a realistic idea of how the project is going – including where it is going wrong – while those with the power to make decisions and manage risk are unaware of looming crises (and indeed, opportunities) before they happen (or are missed). This may be connected to the incentivisation of project participant organisations (and even individuals) to attain key dates or targets, as it takes a brave person to flag that these won't be met. Often such brave whistle-blowers receive criticism rather than reward for flagging that action is needed.

Complex situations need the very active involvement of the project board, as the board's members will understand the wider objectives and constraints, and the concerns of the most significant stakeholders. They will therefore be able to make the necessary risk and other trade-offs. At least one member must have the specific duty to oversee risk management (although ideally, all board members will take interest in the hidden issues that threaten success). This role involves regularly and deeply exploring the most significant risks. It is vital that board-level risk exploration is not based on summary reports prepared elsewhere, but on immersion in the details and full engagement with project participants, right down to the shop floor. This is the only way to ensure that the full breadth of project knowledge is applied to resolving risks and maximising opportunities.

The board should ensure that there are formal layers of defence in place to ensure that risks are appropriately dealt with. These are likely to include:

- Within the project team – the team should be charged to actively manage all risks and report regularly on their impact, especially giving warning of any risks that are escalating
- Within the risk and compliance function for the project – recognising the complexity of many of the project risks and staffed by informed people capable of appreciating the complexities and able to challenge and interact with those who are managing the risks
- By audit and board action.

The board should promote a culture of openness and honesty so that there are no incentives to hide or distort risks. As promoted by the UK Corporate Governance Code for listed companies, these principles apply equally to project boards and their members.

Determining an appropriate risk management approach

A risk profile is a means of providing a summary assessment of the client organisation's risk management capabilities and practices as appropriate to the project. An example of what this involves in each category of risk management is given in the table below:

Category	Risk Management Approach	Client Leadership	Risk Currency
1. Traditional	<ul style="list-style-type: none"> • Spreadsheet- based • Siloed • Disconnected from main project processes 	<ul style="list-style-type: none"> • Delegated • Largely uninvolved • Subject to frequent surprises 	<ul style="list-style-type: none"> • £, time
2. Active	<ul style="list-style-type: none"> • More aware • Wicked and messy risks treated differently • Reward team for openness 	<ul style="list-style-type: none"> • Involved and informed 	<ul style="list-style-type: none"> • £, time, and value linked need
3. Fully rational	<ul style="list-style-type: none"> • Holistic Immersed in all processes 	<ul style="list-style-type: none"> • Immersed • Active Board involvement • Full transparency Inspires team 	<ul style="list-style-type: none"> • Value currency

Table 2 Categories of risk management capability

Only very simple projects should be satisfied with traditional risk management – the first category. Large and complex projects and programmes should be striving to be in the third category – fully rational – if they are to increase their likelihood of success. The three approaches to risk management are characterised below:

Approach to risk management facet	Traditional Category 1	Active Category 2	Fully rational Category 3
Who should do it	<p>Practitioners as implementers of the risk process.</p> <p>Uses training and development to produce practitioners who can follow detailed procedures and techniques as prescribed by project management methods and tools.</p>	<p>Practitioners as coordinators of risk management.</p> <p>Develops practitioners through defined risk management training which allows scope for free thinking and application of methods based on experience. Emphasis on knowledge sharing between teams.</p>	<p>Practitioners as reflective listeners.</p> <p>Facilitates the development of reflective practitioners who can listen, learn, operate and adapt effectively in complex project environments, through experience, intuition and the pragmatic application of theory.</p>
What they do	<p>Establishes detailed steps, processes and timetables for risk management. Manages process to ensure complicated projects are kept running smoothly. Attempts to control risk by monitoring results, identifying deviations from the plan and developing mitigation actions to return to plan.</p> <p>Considers the risk management process to be a linear sequence of tasks to be performed using codified knowledge, procedures and techniques, and based on an image of projects as apolitical production processes.</p>	<p>Focuses on prevention over cure. Constantly reviews risk management processes and takes the necessary actions to achieve desired outcomes. Encourages coordination of risk activities across teams to support a more integrated risk management approach. Openness about risk is encouraged to promote transparency throughout organisation hierarchy. Applies concepts and methodologies that focus on the management of a range of value-based risks. Risk awareness is promoted, and teams are encouraged to share knowledge in order to identify any potential deviations from plan early on.</p>	<p>Understands the 'many acceptable futures propositions' and manages risks to produce the changes needed to achieve the desired outcomes. Develops behaviours and confidence in team through scenario-planning and team-building to identify and respond to risks and opportunities. Applies concepts and frameworks which focus on risk management as value creation. Adapts the risk process to overcome major political, bureaucratic and resource barriers to develop change in behaviours. Develops trust through managing expectations. Uses concepts and images which focus on social interaction, understanding the flux of events and the framing of projects within an array of social agendas, practices, stakeholder relations, politics and power.</p>

Approach to risk management facet	Traditional Category 1	Active Category 2	Fully rational Category 3
Overall approach	Seeks predictability and order – frustrated by the emergence of new information.	Able to implement effective contingency plans and efficient escalation procedures. Aware of the potential for ‘unknowns’ and is receptive to their discovery.	Has learnt to live with chaos, complexity and uncertainty. Recognises that value creation can only emerge from navigating these successfully.
Key presumptions about their risk model	Traditional client assumes that the risk model reflects reality	Active client believes that the risk model is an active process that needs constant challenge and a flow of fresh insights to keep it current.	Fully rational client is alive to the development of new risk models and theories which recognise the full complexity of projects and project management, and that the model must reflect these complexities.

Table 3 Characterisation of risk management approaches (adapted from *Tame, Messy and Wicked Risk Leadership* by David Hancock, 2010)

A risk profile may be developed in the Optioneering phase to compare different the options under consideration. It is recommended that the profile should follow the overall shape of the NAO’s DECA methodology as outlined below. This provides a solid basis for assessing the complexity of a project in terms of risks that could derail it. Different project options may have different risk profiles and obviously, risk should be an important determinant in selecting a most favoured option. Generally, project options should be assessed according to:

- Likelihood of achieving the Strategic Objectives
- Affordability against a range of Metrics
- Inherent risks that affect certainty/likelihoods.

Assessment using the NAO DECA methodology <i>plus others based on the Value Toolkit</i>	Option 1	Option 2	Option 3
Strategic importance			
Stakeholders / influencers			
Requirements and benefit articulation			
Stability of overall context			
Financial impact and value for money			
Execution complexity (including technology)			
Interfaces / relationships			
Range of disciplines and skills			
Dependencies			
Extent of change			
Organisational capability			
Interconnectedness			
<i>Clarity of Mission and Project Outcomes</i>			
<i>Clarity of Values defined</i>			
Recommended category of risk management needed 1. Traditional 2. Active 3. Fully rational			

Table 4 Suggested risk profile layout

References and further reading

Standards of Risk Management

As an addendum to the section 'Current Definitions of Risk', there are several other British and global risk management standards, including:

- *Management of risk: principles and concepts* (the 'Orange Book', HM Treasury).
- *Central government guidance on appraisal and evaluation (of projects)*, (the 'Green Book', also HM Treasury). This introduces the concept of 'optimism bias' the "proven tendency for appraisers to be too optimistic about key project parameters, including Capital costs, operating costs, project duration and benefits delivery", all of which increase the risk of project failure.
- *Improving project delivery: project initiation route map* (Infrastructure and Projects Authority).
- *Project risk analysis and management* (Association of Project Management).

