



Department for Levelling Up,
Housing & Communities

Guidance on Collaborative Procurement for Design and Construction to Support Building Safety



Commissioned by the Department for Levelling Up, Housing and Communities
and prepared by

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Guidance on Collaborative Procurement for Design and Construction to Support Building Safety

This guidance has been prepared by Professor David Mosey of King's College London Centre of Construction Law and Russell Poynter-Brown of On-Pole Limited working in collaboration with the Department for Levelling Up, Housing and Communities and the Procurement Advisory Group. This guidance is offered in good faith but without legal liability, on the understanding that clients and teams will rely on their own professional advice when considering, adopting and implementing its recommendations.

Forewords



“I would like to congratulate the authors of the Collaborative Procurement Guidance, David Mosey and Russell Poynter-Brown, and the Procurement Advisory Group, on the publication of this important document that will have a positive effect on collaboration and culture change within the construction industry. I highlighted poor procurement and contract practice as an area of concern in my Independent Review into Building Regulations and Fire Safety, noting that safety and quality are often sacrificed in favour of seeking the lowest possible price.

The Industry Safety Steering Group and I were impressed with the hard work that has gone into this report when Russell attended the Group in June 2021. I would like to thank him and David for their commitment to ensuring this guidance has the best opportunity to help improve procurement practices across the industry. The guidance encourages a more holistic approach to procurement as well as the need for collaboration, both of which the ISSG has encouraged in the past, not only within procurement but in other workstreams also. It is also encouraging that the creation of the guidance has been supported by the cross-industry Procurement Advisory Group which demonstrates what can be achieved through collaboration as well as taking into account wider views which are reflected in the guidance. I hope that those involved in procurement across the supply-chain adopt this guidance and use it to improve their practices to reap the benefits of increased collaboration to create safe, high-quality buildings”.

Dame Judith Hackitt



“Improving procurement practices across the built environment is integral to delivering safe, high-quality buildings. Procurement kick-starts a project, so it is important that the right behaviours are incentivised from the beginning and influence all members of the supply chain to behave in the correct way.

Dame Judith Hackitt, in her seminal review of the building safety system, recognised that safety and quality are often sacrificed to achieve the lowest cost, rather than best value for money. Dame Judith was right to argue that delivering value for money and safe, high-performing buildings depend on establishing trusted, collaborative partnerships between the client, the contractor, and the rest of the supply chain. This guidance takes this insight as its starting point and provides dutyholders and professionals with practical advice and examples of how to apply the principles of collaborative procurement throughout the lifecycle of the building.

I encourage the sector and in particular dutyholders and procurement professionals to adopt this guidance and implement it into the way they do business. Doing so will help to change incentives, behaviours and ultimately culture across supply chains, which is critical to improving safety and performance of buildings.

I am grateful to the cross-industry Procurement Advisory Group for their oversight of this important document, in particular the lead authors: Professor David Mosey (King's College London) and Russell Poynter-Brown (On-Pole). I look forward to their continued support in helping us to make sure that procurement practice is helping to achieve the outcome that we all want to see: safer, better-quality outcomes for residents.”

Lord Greenhalgh

Procurement Advisory Group Statement of Support

Dame Judith Hackitt stated that *‘Improving the procurement process will play a large part in setting the tone for any construction project...where the drive for quality and the required safety outcomes, rather than lowest costs must start’*. This guidance explains crucial improvements that will deliver safer buildings, using proven principles of collaborative procurement that should be adopted by all public sector and private sector clients and by the teams with whom they work. These improvements establish new norms that can be applied through a range of procurement models and contracts.

The changes proposed in this guidance use better project planning, fairer treatment of risk and more accurate information to create improvements in the safety and quality of higher risk projects within the scope of the Building Safety Bill. The case studies show how these changes also deliver other improvements in economic, social and environmental value.

This guidance makes clear the direct links between collaborative practices and the means by which dutyholders should address relevant questions arising at each of the *‘gateways’* identified in the Building Safety Bill. It proposes specific actions that will assist the marketplace in making submissions to the new Building Safety Regulator, and its recommendations should not be viewed only as *‘nice to have’*.

We recommend and support the adoption of this guidance and the specific actions that it advocates.

Paul Nash, Chartered Institute of Building

Duncan Brock and Carl Thomas, CIPS

Alison Nicholl, Constructing Excellence

John P Welch, Crown Commercial Service

Trevor Hursthouse, Lingwood Management Services (also representing Actuate UK)

Martin Cawthorn, L&Q

Kevin Murray, Metre Sq

Professor John Cole, RIBA

Alan Muse and Steven Thompson, RICS

Barry Beavis, Sharpfibre representing the Association of Passive Fire Protection (ASFP)

Rebecca Rees, Trowers & Hamlins

Tim Cummins, World Commerce and Contracting

Executive Summary

The Grenfell Tower fire in 2017 led to a significant programme of work to reform the building safety system and Dame Judith Hackitt's Independent Review of Building Regulations and Fire Safety identified procurement as one of many areas that urgently need to be improved.

This guidance has been developed to assist clients and industry in adopting and implementing procurement practices that deliver safer buildings. It shows how collaborative procurement can lead to safer, better-quality outcomes and how clients and their teams can use collaborative procurement in practice.

Collaborative approaches have been proven to succeed in reducing risks and improving value on construction projects in the public sector and the private sector. These approaches should be adopted on all construction projects, and this guidance show why it is essential to adopt them on projects that are *'in-scope'* of the new regulatory regime that will be introduced through the government's Building Safety Bill (the *'Bill'*).

This guidance is designed to support:

- Public and private sector clients and their advisers when implementing collaborative processes, relationships and systems in their procurement strategies, procedures and contracts for projects in-scope and at each *'gateway'* point under the Bill
- The parties identified in the Bill comprising *'dutyholders'* during design and construction, when using collaborative processes, relationships and systems to inform, support and integrate the design, construction, supply and operation of an in-scope project and when implementing risk management so as to prioritise safety and quality issues and the needs of residents
- The Building Safety Regulator when establishing how the industry moves to safer practices across the lifecycle of buildings in-scope of the new regulatory regime.

Rather than prescribing particular procurement models or contract forms, this guidance recognises that clients in the public and private sectors adopt varying approaches; it summarises ways in which all public and private sector dutyholders can demonstrate

to the Building Safety Regulator how they have used collaborative systems to improve safety and quality outcomes. This guidance mirrors the commitment in the government's 2020 Construction Playbook that collaborative procurement practices will help to deliver *'better, faster and greener solutions that support our recovery from the COVID-19 pandemic and build the economy of the future while improving building and workplace safety'*.

This guidance breaks down collaborative procurement into four specific proposals that should be adopted on any in-scope project:

- Selection by value that avoids a race to the bottom
- Early supply chain involvement that improves safety and reduces risks
- Collaborative relationships that improve commitments and involve residents
- A golden thread of information that integrates design, construction and operation.

It explains how these proposals are supported by project systems and strategic commitments that sustain and enhance a collaborative culture, by the use of collaborative procurement to improve economic, social and environmental value and by team-building techniques and lessons learned from other industries.

Guidance on Collaborative Procurement for Design and Construction to support Building Safety

1 What is different about this guidance?

The Grenfell Tower fire in 2017 represented the greatest loss of life in a residential fire since the Second World War. Since the tragedy there has been a significant programme of work across government and the wider built environment industry to reform the building safety system in line with the recommendations in Dame Judith Hackitt's Independent Review of Building Regulations and Fire Safety.

Dame Judith Hackitt identified the procurement processes used across the construction industry as one of the many areas that urgently need to be improved. At the time of the publication of this guidance the Grenfell Tower Inquiry is still underway, but there has been significant criticism of the procurement process that governed the Grenfell Tower refurbishment project.

'Improving the procurement process will play a large part in setting the tone for any construction project. This is where the drive for quality and good outcomes, rather than lowest costs must start.'

Dame Judith Hackitt

Dame Judith Hackitt's Independent Review:

- A key issue underpinning system failure is *'Indifference'* where *'the primary motivation is to do things as quickly and cheaply as possible rather than to deliver quality homes which are safe for people to live in.'* (Foreword, page 5)
- ***'Improving the procurement process will play a large part in setting the tone for any construction project. This is where the drive for quality and good outcomes, rather than lowest costs must start.'*** (Foreword, page 8)
- ***'The procurement process kick-starts the behaviours that we then see throughout design, construction, occupation and maintenance.'*** (Section 9.1, page 108)

This guidance has been developed to support clients and industry in adopting and implementing procurement practices that will deliver safer buildings. It examines evidence of

the ways in which collaborative procurement can lead to safer, better- quality outcomes, and it explains how clients and their project teams can use collaborative procurement in practice.

Collaborative approaches have been proven to succeed in reducing risks and improving value on construction projects in the public sector and the private sector. These approaches should be adopted on all construction projects, and this guidance show why it is essential to adopt them on projects that are *'in-scope'* of the new regulatory regime that will be introduced through the government's Building Safety Bill (the *'Bill'*).

The Bill describes the most significant changes to building safety legislation in decades and undertakes wholesale reform of the associated regulatory system. It introduces a new era of accountability, making it clear where the responsibility for managing safety risks lies throughout the design, construction and occupation of buildings that are in-scope, with more onerous sanctions for those that fail to meet their obligations. Through the Bill and associated legislation, the government will introduce a more stringent regulatory framework in design and

construction led by the Building Safety Regulator for new high-rise residential buildings, care homes and hospitals which are 18 metres or more in height or at least seven storeys (*'higher-risk'* buildings). As part of these reforms, the government will establish three gateways at key stages in design and construction that will apply to higher-risk buildings:

- *'Planning gateway one'* – at the planning application stage
- *'Gateway two'* – before building work starts
- *'Gateway three'* – when building work is completed.

This guidance is designed to support these reforms and it recommends procurement and contracting questions that should be addressed in advance of each *'gateway'* application.

This guidance also supports a more stringent regulatory framework for building work carried out in existing higher-risk buildings, which will be led by the new Building Safety Regulator and will strengthen oversight of prescribed refurbishments:

- Before building work starts to assess whether proposals comply with building regulations and assure building safety
- During building work, through inspections at key stages, and the requirement for significant changes from the original proposal to be assessed by dutyholders and approved by the Building Safety Regulator before they are made
- On completion of building work to check compliance with building regulations before a completion certificate is issued.

This guidance should be read in the context of the Building Act 1984 and Building Regulations and the wider health and safety regulatory regime, including the Construction (Design and Management) Regulations 2015, the Health and Safety at Work Act 1974, the Management of Health and Safety at Work Regulations 1999 and supporting guidance published by the Health and Safety Executive.

This guidance is designed to support:

- Public and private sector clients and their advisers when implementing collaborative processes, relationships and systems as features of their procurement strategies, procedures and contracts for projects in-scope and when addressing questions that are relevant to each *'gateway'* point

- The parties identified in the Bill comprising *'dutyholders'* during design and construction (namely the *'Client'*, *'Principal Designer'*, *'Principal Contractor'*, *'Designers'* and *'Contractors'*), *'Accountable Persons'*, *'Building Safety Managers'* and all other consultants, subcontractors and suppliers when using collaborative processes, relationships and systems to inform, support and integrate the design, construction, supply and operation of an in-scope project and when implementing risk management so as to prioritise safety and quality issues and the needs of residents
- The Building Safety Regulator when establishing how the industry moves to safer practices across the lifecycle of buildings in-scope of the new regulatory regime.

The collaborative procurement practices recommended in this guidance are not experimental or theoretical. They are well-established and have successfully achieved improved value and reduced risks on many projects in the housing sector and in other built environment sectors. This guidance does not prescribe particular procurement models or contract forms and it recognises that clients in the public and private sectors adopt varying approaches. Instead, it summarises ways in which all public and private sector dutyholders can demonstrate to the Building Safety Regulator how they have created and used collaborative processes, relationships and systems in order to improve safety and quality outcomes.

This guidance demonstrates the findings of Dame Judith Hackitt's Independent Review that improved procurement systems which impact on safety can also *'lead to a significant increase in productivity.'* It mirrors the commitment in the government's 2020 Construction Playbook that improved procurement practices will deliver *'better, faster and greener solutions that support our recovery from the COVID-19 pandemic and build the economy of the future while improving building and workplace safety.'*

More details are set out in:

- *'Building a Safer Future Independent Review of Building Regulations and Fire Safety: Interim Report'*, 2017, Hackitt, J., https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/668747/Independent_Review_of_Building_Regulations_and_Fire_Safety.pdf

- *'Building a Safer Future- Independent Review of Building Regulations and Fire Safety'*, 2018 Hackitt, J. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707785/Building_a_Safer_Future_-_web.pdf
- The Construction (Design and Management) Regulations 2015 (legislation.gov.uk)
- Construction - Construction (Design and Management) Regulations 2015 - What do I need to do? - Commercial clients: roles and responsibilities (hse.gov.uk)
- Need building work done? A short guide for clients on the Construction (Design and Management) Regulations 2015 (hse.gov.uk)

'The way in which procurement is often managed can reduce the likelihood that a building will be safe.'

Dame Judith Hackitt



2

Why is this guidance needed?

Dame Judith Hackitt's Independent Review:

- *'The way in which procurement is often managed can reduce the likelihood that a building will be safe.'*
- *'The contracting process determines the relationships, competencies and processes that exist between all the parties in the build and management processes.'*
- *'Procurement sets the tone and direction of the relationships between the client, designer, contractor and their subcontractors, as well as determining the formal specification of the building.'*
- *'Issues at this stage, for example inadequate specification, focus on low cost or adversarial contracting, can make it difficult (and most likely, more expensive) to produce a safe building.'* (Section 9.7, page 109)

Collaborative construction procurement needs to be clearly connected to the underlying commercial needs and issues that arise on any project, and it will not succeed if it depends on vague or idealistic concepts. This guidance breaks down collaborative procurement into four specific proposals that should be adopted on any in-scope project:

- Selection by value that avoids a race to the bottom
- Early supply chain involvement that improves safety and reduces risks
- Collaborative relationships that improve commitments and involve residents
- A golden thread of information that integrates design, construction and operation.

Case studies provide a wealth of evidence as to how collaborative procurement can improve project outcomes. Yet the construction industry and its clients remain cautious and collaborative practices have not become the norm. Instead, many clients, consultants and contractors continue to use procurement models and contracts that endanger building safety by:

- Gambling on lowest price bids without joint review of detailed costs

- Focusing primarily on transferring risk down the supply chain and preparing the ground for potential claims and disputes.

This guidance shows how collaborative procurement avoids these risks by preserving reasonable legal and commercial protections while using early planning, clear roles, full consultation and accurate information to reduce the potential for failures, errors, misunderstandings and disputes.

Government response to the 'Building a Safer Future' consultation:

'Fire and structural safety issues can be exacerbated by poor procurement, including:

- *poorly designed tender specifications and processes*
- *eleventh hour contractor appointments*
- *lack of appropriate engagement with the supply chain and*
- *contract forms which prioritise low-cost solutions at the expense of building safety.*

These practices can result in poor value for money and poor building safety outcomes. The Government believes that collaborative procurement approaches can help to mitigate some of the poor behaviours identified above.'

Effective collaboration among the individuals engaged on a project or programme of work is only made possible by integrating the differing needs and commercial priorities of the organisations who employ them. A shared pool of relevant knowledge is imperative, and the legal and commercial tests of collaborative construction procurement should consider:

- Firstly, how team members build up shared knowledge at a time when it can be most effectively used to improve project outcomes
- Secondly, how team members use that shared knowledge to improve project outcomes rather than to seek benefits at someone else's expense.

There is no universal business morality that creates collaborative norms of behaviour or that builds an automatic basis for trust or good faith. To demonstrate competence and to translate goodwill into actions, team members need a clear and balanced understanding of what a collaborative culture means in practical terms and how they are expected to create and sustain it. So that team members can anticipate and avoid misunderstandings or breakdowns in good working relationships, they need to establish procurement processes and contracts that reflect and support their collaborative practices.

The procurement and contracting policies expressed in the government's 2020 Construction Playbook recognise that *'setting the right behaviours and practices throughout the design, construction, occupation and maintenance stages, and the handoffs between these stages, is crucial to ensuring building safety'*. Although the Construction Playbook focuses primarily on procurement by public sector clients, it reflects extensive private sector consultation and is supported by a *'Compact with Industry'* whose signatories include private sector organisations such as the British Property Federation.

The Construction Playbook's Compact with Industry emphasises the need to *'work more collaboratively at all levels of the supply chain'*, and *'to place more focus on social value, sustainability and asset performance'*. It highlights the opportunities for public sector clients and suppliers *'to create long-term relationships that will underpin our investments in people, technology and capacity'*.

As regards the use of collaborative contracts, the Playbook states that:

- *'One of the most effective ways to deliver outcomes is to create contracting environments that promote collaboration and reduce waste'*
- *'Contracts should create positive relationships and processes designed to integrate and align multiple parties' commercial objectives and incentives.'*

In the procurement process leading to a collaborative contract, team members should be selected according to their competence and the value they bring to a project. They should be paid promptly, earn a fair profit and be given the earliest opportunities to influence optimum approaches to safety and quality as well as other aspects of efficiency, risk management

and value for money. Team members will be motivated to concentrate their efforts on the best interests of the project, and not on tactics that prepare the ground for later claims, if they understand how collaborative relationships and processes will help them to:

- Avoid losses
- Minimise wasted cost, time and resources
- Enhance their reputations
- Avoid disputes.

Although many construction teams work hard to create and maintain high collaborative standards, a consistent collaborative approach now needs to be adopted on all projects relating to buildings in-scope in order to improve industry-wide culture, competence and performance. Dutyholders are therefore encouraged to implement the collaborative processes, relationships and systems recommended in this guidance in order to achieve the improvements in project strategy, procurement, contracting and management that are necessary to prioritise residents and ensure their safety.

Section 3 of this guidance sets out a checklist of recommended procurement and contracting questions that dutyholders should consider in advance of each *'gateway'* that is expected to form part of the new building safety regime.

The specific practices that are necessary to achieve successful collaborative design and construction procurement are then listed as Key Points in **Section 4** which provide a summary of the remaining sections of this guidance.

Subsequent sections explain collaborative procurement and contracting practices in more detail, illustrating:

- How selection by value avoids a race to the bottom (**Section 5**)
- How early supply chain involvement improves safety and reduces risks (**Section 6**)
- How collaboration improves commitments and involves residents (**Section 7**)
- How a digital golden thread of information integrates design, construction and operation (**Section 8**).
- What systems sustain and enhance a collaborative culture (**Section 9**)
- How strategic collaboration can embed improved safety (**Section 10**).

Section 11 illustrates how, in addition to improved safety and quality, collaborative procurement enables public and private sector clients and their teams to achieve other improvements in economic, social and environmental value.

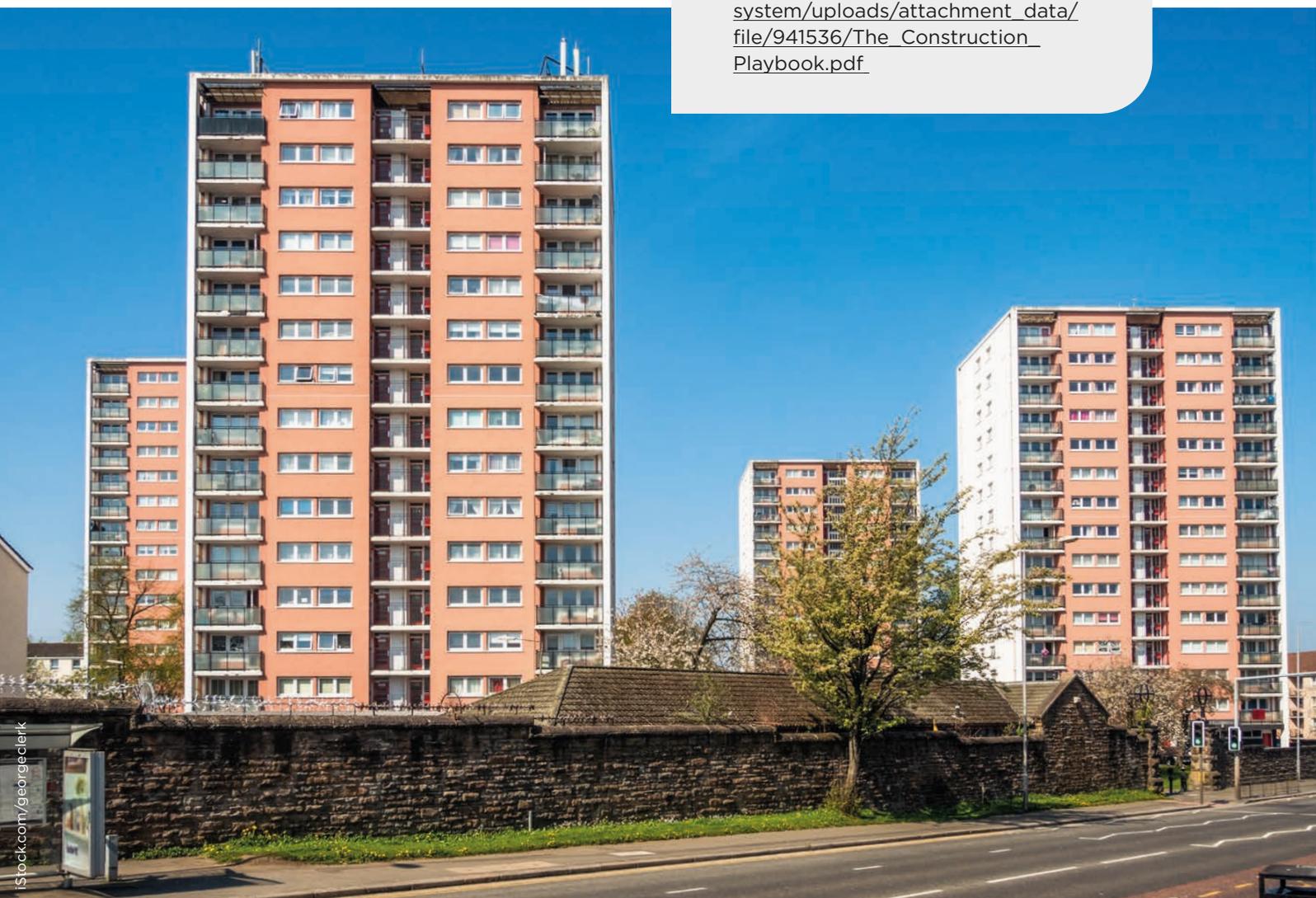
Section 12 outlines team-building techniques through which the collaborative culture of in-scope building projects can be cultivated. It also shows how collaborative clients and teams can benefit from new sources of advice and support, and how dutyholders can use lessons learned from other industries.

When using this guidance, please note at the end of each section the sources and weblinks that are provided for more details in relation to:

- The sources quoted
- The case studies illustrating specific collaborative practices.

More details are set out in:

- *'Reinventing Construction Through a Productivity Revolution 2017'*, <https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/reinventing-construction-through-a-productivity-revolution>
- *'A reformed building safety regulatory system'*, Government response to the *'Building a Safer Future'* consultation, 2020, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/877628/A_reformed_building_safety_regulatory_system_-_gvt_response_to_the_Building_a_Safer_Future_consultation.pdf
- *'The Construction Playbook'*, 2020, Government guidance on sourcing and contracting public works projects and programmes https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/941536/The_Construction_Playbook.pdf



3 What gateway questions link this guidance to the new building safety regime?

This section sets out a checklist of suggested questions for teams to use in preparing for each of the three ‘gateways’ through which in-scope projects will need to pass in the new building safety regime. These gateways are expected to be used to scrutinise compliance with the new building safety regime by dutyholders during design and construction comprising the ‘Client’, ‘Principal Designer’, ‘Principal Contractor’, ‘Designers’ and ‘Contractors’ as defined in the Bill. These gateways are expected to be confirmed when the Building Safety Bill and related legislation become law.

3.1 Planning gateway one (planning application stage)

Government response to the ‘Building a Safer Future’ consultation:

‘To aid the local planning authority in their decision as to whether to grant planning permission, the developer will be required to submit a Fire Statement setting out fire safety considerations specific to the development with their planning application.’

Question A: Have the Client’s processes for identifying the person drafting the ‘**Fire Statement**’, and for other professionals who are involved in preparing the planning application, demonstrated a **balanced approach to value and evidence of suitable competencies**? [Guidance **Section 5**]

Question B: Have the Client’s contract terms for professionals who are involved in preparing the planning application stated their **integrated commitments** (within the scope of their agreed roles and contributions) to the **safety and quality compliance** of their proposals? [Guidance **Section 7**]

Question C: Have the Client’s selection process and contract terms for the professionals involved in preparing the planning application made clear their capabilities and commitments **to use suitable digital information management tools** for the creation, sharing, storage and use of information? [Guidance **Section 8**]

3.2 Gateway two (building control stage, before construction can begin)

Government response to the ‘Building a Safer Future’ consultation:

- *‘At Gateway two, the Client will also be required to ensure they are satisfied that the Principal Designer and Principal Contractor can demonstrate the necessary competence to discharge their responsibilities effectively.’*
- *‘The Client will be required to submit key information to the Building Safety Regulator demonstrating how they are complying with building regulations through the submission of full plans, the construction control plan, fire and emergency file, and other supporting documentation that will help the assessment team determine whether the application meets the building regulations requirements and that the dutyholder has sufficiently demonstrated that they are managing building safety risks.’*
- *‘Key information related to fire and structural safety submitted during the three Gateways will form part of the golden thread of data, which will be kept up to date and made accessible to relevant people throughout the lifecycle of the building.’*

Question D: Have the Client’s procurement processes for identifying and appointing the Principal Designer, the Principal Contractor and the other professionals involved in preparing the building control application submitted at Gateway two (including plans, construction control plan, fire and emergency file and other supporting documentation), and for identifying and appointing all other parties who will be working on the project during design and construction, demonstrated a **balanced approach to value and evidence of suitable skills, knowledge, experience and behaviours**? (also shown in the Client’s signed declaration of competence at Gateway two) [Guidance **Section 5**]

Question E: Have the Client's procurement processes for identifying and appointing the Principal Designer, the Principal Contractor and the other professionals involved in preparing the building control application submitted at Gateway two (including plans, construction control plan, fire and emergency file and other supporting documentation), and for identifying and appointing all other parties that will be working on the project during design and construction, used **early supply chain involvement ('ESI')** so as to optimise their **contributions to improved safety and quality** within agreed periods of time after their appointment and in advance of Gateway two? [Guidance **Sections 6 and 10**]

Question F: Have the Client's contract terms for the Principal Designer, the Principal Contractor and the other professionals involved in preparing the building control application submitted at Gateway two (including plans, construction control plan, fire and emergency file and other supporting documentation), and the contract terms for all other parties that will be working on the project during construction, stated their legal obligations as **dutyholders** (within the scope of their agreed roles and contributions) to **safety and quality compliance**? [Guidance **Sections 7, 9 and 10**]

Question G: Have the Client's procurement processes for the Principal Designer, the Principal Contractor and the other professionals involved in preparing the building control application submitted at Gateway two (including plans, construction control plan, fire and emergency file and other supporting documentation), and the procurement processes for all other parties that will be working on the project during design and construction, made clear their capabilities and commitments to **use suitable digital information management tools** for the creation, sharing, storage and use of information comprising a **golden thread of information**? [Guidance **Section 8**]

Question H: Is there a collaborative system by which the Client, the Principal Designer, the Principal Contractor, and the other professionals involved in preparing the building control application submitted at Gateway two (including plans, construction control plan, fire and emergency file and other supporting documentation), and all other parties that will be working on the project during design and construction, have **regularly consulted with each other and with residents** (where applicable) in advance of Gateway two in relation to the safety and quality compliance of all designs and

specifications and all related cost, time, supply, construction, maintenance and risk management information? [Guidance **Sections 7 and 9**]

Question I: Is there a **transparent decision-making process** by which the Client, the Principal Designer, the Principal Contractor and other professionals involved in preparing the building control application submitted at Gateway two (including plans, construction control plan, fire and emergency file and other supporting documentation), and those that will be working on the project during design and construction, have agreed the **Gateway two application**, based on and to the extent of their agreed roles and their contributions as dutyholders to **safety and quality compliance**? [Guidance **Sections 7 and 9**]

3.3 During construction (between Gateways two and three)

Government response to the '*Building a Safer Future*' consultation:

'The change control strategy submitted as part of the construction control plan at Gateway two will need to be updated and maintained throughout the construction phase, to record all changes from the original plans as submitted, together with:

- *a complete construction control plan*
- *an updated fire and emergency file; and*
- *a complete key dataset.'*

Question J: Is there a collaborative system by which the Client, the Principal Designer and the Principal Contractor, and the others working on the project during design and construction, **regularly consult with each other** in accordance with their agreed roles and contributions as dutyholders:

- To implement the **construction control plan**?
- To update, maintain and implement the **change management strategy** approved at Gateway two and to record all changes from the application approved at Gateway two?
- To monitor and update the **golden thread** of information, ensuring that it is accurate and up to date?

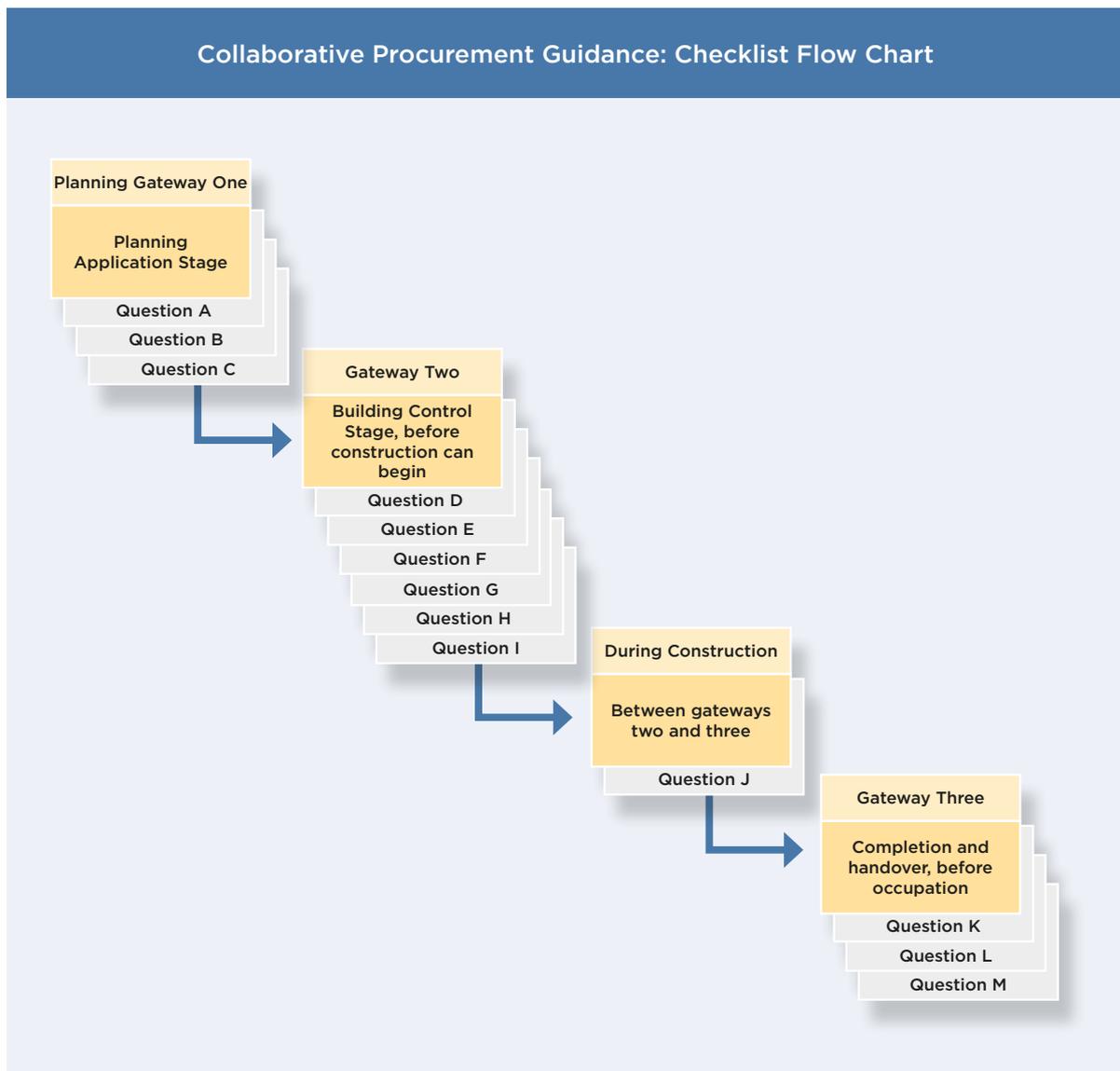
- To ensure the **safety, quality and regulatory compliance** of all designs, specifications and related supply, construction, maintenance and risk management activities including the implementation of appropriate site controls and change control procedures? [Guidance **Sections 7 and 9**]

3.4 Gateway three (completion and handover, before occupation)

Question K: Is there a collaborative system by which the Client, the Principal Designer and the Principal Contractor, and the other professionals involved in preparing the Gateway three application (including as-built plans and other prescribed documents), have **regularly engaged with residents** (where applicable) in advance of Gateway three, based on and to the extent of their agreed contributions as dutyholders, in relation to safety, quality and regulatory compliance? [Guidance **Sections 7 and 9**]

Question L: Is there an integrated system by which the Client, the Principal Designer and the Principal Contractor, and the other professionals involved in preparing the Gateway three application (including as-built plans and other prescribed documents), have confirmed, based on and to the extent of their agreed roles and contributions as dutyholders, the **safety, quality and regulatory compliance** of all designs and specifications and all related supply, construction, maintenance and risk management information and activities at regular stages **before work is covered up** during construction, and **before work is handed over on completion** at Gateway three? [Guidance **Sections 7 and 9**]

Question M: Have the Client's procurement processes made clear its capability and commitment to hand over the **golden thread of information** and other prescribed information to the operator of the completed building (if applicable)? [Guidance **Section 8**].



4

What are the key points when implementing collaborative procurement?

This section provides a summary of the key points that should be considered when implementing collaborative procurement on in-scope projects in the public sector or the private sector. These key points reflect the guidance in **Sections 5 to 12** inclusive, and the summaries follow the same sequence of topics as those sections.

Key points - Section 5: How can a procurement process avoid a race to the bottom?

- Avoid a single-stage, fixed price procurement process, especially if there is a risk that the Client may be provided with inaccurate fixed prices based on incomplete or inaccurate information (5.1)
- Use a two-stage procurement process that enables early provisional appointments following which team members' tender proposals and commitments can be tested and improved upon before full implementation of the project is approved (5.2)
- Assess competencies carefully against a recognised set of criteria to ensure that dutyholders and other team members can fulfil their commitments and obligations (5.3)
- Ensure that evaluation criteria are detailed, measurable, weighted and accurately reflect the Client's brief and the principles of value-based procurement (5.4)
- Demonstrate a robust balance between safety, cost and quality, using evaluation processes that demonstrate value and provide evidence of suitable competencies and insurances (5.5)
- For public sector Clients, use the provisions of current Public Contracts Regulations that enable a balanced approach to assessing the most economically advantageous tenders (5.6).

Key points - Section 6: How can early supply chain involvement improve safety and reduce risks?

- Appoint Principal Contractors, subcontractors and other supply chain members through early supply chain involvement ('ESI') following a value-based procurement process, so that they

contribute their skills, knowledge and experience and so that they demonstrate behaviours that will optimise safety and quality (6.1)

- Use ESI pre-construction phase processes to test how Principal Contractors, subcontractors and other supply chain members can work with Clients and consultants to improve project outcomes and reduce risks (6.2)
- Use ESI '*Supply Chain Collaboration*' to optimise early contributions by selected subcontractors and other supply chain members during the pre-construction phase of the project (6.3)
- Implement ESI to improve cost certainty and transparency by the separate agreement of appropriate profit and overheads and by active engagement with Principal Contractors, subcontractors and other supply chain members (6.4)
- Use ESI to plan and agree integrated timescales and to manage changes (6.5)
- Use forms of contract that provide integrated ESI systems and controls (6.6).

Key points - Section 7: How can collaboration improve commitments and involve residents?

- Ensure that the roles and relationships agreed between project team members are demonstrably clear, collaborative and integrated (7.1)
- Establish fair payment terms and cost models that eliminate late payment and support profitability (7.2)
- Use transparent decision-making systems (7.3)
- Use joint risk management by which appropriate team members agree the actions for dealing with each risk while accepting reasonable accountability (7.4)
- Implement a consultation system to ensure that the views of resident representatives are notified, discussed and taken into account (7.5)
- Make clear the contractual relationships and processes that support a collaborative culture (7.6).

Key points – Section 8: How can a digital golden thread integrate design, construction and operation?

- Recognise the importance of sharing accurate and complete project information (8.1)
- Use digital information management tools for the creation, sharing, storage and use of project information (8.2)
- Consider how digital information can improve whole life asset management (8.3)
- Use building information modelling ('BIM') to improve ESI processes (8.4)
- Use BIM to improve collaborative procurement relationships and activities (8.5)
- Consider how BIM contributions can be integrated using collaborative contracts (8.6).

Key points – Section 9: What systems sustain and enhance a collaborative culture?

- Establish collaborative team leadership, management and quality control (9.1)
- Agree a suitable system for developing accurate cost information and prices (9.2)
- Consider and agree suitable incentives that will enhance relevant commitments (9.3)
- Consider the benefits of systems for early warning and collaborative dispute resolution (9.4)
- Consider the potential for project insurances to encourage collaborative behaviour (9.5).

Key points – Section 10: How can strategic collaboration embed improved safety?

- Consider the potential for long-term collaborative contracting to embed improved safety and quality and other economic, social and environmental value (10.1)
- Consider the potential of a '*framework alliance*', including enhanced outputs from Supply Chain Collaboration (10.2)
- Consider the potential of a '*term alliance*' governing whole life asset management (10.3)
- Identify where modern methods of construction ('MMC') can improve safety and offer other benefits (10.4)
- Consider systems governing strategic performance measurement and incentives (10.5).

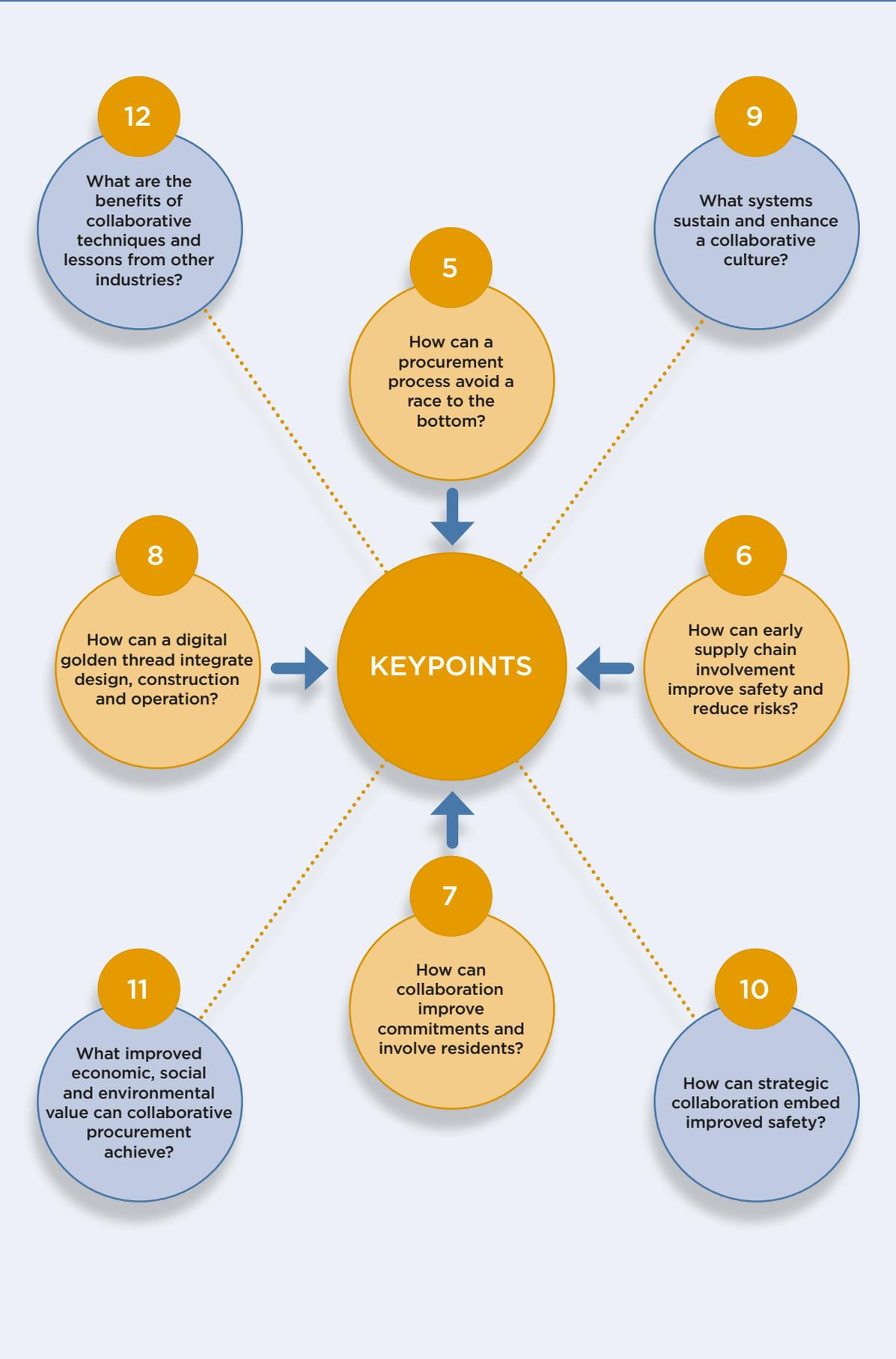
Key points – Section 11: What improved economic, social and environmental value can collaborative procurement achieve?

- Assess and agree how collaborative procurement systems demonstrate improved value for the Client (11.1)
- Assess and agree how collaborative procurement systems demonstrate improved value for Principal Designers, Principal Contractors and all other consultants, contractors, sub-contractors and other supply chain members (11.2)
- Assess proposals for improved cost certainty and cost savings where these do not compromise safety or quality (11.3)
- Assess the benefits of proposals for other improved economic value such as improved performance and extended warranties where these do not compromise safety or quality (11.4)
- Assess the benefits of proposals for improved social value where these do not compromise safety or quality (11.5)
- Assess the benefits of proposals for improved environmental value where these do not compromise safety or quality (11.6).

Key points – Section 12: What are the benefits of collaborative techniques and lessons from other industries?

- Agree processes for developing trust and raising issues through early identification and collective resolution of problems so as to confront issues without being confrontational (12.1)
- Apply systems for consensus-building and decision-making that encourage team members to air views and suggestions openly (12.2)
- Agree how team members hold each other to account in terms of behaviours or performance without jeopardising collaborative working relationships (12.3)
- Consider the benefits of independent advice and team coaching (12.4)
- Consider techniques that improve collective performance in other industries (12.5).

Collaborative Procurement Guidance: Key Points



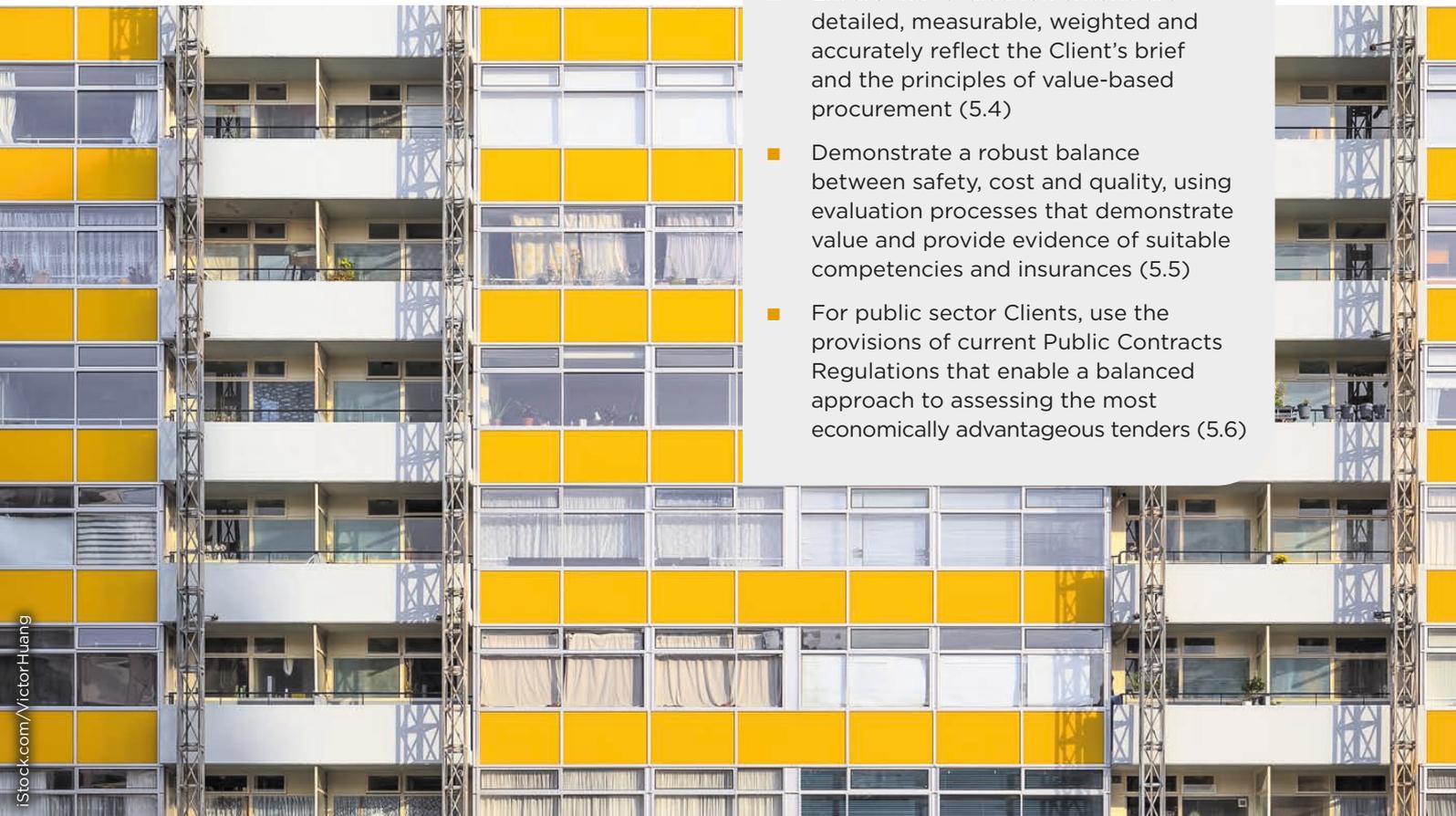
5 How can a procurement process avoid a race to the bottom?

This section explains why and how the procurement processes for identifying and appointing the Principal Designer and the Principal Contractor, and the other dutyholders comprising consultants, and suppliers who prepare Gateway documentation, should demonstrate a balanced approach to value and evidence of suitable competencies. It shows that a balanced approach to evaluating quality and cost does not breach Public Contracts Regulations.

This guidance does not prescribe a particular procurement model in terms of how design and construction responsibilities are allocated or in terms of a particular contract form. Instead, it shows how the timing and method of identifying and appointing team members can avoid a 'race to the bottom' and can improve the safety and quality of project outcomes.

Key points - Section 5: How can a procurement process avoid a race to the bottom?

- Avoid a single-stage, fixed price procurement process, especially if there is a risk that the Client may be provided with inaccurate fixed prices based on incomplete or inaccurate information (5.1)
- Use a two-stage procurement process that enables early provisional appointments following which team members' tender proposals and commitments can be tested and improved upon before full implementation of the project is approved (5.2)
- Assess competencies carefully against a recognised set of criteria to ensure that dutyholders and other team members can fulfil their commitments and obligations (5.3)
- Ensure that evaluation criteria are detailed, measurable, weighted and accurately reflect the Client's brief and the principles of value-based procurement (5.4)
- Demonstrate a robust balance between safety, cost and quality, using evaluation processes that demonstrate value and provide evidence of suitable competencies and insurances (5.5)
- For public sector Clients, use the provisions of current Public Contracts Regulations that enable a balanced approach to assessing the most economically advantageous tenders (5.6)



Dame Judith Hackitt's Independent Review:

- Recommendations include *'tackling poor procurement practices ... to drive the right behaviours to make sure that high-safety, low-risk options are prioritised and full life cycle cost is considered when a building is procured.'* (Recommendations, page 13)
- *'The invitation to tender and the bid process must prioritise building safety and balance the upfront capital cost against quality and effectiveness. The safety requirements must be effectively tested during both the tendering process and the bid review.'* (Section 9.12, page 109)

5.1 The problems of single stage procurement

An arm's length single-stage, fixed price tender appears to suggest a commitment to accept unconditional responsibility for delivering works, services or supplies for a fixed amount of money. However, when applied to construction projects, this approach often drives inappropriate behaviours and encourages a focus on providing the minimum standard of materials and workmanship necessary to achieve the stipulated specification, the *'race to the bottom'* as emphasised in Dame Judith Hackitt's Independent Review.

Single-stage, fixed price procurement gives rise to problems where a Client or Principal Contractor is provided with inaccurate fixed prices that are based on incomplete or inaccurate information. Clients, Principal Contractors, Principal Designers and other consultants, contractors, subcontractors and other supply chain members will all be vulnerable to safety risks arising from errors and defects if fixed prices are based on incomplete or inaccurate risk appraisals. This problem occurs wherever designs prepared by consultants, contractors and other supply chain members are priced without consultation, for example using one party's estimator with no detailed review of underlying costs by other team members. Quoting estimated prices in an arm's length single stage tender creates the illusion of low prices and cost certainty but also increases the risk of later claims and disputes when the true costs emerge. Compromises in quality and safety then arise from efforts to deliver the project within the prices quoted.

Problems in the construction industry by way of unpredictable outturn costs, delays and defects can often be traced to a single-stage, fixed price procurement process. In a single-stage approach, the Joint Contracts Tribunal (JCT) 2017 *'Tendering Practice Note'* observes that bidding contractors *'will do enough preparatory work to be successful at tender but are unlikely to be able to understand fully all aspects of the project or have sufficient time to identify and consider how to manage the potential risks to the project'*. These failings are not necessarily the result of deliberate tactics, and instead may be attributable to an actual or perceived lack of time or of available and accurate information.

To the extent that the Client and other team members are confident that single stage procurement is appropriate for all or part of a project, for example where all designs, risks and supply chain costs can be established and agreed on the basis of reliable information from previous similar projects, they still need to consider collectively the measures necessary to mitigate the problems identified above. These measures include:

- Agreement of a project budget using benchmarks from the previous comparable projects
- Increased price transparency in tender returns
- Thorough investigation of suspected abnormally low bids
- Incorporating express provisions in the contract regarding joint management of risk
- Integrating the roles and responsibilities of all team members.