It is also worth referencing the work by the National Audit Office (NAO) – the body the country entrusts with rooting out waste and bad practice, and pointing out better ways to do things. In 2013, the NAO developed "the Delivery Environment Complexity Analytic" (DECA) to provide a high-level overview of the challenges, complexity and risks to delivery of any project, programme, policy or area of work. Its headings are very relevant to consideration of the prime sources of risks on projects. DECA lists the following factors:

1. Strategic importance - the extent to which the project supports delivery of objectives, the level of Ministerial/Executive and wider public interest.
2. Stakeholders / Influencers - the groups or individuals with an interest in the project and the level of influence they have on it.
3. Requirements and Benefit articulation - are the sponsoring body and delivery team clear about their requirements and how these requirements will lead to the objectives being met?
4. Stability of overall context - will the requirements and environment remain stable for the foreseeable future?
5. Financial impact and value for money - how significant is the project financially to the sponsoring body/supplier and are the expected benefits proportional to the projected costs?
6. Execution complexity (including technology) - how complex are the objectives to deliver, due to factors including technology, approach, and tight timescales? How difficult is the project to deliver?
7. Interfaces / Relationships - how many different bodies are involved in delivery?
8. Range of disciplines and skills - are specialist skills required for delivery, and are these available within the organisation?
9. Dependencies - is the work critical to the delivery of objectives elsewhere or dependent upon other projects for its own success?
10. Extent of change - does the project/work involve a significant change in the way the organisation conducts its work, or is it business as usual?
11. Organisational capability: performance to date - has the organisation demonstrated the capability and capacity to deliver its objectives? Has it learnt lessons from the past?
12. Interconnectedness - how well does the organisation understand the links between the elements in its external environment, the complexity, and its own capability?

Further Reading

Our industry needs to innovate, and innovation carries risk. Managing risk to realise value, and thus opening up opportunities for genuinely useful innovation, will require industry professionals to develop their understanding of how risk operates, and knowledge of how to use risk management to their advantage.

Easily accessible information on this essential topic may be found in the materials used for the writing of this guidance, as follows:

- *Tame, Messy and Wicked Risk Leadership* (Routledge, 2010) by David Handcock remains a must-read analysis of the realities of risk and risk management, and is a classic in the field.
- *Radical Uncertainty: Decision-Making for an Unknowable Future* (Little, Brown, 2020) by John Kay and (former Bank of England governor) Mervyn King provides useful insights into – among other things – the characteristics and impact of large and complex risks.
- *The Black Swan: the Impact of the Highly Unprobable* (Allen Lane, 2007) by Nassim Nicholas Taleb is another ground-breaking analysis of the occurrence of rare events.
- *The Wetware Crisis: the Thermocline of Truth* (blogpost, 2008, <https://brucefwebster.com/2008/04/15/the-wetware-crisis-the-thermocline-of-truth/>) by Bruce F. Webster, introduces the concept of how necessary information does not travel above a certain level of project management hierarchy, to the detriment of risk management and project delivery.

Appendix B Client Profiling and the Value Toolkit

This document gives further details of the features and purpose of client profiling. For a tool that is ready for use, please refer to the separate MS Excel Client Profile Tool.

The purpose of client profiling

To gain the best results from implementing the Value Toolkit, it is recommended that clients develop a complete and nuanced understanding of:

- their own organisation (**client characteristics**)
- the factors acting upon and within the client organisation that are relevant to the deliverability of the project or programme in question (**project deliverability environment**), and,
- the strengths, weaknesses, opportunities and threats inherent in the interaction between these two aspects (client characteristics and project deliverability environment).

The process of analysing and understanding the significance of these features can be complex, requiring in-depth knowledge of the client organisation, its activities and its potential. This understanding will inform the client's choice of the most appropriate Delivery Model for a completely successful project. From this choice cascades related decisions regarding Commercial Strategy, type of contract, and responsibility for delivering value within the context of project delivery overall. The implications are thus consequential and worthy of serious consideration.

As mentioned in Part I of the Value Toolkit handbook, client profiling can perform a critically useful function in forging the identity of a new organisation, where this has been formed specifically for the purpose of delivering a project or programme.

It must be emphasised that the Client Profile Tool is provided to help guide the client in gaining a better understanding of its particular strengths and characteristics, and any areas that will require active management to complete the project successfully. Thus, the tool's purpose is to facilitate discussion rather than to provide hard evidence about the client organisation or dictate the choices that the client should make.

This kind of understanding and analysis is a high-level activity that is likely to involve significant decisions by senior members of the client organisation. It should therefore be appropriately resourced, scheduled and supported by a skilled facilitator.

Components of the Client Profile

Client Characteristics

Assessment of client characteristics involves understanding the organisation's current identity and operation, and the evolution that has led to the way it is today. The people undertaking this process should at all times be alert to both the opportunities and the limiting factors indicated by the characteristics of their organisation.

Specific areas for analysis include:

- Legacy: Corporate memory/corporate potential
 - To what degree is the client autonomous or dependent on others to function effectively, in terms of:
 - its operating model for managing assets?
 - its behavioural culture towards supplier involvement?
- Legacy: Corporate resilience
 - To what degree is the client dependent on the knowledge or performance of others to survive with regards to:
 - technical capability, management, and direction of critical business functions?
 - the maturity of data and asset information systems?
- Leadership style
 - Is the client hands-on or hands-off and what are the rational reasons for this? Is the client able to relinquish control?
 - What is the client's desire to operate with a single point of contact vs multiple points of contact (bandwidth/confidence/laziness)?
 - Does the client dictate or co-create in its approach to day-to-day work? Does the client know best, has it got tabs on everything, does the client already know what it wants or is it looking for equity in decision making from its market partners?
 - Is the approach to the project or programme viewed as transformational i.e. will the project make the organisation significantly different?
- Identity
 - How does the client do things, based on recent past delivery experience?
 - To what degree is the client reliant on others to undertake core tasks?
 - How large or limited is the client's appetite for innovation?
 - Is the client identity shaped by a small number of individuals?

Project deliverability environment

As well as the external environment (legislative, market, stakeholder etc) in which both client and project exist, analysis of the project deliverability environment seeks to capture the organisation's focus in terms of its core operations and ambitions, how it intends to measure success, the technical complexity of the pipeline of projects or programmes to be undertaken, and the degree of connectedness between corporate ambition and the pipeline of projects or programmes.

Specific areas explored will include:

- Corporate vision and strategy
 - What is the client corporate vision, objectives, and strategy and to what degree is there synergy between the project or programme and those ambitions?
 - Is the approach to the project or programme viewed as transformational i.e. will it make the organisation significantly different?

- Longevity
 - How long does the client need exist for to deliver its Mission and project outcomes with associated Value Profile?
 - Does the pipeline contain projects or programmes? Are they part of a portfolio?
 - Visibility and strength of pipeline?
- Technical repeatability
 - What degree of repeatability exists in the nature of the intervention?
 - What is the nature of the client's core operations in delivering its Mission? Is this a one-off intervention or a series of interventions over time?
- Pathfinder
 - To what degree is the client a pathfinder? Entrepreneurial? Prepared to innovate? Prepared to try new things?
 - What is the appetite of the client to invest in R&D?
 - To what degree does the client have a culture of continuous improvement supported by technological advancements?
- External environment/stakeholder groups
 - What type of relationship exists between the funder and the client?
 - How complex and significant is the stakeholder landscape?
 - What level of assurance will be required with external parties and other stakeholders?
 - To what degree does the client want to control the stakeholder management activities?
 - What type of relationship exists between the Sponsor and the client organisation? Is the relationship close? Autonomous? What governance requirements exist?
 - What expectations will the Sponsor have of this client organisation as it relates to closeness of relationship, level of autonomy, governance requirements?
 - How stable is the environment within which the sponsor operates? What does this mean for the client organisation?
 - What restrictions and constraints does the regulatory environment place on the client?
 - What activities must and must not be undertaken by the client organisation?
 - To what degree is the client organisation able to delegate their obligations?
- Resourcing Model
 - What is the strategy for how the client wants to work with the market in the short, medium and long-term?
 - What is the resourcing strategy for the client in the short, medium and long-term?
 - What is the target shift in make vs buy?
 - Where is the business investing in skills, competencies, talent, and diversity?
- Ecosystem Preference
 - What proximity to market participants does the client want to have?
 - How important is single point accountability to the client and what does this mean for the design of the target ecosystem?
 - Does the client want to manage interfaces or minimise these touch points in the way it shapes its ecosystem?