5.2 Using a two-stage procurement process

A two-stage procurement process can use provisional appointments (outlined further in Section 6) which govern a pre-construction phase during which the appointed team members' tender proposals and commitments can be tested, and often improved upon, before the full implementation of the project is approved. The JCT *'Tendering Practice Note'* recognises that this *'increases the scope for value engineering, through early contractor involvement, teamwork and fixed (rather than estimated) sub-contractor pricing, and... reduces the scope for claims that result from inaccurate or inadequate designs or specification. With the design and procurement processes being in part concurrent, it may also save time'*.

‘The invitation to tender and the bid process must prioritise building safety, and balance the upfront capital cost against quality and effectiveness’

Dame Judith Hackitt

Early contractor involvement, defined as early supply chain involvement (‘ESI’) in the Construction Playbook, is outlined in Section 6 and can be combined with robust competitive procurement processes. The government recommends three procurement models that have been proven to achieve improved efficiencies using collaborative approaches that include ESI. These are described in Section 6.1 and comprise ‘Two Stage Open Book’, ‘Cost Led Procurement’ and ‘Integrated Project Insurance’ (‘IPI’)

For example, the government’s ‘Two Stage Open Book’ guidance suggests that:

- *‘At the point of selection of the Consultants and Tier 1 Contractor, Two Stage Open Book provides the basis for a transparent competitive process in respect of their fees/profit/overheads, and any other components of the project for which it is appropriate to test costing, such as risk contingencies and the provisional cost of particular proposals submitted.*
- *Evaluation of fees/profit/overheads and such other costs needs to be balanced appropriately against evaluation of qualitative proposals and the proven ability of the Consultants and Tier 1 Contractor to deliver the project/programme within the Project Budget cost ceiling*
- *At the point of selection of Tier 2/3 Subcontractors and Suppliers, Two Stage Open Book provides the basis for further transparent competition based on accurate costing and additional qualitative proposals.’*

The government recognises that this approach ‘reduces industry bidding costs, enables faster mobilisation and provides the opportunity for clients to work earlier with a single integrated team testing design, cost and risk issues ahead of start on site following full project award at the end of the second stage.’

5.3 Assessing competences

In response to the competence concerns raised in Dame Judith Hackitt’s Independent Review,

the Competence Steering Group (‘CSG’) was established with multiple working groups to consider how to improve competences in a wide range of industry roles relating to buildings in scope. For procurement, the CSG Key Recommendations were:

- *‘There must be a designated individual who is assigned as a Procurement Lead. This lead must have a comprehensive competence level at every stage of the RIBA Plan of Work*
- *The Procurement Lead will be assessed and accredited against a new procurement competence framework which identifies the capabilities and knowledge that are needed to carry out all procurement activities identified for in scope buildings*
- *Implementing this Procurement Lead role will need a culture change in the construction sector and work is needed to raise awareness of the new competence requirements for procurement activities to ensure appreciation and compliance.’*

Dame Judith Hackitt’s Independent Review:

- *‘Competence across the system is patchy.’ (Executive Summary, page 11)*
- *Recommendations include ‘Setting out demanding expectations around improved levels of competence’ (Recommendations, page 13)*

Government response to the ‘Building a Safer Future’ consultation:

- *‘Dutyholders will need to ensure that those they employ have the necessary competence to discharge their functions effectively and assure that they themselves are suitably competent for the work they have been engaged to do.’*

A new standard for setting and overseeing competence frameworks is being developed, currently known as the *'BSI Flex 8670 Built environment - Overarching framework for competence of individuals - Specification'*. The sector-specific frameworks proposed by the CSG continue to be refined against this standard and the industry is expected to develop training routes that match these frameworks covering the skills, knowledge, experience and behaviours required to undertake an appointed role in a way that ensures compliance with Building Regulations and best procurement practice. While skills, knowledge and experience can be determined, measured and compared objectively, the behavioural aspects of competence are harder to analyse and rely on additional techniques such as the workshops referred to in Section 5.4.

When considering competence within an organisation, the ISO 44001 standard for *'Collaborative business relationship management systems'* describes how:

- *'Organisations will need to determine the necessary competence of people doing work that, under its control, affects the management system's performance, its ability to fulfil its obligations and ensure they receive the appropriate training'*
- *'In addition, organizations need to ensure that all people doing work under the organisation's control are aware of the collaborative relationships policy, how their work may impact this and implications of not conforming with the collaborative business relationship management system.'*

5.4 The role of evaluation criteria

A successful procurement process depends on the quality of the Client's brief, which should set out comprehensive information as to the Client's business needs and all relevant external factors, including:

- The initial goals and objectives of the project, signed off by the Client as the definition of the business need to be met
- All project specific requirements and constraints that may be pertinent
- Any time and budgetary constraints.

The Construction Industry Research and Information Association ('CIRIA'), in its

1998 guidance *'Selecting Contractors by Value'*, recognised the need for Clients and their advisers to invest time and money in procurement strategies and processes in order:

- Thoroughly to work through and prioritise what they are seeking to gain from a project
- To set up projects so as to enable contractors to contribute the maximum value
- To identify relevant criteria for their selection
- To gather information to enable these criteria to be applied.

In order to run a procurement process on the basis of quality as well as price, a Client needs to establish a range of criteria that can be assessed objectively. A process of market consultation through informal early market engagement will often reveal important information that influences the Client's approach in framing its criteria for the identification and appointment of the Principal Designer, the Principal Contractor and other team members.

The Construction Playbook requires the use of *'value-based procurement'* by which it expects that Clients will *'consider the outcomes they are trying to achieve and identify wider value drivers beyond speed, cost and quality'*. This work is being taken forward by the Construction Innovation Hub in the development and trialling of their *'Value Toolkit'* which is expected to be complementary to and symbiotic with this guidance.

The Construction Playbook requires that the evaluation of bids is based on a Client's *'clear understanding of value, their desired/required outcomes and how these align to government's wider priorities, including net zero GHG emissions by 2050'*. It recognises that framework providers and clients will need to adopt new evaluation practices in order to achieve this clear understanding and requires that:

- *'Value-based procurement should be adopted at an organisational level and driven through a portfolio approach to projects and programmes'*
- *'Evaluation - and evaluation criteria- should focus on value over cost'*
- *'The quality evaluation criteria need to be sufficiently well developed and detailed to allow for the differentiation in scores between competing bids, to avoid too close or identical scores from bidders.'*

ISO 44001 suggests that the evaluation criteria for the members of a collaborative team can include assessment of each organisation's commitment to collaborative working, including for example:

- *'Collaborative profile and experience*
- *Cultural compatibility*
- *Customer relationship management*
- *Supplier relationship management*
- *Stakeholder implications.'*

The Client's own criteria for the success of a project should guide its creation of evaluation criteria for proposed team members. These evaluation criteria need to be detailed and measurable rather than general commitments to collaborate. Criteria should be weighted so that they reflect the Client's needs and the anticipated project outcomes and deliverables.

Clients should use their evaluation criteria to obtain clear commitments from bidders rather than vague collaborative promises that can be evaded or reinterpreted at a later stage. The claim that a team member wants to work collaboratively but that other team members have let it down is often used to justify a reversion to narrow self-interest when challenges arise.

The 1995 Cabinet Office report *'Construction Procurement by Government – an Efficiency Unit Scrutiny'* found that *'the best projects [we saw] and the best private sector clients put time into getting the right team. They assessed the quality of the individuals, their ability to work together and their experience.'* The Cabinet Office was concerned that public sector Clients frequently put together teams with undue emphasis on lowest price or expediency. They recommended, for example, that interviewing the individuals who will actually work on the project should be normal practice, providing *'the opportunity to compare the applicant's creative approaches to the design process, as well as their interpretation and understanding of the project implementation'* plus *'an important insight into each applicant's management style and communications'*.

A University of Reading report in 2018 described how evaluation criteria for team members on the *'Dudley College'* Trial Project included behaviours such as:

- Ability to work in a spirit of mutual trust

- Ability to work with a 'no-blame mindset'
- Ability to understand/appreciate perspective of others and adapt behaviour appropriately
- Mutual respect between differing disciplines and personalities.

The Reading report explained how *'following post-tender interviews, a behavioural workshop was held with bidding parties to validate the assessments made by the Client Advisory Team from previous assessment activities. Behavioural analysis or other forms of psychometric profiling of individuals and teams can be revealing but is a demanding process and, in the absence of contractual constraints, it cannot prevent those individuals leaving an organisation after its appointment'*.

5.5 Balancing cost and quality

Achieving a realistic and robust balance between cost and quality is essential to the successful selection of project team members. Clients should look beyond only cost comparisons and examine the value-adding proposals of potential team members, such as their project-specific experience and competences, their understanding of the Client's goals and objectives and the whole-life cost impact of their proposals, in order that the Client's investment in the project can be optimised.

The 2018 post-Grenfell Housing Forum report *'Stopping Building Failures'* noted that *'On housing programmes, the financial elements of the bid will include the construction costs, overheads and profits, costs of staff transferring as a result of TUPE (particularly on repairs and maintenance programmes), and the cost of any social value proposals including apprenticeship opportunities. However, there are other financial elements that can be evaluated including discount cost savings over the lifetime of the contract and life-cycle costs'*.

The former Office of Government Commerce included among its critical factors for success the *'award of contract on the basis of best value for money over the whole life of the facility, not just lowest tender price'*. Evaluation by reference to balanced criteria is more demanding than a straightforward comparison of prices, but the bidders' method statements and qualitative submissions provide valuable information that create the foundations for reliable commercial relationships.

CIRIA suggested in *'Selecting Contractors by Value'* that qualitative selection criteria

should assess a wide range of capabilities and proposals including:

- *‘Technical knowledge and skills – experience in engineering specialist elements; appropriate design capacity*
- *A number of management skills: ... managing time ... managing cost ... managing value ... managing quality ... managing risk ... managing health and safety*
- *Effective internal organisation – clear communications; sound administration; empowered staff*
- *Collaborative culture – record of “partnering”; positive lead from the top; client focus*
- *Appropriate human resources – qualified and enthusiastic personnel available to do the job*
- *Supply chain management – sound dealing with subcontractors/suppliers; established relationships*
- *Financial resources – sound balances and cash flow; reliable references*
- *Generally – a sound, relevant and demonstrable track record’.*

A persistent concern remains that financial evaluation will inevitably dominate a selection procedure and will tempt bidders to undercut each other’s prices regardless of other criteria. Overcoming this problem requires the Client and its advisers to make clear their priorities in a way that bidders respond to, for example by evaluating quality first and then evaluating cost, taking the benchmark price from the highest quality bid. The Housing Forum in *‘Stopping Building Failures’* suggests other evaluation models *‘that seek to protect the contracting authority and the bidders from an unrealistic pricing risk’*:

- *‘The optimum pricing model in which the contracting authority sets out the optimum price which it considers appropriate for the contract, based on market research. The tenderer is then incentivised to make the effort to reach the optimum price without undercutting it. The tenderer closest to the optimum price receives the highest mark. This should protect against abnormally low bids but arguably curbs the potential for truly innovative approaches’*
- *‘The fixed price model where the contracting authority fixes the price for the contract and then undertakes a value for money evaluation on the non-price element of the contract’s*

delivery, such as the quality and experience of the team, choice of materials, health and safety standards, liaison with residents, or environmental and social aspects of the project. By fixing the price and considering alternative value for money proposals, the contracting authority will again be neutralising the effect of any abnormally low bids on the overall evaluation’.

- The Trowers & Hamblins December 2020 White Paper *‘Price evaluation models for the housing sector’* considers the recommendations of a working group looking at alternative pricing models and how they can be used in the housing sector to secure sustainable outcomes. The Paper provides helpful comparisons between alternative methods of evaluating bidders’ tender price submissions in an endeavour to discourage a *‘race to the bottom’* and encourage the submission of bids that demonstrate sustainable value across the life of a contract, rather than artificial savings at the point of procurement.

In addition to balanced evaluation criteria, Clients and their teams can use other structured approaches to achieve an improved and sustainable balance between the priorities, needs and aspirations of stakeholders, together with the resources needed to achieve best value. These include *‘Value Management’* which can be applied early in the procurement process as part of a strategic opportunity to identify and agree Client objectives and value drivers.

Value Management is described in RICS guidance as delivering optimum whole life cost without detriment to safety, quality, performance and reliability. It includes reviews undertaken in a series of structured workshops, using tools for value benchmarking and profiling and weighted evaluation matrices. The Construction Innovation Hub’s Value Toolkit complements Value Management in focusing on *‘Value Definition’*, an agreed *‘Delivery Model’* and systems of *‘Procuring for Value’* and *‘Ongoing Measurement’*. The Toolkit recognises that each project or programme has its own unique value profile by reference to the relative importance of four value categories:

- Natural (air, climate, water, land, resource use, biodiversity)
- Social (influence and consultation, equality and diversity, networks and connections)
- Human (employment, skills and knowledge, health, experience)
- Produced (lifecycle cost, return, production, resilience).

5.6 Evaluation in accordance with public procurement

Evaluation by a public sector Client is not restricted to price comparisons, and pursuant to the current 2015 Public Contracts Regulations must be on the basis of the *'most economically advantageous tender'*. This can be *'be identified on the basis of the price or cost, using a cost-effectiveness approach, such as life-cycle costing'*, and may also *'include the best price-quality ratio, which shall be assessed on the basis of criteria, such as qualitative, environmental and/ or social aspects, linked to the subject-matter of the public contract in question'*.

Evaluation of the most economically advantageous tender can include criteria consistent with the objectives of improving both economic and social value, for example permitting the Client to evaluate *'quality, including technical merit, aesthetic and functional characteristics, accessibility, design for all users, social, environmental and innovative characteristics'*. Qualitative evaluation may be undertaken alongside price evaluation as part of a price-quality ratio or may be the only basis for evaluation where *'the cost element may [also] take the form of a fixed price or cost on the basis of which economic operators will compete on quality criteria only'*.

There is no requirement under the current Public Contracts Regulations that every element of a project brief or of a sample project brief must be fully priced prior to selection. There is also no prohibition of the early conditional selection of a Principal Contractor and other contractors and supply chain members to undertake pre-construction phase activities, nor a requirement that evaluation criteria for the most economically advantageous tender should include a fixed price for the project.

The current Public Contracts Regulations describe a range of selection procedures for individual projects and for frameworks which include:

- The *'Open Procedure'* which comprises a single-stage invitation for any party to bid with no negotiation
- The *'Restricted Procedure'* which comprises a pre-qualification stage before a shortlist of parties are invited to bid, again with no negotiation

- The *'Competitive Procedure with Negotiation'* and the *'Competitive Dialogue Procedure'*, each of which comprises a pre-qualification stage before shortlisted parties are invited to bid and to enter into structured negotiations or dialogue.

In December 2020, the government launched consultation on new post-Brexit procurement rules in its Green Paper *'Transforming Public Procurement'*. This Green Paper proposes significant changes to the current Public Contracts Regulations and may introduce new procedures and options governing selection and evaluation of team members for public sector projects.

A public sector procurement process using early supply chain involvement (ESI) (as considered in Section 6) can comply with the current Public Contracts Regulations.

More details are set out in:

- ISO 44001, BS ISO 44001:2017 *Collaborative business relationship management systems- Requirements and framework*, BSI 2017
- *'RICS guidance note, Value Management and value engineering 1st Edition, January 2017'*
<https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/construction/black-book/value-management-and-value-engineering-1st-edition-rics.pdf>
- *'Setting the Bar'*, 2020, Competence Steering Group
<https://cic.org.uk/admin/resources/setting-the-bar-9-final-1.pdf>
- *'Stopping building failures, how a collaborative approach can improve quality and workmanship'*, 2018, The Housing Forum,
<http://www.housingforum.org.uk/publications/housing-forum-reports->
- *'Transforming Public Procurement'*, Green Paper, December 2020
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943946/Transforming_public_procurement.pdf

- Trowers & Hamblins December 2020 White Paper *'Price evaluation models for the housing sector'* at <https://www.trowers.com/insights/2020/november/white-paper-price-evaluation-models-for-the-housing-sector>
- *'Value Toolkit'*, 2020, Construction Innovation Hub, <https://constructioninnovationhub.org.uk/value-toolkit/>
- *'Built environment - Core criteria for building safety in competence frameworks - Code of practice'* April 2021 <https://shop.bsigroup.com/products/built-environment-core-criteria-for-building-safety-in-competence-frameworks-code-of-practice?pid=000000000030437128>



6 How can early supply chain involvement improve value and reduce risks?

The Construction Playbook states that early supply chain involvement ('ESI') is *'key to reducing end-to-end programme timescales, identifying opportunity and mitigating risk early and accessing the industry experts' knowledge and experience in all tiers of the supply chain early in the project or programme lifecycle'*.

This section explains the importance of the Client using early supply chain involvement ('ESI') as part of the processes for selecting and appointing the Principal Designer, the Principal Contractor and the other dutyholders, consultants and suppliers who prepare 'gateway' documents. It shows how ESI provides a proven means to optimise the contributions of all dutyholders and other team members to improved safety, quality and regulatory compliance, particularly through their joint activities such as 'Supply Chain Collaboration' that are undertaken within agreed periods of time after appointment of the Principal Contractor and other contractors and supply chain members and in advance of a Gateway two application submission.

This section also shows how ESI supports cost certainty and transparency and the management of quality, time and change so as to ensure safety, quality, and regulatory compliance throughout an in-scope building's lifecycle.

Key points - Section 6: How can early supply chain involvement improve safety and reduce risks?

- Appoint Principal Contractors, subcontractors and other supply chain members through early supply chain involvement ('ESI') following a value-based procurement process, so that they contribute their skills, knowledge and experience and so that they demonstrate behaviours that will optimise safety and quality (6.1)
- Use ESI pre-construction phase processes to test how Principal Contractors, sub-contractors and other supply chain members can work with Clients and consultants to improve project outcomes and reduce risks (6.2)
- Use ESI 'Supply Chain Collaboration' to optimise early contributions by selected subcontractors and other supply chain members during the pre-construction phase of the project (6.3)
- Implement ESI to improve cost certainty and transparency by the separate agreement of appropriate profit and overheads and by active engagement with Principal Contractors, subcontractors and other supply chain members (6.4)
- Use ESI to plan and agree integrated timescales and to manage changes (6.5)
- Use forms of contract that provide integrated ESI systems and controls (6.6).



6.1 The purpose of early supply chain involvement

Early supply chain involvement ('ESI') is a feature of collaborative procurement through which, by early conditional appointments in advance of start on site, the Principal Contractor and other contractors and supply chain members have the opportunity to contribute their skills, knowledge and experience in order to ensure agreement with the Client, the Principal Designer and other consultants of the optimum approaches to safety and quality.

The Construction Playbook explains that ESI *'extends the principle of early contractor involvement by formally engaging the tier 1 contractor alongside tier 2 and 3 sub-contractors and suppliers in the pre-construction phase to input into the design (including the use of standards for products and interfaces), costing, risk management and structuring of a project or programme'*.

The role of ESI in joint risk management is considered in Section 7.4. It is essential to enable the early assessment of safety risks and other project risks by the Client, the Principal Designer, the Principal Contractor and all other consultants, contractors and supply chain members who can recommend and agree actions to eliminate or reduce these risks before committing to commence the construction phase of the project.

ESI provides the team with thinking time and clear procedures through which to examine and agree the scope for improved value and reduced risks in designs, sources of supply and methods of construction. It also enables team members to ensure that costs add up to fair and accurately calculated prices, and that deadlines, interfaces and change management procedures are based on a clear mutual understanding. A procurement and contracting system that uses ESI supports successful preparation for **Gateway two** and **Gateway three** applications.

The ability of the parties to influence project outcomes, including safety and quality, cost and time certainty, improved value, improved performance and the flexibility to incorporate changes, is much greater in the earlier conceptual and design stages of the project. By the time that manufacturing, delivery and construction operations are underway, the opportunities to agree safety and quality improvements, and to manage safety and quality risks, have reduced significantly.

ESI ensures that main contract and subcontract appointments are made early enough to secure the maximum contributions from each team member, not by way of speculative optional extras but as important contributions to optimise project designs, sources of supply, methods of construction and other working practices. For example, ESI can enable the systematic joint analysis and validation of the designs and specifications that each design consultant, contractor, subcontractor or supplier is being asked to warrant. Without this joint analysis and validation, a design warranty is not reliable.

The government recommends the following procurement models that have been proven through a series of *'Trial Projects'* to achieve improved efficiencies by using collaborative approaches that include ESI and in some cases building information modelling ('BIM'):

- *'Two Stage Open Book'*, comprising the use of pre-construction phase conditional appointments of the team members as a means to encourage proposals for cost savings and improved value, within a stated budget, prior to confirming construction phase appointments
- *'Cost Led Procurement'*, comprising the use of a framework mini-competition as a means to encourage speculative proposals for savings and improved value, within stated cost ceiling, prior to team appointments
- *'Integrated Project Insurance'* ('IPI') comprising appointment at outset of an alliance team to develop a delivery solution within a target budget and its commitment prior to construction to achieve the required outcomes, with the approved approach supported by a new latent defects and cost overrun insurance policy (as summarised in Section 9.5).

The 2016 Government Construction Strategy reported that:

- The new models of construction procurement were trialled to explore the potential to drive better value and affordability in the procurement process
- The new models include the principles of early supplier engagement, transparency of cost and collaborative working to deliver a value for money outcome
- Alongside the potential for efficiencies, the models can support improved relationships across Clients and the supply chain, increased supply chain innovation and reduced risk.

ESI should not be confused with a two-stage tendering system by which bidding contractors are expected to offer speculative design contributions as part of a short-listing or negotiation process, with no clarity as to whether their efforts will lead to appointments or other rewards. By contrast, ESI is governed by a conditional appointment setting out the joint processes through which additional information is completed to a level of detail sufficient for the parties then to agree that the project should proceed to construction. ESI should also describe the processes by which the team move from the preconstruction phase to the construction phase with minimum negotiation.

ESI does not impose any specific allocation of design and construction responsibilities among the consultants, main contractor, specialist subcontractors, manufacturers and operators. Instead, it ensures that main contract and subcontract appointments are made early enough to secure the maximum contributions from each team member, not as an optional extra but as an important component of mainstream design management and risk management.

A collaborative contract governing ESI should set out in detail the steps by which it aligns the differing commercial interests of team members, including for example:

- The extent to which an early invitation to tender enables contractor bidders to assimilate project information and to propose their own improvements, with guidance as to how these proposals are included in the criteria for evaluation of bidders
- Whether cost transparency can be achieved through agreement of contractor profit, overheads and preconstruction phase costs in a way that enables a more accurate build-up, analysis and agreement of other costs
- Whether the appointments of subcontractors, manufacturers and suppliers can be finalised prior to start on site in order to improve cost certainty, while also attracting their commitment to improved value
- How preconstruction phase activities undertaken by the client, consultants and contractors, such as joint design reviews and supply chain tenders, can be programmed in a way that does not delay start on site
- Whether risk assessments by the client and consultants can be aligned with those of contractors, subcontractors and suppliers,

and how joint risk management actions can be agreed and implemented without delaying start on site.

6.2 Using ESI to improve safety and reduce risks

The Construction Playbook states that ESI should *'help highlight the interdependencies of specialist supply chain members and allow them to be part of developing the solution to the right quality levels and increase safety collaboratively'*.

Dame Judith Hackitt's Independent Review states that a client and its team should *'establish procurement processes that allow sufficient time, resources and prioritisation to deliver the core objectives'* and to *'Identify how core building safety requirements will be met in the pre-construction phase.'* (Table 2, page 34)

ESI can assist in mitigating the fragmentation, defensiveness and failures to share important information that are typical of many traditional procurement models. It promotes a more integrated and holistic approach to project initiation, development and implementation and it actively encourages the open and transparent sharing of key project information amongst all team members, including in relation to safety.

Collaborative procurement using ESI maximises the benefits of early, value-based team selection processes by creating conditional contracts that can prioritise safety and take into account the interests of residents. ESI procurement processes and contracts can make clear:

- How and when team members will establish, check, integrate and agree the safety and quality compliance of their designs and specifications with all related cost, time, supply, construction, maintenance and risk management information and activities
- How and when team members will establish, check, integrate and agree the safety and quality compliance of all proposed subcontractors, suppliers and manufacturers
- How and when team members will establish, check, integrate and agree the safety and quality compliance of all working practices on and off site

- How to use direct lines of communication between the client, design consultants, contractors and key subcontractors and suppliers.

ESI provides an opportunity for the team to assess and plan to mitigate health and safety, operational, commercial and other related risks. ESI also improves opportunities for contractors, sub-contractors and specialists to provide input to design and specification development, enhancing agreed outputs and identifying better value solutions, including those relating to off-site fabrication and other *'modern methods of construction'*.

Collaborative procurement using ESI provides the means to improve safety and quality by establishing and maintaining mutually agreed safety and quality standards, joint safety reviews and integrated systems of quality control that are supported by:

- Contractors, subcontractors and suppliers working alongside the Client and its consultants at a time when their contributions can help to improve value and reduce risks, whether on a single project or under a framework alliance or term alliance connecting multiple projects and tasks (see also Section 10)
- Joint costing processes and cost reviews to ensure that the budgeting, build-up and finalization of costs do not compromise agreed safety and quality standards (see also Section 6.4)
- A shared timetable to ensure that all dutyholders and other team members undertake their responsibilities in respect of safety and quality within agreed timescales, do not miss deadlines and do not delay each other (see also Section 6.5)
- Joint risk management in respect of safety and quality issues arising before and after commitment to proceed with construction, as set out and updated in a shared risk register (see also Section 7.3)
- An agreed decision-making process for agreeing improvements and resolving problems (see also Section 7.2)
- Effective teamwork in approaching all safety and quality matters throughout the design, construction and operation of the project (see also Section 7).