- Does the client value what a 1st tier supplier has to offer in terms of integration? Would the client move away from the 1st tier model?
- What is the client's appetite to adopt new and untested products and methodologies?
Does the client have the time/space/appetite for R&D to let things fail?

Sample analysis of the impact of project delivery environment on client decisions

The table below gives an example of how aspects of a client's project deliverability environment relate to the client's probable use of the Value Toolkit.

Aspect of a client's project delivery environment	Examples of client
<p>Degree of serial clienting:</p> <p>A client that produces many projects has a strong incentive to use the Value Toolkit and can develop the in-house capability to use it better, along with in-house expertise in leading projects generally. Serial clienting presents a strong incentive to invest and take risks so as to innovate and become better. This includes investing in stable and mutually rewarding relationships with the supply chain, establishing rapport and trust, and encouraging the supply chain to be a source of ideas for innovation and continuous improvement.</p> <p>A one-off client (or client that builds only occasionally) will tend to have a more transactional relationship with the supply chain and wider construction industry and will gain less from innovating – they may lack the capability to manage risks in a more mature, rational way, so are often better advised to be more risk-averse.</p> <p>A special subset of the one-off client is the “pop-up client” – a special purpose organisation created for a particular project or programme. Such clients have all the usual challenges, plus the special ones of creating a functional organisation from scratch, using people who are unlikely to have worked together before and need to establish the bonds, trust and brand of longer-established companies.</p>	<p>Serial client: Network Rail, Highways England, Department for Education new schools programme, large commercial building developer</p> <p>One-off: self-built factory; also notionally Crossrail and HS2 – although these are long and complex programmes so correspond more to serial clients. In their initial stages, they do suffer the challenges of being pop-up, as they generate their own organisations</p>
<p>Degree of stewardship for the asset:</p> <p>Some clients will own, occupy and use the facilities that they build and thus have a greater incentive to ensure that the end-product meets a well-thought out Mission, and is built with allowance for flexibility should operations change or use vary in the future. Such clients will benefit strongly from a value-based approach.</p> <p>Clients that build only to sell the product will be very focused on what will suit potential buyers – so their design may be more flexible from the outset so as to maximise the market for the asset.</p>	<p>High stewardship: self-built factory for a manufacturing company</p> <p>Lower stewardship: housebuilders, where there is insurance schemes to provide protection to the subsequent home-owners – and so sets standards for building quality</p>

Aspect of a client's project delivery environment	Examples of client
<p>Size and complexity of project, programme or portfolio:</p> <p>A client embarking on a long and complex series of projects may be incentivised to use the Value Toolkit to support decisions that are based on a greater degree of challenge and rigour, capable of standing up to strong governance processes. A client with a relatively simple project may have fewer stakeholders to satisfy and less concern about risks, so may use simple, established processes.</p>	<p>Larger and more complex projects include large nuclear power stations and rail schemes such as HS2 and Crossrail.</p>

Appendix C Selection of Delivery Model

Choice of Delivery Model should be a deliberate decision as it is central to the successful delivery of the project. Yet all too often, the decision is taken without full understanding of what is involved, what the choices are, and which Delivery Model would be most appropriate.

The Value Toolkit advocates the kind of discussion and analysis that supports reasoned and well-founded decision making in this area. No client should adopt a particular means of delivery without knowing why. For example, 'Design and Build' (D&B) is not a Delivery Model: it relates only to who takes responsibility for design of the solution, which is just one aspect of delivery. In fact, all Delivery Models can be executed using different forms of D&B.

The choice of Delivery Model is specific not only to a particular client but to a specific project. It takes into account the project context and the relevant market factors, so a client may run various development processes using completely different Delivery Models. Similar projects may use similar Delivery Models and some types of projects with high levels of repetition can fruitfully repeat the use of a particular Delivery Model to great advantage. But equally, a client who procures very different types of services on projects should be dubious if they find the same Delivery Model being applied for those very different situations.

Choices of Delivery Model

This section outlines six possible Delivery Models that (with the exception of the sixth) are between them capable of delivery every type of project or programme. They are:

- **Transactional** and **Hands-on-leadership** - both established and commonly used Delivery Models, familiar throughout the construction industry.
- **Product mindset**, **Hands-off design** and **Trusted helper** - all potentially transformative Delivery Models that will help achieve greatly improved outcomes for clients, industry and users alike.
- The sixth model is included to represent a specific kind of **failed delivery**. This is the client that engages with the construction industry but cancels its attempt part-way through project development through failing to find a viable way forward. Rather than wasting industry time, as is commonly perceived, these cases provide valuable insight into ways in which traditional approaches are failing clients. The industry can achieve far better results by assisting these clients more appropriately, refining their ideas and aspirations, and using the Value Toolkit to help shape their project Mission and Strategic Objectives into something achievable. At the very least, early engagement will enable all parties to identify unrealistic aspirations much earlier in the process.

In considering the selection of a Delivery Model, the client will need to assess the degree to which it wants or requires each of the following:

1. A single (or reduced) point of contact
2. Visibility of day-to-day progression (closeness)
3. A product-based approach (product mindset)
4. To specify design output (design philosophy)
5. Day-to-day decision making regarding the course of action (hands-on/hands-off).

The relevant features of the six Delivery Models are detailed in the table below.

	Delivery Model	Features	Examples
Conventional	Transactional “I know my requirements, who can best deliver it most economically.”	Traditional approach in which the market is engaged to provide an output specified and controlled by the client. It remains a valid Delivery Model	Commercial offices, Housebuilding
	Hands-on leadership “This is complex and I want to watch over it closely”	Complexity of work and stakeholder environment in which the client desires greater control: certainty of outcome and stakeholder management are prioritised over other factors	Crossrail, HS2
Transformational	Product Mindset “I want lots of these but build them better and cheaper”	The construction industry needs to learn from manufacturing about programmes of work being done in a way that is easily replicable. Often strongly reliant on BIM / DfMA. Should lead to an ever-improving product delivered more efficiently at decreasing cost. Viability depends on visible pipeline of repeatable products.	New schools programme of 150 schools where a generic design is done (the product) and then replicated and sequentially improved, varying only for site conditions. Or for housebuilding, a manufactured solution that smaller housebuilders can buy as standard and have delivered to their sites.
	Hands-off design “I need to solve this problem and I don’t mind how you do it”	Outcome driven – needs to solve a problem and is open as to solution (which may not even need to be built) Very open to innovation Amenable to using technology to solve the problem instead	Conventional solution would be a new railway line between two places, but could also be resolved by doubling length of trains and rebuilding stations or doubling train frequency by a new signalling system

	Delivery Model	Features	Examples
Transformational	Trusted Helper “I need help, come and perform for me without me having to tell you how this needs to be done”	The client is focused on its core business and requires competent suppliers (often in a safety critical environment or highly intense operating environment) that may know the clients operating procedure or technical challenges better than the client. Close existing proximity between client, and the market Workloads are likely to fluctuate	Routine changes to a major airport where the operator is very focused on their own activities, i.e., running the airport successfully.
Missed opportunity	Failed delivery “I am engaging to explore my options”	Poor match of client aspiration and budget.	All the failed projects that stop before anything is built

Table 1 Delivery Models (Adapted from the Construction Playbook)

What influences the selection of the Delivery Model?