6.3 Using ESI supply chain collaboration to optimise specialist contributions

Whether specialist contractors, manufacturers, suppliers and operators are selected and appointed by a Client or a Principal Contractor, their contributions to improved safety and other improved value need to be built into pre-construction phase planning. Using ESI, these supply chain contributions can be provided:

- Speculatively prior to selection, if potential supply chain members recognise that this gives them a better chance of being appointed by the Client or by a Principal Contractor who is already appointed
- Speculatively during selection, if potential supply chain members recognise that their proposals are part of an early selection process and if they are submitted for consideration by a Principal Contractor who is already appointed, with participation by the Client and Principal Designer and other consultants
- After selection, through *'Supply Chain Collaboration'* under early conditional pre-construction phase appointments of supply chain members who are appointed back-to-back with the early appointment of a Principal Contractor.

'Supply Chain Collaboration' is recognised in 2014 Cabinet Office guidance as a set of collaborative contractual processes that enable a Client to explore improved value and reduced risk with subcontracted supply chain members through a sequence of agreed activities led by one or more contractors. Where subcontracted supply chain members have contributed to the costs and qualitative proposals submitted and assessed when a main contractor is selected, it is possible to improve on these proposals by reconsidering and agreeing new ways to engage with these supply chain members. For example, identifying a clear period of time and an agreed process can:

- Enable the Principal Contractor and its preselected subcontractors and suppliers to engage with the Client, the Principal Designer and other consultants in order to check whether they have the same understanding of designs and of the ways in which those designs will be completed and constructed

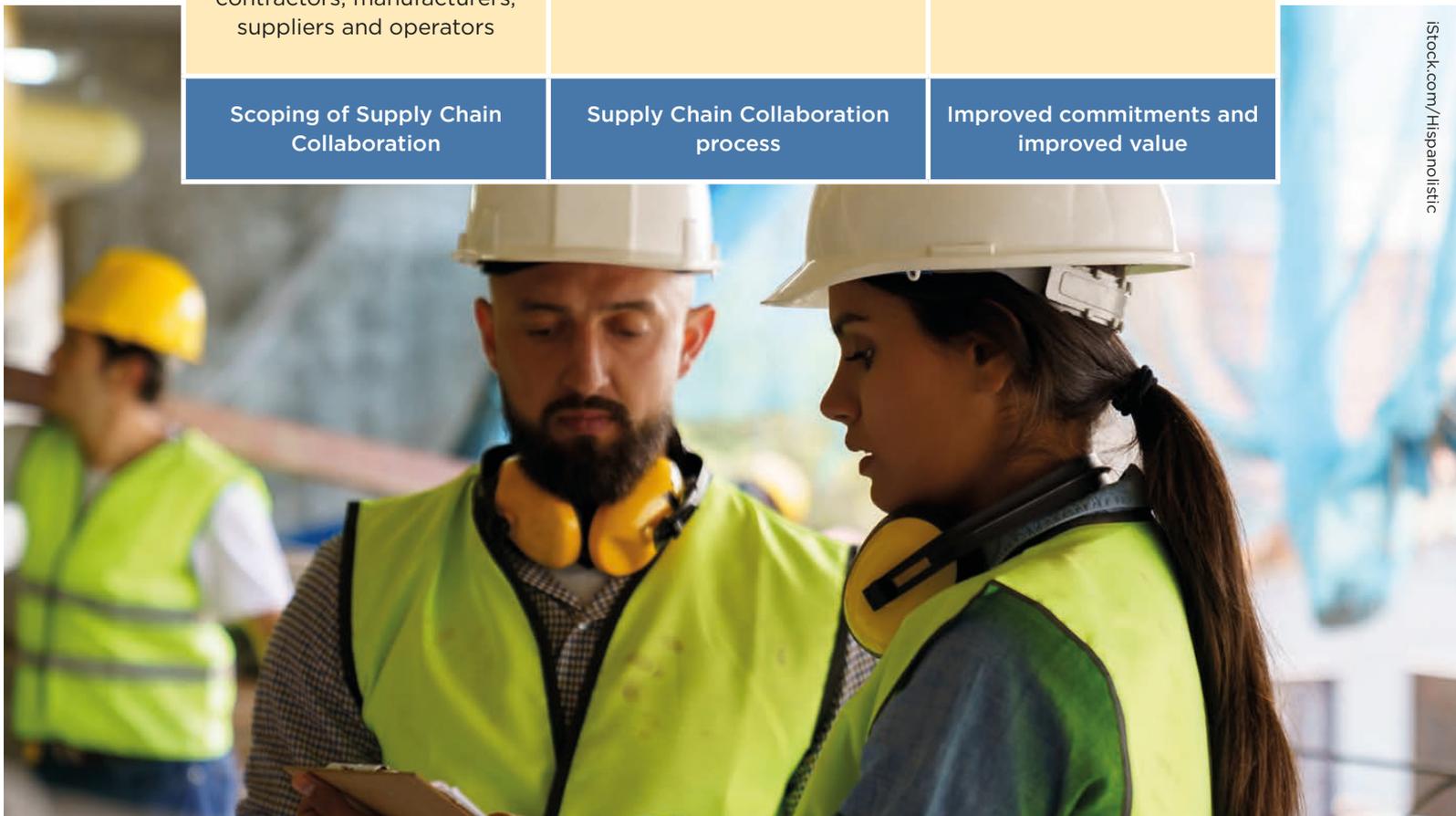
- Create opportunities for the Principal Contractor to agree improved working arrangements with its preselected subcontractors, suppliers, manufacturers and operators that lead to improved prices and proposals
- Create opportunities for the Principal Contractor and Client to consider whether improved value and improved performance can be offered by alternative subcontractors, suppliers, manufacturers and operators.

Where a long-term contract is established as a 'framework alliance' or 'term alliance,' (considered further in Sections 10.2 and 10.3,) it is possible for one or more Clients to undertake Supply Chain Collaboration with one or more Principal Contractors and Principal Designers

in order to share supply chain contributions that improve safety and quality and that reduce risks. The basic structure of Supply Chain Collaboration is illustrated below, and feedback from government Trial Projects highlights the improved value achieved.

Public sector clients can reconcile Supply Chain Collaboration with the constraints of the current Public Contracts Regulations considered in Section 5.6, as it provides a means for them to explore with a Principal Contractor, after its appointment, whether local or regional businesses offer better value than the contractor's intended supply chain members. This system enables Clients and their teams to enhance the opportunities for local and regional businesses to prove their worth and to win additional work.

<p>Client(s), Principal Contractor(s), Principal Designer(s) and other consultants review and agree the scope for achieving improved value and reduced risks through improved mutual commitments with sub-contractors, manufacturers, suppliers and operators</p>	<p>Timetabled sub-contract business cases and tenders are led by Principal Contractor(s) to obtain new proposals from sub-contractors, manufacturers, suppliers and operators</p>	<p>Improved mutual commitments and consequent improved value and reduced risks are agreed and recorded in sub-contracts and/or in long-term framework alliance or term alliance contracts</p>
<p>Scoping of Supply Chain Collaboration</p>	<p>Supply Chain Collaboration process</p>	<p>Improved commitments and improved value</p>



Supply Chain Collaboration can be led by a Principal Contractor (whether this is a general contractor or specialist) so as to avoid Client involvement being categorised as ‘*nomination*’ or ‘*naming*’ and so as to avoid compromising the Principal Contractor’s control of and responsibility for its supply chain members. Details of the participation by the Client, the Principal Designer and other consultants in reviewing documents and attending meetings should be agreed in advance, and the choice of supply chain members invited to participate in the processes should be approved both by the Principal Contractor and by the Client. It is important to embed Supply Chain Collaboration from the beginning of the procurement process and to include clear contractual machinery that describes when and how:

- A shortlist of prospective supply chain members will be agreed
- Prospective supply chain members will be briefed and invited to put forward proposals
- Supply chain members will be selected and appointed.

6.4 Using ESI to improve cost certainty and transparency

Without a clear system for developing detailed project costs during the pre-construction phase, the ESI period of early engagement may not be used productively to reconcile Client and Principal Contractor cost expectations. If subcontract prices are established by a process that involves only the Principal Contractor, without a system for the collaborative involvement of the Client and other team members, this undermines the openness required for successful collaborative procurement because the Client and other team members will have no way of knowing how supply chain costs have been arrived at.

The omission of subcontracted supply chain members from collaborative procurement and from detailed cost analysis leaves a Principal Contractor free to put safety and quality at risk by using non-collaborative practices in its relationships with those supply chain members, for example by demanding subcontractor cost reductions in order to increase its own profit. For example, a target cost and pain/gain share incentive (considered in Sections 9.2 and 9.3) agreed between the Client and the Principal Contractor is compromised if it is not matched by equivalent incentives agreed between the Principal Contractor and the members of its supply chain.

Cost managers using ESI are no longer confined to developing a single set of bills of quantities or schedules of rates for contractor bidders to price. They can work with other team members to develop and manage:

- An appropriate budget based on cost benchmarks for similar projects
- The systems for bidding and agreeing team members’ fees, profit and overheads
- The systems for bidding and agreeing work packages and supply chain appointments
- The systems for finalising transparent, accurate cost information at each stage in the selection of consultants, contractors and supply chain members
- The mechanisms to search for cost savings and to assess the impact of those cost savings on other costs.

The ESI cost model can protect contractor profit and overheads by requiring that they are stated separately by bidders and by ringfencing them from other project costs. The remaining project costs can then be subject to closer analysis and adjustment, with joint motivation to seek efficiency savings, while they are being built up into fixed or target prices. Concerns may be expressed that ringfencing the profit and overheads of a pre-selected Principal Contractor may lead it to be less commercially rigorous in its subcontractor and supply chain tender procedures, and that inflated supply chain prices could lead to the total price exceeding the Client’s budget. These concerns can be addressed by:

- Close monitoring by the Client and consultants of the Principal Contractor’s subcontract tendering processes so as to ensure that these do not impose excessive demands that could inflate supply chain prices
- A timetable that allows time for review of supply chain costs, so as to agree total prices within the project budget as a precondition for the construction phase to proceed
- Transparency at each stage whereby the project manager receives all documentation prepared and issued by the Principal Contractor, all tender returns and proposals submitted by prospective supply chain members and all related correspondence, and whereby the project manager is also invited to attend all meetings with prospective sub-contractors, suppliers and manufacturers.

6.5 Using ESI to improve the management of time, change and quality

Time management is a key function of collaborative procurement, and a shared timetable needs to integrate the timescales of ESI activities undertaken by the Client with the Principal Designer, Principal Contractor and with other consultants, contractors, subcontractors, manufacturers, suppliers and operators. For example, agreed ESI deadlines for all design contributors include dates for the submission, review and approval of:

- Each stage of the designs developed before creation of a **Fire Statement** and fire safety information to be submitted with relevant planning applications under **Planning Gateway one** requirements.
- Each stage of the designs developed before and after prices are submitted by bidding contractors
- Design details and amendments added before submitting a building control application at **Gateway two** and committing to the construction of the project
- Design details and amendments added before and after committing to the construction of the project and each work package
- Design details and amendments necessary to integrate designs with supply and manufacture off site and with works on site through to submission of a **Gateway three** application.

Clients and their advisers may be concerned that there is not enough time for ESI, but the Construction Playbook states that *'Investing time in ESI can lead to more effective designs, reducing changes and potential cost increases downstream. This results in faster delivery when construction starts'*. It also emphasises that *'Early engagement will help highlight the interdependencies of specialist supply chain members and allow them to be part of developing the solution to the right quality levels and increase safety collaboratively'*.

An integrated ESI timetable sets out agreed deadlines and interfaces between team members and sits at the heart of collaborative procurement. Without it, there is the risk that ESI commitments will be open-ended and will allow delays in starting and proceeding efficiently with a particular stage of design,

Example: The Hackney Rogate House project team reported how *'joint investigation and planning of complex refurbishment works [achieved an] accurate and integrated construction phase [contractual] Project Timetable; Completion of works at Alma House had taken 115 weeks to refurbish 108 flats whereas at Rogate House it took 90 weeks to refurbish 192 flats; The Rogate House team had worked at approximately double the speed.'*

Collaborative ESI should set out agreed risk management actions in respect of safety and quality concerns and should recognise where external influences may cause delays that are outside the control of team members. ESI can then assist team members in identifying opportunities to mitigate the effects of these external influences.

Example: On the St George's Hospital Keyworker Accommodation project, the team used open-book costing to agree a maximum price, following which *'monthly critical analysis ensured that financial risks could be eliminated or quantified... allowing the client to instruct change instructions which increased the quality of the project further, safe in the knowledge that costs would be confined within the agreed maximum price.'*

Team members cannot ignore the possibility of a change in the Client's requirements or other changing circumstances, and ESI provides the shared information that helps team members to adjust their financial arrangements to reflect new information acquired or emerging during the course of a project. Agreement of the Principal Contractor's profit and overheads and joint analysis of other project costs enable the Client to work with the other team members to mitigate the cost effects of proposed changes.

ESI creates shared knowledge of costs that helps to avoid or minimise the scope for disputes because, as the Arup Report for Government stated, *'when differences arise against a background of open-book record-keeping and the cooperative exchange of information, the process and disclosure of information can reduce the scope of the difference'*.

A collaborative team needs to agree a system of quality management, and ESI provides the time and means to agree not only the appropriate standards and methods for design, supply, construction and operation of an in-scope building but also the means for monitoring safety and quality compliance.

The role of a project manager under a collaborative contract includes the fair and constructive exercise of professional judgment during the ESI pre-construction phase and construction phase in order to facilitate an integrated design, supply and construction process, and in preparing for the handover and ongoing operation of the completed building or works. The project manager should:

- Organise and monitor contributions to agreed ESI activities by the Client, Principal Designer, Principal Contractor and the other dutyholders, consultants, subcontractors and suppliers who prepare Gateway applications in order to optimise **safety, quality and regulatory compliance**, including design, costing, Value Management, Supply Chain Collaboration and risk management
- Organise, monitor and manage and agreed activities of dutyholders in achieving **safety, quality and regulatory compliance** and in developing and updating a **fire and emergency file**
- Organise and monitor and manage compliance with an **integrated timetable** governing all agreed activities of dutyholders
- Organise, monitor and manage the **construction control plan (including the change management strategy)** submitted for approval at **Gateway two**
- Organise and monitor the use of **suited digital information management tools** to create a **golden thread of information** as described in Section 8.

6.6 The links between ESI and contracts

The housing sector has successfully implemented ESI over the last 20 years using contract forms such as PPC2000, creating persuasive evidence of improved value and reduced risks in case studies such as those quoted in this guidance. JCT 2016 also provides

a contractual basis for ESI using a 'Pre-Construction Services Agreement' or 'PCSA' and NEC4 provides a basis for ESI in its 'Option X22'. Both these contract forms are used by housing sector clients and their teams.

The Construction Playbook is neutral as regards the contract forms that enable ESI, recommending the use of unamended JCT2016, NEC3, NEC4 and PPC2000/TAC-1 forms but noting also that the '*procurement process, evaluation approach and contract should generally be structured to cover both the ESI and the construction phase. While it is possible to follow ESI with a further competitive procurement process, this can undermine the benefits of using ESI*'. The lack of integration between a JCT PCSA and a separate JCT 2016 construction phase building contract would be vulnerable to this criticism.

A collaborative contract should be a handbook for the performance, management and integration of agreed ESI activities but this guidance does not recommend specific contract forms. The collaborative contract relationships, processes and systems that underpin ESI can be incorporated in any published standard form contract and also in bespoke appointments and development agreements.

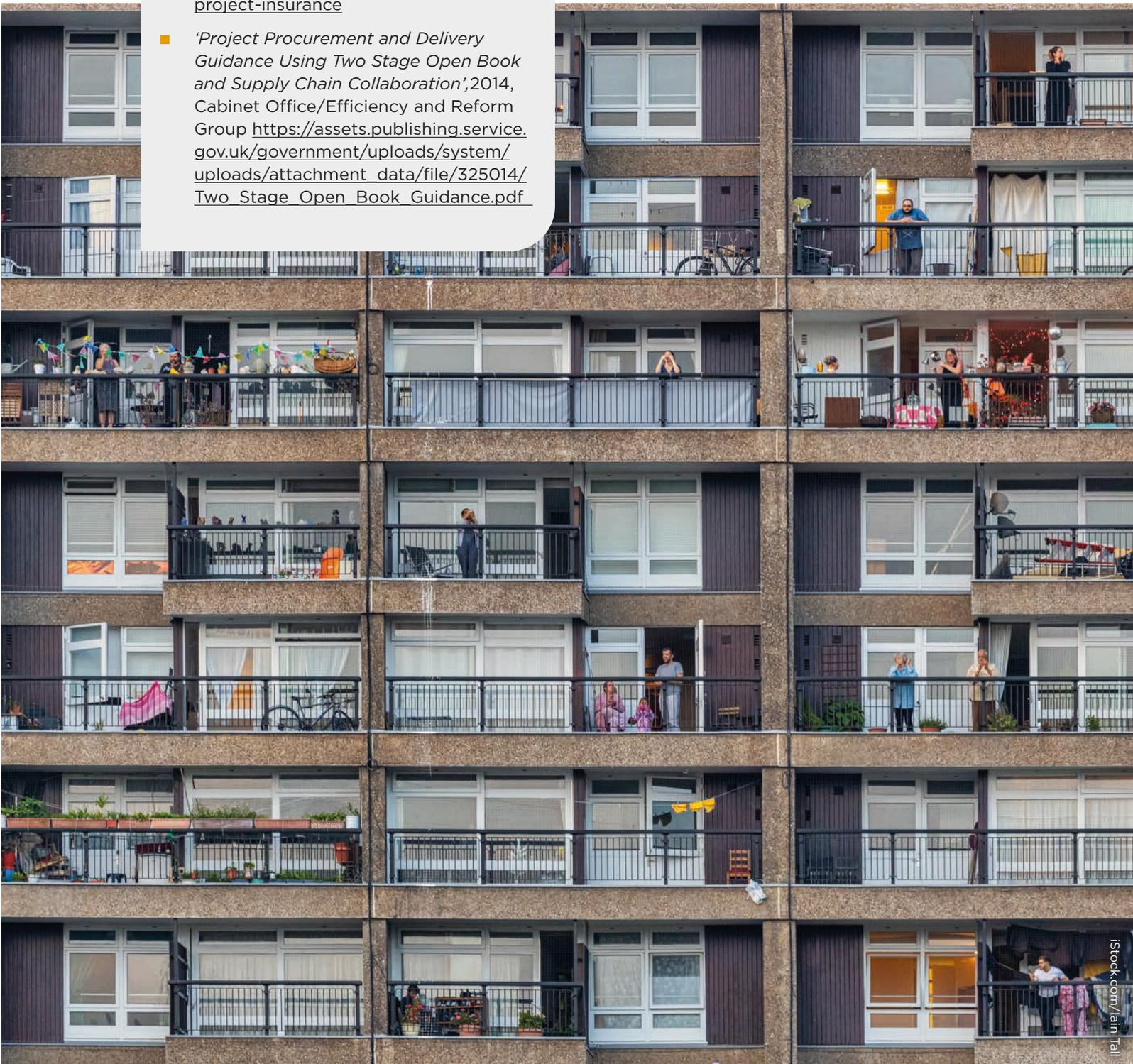
ESI contracts should be created at a time when they can best support the early planning of projects and programmes of work and when they can help to reduce the risk of unforeseen events by fully integrating the work of team members. To coordinate and motivate the work of team members, ESI contracts should govern not only actions and payments but also rules and procedures for planning and mutual expectations as to the team members' behaviour.

Other features of collaborative contracts are considered in Sections 7.6, 8.6, 10.2 and 10.3.

More details are set out in:

- Housing sector case studies of successful collaborative procurement appearing in this Section 6 and in Sections 7, 9, 10 and 11, published by the Association of Consultant Architects at <http://www.ebuildingcontracts.co.uk/wp-content/uploads/2017/09/10-Year-Anniversary-PPC-and-5-Year-TPC.pdf>

- *'Cost Led Procurement Guidance'*, 2014, Cabinet Office/Efficiency and Reform Group https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/325012/Cost_Led_Procurement_Guidance.pdf
- *'Integrated Project Insurance Guidance'*, 2014, Cabinet Office Efficiency and Reform Group <https://www.gov.uk/government/publications/integrated-project-insurance>
- *'Project Procurement and Delivery Guidance Using Two Stage Open Book and Supply Chain Collaboration'*, 2014, Cabinet Office/Efficiency and Reform Group https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/325014/Two_Stage_Open_Book_Guidance.pdf



7

How can collaboration improve commitments and involve residents?

This section explains why and how dutyholders should create and implement integrated systems by which they regularly engage with each other, and with residents where applicable, in order to fulfil their commitments to safety, quality and regulatory compliance. It considers the importance of a transparent decision-making process by which the Client, the Principal Designer, the Principal Contractor and the other supply chain members agree Gateway two and Gateway three application submissions, as well as other applications such as change control applications. It also explains how dutyholders can ensure regular consultation with residents where applicable.

- 'Strategic supplier relationship management can unlock additional value and innovation'.

Dame Judith Hackitt's Independent Review stated that *'it is incumbent on all dutyholders to ensure that the procurement process they use drives the correct behaviours throughout their supply chain.'* (Section 9.8, page 109)

Key points – Section 7: How can collaboration improve commitments and involve residents?

- Ensure that the roles and relationships agreed between project team members are demonstrably clear, collaborative and integrated (7.1)
- Establish fair payment terms and cost models that eliminate late payment and support profitability (7.2)
- Use transparent decision-making systems (7.3)
- Use joint risk management by which appropriate team members agree the actions for dealing with each risk while accepting reasonable accountability (7.4)
- Implement a consultation system to ensure that the views of resident representatives are notified, discussed and taken into account (7.5)
- Make clear the contractual relationships and processes that support a collaborative culture (7.6).

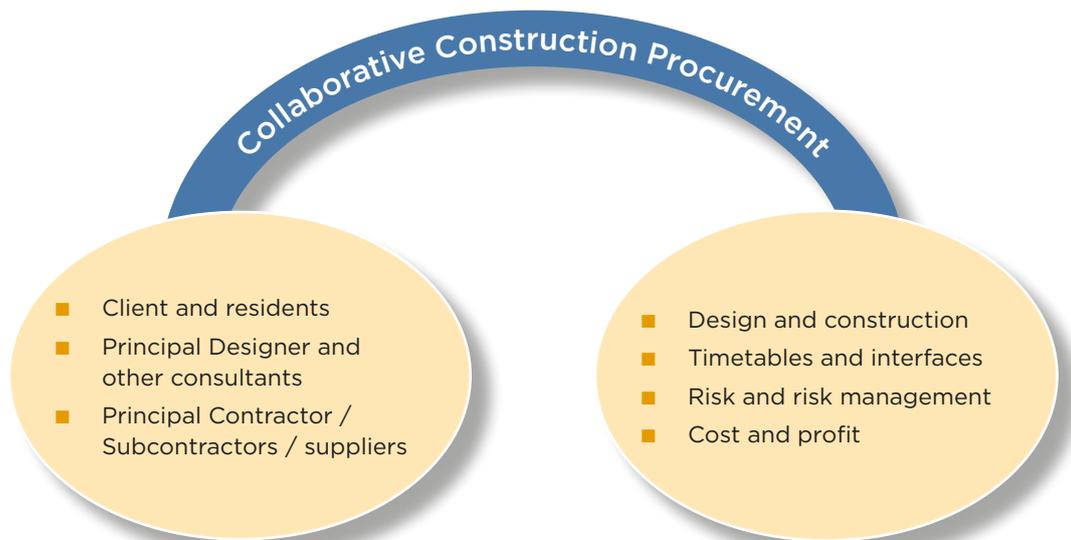
7.1 Integrating collaborative commitments to safety and quality

In order for collaborative procurement to improve assurance as to the safety and quality of in-scope buildings, the team members need to be accountable for their designs, construction, manufacture and other work, and this accountability should be based on a clear understanding of how their different contributions fit together. Advance knowledge of each other's brief and proposals will mean that team members can base their work and warranties on more complete and accurate information. This is a major step away from the divisive project controls that are typical of many traditional procurement approaches and that give each team member only part of the picture.

The Client, Principal Designer, Principal Contractor, and all other team members involved in the preparation of Gateway applications, including the required plans and other documents, need new commercial and legal lenses through which to view their integrated commitments and through which to have a clear focus on issues arising.

The Construction Playbook emphasises the value of investing in and maintaining collaborative relationships because:

- 'Acting together with suppliers drives mutual understanding and helps to solve problems more effectively, leading to better and faster delivery'



Systematic integration of the different team members' agreed commitments is essential to the success of collaborative approaches to team appointments, project planning, project delivery and information management. It can also:

- Create new opportunities to ask and answer practical questions affecting risk and value
- Avoid making incorrect risk and value assumptions
- Establish what involvement, roles and responsibilities it is reasonable and valuable for all team members to accept.