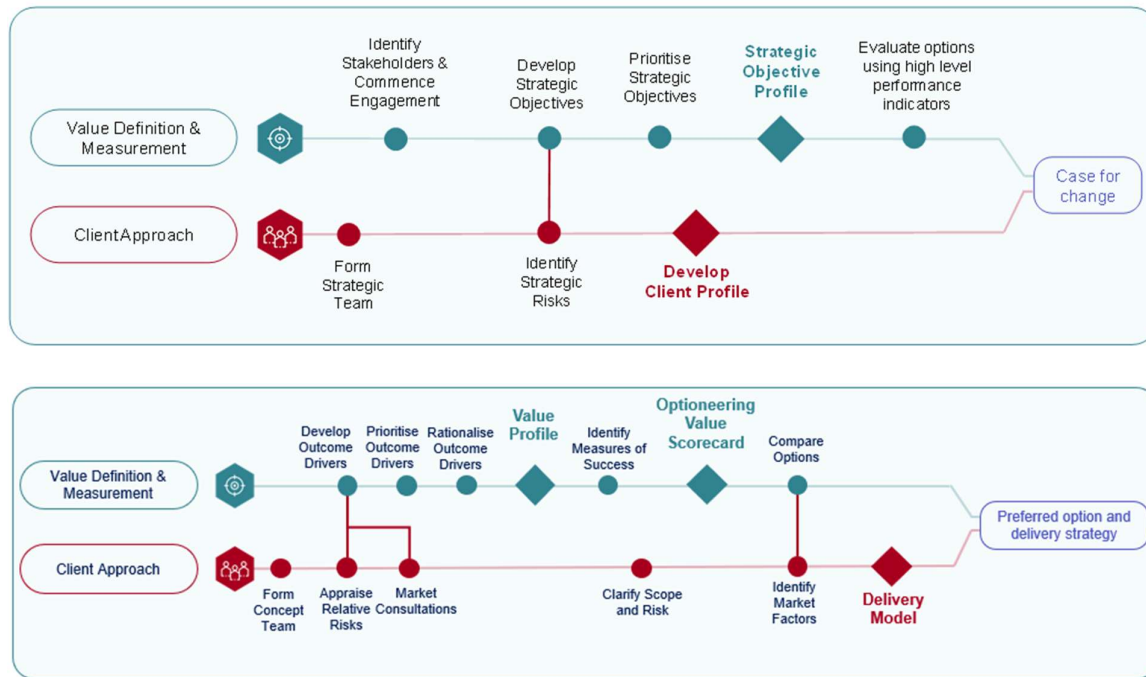
It is the choice of Delivery Model that determines the split of roles and responsibilities between the client and the market. The Value Toolkit’s Client Approach stream highlights three areas that a client needs to consider, explore, and iteratively evolve as a part of the Delivery Model selection process over the course of the ‘Need’ and ‘Optioneering’ phases of delivery.

These are summarised as follows:

1. **Risk:** What are the threats and opportunities in relation to the Mission and associated Value Profile? How does this shape the environment in which the client must exist and how does this influence market perception or participation?
2. **Client Profile:** What type of client do we want to be? What responsibilities do we need to hold in order to deliver the Value Profile? What role are we able to undertake?
3. **Market factors:** What are the market dynamics that shape and inform the client options for delivering the Value Profile? How do these factors, and the strength of market appetite, impact the risk assessment and the delivery options for this project?

These areas must be worked through in a structured and iterative way, feeding back information at each stage to support the evolving development of the project. Different projects will demand greater or lesser degrees of iteration, depending on project complexity and, therefore, the range of possible options.

The Value Toolkit's Integrated Process sets out as part of the Client Approach stream the practical steps that lead up to the selection of the Delivery Model.



Risk and the choice of Delivery Model

To a large extent, the Delivery Model chosen indicates how the client intends to address bundles of risks and how the team will best be deployed to manage them. Different Delivery Models are more appropriate to different types of risk, and understanding this relationship is part of the decision that must be made. The table below characterises each type of Delivery Model (DM) by its relationship to risk management in different types of project.

Delivery Model	Risk characteristics
DM1 Transactional	This DM is suitable when risks can be foreseen from the outset, as some simpler risks can be neatly packaged and allocated. Most complex technical and behavioural risks are less amenable to neat early packaging and change is almost certainly needed if they are to be addressed. This DM is much less effective when there is change after signing the contract, and so it is less safe in higher risk situations than the client may imagine.
DM2 Hands-on-leadership	An important reason for choosing this DM is to manage risks more strongly, particularly behavioural risks such as those posed by influential stakeholders. The risks are of a magnitude where the client needs to be ever-present in dealing with them.
DM3 Product mindset	This DM is most often chosen where a portfolio of works needs to be carried out, where it is possible that a generic platform approach can be applied repeatedly in different situations. Usually similar considerations over how to manage risk prevail when this DM is selected. However, the implementation of a platform approach carries its own family of risks to be managed.
DM4 Hands-off design	This DM tends to be more successful in an environment where the client has a high degree of autonomy about which technical solution to choose and hence is at a relatively low risk of serious stakeholder issues arising. It is unlikely to be suitable where risks are of a complex and/ or technical nature, where the client will need to exercise more control than this DM allows.
DM5 Trusted helper	An important reason for choosing this DM is to manage risks more strongly, particularly technically complex risks or those that derive from working in a very high hazard environment where adherence to strict protocols is vital. The risks are of a magnitude where the client can only trust a highly competent advisor or integrator to manage them fully.

Table 2 Links between Delivery Model and risk management

For the sixth Delivery Model, poor allocation of roles is most often associated with failure – the risks overwhelm the project and the client team is not resilient enough to overcome them.

There is no direct correlation between the risk management approaches advocated by Value Toolkit Handbook and the client's choice of Delivery Model. However, some Delivery Models are more appropriate to address high levels of risk and such situations, higher levels of risk management will in any case secure a better outcome for the project.

Client Profile and the choice of Delivery Model

To select the optimal Delivery Model for the project, the client will need to be able to access deep knowledge about the characteristics of its own organisation and deliverability environment for the particular project in question. This knowledge will have been consolidated in advance of Delivery Model selection where the client has undertaken the recommended client profiling activities.

The shape of the client organisation and the roles and responsibilities of the client are influenced by:

- The technical demands and complexity of the client's pipeline of projects and programmes
- How the client must interact with and manage the external environment within which it exists (i.e. the range, volume and nature of stakeholders).

The relationship between the client and the market – and thus the split of roles and responsibilities – is a direct response to this interaction and is expressed by the selection of the Delivery Model. As the technical demands of the pipeline and/or external environment change, the client organisation must evolve its shape and response to be fit-for-purpose. Creating the Client Profile will enable the client to assess its characteristics and the project deliverability environment against each possible Delivery Model in turn.

Market Factors and the choice of Delivery Model

The third factor for the client to consider in choosing a Delivery Model is the potential role of the market. Just as the potential client role is shaped by the client's current characteristics and project deliverability environment, so too is the potential role of the market. In this, the market's own choice is an important element.

The market may choose to work with certain clients and not with others. Commercial organisations, consultants and suppliers may prefer to target those projects, programmes or sectors that best align with their own long-term business objectives or growth areas, or they may simply be responding to supply/demand dynamics in being more or less selective about the types of work and role that interest them. In short, market appetite is an additional factor to consider in determining the choice of Delivery Model and the market role that it will involve.

Via its Client Approach activity stream, the Value Toolkit advocates a highly consultative approach to testing and refining Delivery Model options. As the Value Toolkit processes evolve, the client is encouraged to share its thinking on Value Profile, risk assessment, solution development and the role of the client. In so doing, the client should invite engagement, including critical feedback, from the market to gauge an early indication of market appetite for the various project choices under scrutiny.

The client will need to explore a broad range of market indicators as to which approaches should be adopted or avoided. These considerations include:

- Timing:
 - Are there any equipment requirements that necessitate very long-lead procurement needs?
 - Is there any specialist work to be done that is at risk of being a scarce resource?

- Capability:
 - Is there precedent for the work required for this project or programme, or is it novel?
 - If novel elements exist, to what extent are they novel?
 - Are there established value chains that exist in relation to the delivery of certain work elements? Would it benefit the project or programme to capitalise on such established collaborations?
 - What is diversity like in our market and do we need to take positive steps to address the mix to ensure high performance and innovation?
 - What role do we want SMEs to play in our market and what steps do we need to take to make this happen?
 - What level of innovation are we targeting and what does this mean for the types of suppliers we engage, how we bring the suppliers together and where the innovation in a supply chain is likely to sit?
- Capacity:
 - What is the capacity of the macro market to do this work against the timing of other similar projects? Are there any pinch points or supply risks as it relates to labour, plant, materials?
 - Are there any niche suppliers that we need to secure to undertake these works?
 - Are there any resources which are in scarce supply and for which there is no resilience planning (e.g. nuclear skills more broadly or signalling engineers for the railways jobs)
 - For scarce skills and building a pipeline, do we need to take positive action to make this happen? Potentially in the form of an academy or similar?
 - Are we over-reliant on any one supplier for certain elements of what we do? What does that mean to the criticality of our programme or our operations? What is our approach if they were to become insolvent?
 - Do we need to track this also at a T2 and T3 level for T1s that all rely on the same smaller suppliers? How do we manage the spread of this capacity risk through our broader supply chain?
 - Where capacity risks have been mapped, what solutions could draw in a broader range of regional suppliers provide?
 - What opportunities exist to drive productivity into the delivery of the project or programme by engaging the market in offsite conversations?
- Availability:
 - In relation to commodities, do we want to secure slots in advance of the build (to hedge prices/for surety of supply/any scarce resource) e.g. quarry or copper etc.
 - Is there a requirement for specialist equipment that we want to specify certain models or M&E or kit etc. and do we want to secure that ourselves and then free issue?
- What is going on in the rest of the macro market that will impact our project or programme (will we compete for suppliers etc.)?
- Ecosystem Design Potential
 - The scale (breadth and depth) of market participants that could be required to come together to deliver the investment per the Delivery Model. The mix of market participant types (across the spectrum of large-scale '1st tiers' through to specialists and SMEs).

- The scale (breadth and depth) of market participants that could be required to come together to deliver the investment per the Delivery Model. The mix of market participant types (across the spectrum of large-scale '1st tiers' through to specialists and SMEs).

A full understanding of such factors can only be generated by undertaking extensive desk-top analysis and engagement with market participants. It is advisable that client organisations consult with a range of trade associations and seek professional advice to generate the data and appropriate analysis. The market changes quickly, so for market factors analysis must be continually updated to create a 'real time' picture and what this means for potential selection of Delivery Model.

Using the Value Definition Framework to help select the optimal Delivery Model

Having taken the time and the steps necessary to assess the factors described above, the client will have used these to begin to focus its likely choice of Delivery Model for the project. Additionally, the client can now use the Value Definition Framework to assess how well the various available Delivery Models support the areas of value that feature most strongly in its Value Profile for the project.

The table below illustrates where and how the need to protect and deliver the Value Profile may influence the choice of Delivery Model.

Capital	DM1 Transactional	DM2 Hands-on leadership	DM3 Product mindset	DM4 Hands-off design	DM5 Trusted helper
Natural incl climate and biodiversity	Risk that Natural, Human and Social Capitals are reduced to standards to comply with, rather than components of overall value.	Often working in an environment with multiple stakeholders, and many broad goals, so better for achieving a range of aspirational socially-based values.	Versatile – the project team are given permission to re-imagine the optimal solution and may do so radically.	Versatile	Versatile – the project team will respond energetically to the client brief.
Human			Versatile	Versatile	Often used for high hazard environments where very competent contractors, well versed in special practices, are essential
Social			Versatile	Versatile	Versatile
Produced incl life cycle costs and production, of which DfMA is a part	Often very focused on least Capital cost and highest return on Capital invested.		Seeking best value for repetitive work, so DfMA usually very significant	Versatile	Versatile

Table 3 Influences and links between Delivery Models and the Value Definition Framework.

Having taken all these factors into account, the client will be in an informed position to make a robust choice of Delivery Model that the market will bear, and which aligns well with its own profile – including its risk management practices – and with the Value Profile of the project.

Appendix D Commercial Strategy

What is Commercial Strategy?

At its simplest, a Commercial Strategy represents how the solution to reaching the outcomes sought from the project or programme are to be bought and delivered. It sets out how and when the suppliers are to be paid, and the basis of the contractual agreement underpinning all this. Done well, the Commercial Strategy is the process for commercialising the roles and responsibilities in the Delivery Model and it brings objective thought to how the roles – both client's and suppliers' – are to be brought to real, pragmatic, commercial life.

But developing a Commercial Strategy is not straightforward. Unlike linear transactions for the supply of commoditised goods produced in controlled environments, projects and programmes in the infrastructure and built environment sectors involve multiple layers of complexity.

Considerations include:

- **Length of value chains**
For example: the provision of relatively simple pre-cast concrete beams on site will have required numerous interdependent transactions and activities involving quarry, production, haulage, manufacture, assembly, and delivery. Additionally, in a complex built system, designers will have had to overcome a wide range of constraints to meet very specific requirements, so replacement of a component late in procurement can upend that carefully integrated design intent.
- **Number of participants that must work in parallel**
Participants will be both on site and off site, and most are not motivated or incentivised to collaborate and deliver together. Supply chains that deliver major projects are generally fragmented, with 95% of all suppliers being SMEs and the range of skills, services and products provided being widely varied.
- **Number of participants and degree of dependency.**
A fragmented supply chain involved in the creation of physical assets, networks and systems creates critical dependencies, for example between:
 - i) design / specification of asset and construction of asset
 - ii) from constructor to operator, including preparation for operational readiness
 - iii) within the construction team, where there are many dependencies such as between civil / structural to mechanical / electrical, or, for projects with complex digital control systems, how the sensors and software are linked, commissioned and integrated
- **Bespoke nature of projects and programmes.**
Most new buildings or assets are unique prototypes; there exists minimal precedent for the nature and scale of the intervention, which heightens the unknown and reduces confidence in deliverability.
- Delivery of the intervention is often connected to a **live physical asset or network of assets** that generate revenue and for which there must be minimal disruption to customers / consumers - for example, an airport which depends on the volume of passenger throughput cannot tolerate unavailable terminals or associated infrastructure. This involves detailed planning to ensure that the effects of downtime are minimised, often including payment of a premium to ensure that the available time is well-used, with expensive contingencies in place to cover any problems.

- The nature of the assets in a network – and their different owners - means the bringing together of **multiple parties with different interests, priorities and agendas**.
- The **degree of connectedness** between (particularly) public sector programmes of work and the end user/tax-payer.
- **Long timescales**
Such projects and programmes often take years or even decades from inception to delivery of the operational asset
- The large-scale physical intervention brings with it **high profile stakeholder opinion and associated needs**, including concerns that lengthy construction may do long-term damage to surrounding communities
- **Uncertainty of construction in live environments**, where the weather cannot be predicted, the ground and what is in it can never be entirely understood in advance and the nuances of access/egress site logistics must be both planned and dynamically managed in the context of micro and macro transport/environmental considerations
- Knowledge of **previous projects and programmes going wrong** increases local scrutiny and sensitivities
- (Rare) **catastrophic effects when things do go wrong** can, if this occurs, undermine the business case for the whole project or programmer and prevent it achieving its objectives
- It is not always possible to secure **insurance**; the construction insurance market is alive to the high risk nature of major projects and programmes and often premiums are such that teams cannot afford to insure their way out of the commercial complexity.