Collaborative procurement is sometimes linked to contractual exclusions of liability and the suggestion that collaborative practices are undermined by the fear of claims for negligence. It is difficult to reconcile increased commitments to the safety and quality of in-scope buildings with contractual waivers that deprive clients and occupiers of their reasonable rights and remedies. Exclusions of liability, created by what are sometimes known as 'no blame' clauses, are not necessary for the collaborative procurement of an in-scope building. Instead, the systems and case studies in this guidance show how collaborative processes, relationships and activities give dutyholders the confidence to stand behind the outputs from their agreed roles and responsibilities, including their contributions to safety and quality and to other aspects of improved value and risk management.

Team integration combined with selection by value, ESI and efficient information management increase the confidence of team members in the quality of their work and of each other's work. These collaborative practices lead to innovations and improved value contributions without the need for changes to usual contractual duties of care.

7.2 The importance of fair payment and profitability

The Construction Playbook underlines the importance of providing a fair return and reasonable payment terms for the construction industry, based on the fundamental principle *'that contracts should be profitable'* for a market to be sustainable. It notes that unreasonable payment terms and unsustainable cost reductions *'can create a bias towards low quality and can increase the probability of contract failures'*. An unreasonable approach to payment at any level of the supply chain undermines trust, collaboration and, ultimately, building safety.

As considered in Section 6.4, an open book ESI cost model protects supply chain profit and overheads by ringfencing them separate from other costs. These other costs are then open to analysis and agreement of the financial impact of improved safety and quality proposals while these are still being built up into a fixed price or target price.

Dame Judith Hackitt's Independent Review:

'Payment terms within contracts (for example, retentions) can drive poor behaviours, by putting financial strain into the supply chain. For example, non-payment of invoices and consequent cash flow issues can cause subcontractors to substitute materials purely on price rather than value for money or suitability for purpose.' (Section 9.11, page 109)

Team members need a clear understanding of what work attracts remuneration and what work is undertaken speculatively. The incentive of a pipeline of work is considered in Section 10 and may attract some speculative proposals for improved value. However, if a consultant or contractor can only expect to be paid if a project proceeds on site, then commercial logic dictates that its first priority will be to ensure that the project goes ahead rather than to provide objective advice on how to improve value.

CIRIA in *'Selecting Contractors by Value'* recommended that payment provisions *'recognise all the contributions being made, and the related risks, responsibilities and rewards, particularly during project development'*. Any pre-construction phase payment entitlements of a contractor or supply chain member should be clearly stated and not open to different interpretations. Collaborative relationships can quickly deteriorate into conflict if a team member considers it has been deprived of an agreed payment.

The Construction Playbook requires that *'Contracting authorities and suppliers should always pay their supply chain promptly'*. Payment security is essential to collaborative procurement, but manipulation of supply chain cashflow has often overridden other considerations. Payment abuse directly affects building safety because financial pressures can lead to shortcuts and compromises in quality. Poor payment practices are also a major barrier to collaborative working. Sir Michael Latham's 1993 report *'Trust and Money'* made clear that a prerequisite to improving commercial relationships in the industry is trust, but that trust can only be achieved by providing greater security for payment.

Project bank accounts ('PBAs') enable supply chain members to be paid faster because monies do not have to cascade through different levels of contracting and because there is some protection of funds from upstream insolvencies. Since 2010, Government policy has been that PBAs must be used unless there are defined, compelling reasons not to use them, and this is reflected in the 2020 Construction Playbook.

The use of cash retentions can also interfere with cashflow and can undermine the principles on which collaborative relationships are based. Arguably, any collaborative relationship should exclude the use of cash retentions. If exceptional circumstances require a retention, then it should be held in an account ring-fenced by a trust arrangement. Alternatively, other forms of performance security such as a bank

guarantee can ensure that funds are available for release to supply chain members or to rectify unattended, non-compliant work.

7.3 Transparent decision-making

Decisions by a business are made by its board of directors with delegation of authority to officers for specific functions. By contrast, a construction project is managed almost entirely by delegated authority to the Principal Designer, project manager, Principal Contractor and others, with no clear basis for them agreeing with the Client and each other the new ideas that improve safety and quality or for making joint decisions that deal with other issues affecting value and risk. A collaborative project team need a forum for transparent decision-making that comprises individuals who can undertake collective reviews and approvals, for example so that all dutyholders can agree the content of **Gateway two** and **Gateway three** applications.

ISO 44001 describes a system for joint issue resolution that:

- *'Defines a decision-making hierarchy*
- *Identifies and resolves issues at the earliest practicable opportunity*
- *Assigns importance, priority and/or timeframe, and responsibility for resolution at the optimum level*
- *Tracks the status of the issue: e.g. open, investigating, escalated, resolved*
- *Aligns with any agreement and/or contracting approach and integrated with lessons learned'*

Example: The Greenwich Council housing repairs and maintenance alliance *'the Core Group and Partnering Team structures promoted communication which ensured the right people were dealing with issues at appropriate levels.'*

A *'Core Group'* is the transparent, collaborative decision-making body that is described in the PPC2000, FAC-1 and TAC-1 contract forms. The need for Core Group decisions to be unanimous has been very successful in enabling team members to seek agreement of collaborative innovations and solutions while protecting their reasonable commercial interests. A similar group is provided for in the NEC4 Alliance Contract *'Alliance Board'* but not in the other NEC4 contracts or in the JCT2016 contracts.

Example: Glasgow Housing Association led a £1 billion programme of stock refurbishment and new build for over 40,000 properties which required the coordination of 63 housing associations with 24 constructors and 27 framework consultants. Its alliance contracts provided for (Association of Consultant Architects):

- Use of a contractual Core Group as *'an essential means for joint problem solving and strategic decision making'*
- A supply chain structure which *'allowed GHA to create supplier framework agreements with key components suppliers, so they had representation on Core Groups and were full members of partnering team.'*

Example: The Whitefriars housing framework alliance used:

- *'Core Group exchange of information and shared best practice, leading to use of the most economical common kitchen supplier'*
- *'Regular Core Group consultation to identify opportunities for improved efficiency leading to more rapid turnaround on site'*

7.4 Using joint risk management to improve accountability

Construction Playbook:

- *'Risk allocation should be supported by good risk management aligned to the project and programme strategic outcomes set out in the Project Scorecard'*
- *'How risks are allocated should take into account both the practical capability and the financial capacity to manage and absorb that risk should it occur'*
- *'Collaborative risk management throughout the commercial lifecycle is essential to support successful project and portfolio delivery and sustainable outcomes.'*

In addition to non-adversarial dispute resolution, as considered in Section 9.5, the PPC2000, FAC-1 and TAC-1 Core Group undertakes:

- Review of proposals for Supply Chain Collaboration and other joint activities intended to achieve improved value
- Agreement of the basis for team members to share information
- Approval of updates to a shared timetable
- Approval of updates to a shared risk register.

The Construction Playbook emphasises the need to *'apply a proactive risk management approach with suppliers incorporating early warning and joint decision-making'*. A collaborative decision-making group should meet regularly, particularly during the ESI pre-construction phase, in order to build effective relationships and create the maximum opportunities to agree proposals for improved quality and safety, for other aspects of improved value and for early risk management.

Successful collaboration is the result of consensus through persuasion, not coercion or unilateral action, and a collaborative contract should state how a decision-making group makes its decisions. For example, a PPC2000 Core Group reaches decisions by consensus of all members in attendance, so that a member cannot block a decision simply by staying away.

Construction projects carry a wide variety of risks and can benefit from collaborative assessment of ways to minimise the potential impact of those risks. The Construction Playbook states that *'The key is to have joined up, transparent mechanisms to identify and handle foreseen and unforeseen risks and opportunities when they arise'*.

Many risks can be managed jointly by a collaborative team if they put the right contractual machinery in place, and ISO 44001 states that *'an effective collaboration is one where the parties share responsibility as far as is practical in supporting the individual risk of the partners.'*

ESI enables a process of joint risk reviews through which team members can challenge their own and each other's risk assumptions at

an early stage when there is still time to take mitigating actions without causing project delay. The Construction Playbook requires that team members use a joint risk review system for *‘exploring opportunities to develop solutions that help to mitigate risk through joint working before construction commences’*. Resident representatives have the first-hand knowledge that can make them valuable participants in joint risk reviews.

The joint analysis of risk will only benefit the project and its team if agreed actions are undertaken based on the results of that analysis. A collaborative contract governing joint risk management linked to ESI creates a system by which team members can identify the risks affecting a project as soon as possible, can agree the status of different types of risk and can agree the actions to be taken for dealing with each risk. Risk management actions can include:

- Obtaining additional information
- Performing additional tests and simulations
- Allocating additional resources
- Improving communication and management of organisational interfaces.

Joint risk management creates new opportunities for risk mitigating actions, and ISO44001 notes that this starts with *‘identification of risks that need to be raised with collaborative partners to ensure the most effective approach is adopted’*. ISO 44001 states that these risks should be set out in a shared risk register, which *‘shall be maintained as part of the documented information and shall be part of the joint risk management process’*.

In order to agree and implement joint risk management processes, it is important that all team members have the same appreciation of the identified risks. The Office of Government Commerce included in its 2007 *‘Critical Factors for Success’* a system of *‘risk and value management that involves the entire project team, actively managed through the project.’*

Example: On the St. George’s Hospital Keyworker Accommodation project the team agreed for *‘preconstruction work to be carried out at the same time as a final Agreed Maximum Price (AMP) was being agreed in which all risks had been*

quantified’. This gave the team *‘the incentive to be proactive in managing risk and expenditure so as to earn rewards available through the shared savings mechanism, openly reviewing buying gains obtained through subcontractor and statutory authority orders’*.

The Construction Playbook requires:

- A contractual system for the efficient sharing of risk information and agreement of risk management actions, enabling *‘early risk work focused on achieving project strategic objectives and alignment’*
- The use of ESI for *‘exploring opportunities to develop solutions that help mitigate risk through joint working before construction commences’*
- A contractual structure for the *‘sharing of appropriate risk registers and transparent communication on risk allocation with prospective suppliers and the supply chain.’*

The joint management of risks by the members of an integrated team reduces the wasted costs that arise from arbitrary risk premiums. The early exchange and review of risk information also ensures that team members can provide more reliable warranties for their work, including their contributions to safety and quality.

In order to implement a collaborative approach to risk management, a shared risk register should be signed off by all team members at the start of their ESI appointments. The shared risk register should form part of each team member’s contract and should state agreed risk management actions during the pre-construction phase and construction phase that are clearly linked to agreed designs, costs and safety measures.

The combination of early joint risk management with other ESI activities enables team members to agree the allocation of risks to those who are best able to manage them or bear their consequences. It enables the agreed allocation of design, construction and operational risks on a more equitable basis.

7.5 Using collaborative procurement to ensure resident consultation where applicable

Dame Judith Hackitt's Independent Review:

'The voices of residents often go unheard, even when safety issues are identified.'
(Executive Summary, page 11)

A collaborative culture should extend to all members of the team, and also where applicable to residents as the stakeholders most directly affected by an in-scope project or programme of work. Collaborative procurement can ensure that residents' voices are heard.

A clear communication system is necessary to ensure that the views of resident representatives are notified, considered, discussed and taken into account. This system needs to be reliable and fully understood. It needs to go beyond informal lines of contact, standard complaints procedures and the points raised at meetings convened for other purposes. ISO 44001 notes that a collaborative team should *'establish, maintain and actively manage an effective communication process, including the messages for key stakeholders (including all collaborative parties), the vision, the objectives behind the collaboration and how concerns will be managed'*.

Example: On a five-year housing programme undertaken by Erimus Homes in Middlesbrough, *'Residents were involved by consultation and choice through the use of a mobile exhibition unit. The average satisfaction score was 9/10. The Erimus investment plan delivery team was commended in the "Integration and Collaborative Working" category at the Constructing Excellence 2007 awards.'*

In communications with residents, a system of feedback is imperative to ensure that the meaning and intent of issues raised are clear and unambiguous. For example, communication should be assisted by structured meetings between the representatives of team members and those resident representatives who are authorised to address issues when they arise. Clear procedures and terms of reference for these meetings, linked to mechanisms for the incremental agreement of new information,

will increase the chances of preserving the relationships between team members and residents while also respecting their different interests.

7.6 The links between collaboration and contracts

Collaborative charters and other general declarations create only shared aspirations among team members. Without contractual collaborative systems that are designed to improve safety, quality and value, the parties can easily decide not to honour a general collaborative declaration, and this failure only increases cynicism and mistrust in the construction industry.

For collaborative construction procurement to improve safety depends on dutyholders and other team members making clear to each other what it is they will do together that they would not do alone. A collaborative contract reaches beyond a general sense of joint purpose and states in detail how team members will integrate their roles and responsibilities in a way that delivers safe and good quality outcomes compatible with their different roles and viewpoints.

Dame Judith Hackitt's Independent Review:

- *A 'focus on low cost or adversarial contracting can make it difficult (and, most likely, more expensive) to produce a safe building.'* (Section 9.7, page 109)
- *'The requirements within contracts can encourage poor behaviours in the relationships between the client, the contractor and the designer. For example, the low margin for larger contractors sometimes leads them to push technical and contractual risk down to their subcontractors. This process both leads to risk being handled by people who are unable to mitigate those risks appropriately and drives inefficiency in building contracts.'* (Section 9.10, page 109)
- *'For higher risk residential buildings (HRRBs), principal contractors and clients should devise contracts that specifically state that safety requirements must not be compromised for cost reduction.'* (Recommendation 9.1 (a), page 109)

A successful team relies on constructive ideas and challenges from many contributors. A collaborative approach by one organisation will have little effect unless new contractual links are built up with other organisations who are willing to adopt the same approach. ISO 44001 recommends 'a formal foundation for joint working, including contractual frameworks or agreements, roles, responsibilities and ethical principles', and proposes that:

- *'Contract terms shall be reviewed to determine clarity of purpose, encourage appropriate behaviour and identify the potential impacts on or conflict with the aims of collaborative working*
- *All performance requirements and measurement methods should be mutually agreed to ensure clarity*
- *Risk and reward models, issue management, exit strategy, knowledge transfer and sustainability should be considered when developing an agreement'*

In reviewing the collaborative features of construction contracts, it is helpful to consider the following recommendations of Sir Michael Latham in his 1994 report 'Constructing the Team':

- *'A specific duty for all parties to deal fairly with each other, and with their subcontractors, specialists and suppliers, in an atmosphere of mutual cooperation'*
- *'Clearly defined work stages, including milestones or other forms of activity schedule'*
- *'Integration of the work of designers and specialists'*
- *A 'specific and formal partnering agreement' that is 'not limited to a particular project' Partnering arrangements that 'include mutually agreed and measurable targets for productivity improvements'*
- *'Shared financial motivation' and 'incentives for exceptional performance'*
- *'Taking all possible steps to avoid conflict on site.'*

The decision to use a JCT2016, NEC4 or PPC2000 contract form, or to create a bespoke appointment or development agreement, is not the only step necessary to establish a successful and interlocking suite of collaborative appointments. When drafting or reviewing the contracts intended to govern the appointment

of a Principal Designer, a Principal Contractor and all other consultants, contractors and supply chain members engaged on an in-scope project, the parties should also examine how these contracts address the recommendations of Sir Michael Latham.

In addition, team members should assess whether the contracts at all levels of the supply chain set out in detail the steps by which they align the differing commercial interests of team members by means of:

- Shared objectives, success measures, targets, and incentives
- Consensus-based decision-making
- Systems for team members to build up, share and manage their design, time, cost, and operational information as the basis for agreeing optimum solutions
- Agreed activities by team members that are designed to improve value
- Clear timeframes and deadlines for team members' agreed activities and for other team members' responses and approvals
- Systems for joint management of risks and the agreed avoidance or resolution of disputes.

Consultant appointments, construction contracts and sub-contracts do not support collaborative procurement if they are seen as unfair by any of the parties, if they treat different team members inconsistently or if they do not describe clear collaborative processes. Contracts awarded to subcontractors and suppliers should be consistent with contracts awarded to tier 1 contractors.

Dame Judith Hackitt's Independent Review stated that *'Contracts must clearly outline the roles of client, principal designer and principal contractor, and whilst work can be delegated, these accountabilities cannot be handed down.'* (Section 9.8, page 109)

The 2012 Procurement/Lean Client Task Force report recommended that only collaborative forms of contract should be used for Government Trial Projects, and identified the JCT Constructing Excellence Contract, NEC3 and PPC2000 for this purpose. They also recommended that these standard from contracts should have an *'absolute minimum of amendments, with no changes to risk allocation*

or payment terms except where they are improved', and that 'effort should be taken to avoid the use of liquidated damages, retentions, parent company guarantees and performance bonds.'

The 2018 Construction Leadership Council report 'Procuring for Value' stated that 'In the last ten years, the industry has improved the way projects and programmes of work are procured and delivered, particularly in the public and regulated sector, with adoption of partnering contracts such as NEC3 and PPC2000. This is continuing to develop with the issue of NEC4 and the TAC-1 Term Alliance Contract and FAC-1 Framework Alliance Contract'.

The role of residents as stakeholders in a housing project can be spelled out in the contract terms. For example, PPC2000 requires the team members to 'work together and individually in accordance with the Partnering Documents to establish the maximum involvement in the Project...by those Interested Parties listed in the Project Partnering Agreement.'

An inclusive approach to collaborative procurement can also be enhanced by involving residents and other stakeholders in liaison groups and facilitated workshops.

Example: On a three-year £600,000 contract for the maintenance of gas appliances in 1,250 dwellings and a number of commercial locations, Havelok Homes and their service provider PH Jones ensured that:

- 'the client's tenants' liaison group was recognised as an "Interested Party" [in the contract] and [they] provided invaluable assistance and liaison'
- 'Workshops facilitated by the contractual Partnering Adviser clarified each party's role and flagged up some vital pre-commencement tasks to be added to the agreed Partnering Timetable'
- 'These encouraged a climate of good faith that eliminated mistrust and promoted a 'can-do' attitude. The parties agreed a range of KPIs with targets and monthly reporting as to safety, customer satisfaction, audit progress, quality of paperwork, timeliness of completing jobs, keeping appointments, doing the work right first time and getting paid on time.'

More details are set out in:

- Latham, M. (1994) *Constructing the Team*- Final Report of the Government/ Industry Review of Procurement and Contractual Arrangements in the United Kingdom Construction Industry <http://constructingexcellence.org.uk/wp-content/uploads/2014/10/Constructing-the-team-The-Latham-Report.pdf>
- Latham, M. (1993): *Trust and Money* - Interim Report of the Joint Government/ Industry Review of Procurement and Contractual Arrangements in the United Kingdom Construction Industry
- Procurement/Lean Client Task Group (2012), Government Construction Strategy Final Report to Government by the Procurement/Lean Client Task Group July 2012 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61157/Procurement-and-Lean-Client-Group-Final-Report-v2.pdf
- 'More homes, fewer complaints', 2016, Report from the Commission of Inquiry into the quality and workmanship of new housing in England <https://cic.org.uk/admin/resources/more-homes.-fewer-complaints.pdf>
- Construction Leadership Council (2018), *Procuring for Value*, Construction Leadership Council <http://www.constructionleadershipcouncil.co.uk/news/procuring-for-value/>
- Guidance on PBAs at Project bank accounts - GOV.UK (www.gov.uk)
- ISO 44001, BS ISO 44001:2017 *Collaborative business relationship management systems- Requirements and framework*, The British Standards Institution 2017.

8 How can a digital ‘golden thread’ integrate design, construction and operation?

Dame Judith Hackitt’s Independent Review proposes:

- *‘Obligating the creation of a digital record for new HRRBs from initial design intent through to construction and including any changes that occur throughout occupation. This package of building information will be used by the dutyholders to demonstrate to the regulator the safety of the building throughout its life cycle’* (Recommendations, page 13)
- *‘A BIM system will enable the dutyholder to ensure accuracy and quality of design and construction, which are crucial for building-in safety up front.’* (Section 8.16, page 103)

This section explains the ways in which the Client, Principal Designer, Principal Contractor and other team members can use digital information management tools to ensure the accuracy and quality of information exchanged between them in relation to the design, construction and operation of in-scope buildings. It illustrates how suitable digital tools can be used in conjunction with ESI and other collaborative systems, and why it is important that dutyholders make clear their capabilities and commitments:

- To use suitable digital tools for the creation, sharing, storage and use of information
- To embed good information management practices within their organisations.

This section of the guidance complements the work of the Building Regulations Advisory Committee whose *‘Golden thread report’* was published in July 2021.

Key points – Section 8: How can a digital golden thread integrate design, construction and operation?

- Recognise the importance of sharing accurate and complete project information (8.1)
- Use digital information management tools for the creation, sharing, storage and use of project information (8.2)
- Consider how digital information can improve whole life asset management (8.3)
- Use building information modelling (*‘BIM’*) to improve ESI processes (8.4)
- Use BIM to improve collaborative procurement relationships and activities (8.5)
- Consider how BIM contributions can be integrated using collaborative contracts (8.6).

8.1 The links between information and safety

Collaborative construction procurement should use efficient systems through which the team members can develop, share and apply information in ways that improve the safe design, construction and operation of a project. In order to optimise safety and quality, to manage risks and to resolve problems, an information management system needs to support transparent decision-making and to avoid the risks of:

- Information coming too late or going to the wrong place
- Information being only a record rather than a tool
- Information being collected in order to allocate blame rather than seek solutions.

The absence of complete and up to date information gives rise to safety-related difficulties, including:

- Uncertainty as to whether unauthorised changes have been made to approved designs or specifications at any stage during design development or during supply and construction
- Building owners not having the accurate information they need to manage the building effectively and safely throughout its entire lifecycle
- Difficulty in ascertaining or predicting what impact future alterations to a building may have on its safety.

For new buildings, Dame Judith Hackitt's Independent Review identifies the following non-exhaustive list of information to be recorded and maintained:

- Size and height of the building
- Full material and manufacturer product information
- Identification of all safety critical layers of protection
- Design intent and construction methodology
- Digital information capture of completed buildings e.g. laser scanning
- Escape and fire compartmentation information
- Record of inspections/reviews/consultations.

Access to reliable information will also support dutyholders in fulfilling their roles in relation to works on existing buildings, where Dame Judith Hackitt's Independent Review indicates that the following information is required:

- Size and height of the building
- Structure
- Fabric
- Escape and fire compartmentation information
- Systems in operation
- Permanent fixtures and fittings.

Dame Judith Hackitt's Independent Review highlights *'almost unanimous concern surrounding the ineffective operation of the current rules around the creation, maintenance and handover of building and fire safety information. Where building information is present, it is often incomplete or held in paper form and is not accessible to the people who need to see it.'* (Section 8.1, page 102)

8.2 Creating digital information

Digital transactions and technological advances enable the rapid creation and sharing of information and its efficient management. Digital information management enables a project team to record accurately the following information and for all this information to be available for reference against what is undertaken, installed and completed on site:

- All designs, all sources of materials and manufacture and all specialist work packages
- All changes to this agreed and approved information
- The parties who proposed and approved the designs, the sources, the works packages and the changes.

Each project relies on the coordination of a diverse network of people, products, services and works, and requires the integration of a huge number of interconnected processes of design, delivery and payment. Digital technology can improve this coordination and integration, and enables the efficient management of the design, cost and time information that supports design, construction and asset maintenance.

Building Information Management ('BIM') sets out methods and the processes for creating and managing digital information relating to a built asset. ISO 19650:2019 defines BIM as the *'use of a shared digital representation of a built asset to facilitate design, construction and operation processes to form a reliable basis for decisions'*. The purpose of BIM is to ensure that appropriate and accurate information is created and is available in an accessible or suitable format at the right time to the right people.

8.3 Using digital information for whole life procurement

Government response to the *'Building a Safer Future'* consultation:

'Key information related to fire and structural safety submitted during the three Gateways will form part of the golden thread of data, which will be kept up to date and made accessible to relevant people throughout the lifecycle of the building.'

BIM sets out processes to support the management of information through the whole life cycle of a built asset, from initial design through to construction and operation. BIM has an increasing impact on construction projects and particularly on the creation of more efficient systems for their operation, repair and maintenance.

Dame Judith Hackitt's Independent Review identifies the need for a *'golden thread'* of information for all in-scope buildings running through their whole lifecycle, from design and construction through to occupation, so that the original design intent and subsequent changes to any aspect of the building are captured and preserved. A golden thread can use digital tools and systems that enable this information to be stored and used effectively to ensure information is easily available to the right people at the right time. The government is developing the golden thread principles and guidance that will set out requirements as to how information should be managed and stored to support the new building safety regime.

The Construction Playbook requires that *'Operators should be engaged early and continuously'* in the project lifecycle and that *'Transition to the operator will include a 'golden thread' of building information to allow safety to be at the forefront of operations.'* A whole life collaborative procurement model should provide for the regular updating of information throughout the lifecycle of a building in a format that is secure and accessible, without being limited by proprietary technology or systems.

The Playbook states that adopting BIM will *'improve the performance, sustainability and value for money of projects and programmes allowing for the effective retention and management of the 'golden thread' of building information to be passed on from*

the design team to the facility operator via the contractor.' It also states that applying the UK BIM Framework involves utilising the BIM standards, guidance and other resources that will deliver BIM interoperability and government soft landings. These include standardised approaches to defining information requirements, generating and classifying data, information security and data exchange.

The 2015 government report *'Digital Built Britain'* includes proposals for the *'Development of BIM and asset data enabled FM and AM Contracts-including the FM and AM roles in using and maintaining BIM models'*. During occupation and operation, BIM-enabled information should provide dutyholders with a robust evidence base via which to discharge their responsibilities and maintain the safety and integrity of a building while also enhancing decision-making as to the operational issues that need to be addressed.