Finally, major projects or programmes are often subject to global markets in commodities, materials, expertise and skills. Sourcing globally introduces additional complexities, including political factors, economic dynamics, cultural considerations and competition for scarce skills and products between contemporaneous projects, even where these are on opposite sides of the planet.

Consideration of these complex issues requires the input of multiple stakeholders. A fit-for-purpose commercial strategies often involves reaching the best possible trade-offs between all the considerations involved, rather than finding an off-the-shelf commercial position that fits the project perfectly. Ultimately, clients should seek to arrive at a Commercial Strategy that makes clear:

- What is to be delivered
- How disparate and parallel activities come together as part of the whole
- How interfaces – and the difficulties they introduce – are to be dealt with
- How the parties involved are to be rewarded, and, importantly
- The benefits and the risks for all parties involved

In particular, the design of the Commercial Strategy must mitigate against a tendency to ‘dump’ risk rather than manage it. Risk remains a critical aspect of the Commercial Strategy, and the Value Toolkit advocates a mature and rational approach to risk management, as detailed in the Value Toolkit Handbook and associated Appendices.

Designing a fit-for-purpose Commercial Strategy

The design of the Commercial Strategy takes place once the Delivery Model has been selected, upon commencement of the Design phase. Three key steps inform successful Commercial Strategy design as shown in the figure below.

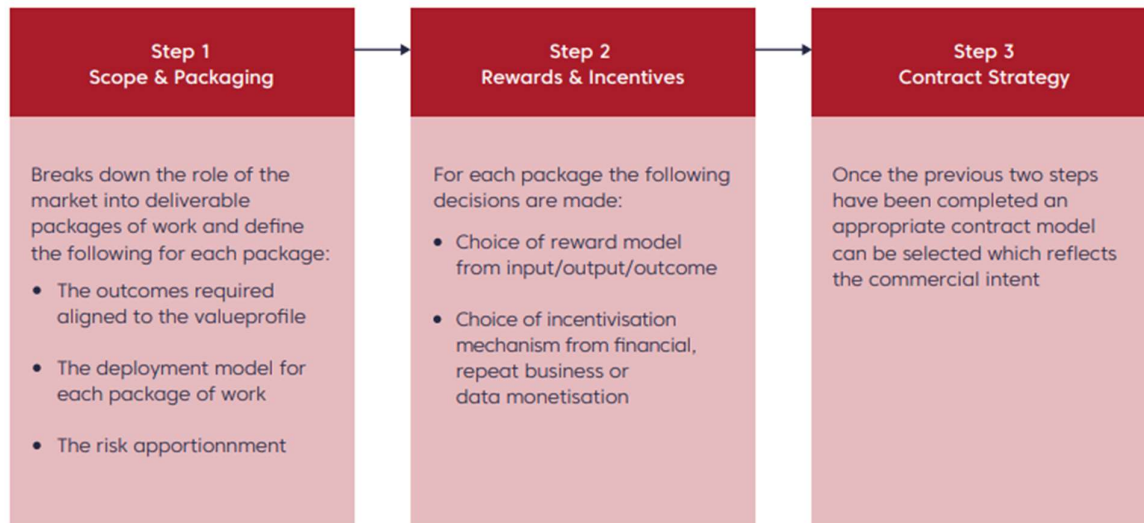


Figure 1 The steps to designing a Commercial Strategy

Step 1: Scope and Packaging

Building on the choice of Delivery Model, this step further break downs the role of the market into the optimal split of scope and interfaces defined as packages. It also deals with apportionment of risk between client and the market and across the packages.

Step 2: Rewards and Incentives

This step involves determining the most appropriate reward and incentivisation model for the different work packages.

It is possible that this approach will produce more than one appropriate option, in which case the client will discuss with the market which model is most mutually beneficial and whether a combination of models is optimal.

Reward Models

The table below is an example intended to guide the selection of appropriate reward models. The example given is based on scoping and selecting the reward models for a consultancy work package.

		Input	Output	Outcome
Package scope & outcomes	Project Complexity			
	Low: Small number of variables and interface, clarity on required outcomes / outputs, certainty and predictability of key critical success factors and minimal change.			
	Medium: Small number of different / competing variables and interfaces, clarity on required outcomes / outputs, some certainty and predictability of key critical success factors and a likelihood of change.			
	High: Significant number of competing variables, lack of clarity on required outcome, uncertainty and unpredictability of key success criteria and rapidly changing environment			
	Stakeholder Landscape			
	Simple: Known, small number of stakeholders with clear requirements and are easy to engage with.			
	Complex: Significant number and or difficult stakeholders with unclear / conflicting requirements.			
	Value Measurement Complexity			
	Low: Quantification of value delivered is easy to determine and a good baseline exists.			
	Medium: Methods of value quantification are established but are subjective.			
	High: No known Metrics for measurement of value; will require independent development of measurement approach.			
	Time to value realisation			
	Immediate: Outcomes are realised immediately.			
	Medium Term: Outcomes / Value realised over a medium term 3 – 5 years for example.			
	Long Term: Outcome / value not fully realised over a significant period of time >5 years. For example, true value of a bridge construction will only be realised over the life of the asset.			
	Level of Product / Service Standardisation			
	Standard: Service / Product is a standard and repeatable and can be deployed for several clients.			
	Standard with some customisation: Utilises standard service or product approach with minor alterations.			
	Bespoke: Unique service or product for that specific client / project; cannot be reused for other clients.			

		Input	Output	Outcome
Commission Profile	Consultancy Deployment Model			
	Client Augmentation: Providing staff in to augment a client organisation with experts.			
	Products and Services			
	Providing defined value adding deliverables and advice to clients.			
	Independent Review			
	Providing an expert opinion or assessment to the client in the form of advice or an output.			
	Direct to the public/end user			
	Delivery of services directly to the public such as development of Apps or public facing information & advice.			
	Portfolio Size / Project Repeatability			
	Single project			
Market Factors	Network / Programme			
	System / Portfolio			
	Risk Appetite			
	Low			
	Medium			
	High			
	Value Chain Collaboration			
	Yes			
	No			

Table 1 Reward models

Incentivisation Models

The incentivisation factor used in the reward models can take three forms:

- Repeat business, where performance is rewarded with a reliable future pipeline of work
- Financial, where performance is rewarded with a monetary incentive or non-performance is penalised
- Data monetisation, where information-based products and services are exchanged for money or something of perceived equivalent value

For each package, the client should explore in discussion with the market which incentivisation models, coupled the with the previously selected reward model, provides the basis for a balanced and fair relationship between market and client.

Step 3: Contract Strategy

Choices at this stage involve determining the optimal contract structure, whether bespoke or in an industry standard form. The contract will capture the scope expression and commercial model, as well as the risk assessment in the form of contractual terms and conditions that reflect how risk is to be dealt with.

Appendix E Value Scorecard mathematical model

The Value Scorecard contains a mathematical model that converts the real-world measurement requirements assigned to each Metric into a points-based system and combines it with the Outcome Driver weightings from the Value Profile. This allows aggregation of performance across Outcome Drivers to provide a holistic assessment of value.