The Construction Playbook states that a proportional government soft landings ('GSL') approach supported by the UK BIM Framework should be applied to all public works projects. The term *'soft landing'* is typically used to reflect a smooth transition from construction to handover and close out and then into operation and end-use. The Playbook explains that a successful GSL approach should be embedded across the project lifecycle, including a period of extended aftercare. Operators should be engaged early and continuously in the procurement processes so that the final building achieves the intended outcomes and wider benefits as quickly as possible.

The Playbook integrates support for BIM with a focus on whole life performance and requires that *'where appropriate, contracts should be written to include clear expectations for completion, maintenance and transition arrangements'*, with *'a clear understanding of how maintenance will be managed in a timely and efficient manner as set out in the contract'*.

8.4 The links between BIM and ESI

In 2015 Digital Built Britain described the incremental development of BIM so that *'collaborative models of working facilitated by data will permit greater engagement with lower tier suppliers.'* The 2016 Government Construction Strategy commented that *'BIM is a way of working that facilitates early contractor involvement, underpinned by the digital technologies which unlock more efficient methods of designing, creating and maintaining our assets'*.

It is important to ensure that the right digital information is available at the right time to the right people and that it supports decision-making throughout the lifecycle of a building in ways that reduce time, cost and operational risk. ESI and BIM can be used to create an early shared knowledge pool that helps team members to agree how to share and use information effectively in ways that improve quality, safety and other project outcomes.

The Construction Playbook, and the 2011 and 2016 Government Construction Strategies, recommend that BIM is adopted for all public sector construction projects in conjunction with ESI and collaborative working. Trial Projects using BIM with ESI and Supply Chain Collaboration have achieved significant improved value in asset creation and in asset operation, repair and maintenance.

8.5 The links between BIM and collaboration

BIM underlines the need for a procurement process and a collaborative contract that answer questions as to who provides what information, when it is best provided and how it is used and relied upon. It enables and depends upon increased integration and collaborative working among team members by setting out:

- Standards and processes that enhance both human and technological interactions throughout a construction project
- A digital information management framework that supports the creation of improved and more robust information
- Agreement as to how information can best be managed and exchanged.

The ISO 19650 series '*Organisation and Digitisation of Information about building and civil engineering works, including Building Information Modelling (BIM) – Information Management using Building Information Modelling*' (ISO 19650) states that:

- '*Collaboration between the participants involved in construction projects and in asset management is pivotal to the efficient delivery and operation of assets*'
- A significant outcome from collaboration is '*the potential to communicate, re-use and share information efficiently and to reduce the risk of loss, contradiction or misinterpretation*'.

BIM raises questions that challenge the following traditional procurement characteristics:

- The absence of direct connections between team members and the dependence on a project manager as an intermediary
- Lack of clarity in the timing and integration of consultant and contractor design deliverables
- Fragmented responses to early warning of a problem
- The slow progress of payments down the supply chain
- The use of project information systems primarily as a source of evidence to support later claims rather than as a forecasting and rapid response system to manage and resolve problems.

BIM offers a clearer view of the mutual dependencies between the activities of team members if they agree to share design, cost, quality and time information in the levels of detail required and at the times when this information will be most useful to the project. The direct mutual connections established through collaborative procurement reflect the overarching ISO19650 requirements for '*information container based collaborative working*' and '*collaborative production of information*'.

8.6 The links between BIM and contracts

To search for references to BIM in a contract is not the most effective way of determining whether it supports the adoption of BIM in practice. It is more useful to assess whether contractual relationships and processes support BIM through provisions governing:

- The impact of information management on agreed deadlines
- Mutual intellectual property rights among team members
- Access for team members to relevant information
- Agreement of a format for information to ensure that team members can access the information, using open-source principles so that information can be shared between different platforms and software providers
- Specifying responsibility for managing information, including creating and updating that information

- Clear information requirements with levels of detail specified, including consideration of the information required at different stages of the building lifecycle
- Clear requirements for verifying the information shared between team members
- Clear requirements as to what information is to be provided at project completion and in what format.

Alignment of BIM with the relationships, processes and activities of collaborative procurement can be enabled through the use of multi-party project contracts such as PPC2000 or the NEC4 Alliance Contract, or through the use of two-party contracts that are connected by means of a contractual integrator. For example, the FAC-1 framework alliance contract has been used as a contractual integrator (or '*integrated information management contract*') that connects multiple two-party contracts in relation to a project or programme of works by:

- Creating BIM information transparency and reliability through collaborative systems of information exchange and team integration
- Setting out agreed BIM deadlines, gateways and interfaces in a multi-party timetable, with flexibility to bring in BIM contributions from specialist sub-contractors, suppliers, manufacturers and operators through Supply Chain Collaboration
- Supporting BIM with direct mutual licences of intellectual property rights
- Providing for clash resolution through early warning and Core Group decision-making.

- 'Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM)' 2019, ISO 19650, The British Standards Institution.
- UK BIM Framework: <https://www.ukbimframework.org>
- PAS 1192-6:2018 Specification for collaborative sharing and use of structured Health and Safety information using BIM (bsigroup.com)
- Building Regulations Advisory Committee: 'golden thread' report July 2021 <https://www.gov.uk/government/publications/building-regulations-advisory-committee-golden-thread-report>

More details are set out in:

- "Government Soft Landings": Executive summary – Cabinet Office <https://www.cdbb.cam.ac.uk/BIM/government-soft-landings>
- 'Digital Built Britain, Level 3 Building Information Modelling – Strategic Plan', 2015, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/410096/bis-15-155-digital-built-britain-level-3-strategy.pdf



9

What systems sustain and enhance a collaborative culture?

This section considers the ways in which leadership, management and quality control can sustain and enhance a collaborative culture and can help teams to focus efficiently on improving safety and quality and reducing risks. This section also describes the options available to collaborative team members in terms of how they deal with costs, incentives, dispute resolution and insurances.

Key points – Section 9: What systems sustain and enhance a collaborative culture?

- Establish collaborative team leadership, management and quality control (9.1)
- Agree a suitable system for developing accurate cost information and prices (9.2)
- Consider and agree suitable incentives that will enhance relevant commitments (9.3)
- Consider the benefits of systems for early warning and collaborative dispute resolution (9.4)
- Consider the potential for project insurances to encourage collaborative behaviour (9.5).

9.1 The importance of leadership, management and quality control

Individuals understand the need to collaborate at a personal level because they depend on each other to achieve agreed outcomes. Collaboration is equally essential at corporate level but is sometimes less well understood. Therefore, effective leadership and performance management are essential to support collaborative procurement.

Clients have a key leadership role, and reversion to traditional behaviours by the Client has a significant adverse impact on the development of a collaborative culture. A Client also depends extensively on other team members, and any lack of clarity in the Client's role may dilute or

confuse the roles and responsibilities of other team members.

A collaborative Client should clarify its required outcomes and other expectations. It should work with other team members in defining and developing the scope and objectives of the project. It should be a focal point for the team and take an active role in a Core Group or other joint decision-making group.

Client leadership needs to be matched by collaborative leadership roles fulfilled by the Principal Designer, the Principal Contractor and all other consultants, subcontractors and supply chain members engaged on an in-scope project.

Commitment to the continuity of leading individuals is important throughout a collaborative project. An example of this is the requirement in NEC4 at Option X22 for the contractor not to replace any key person unless instructed by the project manager or unless that person is unable to continue to act. This NEC4 requirement for continuity could be extended to the key persons working for the project manager and for other team members.

A robust performance management system is another key component of effective collaborative procurement, both at a tactical level and at a strategic level. At the tactical level, an effective performance management system connects the success measures or key performance indicators to the stated goals and objectives of the project. There should be evidence that these measures have been tested by reference to pre-agreed targets, so as to ensure that they are both workable and equitable.

At a strategic level, the performance management system should assess how well the project contributes to the principal business objectives of the Client and the other team members. The metrics should be customised for individual projects but typically might include:

- Financial
- Internal business processes
- Learning and growth (for example, innovation and creativity)
- Customers (internal and external).

Collaborative procurement is not a substitute for a robust system of quality control. Clients need to put in place an appropriate method of inspecting and verifying work in progress in order to satisfy themselves that the team are achieving the required levels of safety and quality and the other agreed project outcomes. Client officers and external consultants all have roles to play in quality control, and some Clients are again exploring a role equivalent to the ‘*clerk of works*’.

9.2 Options for costing a collaborative project

Agreement of accurate costs is dependent on the transparent sharing of available information. For example, a Client should not withhold information as to possible risks that a Principal Contractor may encounter on site, and a Principal Contractor should not withhold information regarding its calculation of contingencies in respect of possible risks on site.

Hidden discounts and rebates agreed by a Principal Contractor with its subcontractors and suppliers are another obstacle to accurate costing. Any discount or rebate should only be permissible if agreed by the Client in advance, so as to ensure a transparent understanding of all supply chain costs.

The integrity of the chosen cost model depends on clear identification of project risks and a robust regime of quality control and risk management to ensure that risk owners are properly managing those risks.

Team members can build up agreed costs through tier 1 tender processes (Section 5) and through tier 2 tender processes under ESI and Supply Chain Collaboration activities (Section 6), using collaborative cost analysis that enables them to agree:

- Fees, profit and overheads
- Fixed prices or target prices
- Rates for units of work
- Categories of actual cost reimbursable to team members
- Provisional sums for later costing.

Collaborative team members can commit to prices wholly or partly before or after commencement of construction, subject to agreed adjustments that take account of cost inflation, provisional sum items, changes and unforeseeable events. Collaborative construction

procurement can use any cost model (fixed, target, rates, cost reimbursement) according to the features and circumstances of the project or programme of work.

Some teams use ESI to build up and agree a fixed price or target price or rates based on agreed supply chain costs, while others use open book accounting as the basis for reimbursement of actual costs during construction. The Construction Playbook recognises that ‘*Where the scope of a project is certain, fixed pricing may be appropriate and, where there is increased uncertainty in scope, a variable approach may be more suitable to achieve best value for money.*’

The flexibility to build up agreed costs with a common understanding of the factors affecting those costs, and then to establish a point in time when those costs are translated into a fixed price or target price, offers a major step forward in making collaborative procurement more accessible to housing sector clients and their teams.

It is not only the chosen means of expressing agreed costs that affects how collaborative procurement supports safety and quality, but also the agreed means of establishing those costs. However a team uses the build-up of agreed costs, it will need to decide:

- The extent to which elements of a project can or should be sufficiently designed to be costed as part of contractor evaluation, and/or so as to enable the provisional selection of other preferred supply chain members
- The extent, if any, to which certain work, service and supply packages can or should be suitable for a contractor to develop a business case for self-delivery
- The breakdown of fees, profit and overheads so as to provide evidence of the value attributable to those fees, profit and overheads, and so as to enable agreed adjustment of overheads to reflect new information emerging from design development and from the selection of subcontracted supply chain members
- The basis for sub-dividing work, service and supply packages and the extent to which it is valuable to agree the fees, profit and overheads payable to subcontracted supply chain members
- The extent to which subcontracted supply chain members can provisionally be approved in line with contractor

recommendations, and the activities required to create a business case that finalises accurate and competitive costs for their work, service and supply packages during the pre-construction phase

- The timing for obtaining prices for all other work, service and supply packages from prospective supply chain members, and the basis for establishing accurate and competitive costs
- The extent, if any, to which the cost of certain work, service and supply packages should be treated as provisional sums and should be finalised by a contractor obtaining prices from prospective supply chain members after commencement of the construction phase.

Successful collaborative procurement depends significantly on identifying separately the fees, profit, and overheads payable to a Principal Contractor, so as to establish a transparent basis for the review and agreement of underlying costs. It may also be possible to extend this approach to subcontracted supply chain members where they in turn engage sub-sub-contractors for parts of their work. Only if and to the extent that costs are distinguished from fees, profit and overheads can collaborative procurement ensure that savings do not erode the agreed margins and other income of team members. This transparency also enables the Client to ensure that contractors do not impose unauthorised supplier rebates and prompt payment discounts on amounts that are contractually due to their subcontractors and suppliers.

The competitive costing of collaborative procurement should not tempt bidders to undercut each other on fees, profit and overheads or to prioritise cost savings above other measures of value. Instead, the evaluation criteria used for team members should invite them to demonstrate how their proposed fees, profit and overheads will be deployed in way that will generate improved value and reduced risks.

To build up and agree the prices for each element of a project creates a detailed common understanding of costs that is distinct from the uninformed gambling inherent in lowest price arm's length bids. A 2005 National Audit Office report commented that, if established through the collaborative development of cost information and supported by suitable incentives, the agreement of *'a guaranteed maximum price, working to agreed margins with*

full open-book accounting procedures in place' is a model that *'builds trust, helps to overcome the adversarial approach to construction and leads to rapid conflict resolution'* and can also create *'a high incentive to complete the job as efficiently as possible with high productivity.'*

The Construction Playbook requires that *'Projects and programmes should undertake benchmarking of key project deliverables including cost, schedule, GHG emissions and agreed outcomes at each stage of business case development'*, and that public sector clients create a *'Should Cost Model'* that provides *'a forecast of what a project or programme 'should' cost over its whole life, including the build phase and the expected design life'*. Working by reference to an agreed Should Cost Model as a project budget is essential to maintain discipline among team members when costing designs and examining safety issues.

In order to create and maintain effective cost controls throughout a collaborative project, the Client and other team members need regular reconciliation of designs and other proposals with the agreed budget. The budget should be developed to create a more detailed cost plan that establishes agreed costs and prices, allowing the opportunity for redesigns and other improvements while avoiding cost overruns on works, services and supply packages.

Traditionally, some Clients may be advised not to declare a budget in the hope that by not sharing this information they will have the benefit of lower bid prices. It is of course tempting to think a bid that is lower than an undeclared budget will be a bonus for the Client. However, a bid that is lower than the Client's budget may not be accurately costed by the bidder and its supply chain, and this may lead them to seek later shortcuts on safety and quality in order to deliver the project within their bid.

9.3 Using incentives to improve commitments

Commitments by all team members can be influenced through agreed incentives by reference to a range of success measures. For example:

- NEC4 provides for incentives embedded in the shared pain and gain provisions and also for a bonus on early completion
- PPC2000 provides for agreement of *'shared saving arrangements and added value incentives'* and for consultant and contractor

incentives 'linked ... to achievement of the agreed Date for Completion ... or to the achievement of any of the targets stated in the agreed KPIs'.

Collaborative procurement often uses pain/gain performance incentives, and these should distinguish between:

- The sharing of all or some cost savings, sometimes combined with the sharing of all or some cost overruns, designed to create a shared motivation to minimise costs
- The sharing of all profits and losses arising from the project, sometimes aggregated with the profits and losses arising from other projects undertaken by the same team, designed to discourage each individual team member from protecting its own position through non-collaborative means such as hidden contingencies.

Example: On the Anchor Property Trial Project:

- *'Gain share incentives were ... established early and it was decided that Anchor would keep the first 10% and the rest would be shared between the client, the contractor and the consultant'*
- *'The share basis was client 40%, contractor 40% and consultant 20%. Anchor had decided on a very open and trusting approach with its supply chain and consequently there was to be no pain share'*
- *'Accordingly, the savings made were around 9% when projects that failed to improve against targets were taken into account'*
- *'Savings were agreed with supply chain members for paint and kitchens and bathrooms, and formal agreements signed.'*

The agreement of a pain/gain incentive does not itself establish a system for identifying and testing potential cost savings and other improved value, nor does it ensure that the team will work collaboratively with subcontracted supply chain members. If not combined with ESI, Supply Chain Collaboration and other collaborative activities, the agreement of a pain/

gain incentive leaves open the possibility that a contractor will achieve its share of savings simply by putting pressure on subcontractors and suppliers to reduce their costs. This would undermine the commitment of those subcontractors and suppliers to a collaborative approach and leave them more likely to recover their losses by compromising safety or quality.

The base point for operating a pain/gain incentive needs to be accurate and should follow sufficient preparatory work by team members, for example coming after the analysis that forms part of Supply Chain Collaboration. A pain/gain incentive depends on transparency which provides all parties with a clear understanding of how, where and why incentives are earned and paid. In order to provide a valuable incentive, shared savings should be earned through collaborative activities rather than automatically as a windfall against an arbitrary starting figure.

The prospect of shared savings may also tempt a contractor to set its target price as high as possible. The JCT Guide to its Constructing Excellence Contract states that *'Normally a client will retain the option not to proceed to the construction stage so as to provide some commercial pressure on the contractor not to pitch his assessment of the target cost for the construction period too high'*.

Before agreeing a pain/gain incentive, a Client and its advisers need to answer the following questions:

- How far the project cost plan should be developed before it can be the basis for calculating shared savings or overruns
- Whether cost certainty and cash flow may be delayed while incentives are being calculated
- When the actions and ideas that generate cost savings should be recognised and rewarded compared to when they should be treated as a team member simply doing its job.

Shared pain/ gain is not the only incentive for collaborative procurement, and a Client and its advisers should also consider other incentives. For example, a team can be motivated by:

- The collaborative agreement and integration of the scope and nature of their services, works and supplies based on a clear statement of the Client's brief and expectations

- Agreement a fair profit and an appropriate contribution to overheads and other costs.

These commercial basics can incentivise a team to concentrate their efforts on the best interests of the project or programme of work, knowing that their time will not need to be spent unproductively in devising tactics to prepare the ground for later claims and disputes. Instead, they see open and well- structured working relationships that will help them to:

- Avoid losses
- Minimise wasted cost, time and resources
- Enhance their reputations
- Avoid disputes.

Example: On the SCMG Trial Project, Hackney Homes and Homes for Haringey used the Core Group and independent adviser to resolve *'potential disputes with the benefit of full cost and time information plus the motive to retain long-term relationships.'*

Incentives on a single project are limited by the value of that project and a team member's share of that value. Incentives can be more attractive and effective if they are agreed at a strategic level and linked to the performance of successive projects or tasks under a framework alliance or term alliance, as considered in Sections 10.2 and 10.3. Incentives relating to the award of additional work can also recognise where performance is impaired by limited capacity, and contractual systems can enable adjustment of the workflow if certain team members become overloaded. A framework alliance or term alliance should state the success measures and targets that determine the variable award of work, and it should also state who evaluates the alliance members' performance and capacity for these purposes.

9.4 Early warning and collaborative dispute resolution

Collaborative procurement has demonstrated a strong track record in dispute avoidance, but it is not possible to eliminate the possibility of disputes altogether. When a dispute arises, there are three ways to approach its resolution:

- *'Preventative'*, by using active joint risk management to ensure that a problem does not escalate into a dispute, as considered in Section 7.4

- *'Facilitative'*, by keeping dispute resolution within the control of the team members until they agree a solution, a system which can lead to mutual recognition of the underlying facts, mutual acceptance of a compromise and preservation of some future goodwill
- *'Evaluative'*, by putting dispute resolution outside the control of the team and accepting a decision made by a third party, a system which is more likely to involve a winner and a loser, considerable expense and loss of future goodwill.

Potential disputes can be averted by a 'preventative' approach if a warning of an emerging problem is issued as soon as the problem arises, and if the warning is issued to the correct party on the understanding that notification will lead to timely decisions and actions. A collaborative team may achieve a 'preventative' approach through joint risk management but it will also need to consider 'facilitative' options in order to avoid the cost and damage of an 'evaluative' approach.

Example: The Arcadis Global Disputes Report 2020 found that *'The key [UK] focus from the survey responses relates to those administering the contracts, however, the second cause suggests contract obligations are drafted in a manner which makes it difficult for all parties to follow. Greater use of more collaborative standard forms of contracts, i.e. PPC 2000, TPC 2005 and FAC-1, might provide more confidence in project delivery. However, this can only really be driven by the owners and their representatives.'*

The collaborative options for a 'facilitative' approach include direct negotiation and Core Group agreement, in both cases triggered by early warning and dependent on using the shared knowledge built up through other collaborative procurement and contracting systems. When team members use a facilitative approach to resolve a dispute by direct negotiations, they need to agree how these direct negotiations will be undertaken, for example by means of:

- *'Direct, good faith meetings'* between *'senior executives nominated in the Contract Particulars (or if either is not available, a colleague of similar standing)'*, as provided for in JCT2016

- Meetings between ‘Senior Representatives’ during an obligatory four-week period, as provided for in the NEC4 Alliance Contract
- Meetings between named individuals in a ‘Problem-Solving Hierarchy’, as provided for in PPC2000.

A contractual communication system can ensure that a duty to warn applies to any potential problem and that it is linked to a negotiation process and/or to a Core Group or other decision-making group which can review the problem when notified. The success of early warning depends on team members overcoming their instinctive wish to remain silent, and instead recognising that early warning proposals can be acceptable to all parties and may serve their interests better than relying only on the enforcement of other contractual rights. It is not possible to define rigidly the circumstances in which an early warning should be given, and team members may try to use early warning as a means to seek contractual waivers or simply to cause a distraction. At worst this runs the risk of wasted time and can be discouraged by good project management and peer group pressure.

Example: On the Greenwich Council housing repairs and maintenance alliance, it was reported that ‘*Early Warning and Core Group systems encouraged collective resolution of problems: Greenwich Council suffered no claims under its collaborative contracts.*’

An early warning identifying a problem or potential dispute should be referred to a decision-making group such as Core Group considered in Section 7.3. The NEC4 contracts include an obligation to give early warning linked to meetings called by the project manager but do not state how those meetings reach decisions. The FAC-1, TAC-1 and PPC2000 contracts include an obligation to give early warning linked to Core Group meetings, and they use consensus-based decisions as a means of resolving disputes ‘*unless all the Core Group members agree such course of action without a meeting*’. There are no early warning provisions to assist dispute resolution under the JCT 2016 contracts.

Notification of a problem to the Core Group provides the basis for consultation and agreement with other interested parties. This is preferable to the notification of a problem only to the Client or project manager, which may lead to a private review process without consultation

and may result in a unilateral decision that is not accepted by other team members.

Example: In a potential dispute on the Bewick Court tower block, arising from the insolvency of the cladding specialist, solutions were agreed as a result of:

- Involvement of the client and project manager with the main contractor in early selection and appointment of the cladding specialist, creating clear cost information with which to analyse cost consequences of replacing that specialist
- Early establishment of a communications strategy, utilising a Core Group and Early Warning for joint risk management
- A clear role for the client participating in Core Group problem-solving activities.

The cost consultant on the Bewick Court project commented that: ‘*We could have seen contractual claims against both the client and the contractor and worst of all a project not yet concluded, resulting in another cold winter for Bewick Court residents. Instead, the project finished on time and within its maximum price and the team remains firmly on speaking terms.*’

9.5 Links between collaborative procurement and project-based insurance

Professional indemnity insurance, in terms of availability, affordability and restrictions on cover, is a significant challenge for the industry. It is reported that this has been exacerbated by issues associated with the COVID-19 pandemic.

In order to mitigate some of the issues relating to professional indemnity cover, and also to encourage effective collaborative procurement, insurers have developed a number of project-based insurance products. For example, there are single project insurance policies targeted at property owners, developers and contractors, with a view to controlling the scope of risks to be insured. Such policies typically consolidate cover into one policy that is negotiated, purchased and managed by a single sponsor and may include:

- Insurance of the works
- Public liability insurance
- Excess liability insurance

- Non-negligence insurance
- Existing structures buildings insurance
- Advanced loss of rent/ additional cost of interest business interruption cover
- Professional indemnity insurance
- Environmental impairment insurance
- Buildings defects insurance.

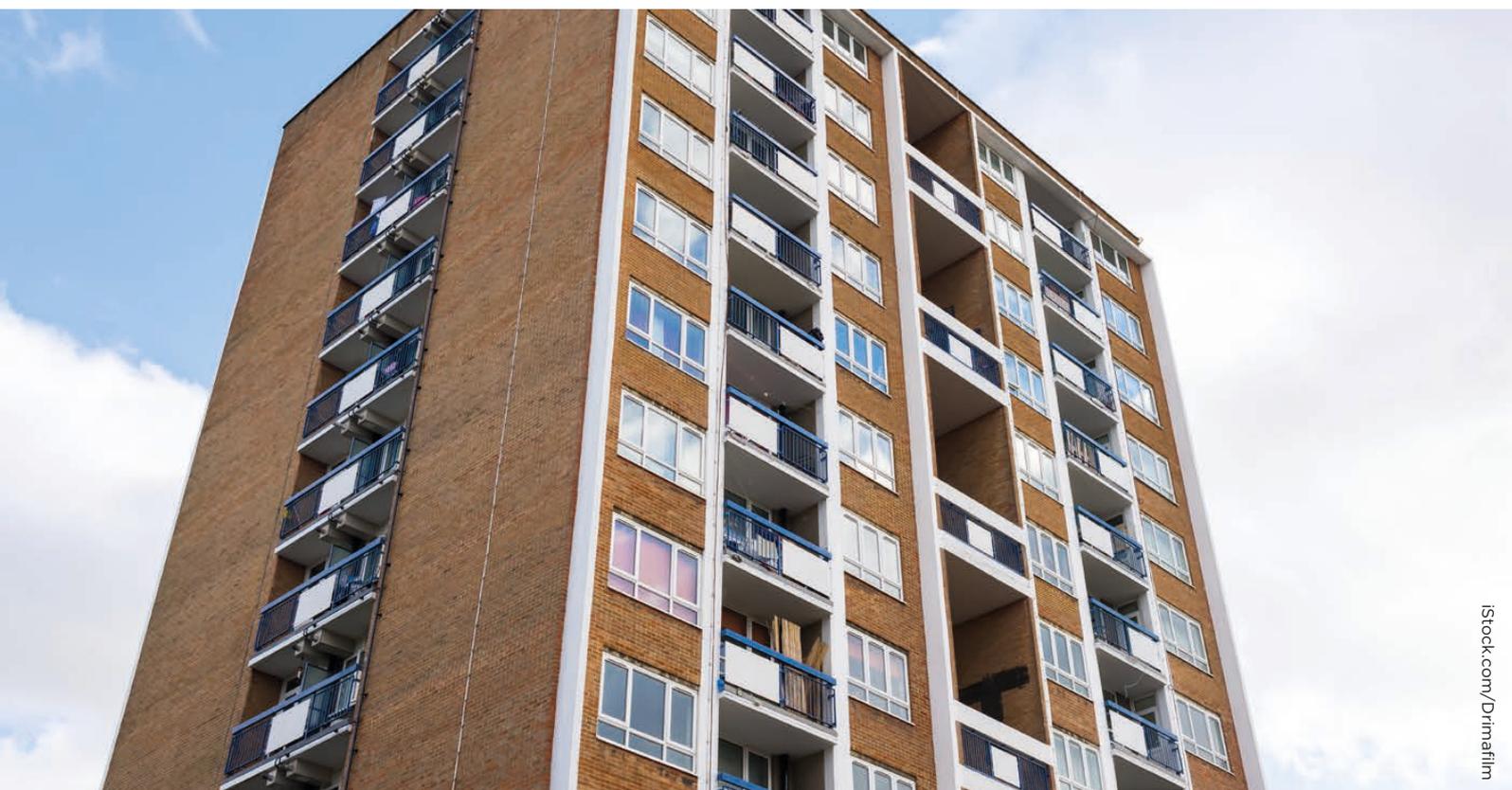
Available policies include owner-controlled insurance programmes ('OCIPs'). OCIPs enable the project principals to purchase construction all risks and third-party liability cover on an all-party basis. Insurers suggest that these products can promote collaborative behaviours among project team members through, for example:

- More transparent insurance costs controlled by all project principals
- Greater flexibility to accommodate changes in project cost and duration
- Cover designed on a project-specific basis
- Control for project principals over the insurer and the level and type of cover
- More expeditious claims-handling, mitigating the potential for disputes.

Project insurance can include delay in start-up cover for loss of revenue or other consequential costs incurred when the completion of a project is delayed. A specific policy of '*integrated project insurance*' was created to support the IPI approach to collaborative ESI on the Dudley College Trial Project. This procurement model involves active participation by an insurer and its appointed technical assessor and financial assessor. The scope of the cover includes 12 years of latent defects and also cost overruns against the target budget, insured on a non-recourse basis alongside a contractual maximum pain-share liability for each team member including the Client.

More details are set out in:

- '*Collaborating to achieve project excellence*', Arcadis Global Construction Disputes Report 2020
<https://www.arcadis.com/en/united-states/our-perspectives/global-construction-disputes-report-2020/>
- Dudley College Trial Project case study
<https://constructingexcellence.org.uk/wp-content/uploads/2016/12/20161205-Trial-Projects-Dudley-College-Advance-II-Case-Study-3-FINAL.pdf>



10 How can strategic collaboration embed improved safety?

This section explains how strategic collaboration under long-term contracts can attract greater commitments to improved safety and quality, can reward performance and can enhance and embed improvements in economic, social and environmental value.

Key points – Section 10: How can strategic collaboration embed improved safety?

- Consider the potential for long-term collaborative contracting to embed improved safety and quality and other economic, social and environmental value (10.1)
- Consider the potential of a ‘*framework alliance*’, including enhanced outputs from Supply Chain Collaboration (10.2)
- Consider the potential of a ‘*term alliance*’ governing whole life asset management (10.3)
- Identify where modern methods of construction (‘*MMC*’) can improve safety and offer other benefits (10.4)
- Consider systems governing strategic performance measurement and incentives (10.5).

10.1 The links between long-term contracting, safety and improved value

A strategic approach to procurement that develops effective benchmarks for improved safety and that benefits from feedback among team members will depend on collaboration that reaches beyond a single project. Longer-term collaboration on multiple projects fosters greater mutual trust and also facilitates the sharing of knowledge and information that generates and embeds improved approaches to safety and quality in the design, construction and operation of each project. There is greater scope for improved value to be achieved on multiple projects because they attract increased personal commitment and investment, because team members can plan with a clearer understanding of potential additional work, and because Clients can expect other team members to learn from project to project.

A ‘*framework alliance*’ is long-term relationship that links the award of contracts for a number of projects, so that a team can use lessons learned on one project to improve the delivery of other projects, and a ‘*term alliance*’ is a long-term relationship governing orders placed for agreed tasks, so that a team can use lessons learned on earlier tasks to improve the delivery of later tasks.

A procurement model and contract that creates and supports a framework alliance or term alliance should be able to answer the following questions:

- How is the alliance created, who are the members and can additional members join?
- Why is the alliance created, what are the measures and targets for its success and how is it ended if it does not succeed?
- How is each stage of the agreed scope of works, services and supplies authorised, in what stages and by awards to which alliance members?
- What will alliance members do together or individually to improve economic, social and environmental value, by means of what contributions and by what deadlines?
- How will alliance members be rewarded for their work?
- How will the alliance members reach decisions, manage risks and avoid disputes?

An effective framework alliance or term alliance will benefit from the integrated relationships and common understanding created by a multi-party contract entered into directly between all the alliance members. To rely on separate two-party contracts makes it difficult to create and sustain an alliance as there is no contractual integrator to support direct collaboration between team members and there are no direct channels through which to share information, solve problems and agree improvements.

10.2 The role of framework alliances

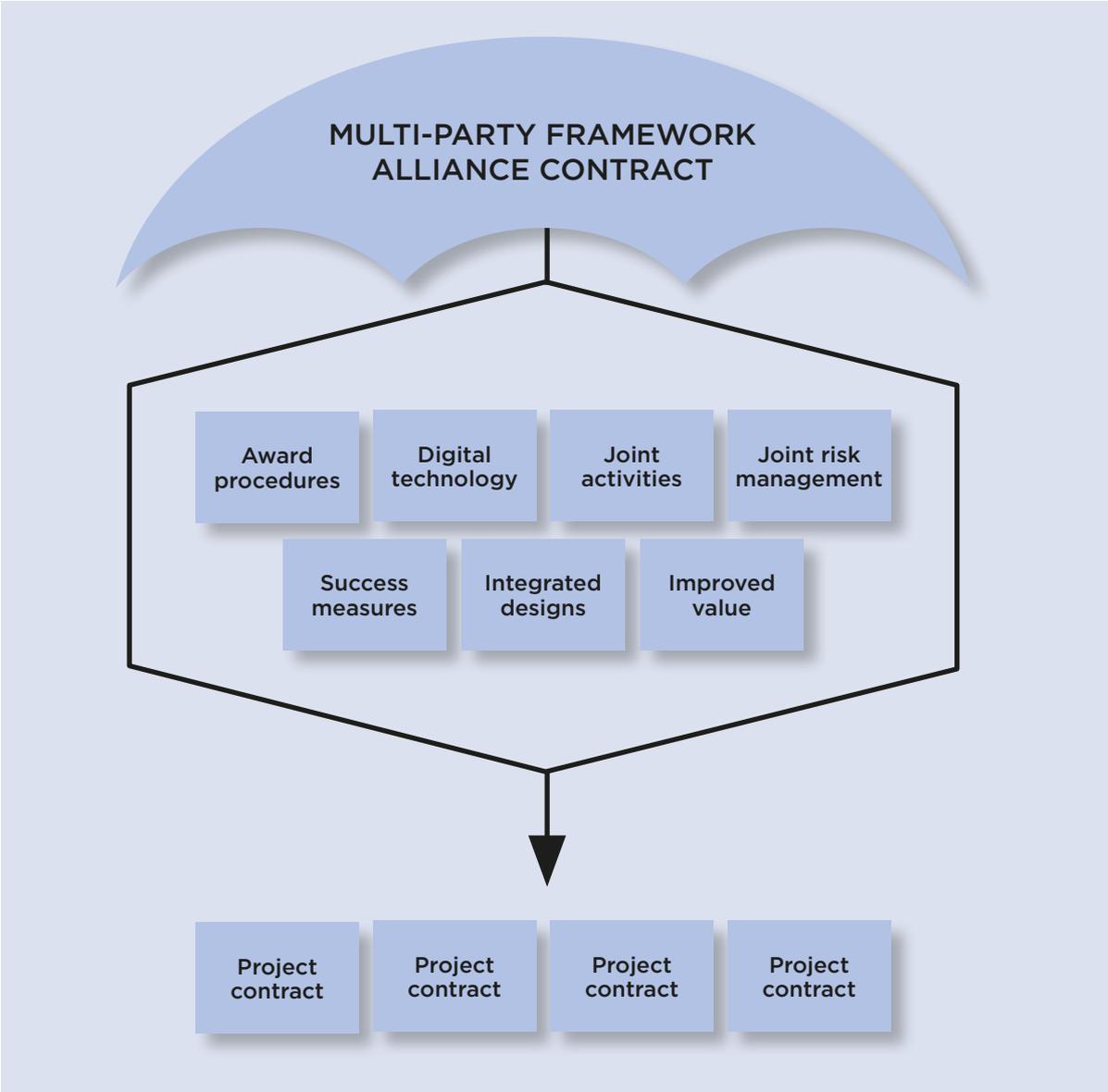
Significant evidence of improved results has led to the development and utilisation of collaborative contracts that support long-term framework alliances. The Construction Playbook promotes the use of frameworks as

an efficient method to procure public works, goods and services, and emphasises that a *'successful framework contract should be based around principles that align objectives, success measures, targets and incentives so as to enable joint work on improving value and reducing risk'*. It goes on to say that the *'FAC-1 framework is a good example of a standard form framework contract that can achieve this and many of the ambitions set out in this Playbook'*.

A 2012 cross-industry working group collected evidence from Government departments and the wider public sector, and reported that benefits from the use of effective frameworks include *'good health and safety performance against national average'* as well as *'sustainable*

efficiency savings', 'high client satisfaction rates', 'high proportion of value of work undertaken by small and medium-sized enterprises, 'high proportion of local labour and subcontractors', 'high take-up of government initiatives such as fair payment and apprenticeships' and 'high proportion of construction, demolition and excavation waste diverted from landfill'.

In 2016 the National Association of Construction Frameworks found that *'significant savings, benefits and other efficiencies in construction can be achieved by effective frameworks through the longer-term arrangements, non-adversarial relationships, common incentives, integrated teams and objective assessment of performance associated with such frameworks'*.



Consistent improvements in safety and quality over multiple projects can be captured through a framework alliance which sets out systems for awarding each project, systems for improving value and measures that establish an ongoing pipeline of work based on agreed levels of performance. A framework alliance can also ensure that all parties are aware of each other's roles and that they share their ideas for improved value on agreed terms as to intellectual property and confidentiality.

A framework alliance can act as a collaborative umbrella that connects and works in conjunction with any number of standard or bespoke two-party appointments. It integrates the work of one or more Clients seeking to award project contracts in respect of similar work programmes, who can benefit from aggregating their programmes and establishing consistent standards and working practices. The website for the FAC-1 framework alliance contract records numerous housing sector Clients who are using this form of contract to create and support collaborative alliances in respect of new build housing and programmes of refurbishment.

Example: The 'SCMG' Trial Project housing framework alliance, led by Hackney Homes and Homes for Haringey, was an FAC-1 prototype creating systems under which *'the project teams have a clear process for exchanging information on a collaborative basis at an early stage, with participants in early contractor involvement meetings working together to agree solutions that promote the best method of delivering the project. Often such discussions are led by the tier 1 contractor (with tier 2/3 support), so as to utilise experience from recent similar projects and to offer clear and well considered methods for the efficient delivery of the works.'*

Example: Epping Forest District Council procured a £22 million alliance for a programme of new homes, integrating a multi-disciplinary consultant design team led by ECD Architects with Airey Miller as employer's agent and cost consultant and a group of four contractors comprising Roof, Neilcott, TSG and Indecon. The agreed FAC-1 objectives were:

- *'To deliver high levels of end user satisfaction that improve and enhance the lives of those living in new homes*
- *To deliver homes that are sustainable for the client and end users*
- *To demonstrate value for money through both capital investment and whole life costs*
- *To learn from shared experiences and to adapt, develop and improve the quality of new homes.'*

An effective framework alliance and an effective framework alliance contract should have the features recommended in 'Constructing the Gold Standard', the independent review of public sector construction frameworks commissioned by government in 2021. These features include a range of collaborative systems that prioritise building safety alongside delivery of net zero carbon targets and the Construction Playbook Compact with Industry. These features also include the agreement of 'gold standard action plans' by Clients and suppliers to convert framework objectives into actions and timetables that deliver improved economic, social and environmental value.

10.3 The role of term alliances

A term alliance governs the issue of orders for services, works or supplies over an agreed period of time, for example in respect of repairs and improvements or the direct procurement of equipment and materials. The potential duration of a term alliance offers scope for the development of collaborative systems that recognise agreed objectives, for the parties to agree joint and individual activities that improve the prospect of achieving those objectives and for the measurement of success according to agreed targets.

If a term alliance governs a combination of planned, responsive, and cyclical tasks, it is particularly valuable as a procurement model for integrated and collaborative asset management through which:

- Capital improvements can reduce responsive and cyclical costs
- Repair and maintenance can reduce the risk of failure of project components and can avoid or delay the need for additional capital expenditure.

Example: The Welwyn Hatfield Borough Council housing term alliance won an Institute of Building Management award, and their *'many examples of good practice'* attracted praise from the Council's District Auditor. Their alliance governed the repair of 9,500 homes, creating a new culture under which:

- *'The shake-up in performance had clear financial advantages beyond the social benefits of housing more people and cutting the time they spend in temporary accommodation'*
- *'For example, the capital cost of increasing housing capacity (by building more houses instead of shortening the time properties are empty) would have been about £10 million'*
- *'Customer satisfaction, independently measured by MORI and monitored by a tenants' panel, showed solid improvements in landlord service, value for money, and quality of repairs and maintenance'*
- *'Viewings accompanied by Mears increased the number of tenants accepting the first property offered from 30% to 80%'*
- *'Void turnaround time more than halved, leading to quicker lettings and increased rent receipts'*
- *'Under Open-book pricing the annual cost increase for maintenance jobs ran below inflation.'*

Successful asset management depends on creating interfaces between the capital works team and the operation, repair and maintenance team. These interfaces give rise to provisions that should appear in collaborative construction contracts and should be mirrored in related term alliance contracts:

- Suitable intellectual property rights licences in respect of BIM models and other design documents that enable the operation, repair and maintenance team to access and use all available asset information
- A clear interface between the defects liability obligations of the capital works team and commencement of the obligations of the operation, repair and maintenance

team, with clarification as to who responds to notification of a problem and at whose expense

- An understanding of all exclusions and limitations in the liability of the design and construction team, including all specialist subcontractors, suppliers and manufacturers, so that it is clear where the operation, repair and maintenance team must step in to avoid leaving any gaps in the service
- Availability to the operation, repair and maintenance team of information regarding plant and equipment warranties, including the terms and conditions of those warranties, so that the operation, repair and maintenance team do not invalidate them through any act or omission
- A clear understanding of the specific obligations of the operation, repair and maintenance team in relation to warranted plant and equipment
- Clarity as to the liability of the capital works team, including subcontractors, suppliers and manufacturers, in the event of an error or omission by the operation, repair and maintenance team.

More ambitious term alliances can be crafted where the same provider is responsible for capital works and for operation, repair and maintenance works, and is incentivised to complete the capital works in a way that reduces on-going responsive and cyclical expenditure. Appropriate incentives could be, for example, a share of savings and/or the award of additional capital works projects linked to anticipated reductions in operation, repair and maintenance costs. The SCMG Trial Project led by Hackney Homes and Homes for Haringey combined capital and responsive works with direct client/subcontractor relationships giving rise to extended warranties and other long-term benefits.

10.4 The benefits of modern methods of construction ('MMC')

In 2018 the House of Lords reported that the benefits of modern methods of construction ('MMC') include:

- *'Better quality'*
- *Enhanced client experience*
- Fewer labourers and increased productivity

- More regional jobs away from large conurbations
- *Improved health and safety for workers*
- *Ensure buildings meet quality assurance standards*
- *Improved sustainability*
- *Reduced disruption to the local community during construction’.*

The Construction Playbook emphasises the potential of MMC and of ‘*product platforms comprising of standardised and interoperable components and assemblies.*’ It requires Clients to collaborate in finding opportunities for cross-sector platform solutions and it states that ‘*procurements and frameworks should support this*’. The Playbook also recognises the potential for ‘*Greener solutions as a result of an increase in manufacturing approaches*’ and requires that ‘*solutions put forward by potential suppliers are accompanied by a whole life carbon assessment*’.

Modular construction, offsite fabrication and other MMC solutions depend on factory production lines, and these in turn require the long-term commitments that are created by an alliance. MMC solutions also depend on the prominent and early involvement of manufacturers, and this can be established through a system of Supply Chain Collaboration.

The September 2020 report ‘*Build Homes, Build Jobs, Build Innovation – A Blueprint for a Housing Industrial Strategy*’ explains how ‘*more innovative and progressive contracts reflect earlier and closer engagement with manufacturers, for instance the ACA Framework Alliance Contract (FAC 1) for long-term strategic relationships enabling one or more clients to integrate housing programmes that are delivered through smart construction linked to separate design, construction and operation contracts*’. The same report recognises the value of long-term contractual commitments under a TAC-1 term alliance contract where this approach was adopted by the Royal Borough of Greenwich and Ideal Modular.

Supply Chain Collaboration under a framework alliance or term alliance enables the appointed Principal Contractor (whether this is a general contractor or an MMC specialist) to lead reviews of sub-contracted supply chain members that establish longer-term, larger-scale supply chain contracts and attract improved MMC investments and commitments. The Trial Projects have demonstrated how ESI using Supply Chain Collaboration strengthens and

improves commercial MMC relationships with subcontracted supply chain members through:

- A better understanding of the programme of work and an opportunity to achieve competitive advantage by demonstrating proposals for improved design/risk management/programming.
- The opportunity to win larger amounts of work for longer periods than originally anticipated
- The opportunity in pre-construction phase discussions to influence directly the approach taken by the Client(s) and/or Principal Contractor(s) to any aspect of the project or programme, so as to improve efficiency and reduce risk in delivery of the subcontractor or supplier work/service/ supply packages.

10.5 The role of strategic performance measurement and incentives

The Construction Playbook recognises that portfolios and longer-term contracting ‘*will give the industry the certainty required and make it commercially viable for suppliers to invest in innovative new technologies and MMC*’. Powerful incentives can be agreed at a strategic level under a framework alliance or term alliance and can be linked to performance of successive projects or tasks. The strongest incentive for team members is likely to be the prospect of earning additional work through:

- The award of additional projects under a framework alliance contract
- The issue of additional orders under a term alliance contract
- The extension of the duration, or the expansion of the scope, of a framework alliance contract or a term alliance contract.

ESI using Supply Chain Collaboration under a framework alliance or term alliance can be linked to rewards that optimise the motivation for all parties to think long-term and act collectively where:

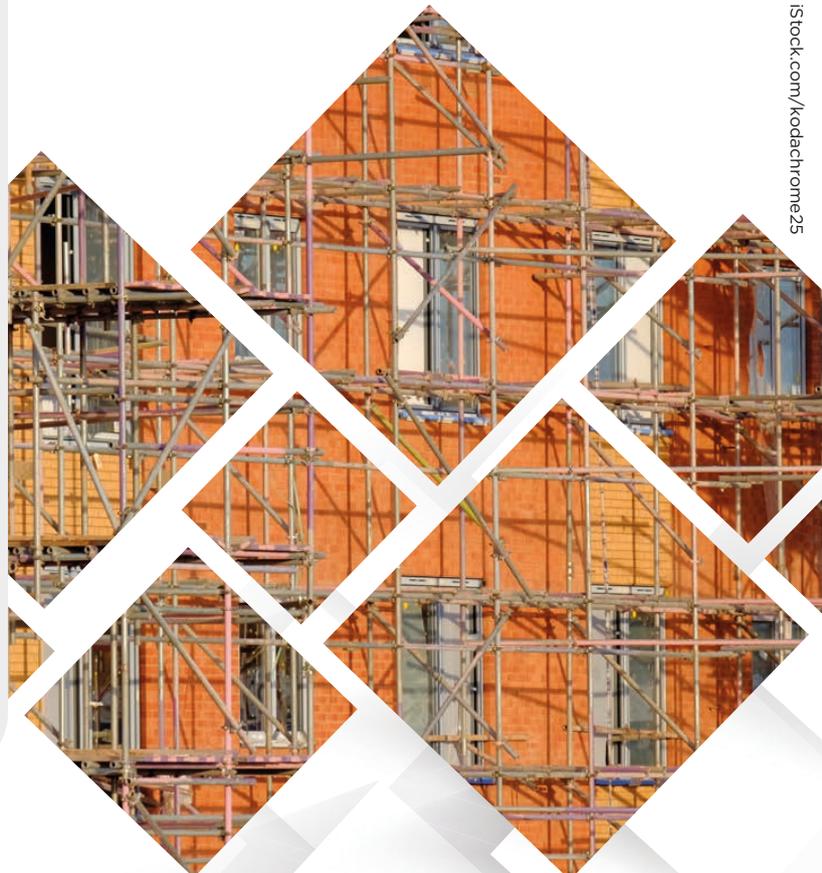
- Contractors, consultants, subcontractors and suppliers are incentivised by the prospect of a continued pipeline of work
- Clients can expect and measure continuous improvement
- Alliance members can capture lessons learned and pass them on from project to project

- Joint commitments to new processes are replicated and can become standard business practices.

A framework alliance contract or term alliance contract should include the success measures and targets that determine the award of work and should state who evaluates the alliance members' performance and capacity for these purposes. For example, FAC-1 and TAC-1 provide for incentives which include not only additional payments such as shared savings but also adjustment to the amounts of work awarded and extension of the agreed scope and duration of the alliance.

More details are set out in:

- *'Effectiveness of Frameworks'*, 2012, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61157/Procurement-and-Lean-Client-Group-Final-Report-v2.pdf
- *Local Government Association National Construction Category Strategy for Local Government, Effective Construction Frameworks 2020 edition* https://constructingexcellence.org.uk/wp-content/uploads/2020/12/National-Construction-Strategy_2020-Edition.pdf
- *'Modernise or Die, Time to decide the industry's future'*, 2016, <http://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2016/10/Farmer-Review.pdf>
- *'Build Homes, Build Jobs, Build Innovation - A Blueprint for a Housing Industrial Strategy'*, 2020, <https://www.hta.co.uk/storage/app/media/build-homes-build-jobs-build-innovation.pdf>
- The FAC-1 and TAC-1 website www.allianceforms.co.uk.
- *'Constructing the Gold Standard', An Independent Review of Public Sector Construction Frameworks*, <https://www.gov.uk/government/news/launching-the-independent-review-of-construction-frameworks>



11 What improved economic, social and environmental value can collaborative procurement achieve?

This guidance has explored the importance of collaborative procurement processes, relationships and activities in optimising project safety and quality compliance for in-scope buildings. This section considers the other ways in which collaborative procurement has been proven to improve economic, social and environmental value. It illustrates Dame Judith's Hackitt's prediction that new procurement practices that improve safety can also 'lead to a significant increase in productivity'. It also mirrors the commitment in the 2020 Construction Playbook that improved procurement practices can deliver 'better, faster and greener solutions that support our recovery from the COVID-19 pandemic and build the economy of the future while improving building and workplace safety'.

Dame Judith Hackitt's Independent Review:

A clear and proportionate package of responsibilities for dutyholders across the building life cycle... means more time will be spent upfront on getting building design and ongoing safety right for the buildings in scope. This will create the potential for efficiency gains; scope for innovation in building practices; and value for money benefits from constructing a building that has longer-term integrity and robustness'. (Executive Summary, page 11)

11.1 Collaborative procurement and improved value

Collaborative procurement practices need to demonstrate benefits for public and private sector Clients and their teams in terms of improved value. Sustainable collaborative procurement models also need to balance cost savings with other improvements in economic value and with improvements in social and environmental value. For these purposes, team members should agree how they define value, what improvements they expect and how these improvements will be delivered.

The ISO 44001 implementation guide 'addresses the creation of value concept' and explains that organisations should 'identify external and internal issues and the needs and expectations of ... stakeholders and how value is delivered to them'. The ways of delivering value should also be set out in agreed processes, contributions and deadlines that are supported by contractual commitments.

Key points - Section 11: What improved economic, social and environmental value can collaborative procurement achieve?

- Assess and agree how collaborative procurement systems demonstrate improved value for the Client (11.1)
- Assess and agree how collaborative procurement systems demonstrate improved value for Principal Designers, Principal Contractors and all other consultants, contractors, sub-contractors and other supply chain members (11.2)
- Assess proposals for improved cost certainty and cost savings where these do not compromise safety or quality (11.3)
- Assess the benefits of proposals for other improved economic value such as improved performance and extended warranties where these do not compromise safety or quality (11.4)
- Assess the benefits of proposals for improved social value where these do not compromise safety or quality (11.5)
- Assess the benefits of proposals for improved environmental value where these do not compromise safety or quality (11.6).