Each Metric is assigned a Performance Range which consists of three values:

- Minimum Performance: the lowest level of performance that the client is willing to accept for the particular project or programme. Below this level an option will be deemed non-compliant.
- Target Performance: the level of performance that the client is aiming to achieve for the particular project or programme.
- Maximum Performance: the highest level of performance that the client requires for the particular project or programme.

The mathematical model enables multiple Outcome Drivers and Metrics to be proportionally and accurately scored using their weighting and Performance Ranges. The model applies a Multi-Criteria Decision Making (MCDM) method that enables options with multiple criteria with different scales and different units to be compared. The method applies a bilinear scoring model to allocate points for the performance of measured Outcome Drivers.

The model incorporates a defined points range (See Figure 1), so:

- When Target Performance is achieved against all Outcome Drivers within the Value Scorecard the score is 1000;
- When Minimum Performance is achieved against all Outcome Drivers within the Value Scorecard the score is 500; and
- When Maximum Performance is achieved against all Outcome Drivers within the Value Scorecard the score is 1500.

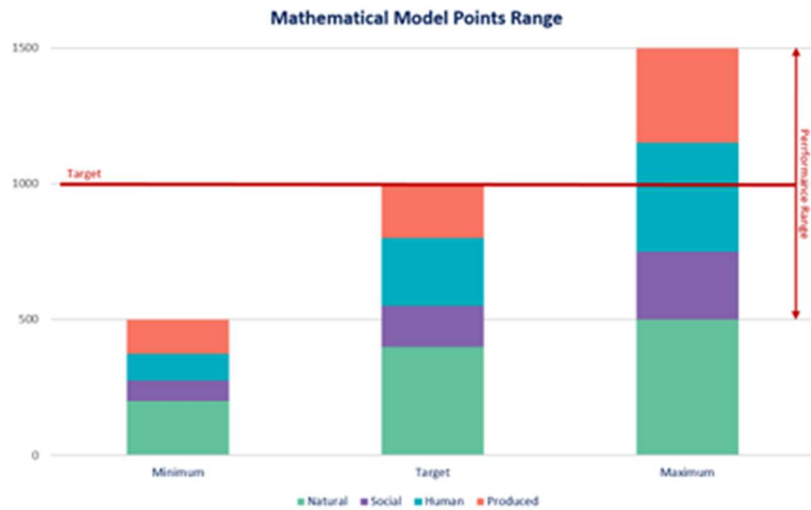


Figure 1 Illustration of Performance Range

This points range restricts the gross influence of very high and very low scores, as well as enabling a suitable distribution of points allowing a distinction between performances. For example, an Outcome Driver at Minimum, Target and Maximum Performance would be:

- Minimum Performance points = Outcome Driver weighting (%) x 500 points
- Target Performance points = Outcome Driver weighting (%) x 1,000 points
- Maximum Performance points = Outcome Driver weighting (%) x 1,500 points

Where an Outcome Driver has more than one Metric the weighting is distributed across each Metric. Figure 2 below gives an example of this points distribution. We recommend splitting this equally unless there is a specific reason to weight one Metric higher than another.

Metric	Weighting	Min	Target	Max
Nat 1	6.0%	30	60	90
Nat 2	4.0%	20	40	60
Nat 3	4.0%	20	40	60
Hum 1	13.0%	65	130	195
Hum 2	10.0%	50	100	150
Hum 3	3.0%	15	30	45
Soc 1	10.0%	50	100	150
Soc 2	12.0%	60	120	180
Soc 3	16.0%	80	160	240
Prod 1	8.0%	40	80	120
Prod 2	8.0%	40	80	120
Prod 3	6.0%	30	60	90
Totals	100.0%	500	1,000	1,500

Figure 2 Example allocation of points across Metrics.

A bilinear model is used to assign points for performance above and below target, with 50% of the points available from Minimum to Target, and 50% of the points available from Target to Maximum. This means that if the Target Performance level is skewed to one end of the range, the number of points does not change. E.g. a client has an embodied carbon reduction target of 60%. Their Minimum Performance is 40%, and Maximum Performance is 90%. The bilinear scale means that 50% of the points are allocated to the scale from 40%-60% and 50% of the points are allocated to 60% to 90%. This is illustrated in Figure 3.

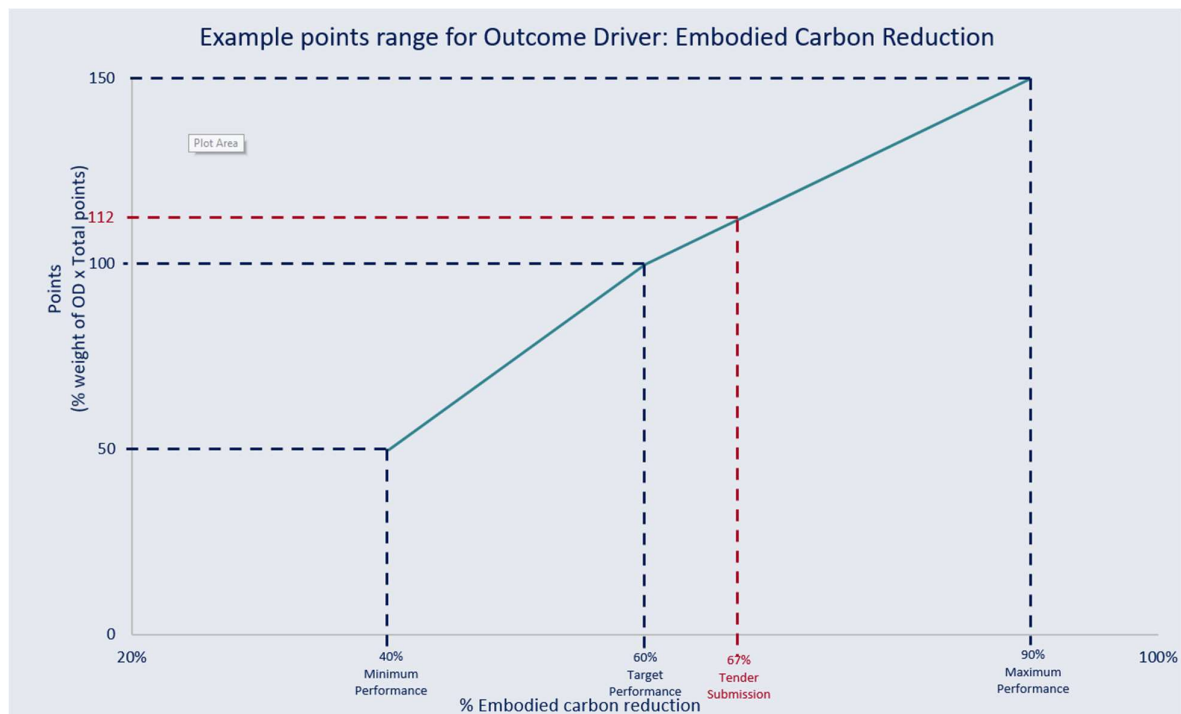


Figure 3 Example Performance Range for Outcome Driver

This model is then used to calculate the points for actual performance of a given solution (e.g. from a tender submission). Performance for each Metric is plotted on the bilinear scale for the Metric and the actual number of points calculated on the basis of its position in that range. This is also illustrated in Figure 3.

Appendix F: Overview of the United Nations Sustainable Development Goals

What are SDGs?

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, are a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity³. There are 17 SDGs in total, which are integrated; they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.



Beneath each goal sits 169 targets, and 232 indicators to measure progress on that SDG.

Complementing these indicators are unique indicators at the national level, which are to be developed by Member States⁴. At the time of writing, the UK reports against the UN indicators, and has not yet developed its own additional indicators⁵.