ISO 44001 suggests that collaboration should demonstrate improved value in terms of:

- *'Delivery performance and outputs*
- *Improved risk profile*
- *Continued alignment of objectives*
- *Behaviour and trust*
- *Enhanced collaborative profile/skills*
- *Additional value created*
- *Issue management'*

When seeking improved value, ISO 44001 proposes that a collaborative team needs to:

- *'Define what 'value' means to the collaborative partners*
- *Provide a mechanism for the capture of innovation and ideas for improvement*
- *Provide a method for performing analysis and evaluation of ideas and innovations against relevant criteria...*
- *Establish a method for reviewing the success or failure of value creation initiatives and record lessons learned for future use'.*

Over the period from 2013 to 2018 Constructing Excellence led the collection of evidence through detailed analysis of Trial Projects by reference to HM Treasury benchmarks, which showed how the teams working on these projects agreed and delivered significant improvements in economic, social and environmental value. Evidence collected from the Trial Projects demonstrated:

- Improved safety
- Improved quality
- Improved cost certainty and cost savings
- Improved supply chain relationships
- New local and regional opportunities
- Improved training and employment outputs
- Reduced impact on the environment.

11.2 Achieving benefits for all team members

In order to be sustainable, a collaborative procurement model needs to reward all team members, taking into account the view expressed by Sir John Armit at the 2016 launch of FAC-1 that *'as the demand for construction*

and infrastructure services increases, procurers and suppliers are looking at delivery structures which will provide not only sustainable, long term value to the procurers but also, more consistent, better margins for contractors, supply chain members and professional teams'.

Clients and their advisers, in line with the *'Two Stage Open Book'* guidance, should use the *'maximum opportunities to learn in detail what matters most to the tier 1 contractor and to each tier 2 or 3 subcontractor and supplier in how they go about their work, and what steps can be taken to improve the ordering and organisation of this work so as to maximise the opportunities for savings and other improved value.'*

For example, the early review and validation of designs and costs by contractors and subcontractors can significantly reduce the design risks for consultants, leading to the safety, quality and buildability of those designs being signed off by all team members. In 2016, the Civil Engineering Contractors Association reported that *'the widespread adoption of early contractor involvement by clients would drive down costs for both clients and contractors.'* Proven contractor benefits from collaborative procurement, cited in Two Stage Open Book guidance, also include:

- *'Early appointment ... that creates a stable basis for pre-construction phase activities leading up to authority for the project to commence on site'*
- *'Open Book costing combined with prior agreement of ... fees/profit/overheads to ensure that agreed cost savings do not erode margins'*
- *'Joint working during the pre-construction phase that enables the tier 1 contractor to influence robust programming and early risk management activities, so that the project proceeds to the construction phase on an agreed basis supported by maximum information'*
- *'Creation of an environment in which ... contractors can demonstrate savings and other improved added value in order to obtain additional work, contract extensions and other agreed incentives such as shared savings'.*

Sir Michael Latham commented in 2010 that collaborative ESI *'motivates the team to drive down cost in a systematic way. It also helps identify carbon reduction and energy efficiency measures, as well as opportunities*

for employment and skills during the conditional pre-construction phase. These can be properly costed and jointly assessed with key subcontractors and manufacturers at a time when all team members have the same objective, namely to finalise a brief within budget so that work can proceed on site’.

11.3 Improving cost certainty and cost savings

For a Client to obtain cost savings on a project may suggest a reduction or compromise in quality or some other aspect of the project. However, as considered in Section 6.4, collaborative ESI provides mechanisms to achieve cost savings that do not cut corners, that are agreed in advance and that are not to the financial detriment of any team member. In addition, the Trial Projects reported how agreed cost savings can be combined with other improved value such as extended warranties, social benefits and sustainability initiatives.

The Trial Projects show how consultants working together with contractors and subcontractors early in the design phase can improve cost certainty by building up accurate fees, margins and cost components rather than a single stage bid price with little evidence of how it was arrived at. The Trial Project case studies also provide robust evidence of agreed cost savings that are attributable, for example, to:

- Accelerated mobilisation so as to increase productivity
- Revised designs such as a more efficient site layout
- A revised programme with a more economical sequence
- A revised approach to risks, for example following additional site investigations
- Revised working methods to improve efficient interfaces between team members.

Example: In the use of collaborative ESI for the development of a residential care home by Bath and North East Somerset Council, Leadbitter Construction commented that they were ‘involved in the whole process from inception to completion, assisting the client and design team to find the most cost-effective solution throughout each stage of the design.’

A collaborative approach to risk management activities during the pre-construction phase can also identify ways to save cost by reducing or eliminating risk contingencies. For example, Trial Projects have required that all proposed risk contingencies are notified to the Client by other team members prior to their pre-construction phase appointments and are only included in agreed prices after joint reviews and after implementation of agreed risk management activities.

Trial Project results also show how savings can be enhanced by learning from project to project and by Supply Chain Collaboration.

Example: The cost savings on the housing procurement comprising the SCMG Trial Project averaged 14% over the life of collaborative frameworks led by Hackney Homes and Homes in Haringey, plus average price rises substantially below the tender price inflation forecasts provided by independent consultants.

Example: Glasgow Housing Association used collaborative ESI on its stock refurbishment and new build programme, where Savills as independent adviser commented that ‘The ability to get the constructors on board early and to involve them in the design, programming and scoping decisions before works began undoubtedly saved the client – and the constructors – hundreds of thousands of pounds.’

Example: Under the Royal Borough of Greenwich term alliance governing housing repairs: ‘Performance for the first full year showed immediate improvements with time to re-let vacant properties down by 23% from 43 to 33 days, average time for non-urgent repairs down from 18 to 11 days, complaints down by 50% and post-job satisfaction scores of 95%. Improved communication and joint working were key changes. “Open-book” accounting and supply chain management led to savings to such an extent that the client agreed to extend the scope of work to compensate for falling contract values.’

Example: Early housing sector users of the FAC-1 contract reported significant cost savings, for example 9.3% recorded by Futures Housing Group.

11.4 Improving other economic value

Collaborative procurement establishes new lines of communication between the Client, the Principal Designer, the Principal Contractor and other consultants, contractors, subcontractors, suppliers, manufacturers and operators. These in turn create opportunities for improved integration, information and innovation which can lead to better design solutions and can encourage extended warranties.

Example: Through ESI supply chain collaboration, the SCMG housing framework alliance secured the *'Availability of extended warranties above industry standards, managed by suppliers/installers, such as windows warranted for 30 years.'*

Example: Under a term alliance awarded by Maidstone Housing Trust:

- *'Cost and time efficiencies were key to the client so that savings could be reinvested in the programme, but the works were complex and a robust structure was needed if these efficiencies were to be achieved.'*
- *Working closely with the client team, VINCI Facilities identified alterations that could be made to the properties to meet design specifications and minimum storage requirements.*
- *They also found alternative materials to those specified by the client that matched longevity and durability and gave rise to time and cost savings, sufficient for an additional four properties to be upgraded.'*

Example: On the Hackney Rogate House project:

- *'the collaborative approach to design also allowed agreement of aesthetic improvements such as external metal balconies which were designed and installed in collaboration with the balcony supplier for a cost less than that incurred at Alma House'*
- *Completion of works at Alma House had taken 115 weeks to refurbish 108 flats whereas at Rogate House it took 90 weeks to refurbish 192 flats. The Rogate House team had worked at approximately double the speed.'*

Example: On the asset management alliance awarded by Welwyn Hatfield Council:

- *'Customer satisfaction, independently measured by MORI and monitored by a tenants' panel, showed solid improvements in landlord service, value for money, and quality of repairs and maintenance'*
- *Viewings accompanied by Mears increased the number of tenants accepting the first property offered from 30% to 80%.*
- *The former chair of the tenants' panel commented that "The reduced void turnaround time has enabled more families to move in and the tenants really like the viewings which are much friendlier".'*

11.5 Improving social value

Collaborative procurement increases opportunities to deliver social value, and the Construction Playbook requires that *'Social value should be explicitly evaluated in all central government procurement, where the requirements are related and proportionate to the subject-matter of the contract'*. Social value can include improved skills and employment, improved health and safety at work, new opportunities for local and regional businesses and a range of community benefits.

The Social Value Act 2012 requires all public sector bodies to factor in economic, social and environmental well-being when commissioning public services contracts. In addition, the September 2020 Procurement Policy Note (PPN 6/20) launched a new model to deliver social value through government commercial activities, requiring government organisations to *'use this model to take account of the additional social benefits that can be achieved in the delivery of its contracts, using policy outcomes aligned with Government priorities'*.

PPN 6/20 requires that social value is explicitly evaluated in all central government procurements, rather than just *'considered'* as required under the Public Services (Social Value) Act 2012, wherever these social value requirements are related and proportionate to the subject matter of the contract. The range of social value described in PPN 6/20 covers:

- Helping local communities to manage and recover from the impact of COVID -19
- Creating new businesses, new jobs and new skills
- Increasing supply chain resilience and capacity
- Effective stewardship of the environment
- Reducing the disability employment gap
- Tackling workforce inequality
- Improving health and wellbeing
- Improving community integration.

Example: On the Whitefriars Housing framework alliance *'establishment of a steady volume of work enabled both constructors to operate using a stable workforce and to increase their efficiency on site... The client, with both constructors and in partnership with Mowlem, established the Whitefriars Housing Plus Agency which secured training opportunities for 38 people in the first year and a total of over 200 during the programme as a whole.'*

Employment and training opportunities are examples of the social value that can be delivered as part of a construction project. The government has recognised the importance of making *'effective use of public procurement to encourage skills development in construction*

supply chains' (BEIS, 2018). Collaborative construction procurement can create and deliver commitments to improve employment and skills opportunities throughout the supply chain and can use detailed and proportionate benchmarks for this purpose such as those provided by the Construction Industry Training Board.

Example: The Maidstone term housing alliance reported how *'Working in partnership with Mid-Kent College, VINCI Facilities developed a training scheme that equipped a core team with the necessary skills to finish all kitchen and bathroom works on any given property'* and *'a similar partnership with North Kent Construction Skills allowed VINCI Facilities to extend its training outside the business by offering extensive work experience placements, a number of which have now developed into apprenticeships.'*

Social value can include increased opportunities for SMEs and for local and regional businesses. The Construction Playbook recognises that *'SMEs are experts in their fields and can provide insight into MMC, innovative technologies and ways to minimise the GHG footprint of the proposed solutions across their whole lifecycle'*.

Example: Hackney Homes and Homes for Haringey used the SCMG housing framework alliance to create *'additional employment and skills opportunities for individuals, for example 46 new apprenticeships over the first 18 months of the Hackney programme, plus establishment of the Building Lives Training Academy where apprentices who have got NVQ Level 1 are engaged by constructors/specialists according to demand of ongoing work so as to achieve NVQ Level 2 after 15/18 months.'*

SMEs and local and regional businesses can be selected and appointed directly by the Client, for example by sub-dividing a project into specialist packages through collaborative construction management.

Where a Client does not want to take on the responsibility of appointing local and regional

businesses directly, it can create new opportunities by working with tier 1 contractors and using Supply Chain Collaboration as described in Section 6.3 to explore the benefits of them appointing local and regional subcontractors, suppliers, manufacturers and operators.

Example: The Futures Housing Group programme created a tender with *'measures attractive to SMEs but open to all'* and features that benefit small businesses such as *'cashflow easing features that included the provision of key materials in certain lots on a free issue basis, such as heating installations, bathroom installations and electrical works'* and *'proposals to have embedded payment cards with the contactors, enabling them to claim payment immediately on agreement of final account'*. As a result of this approach:

- *'Of the 23 contractors invited to join the Framework, only two are non-SME'*
- *'The average size of the other companies is less than 25 employees.'*

Example: The SCMG housing framework alliance established *'early joint appointment of comprehensive range of SME Tier 2 and Tier 3 supply chain members'* and created new opportunities for SME subcontractors and suppliers. They described how:

- *'Through the SCMG systems, new lines of client contact are established with tier 2 and tier 3 supply chain members at an early stage in the preconstruction process so that they can make maximum contributions to design, resident consultation, surveying and programming and can work in conjunction with the client and tier 1 contractors'*
- *'The SCMG systems have demonstrated a breakthrough in enabling public sector clients to deal directly with key subcontractors and suppliers so as to ensure they build up fully integrated working relationships'*
- *'A multi-client, multi-contractor team has engaged with a wide range of SME subcontractors and suppliers under a standardised system.'*

A contractual Supply Chain Collaboration process describes collaborative subcontract reviews led by tier 1 contractors after their own early appointments. It can ensure that these reviews take account of the particular benefits that local and regional businesses may offer in terms of safety, quality, cost, sustainability and other relevant factors. This approach offers a major breakthrough for central and local government and for other public sector clients who wish to support the local and regional economy without making multiple direct appointments or infringing Public Contracts Regulations. Trial Project case studies demonstrate how these systems have worked and how social benefits can be obtained.

11.6 Improving environmental value

The Construction Playbook expects contracting authorities to *'set out strategies and plans for achieving net zero GHG emissions by or ahead of 2050 for their entire estate/ infrastructure portfolio'*, and it states that *'systems and processes should be in place to ensure their projects and programmes deliver on the targets set'*.

Company directors have a statutory duty to have regard to *'the impact of the company's operations on the community and the environment'* (Companies Act 2006, Section 172.1(d)), and there is a pressing need for approaches to procurement that fulfil this duty. For example, the search for ways to maximise energy efficiency and reduce waste can benefit from ideas developed not only by design consultants but also by contractors, subcontractors, manufacturers and operators.

The Construction Playbook states that *'Contracting authorities should require that solutions put forward by potential suppliers are accompanied by a whole life carbon assessment. This should be conducted in collaboration with the wider supply chain, reflecting ways of minimising the GHG emissions across the life of the asset'*. In order to evaluate and utilise proposals for improved sustainability, it is essential to engage with supply chain members using ESI during the planning and pre-construction phase of the project. By inviting proposals at a time when they can be jointly reviewed, costed and integrated in the delivery processes, a project team can deliver significant reductions in environmental impact.

Relevant contributions, as demonstrated in Trial Project case studies, include:

- Proposals as to the most buildable and least wasteful interpretation of consultant designs
- Proposals in respect of reduced waste and increased recycling
- Proposals as to the efficient use of energy on site, including modern methods of construction such as off-site fabrication
- Proposals as to the efficient use of energy by reduced maintenance and repair in the operation of the built facility.

Collaborative procurement can deal with the conflicting pressures of cost management and improved sustainability whereas these pressures can undermine a traditional single stage approach. If single stage bidders are asked to put forward sustainability proposals, they may hold back or compromise good ideas in order to reduce their bid prices. Following a single stage bid, clients may reject sustainability proposals as unaffordable or unbuildable having had no preconstruction phase opportunities to investigate them in detail.

Collaborative ESI and Supply Chain Collaboration enable the cost and quality benefits of sustainability proposals to be developed thoroughly and to be assessed by all team members. This provides clients, as noted by Housing Forum in *'Stopping Building Failures'*, with *'the means to evaluate the cost of environmental issues ...and to balance this against their demonstrable benefits'*.

Example: The SCMG housing framework alliance reported subcontractor/supplier innovations in proposed new materials and development of specifications, such as *'future-proofing green roofs at no additional cost and upgrading windows from Grade C to Grade A at no additional cost.'* The SCMG alliance also reported that supply chain members offered *'improved repairs and maintenance through, for example, self-cleaning glass on high rise blocks'* and *'more sustainable solutions including external wall insulation.'*

Example: On a five-year, multi-client programme, the regional National Change Agent housing consortia achieved: *'efficiency savings totalling £226 million from cumulative expenditure of £1.6 billion', 'over 500 apprentices successfully completing NVQ training to levels 2 and 3 and helped into full employment, with 80% retention', 'establishment of numerous SME businesses and social enterprises' and 'a joint initiative with WRAP to halve waste to landfill.'*

The new lines of communication and the additional time created for joint working on the Trial Projects led to team members offering new proposals for sustainable solutions that were practical and affordable within the Client's budget.

The Trial Projects also showed how environmental initiatives can be combined with support for SME businesses, particularly where the scale of the programme enables consistent procurement practices and where collaborative systems facilitate an exchange of ideas.

More details are set out in:

- Two Stage Open Book and Supply Chain Collaboration Guidance (2014) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/325014/Two_Stage_Open_Book_Guidance.pdf
- Association of Consultant Architects (2010), 10 years of Partnering Contracts. <http://ppc2000.wiserhosting.com/wp-content/uploads/2016/12/10-Year-Anniversary-PPC-and-5-Year-TPC.pdf>
- Benefits and costs: Leading health and safety at work (hse.gov.uk)

12 What are the benefits of collaborative techniques and lessons from other industries?

This section outlines how dutyholders can enhance safety and quality outcomes by applying lessons learned from successful collaboration in other industries in order to create and sustain collaborative teams. The Construction Playbook states that *'Trust is key and it is important that a mutually beneficial, open and collaborative approach is adopted during the process in sharing ideas and innovative solutions'*.

Dame Judith Hackitt's Independent Review:

'To support the culture change, those who work in the built environment need to learn from the good practices in other sectors where the need to preserve and protect safety performance has long been an integral part of contract negotiation and agreement.' (Section 9.4, page 108)

Often the construction industry focuses on the individual's role in project delivery and dismisses the benefits of a structured approach to collaboration, which means that highly effective teamworking and relationship building are not prioritised.

Key points - Section 12: What are the benefits of collaborative techniques and lessons from other industries?

- Agree processes for developing trust and raising issues through early identification and collective resolution of problems so as to confront issues without being confrontational (12.1)
- Apply systems for consensus-building and decision-making that encourage team members to air views and suggestions openly (12.2)
- Agree how team members hold each other to account in terms of behaviours or performance without jeopardising collaborative working relationships (12.3)
- Consider the benefits of independent advice and team coaching (12.4)
- Consider techniques that improve collective performance in other industries (12.5).



12.1 Developing trust and raising issues

Historically, the construction industry has suffered from a reluctance to raise issues or concerns at project or programme team level for fear of this being considered a negative or disruptive influence. The ability to raise concerns is important to improving performance, and it requires trust that other team members will take these concerns seriously and will not be protective of their interests in a way that hinders progress,

Collaborative procurement and contracts encourage the early and open identification of issues, and high-performing teams can focus on collectively resolving these issues, not on blaming individuals or organisations. In this way they are better able to develop the mutual trust required to confront issues without being confrontational.

In this context trust is the confidence among team members that their peers' intentions are constructive and that there are no reasons to be protective or suspicious of these intentions. The ability of team members to acknowledge vulnerabilities is a pre-requisite to improving performance, and it goes hand in hand with contracts that clearly describe collaborative relationships and processes and equitable risk management.

12.2 Systems for consensus-building and decision-making

There are many examples from other industry sectors of teams who have delivered highly successful projects or programmes despite a measure of disagreement among team members. Collaborative benefits come from team members openly airing their views and suggestions, thereby encouraging commitment to adhere to the most persuasive line of debate, even if some individual team members' views differ from the majority.

The military adage of *'better to make a decision than no decision'* should encourage team members to unite behind decisions, even if there is some uncertainty about the outcomes. Collective support for a decision also promotes a greater degree of confidence among those outside the project or programme team, showing how the team is willing to sacrifice some entrenched positions in favour of a collaborative commitment to resolve a problem and avoid a conflict.

That said, it is also important to ensure that disagreements are subject to a process of persuasion that ultimately leads to consensus. For example, the Core Group considered in Section 7.3 requires unanimous decisions made by those members in attendance in order to avoid a majority vote undermining the collaborative commitments of the minority.

Problems will arise if the search for consensus is not a proactive process of persuasion or if the need for consensus allows people to default to the lowest common denominator. Also, many project innovations and specialist contributions depend on delegated authority and professional judgment rather than seeking agreement at every stage. Consensus-building needs to be supported by leadership and active teamwork.

12.3 The links between collaboration and accountability

Project teams are often reluctant to hold each other to account in relation to problems in each other's behaviour or performance, for fear of jeopardising good working relationships. In a collaborative project team, any one member should feel able to make clear a perceived problem in another member's behaviour or performance and should also want to be told if it is letting its peers down in any way. Notifying these problems encourages a healthy respect amongst all team members, but it also depends on individual team members trusting each other to seek solutions that are consistent with a culture of collective accountability.

Inattention to the performance of other team members encourages an individual team member only to focus only on its own position, to the detriment to the collective performance of the team as a whole. In contrast, teams should emphasise the status and performance of the team as opposed to that of individual members, for example by using tools such as the *'balanced scorecard'* to establish and monitor a range of collective measures.

12.4 The role of independent advice and team coaching

Sir Michael Latham recommended in his 1994 report *'Constructing the Team'* the need for *'serious training, deep culture change led from the top and continuous reinforcement'*. He emphasised that *'clients and contractors cannot go to bed on Friday night as an adversarial client or contractor and wake up on Monday morning as a partnering convert'*. Latham perceived that progress depends on the need to challenge a

'cynics bestiary' of those 'who do not believe in partnering' as comprising six fundamental types: 'the stick-in-the-mud', 'the jobsworth', 'the one who just doesn't get it', 'the die-hard sceptic', 'the control freak' and 'the young people who don't believe in partnering because they have been fed a poisoned account'. Independent advice and team coaching can help to overcome bias, preconceptions and unhelpful attitudes.

Example: Under a term alliance awarded by Havelok Homes: 'Workshops facilitated by the independent adviser clarified each party's role and flagged up some vital pre-commencement tasks to be added to the agreed timetable. These encouraged a climate of good faith that eliminated mistrust and promoted a 'can-do' attitude.'

The Construction Leadership Council 2018 report 'Procuring for Value' noted that 'the experience of contractors and quantity surveyors is that new forms of contract are often poorly understood within the supply chain. Representatives of all team members need to develop knowledge, experience, and commitment to collaborative procurement processes, including:

- An informed commitment to support the agreed alliance processes
- A full understanding of how and why alliance processes work
- The capability to make prompt decisions in accordance with the agreed governance system'.

It is tempting to suggest that, if a collaborative team needs independent advice, it is likely to be in trouble. However, the Construction Industry Council Partnering Task Force concluded in their 2000 'Guide to Project Team Partnering' that it is unrealistic to expect project teams to adopt collaborative approaches to procurement without the benefit of professional advice. Their view was that, while the ideal number of advisers to support new project processes is 'zero', the next best number is 'one', namely an independent adviser who can be seen as an ombudsman for the team. They proposed the appointment of an independent adviser accountable to all team members who could 'prepare (on an even-handed basis) the documents that record the team's commitments, procedures and expectations.'

An independent adviser should always offer a positive and constructive approach in his or her advice to team members. In order to maintain impartiality and objectivity, consideration should be given to all team members contributing equally to the cost of the independent adviser's fees.

An independent adviser may encounter obstacles if:

- Clients and other team members are reluctant to spend money on independent advice
- Advisers to individual team members reject independent advice because they see it as questioning their own advice
- Project managers reject independent advice because they see it as questioning their objectivity
- Team members assume that independent advice is required only for the resolution of disputes.

Collaborative procurement can benefit from ongoing support, advice and team coaching from an independent adviser. Feedback from the use of collaborative contracts, both at project and strategic levels, indicates that an independent adviser to the project team can help to improve performance and can assist in delivering better outcomes, including improved safety and quality.

The appointments of an independent adviser vary considerably, but common themes are the provision of fair, impartial and constructive advice on the interpretation and implementation of procurement systems and contract terms, on the management of risks and on the avoidance or resolution of disputes. In some instances, this role has been extended to include formal or structured team coaching. If the team members themselves create the collaborative rules within which they will operate, it is easier for everyone to abide by those rules.

Tony Lewellyn stated that 'Project team coaching is the application of a series of interventions that enable a project team to develop and implement the collaborative behaviours required to deliver the desired outcomes of the stakeholders, to the performance standards that the team expect of themselves'. Whilst it is not uncommon for individuals to receive personal coaching, the structured and effective coaching of team members together is far less prevalent.

Team coaches can ask constructive yet challenging questions of the team members and help the team hold itself to account for its collective performance. A team coach can be open and candid without being judgmental and can encourage all members of the team to be honest about their concerns and vulnerabilities without being judged.

Although the role of the independent adviser and/or team coach has been proven to be beneficial, it is vital that the person fulfilling that role does not become the de facto leader of the team. The team must be led by its appointed leader(s), as considered in Section 9.1, so as to avoid the risk of losing focus when the independent adviser or the team coach is not present.

12.5 Adopting lessons from other industries

There are valuable lessons that the construction industry can learn from other industries in order to improve safety and quality outcomes through collaborative procurement.

In an endeavour to chase often exacting deadlines and performance targets, industry teams frequently overlook the need to actively manage their relationships with the same degree of diligence as they manage their operations on site. The *'opportunity cost'* of this in terms of increased tensions with the team, duplication and associated inefficiencies was adroitly summarised by professional basketball coach John Wooden: *'If you don't have time to do it right, when will you have time to do it over?'* In other words, a team should focus on getting it right first time.

This section describes how the construction industry can benefit from adopting lessons learnt from other industry sectors, with particular reference to specific recommendations in this guidance:

■ Lessons for early supply chain involvement that improves safety and reduces risks

McKinsey & Company studied how construction has learned or might learn from the responses of other industries to external disruptive influences. They describe how, as *'ship, aircraft, and car manufacturing shifted to assembly lines, the supply of critical components was increasingly important. In many cases, those components were the basis of differentiation: in car manufacturing, for example, the quality of*

engines could be a distinctive factor. Therefore, it was important to control the supply. Vertical integration or partnerships along the value chain were common in each industry. In commercial aircraft manufacturing, engines were, and are, produced by external suppliers but, in order to develop better-quality and more efficient engines than their competitors', manufacturers hold integrated partnerships in R&D and testing.'

■ Lessons for collaborative relationships that improve commitments