SDGs Relevant to the Built Environment

The full list of targets and indicators is available on the UN SDG website⁶. A shortlist of targets relevant to the built environment is provided in Table 1. The shortlist was identified by mapping the SDGs against the

³<https://www.undp.org/sustainable-development-goals#:~:text=What%20are%20the%20Sustainable%20Development,people%20enjoy%20peace%20and%20prosperity.>

⁴ <https://unstats.un.org/sdgs/indicators/indicators-list/>

⁵ <https://sdgdata.gov.uk/>

⁶ <https://sdgs.un.org/goals>

17 Value Categories. Each of the 169 targets, with reference to their associated indicators, were mapped against the 17 Value Categories, reporting either:

- A **direct** relationship – in which there is a clear alignment between the target and the Value Category, e.g. target 3.9 ‘By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination’ has a direct relationship with the Value Categories ‘Air’, ‘Water’ and ‘Land’.
- An indirect relationship – in which the target has an secondary alignment with the Value Category e.g. target 1.2 ‘By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions’ has an indirect relationship with the Value Category ‘Employment’ - infrastructure projects that commit to hire locally and thus provide employment opportunities to a community contribute to mitigating the risk of poverty within the community.
- No relationship – in which neither the focus of the target nor the metrics of the associated indicators are relevant to the primary focus of the Value Category. These have been excluded from Table 1.

Roles and Responsibilities

Should a project seek to align to the SDGs, the responsibility ultimately lies with the client team to ensure the project delivers against these.

However, as the SDGs relate to different aspects of the development, e.g. reducing carbon emissions etc., SDGs could be delegated to an appropriate member of the team, as part of their design remit on the project.

Aligning the Strategic Objectives to SDG Targets

The SDGs can be used to guide the process of identifying Strategic Objectives for the project. This would involve reviewing Table 1 and selecting the most relevant SDGs for the project. This approach is most suitable for clients who have already incorporated SDGs into their wider ESG policies, as they have already identified clear priorities and SDGs they wish to influence.

The Strategic Objectives can also be retrospectively aligned to the SDG, as any project adding value is likely to contribute either directly or indirectly to at least one SDG target. This is because the SDGs are a very broad reaching set of goals, addressing issues from reducing pollution to promoting fair employment to ensuring local engagement.

Table 2 below provides a template for the facilitator to help align the identified Strategic Objectives to SDGs. This may also help with reporting SDG contributions at the delivery phase of the project.

Measures of Success

Many of the indicators reflect the national level focus of the SDGs and are designed to assist in national level reporting. As such the indicators may not be applicable or may not translate well down to the project level.

For example, indicator 1.5.1 “*Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population*” looks at national data, rather than project specific impacts.

Nonetheless it's associated target, target 1.5 *“By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters”* is still relevant for all built environment projects. Therefore, should this be identified as an Outcome Driver for the project, custom indicators should be identified that suit the scale and type of project.

For example, under SDG 7 Affordable and Clean Energy, target 7.2 is *“By 2030, increase substantially the share of renewable energy in the global energy mix”*; measured by indicator 7.2.1 *“Renewable energy share in the total final energy consumption”*. For the project, an example metric could be the % of implemented renewable energy generation in the project.

The Facilitator should discuss with the client's project team to identify suitable Measures of Success. If the client's corporate team have already identified SDGs as part of their ESG strategy, then their input should also be sought to help determine suitable metrics to support the client's ESG targets, as well as the delivery of the project.

It is up to the Facilitator to use professional judgement when determining how closely aligned the Measure of Success is to the intention of the SDG indicator.

Table 1: Built Environment SDG Shortlist

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
Goal 1. End poverty in all its forms everywhere																	
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions																	
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance																	
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters																	
1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions																	
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture																	
2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
Goal 3. Ensure healthy lives and promote well-being for all at all ages																	
3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being																	
3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents																	
3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all																	
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination																	
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States																	
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all																	
4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes																	
4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university																	
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship																	
4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations																	
4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development																	
4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all																	
Goal 5. Achieve gender equality and empower all women and girls																	
5.1 End all forms of discrimination against all women and girls everywhere																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation																	
5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life																	
Goal 6. Ensure availability and sustainable management of water and sanitation for all																	
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all																	
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations																	
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally																	
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity																	
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes																	
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies																	
6.b Support and strengthen the participation of local communities in improving water and sanitation management																	
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all																	
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services																	
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix																	
7.3 By 2030, double the global rate of improvement in energy efficiency																	
7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support																	
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all																	
8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries																	
8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors																	
8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead																	
8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value																	
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training																	
8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms																	
8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment																	
8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products																	
8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization																	
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation																	
9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all																	
9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries																	
9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets																	
9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending																	
9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States																	
9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities																	
9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020																	
Goal 10. Reduce inequality within and among countries																	
10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average																	
10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard																	
10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality																	
10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions																	
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable																	
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums																	
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons																	
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage																	
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations																	
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management																	
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities																	
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning																	
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials				◆	◆												*
Goal 12. Ensure sustainable consumption and production patterns																	
12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries																	
12.2 By 2030, achieve the sustainable management and efficient use of natural resources																	
12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment																	
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse																	
12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle																	
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature																	
12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production																	
12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products																	
Goal 13. Take urgent action to combat climate change and its impacts																	
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries																	
13.2 Integrate climate change measures into national policies, strategies and planning																	
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning																	
13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Sustainable Development Goals		Value Definition Framework															
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development																	
14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution																	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans																	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels																	
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information																	
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss																	
15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements																	
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world																	
15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development																	
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species																	
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species																	
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts																	
15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems																	
15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Sustainable Development Goals						Value Definition Framework											
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels																	
16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements											Blue		Blue				
16.5 Substantially reduce corruption and bribery in all their forms													Light Blue				
16.6 Develop effective, accountable and transparent institutions at all levels										Light Blue	Light Blue		Blue			Light Blue	
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels										Light Blue	Blue	Blue	Blue				
16.b Promote and enforce non-discriminatory laws and policies for sustainable development										Light Blue	Light Blue	Blue	Blue				
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development																	
17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection					Light Blue								Light Blue	Blue			
17.14 Enhance policy coherence for sustainable development		Light Blue	Light Blue	Light Blue	Light Blue	Light Blue			Light Blue		Light Blue	Light Blue	Light Blue				

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

♦ indicates target relates to development in developing nations

Sustainable Development Goals	Value Definition Framework																
Target	Natural						Human				Social			Produced			
	Air	Climate	Water	Land	Resource Use	Biodiversity	Employment	Skills and Knowledge	Health	Experience	Involvement and Influence	Equality and Diversity	Networks and Connections	Lifecycle Cost	Return	Production	Resilience and Security
17.15 Respect each country’s policy space and leadership to establish and implement policies for poverty eradication and sustainable development																	
17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries																	
17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships																	

Note: **dark blue** is direct relationship, **light blue** is indirect relationship, and no colour is no relationship.

◆ indicates target relates to development in developing nations

Table 2: Strategic Objective SDG Alignment Template

Value Toolkit						SDG				
Ref	Strategic Objective	Outcome Driver	Measure of Success	Lifecycle of Project	Time scope	SDG Goal	SDG Target	SDG Indicator	Type of Contribution	Contribution Description
e.g. Air1	Improve health and wellbeing	Minimise air pollution through delivery	Proportion of clean plant (%)	Operation	Year-on-year	Goal 11. Sustainable Cities and Communities	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	Makes a direct, positive contribution	By increasing (X%) share of energy generation by clean plant, thereby reducing PM2.5 emissions

#ValueToolkit

constructingexcellence.org.uk/value-toolkit

The Construction Innovation Hub is funded by UK Research and Innovation through the Industrial Strategy Challenge Fund



The Construction Innovation Hub is a partnership between:

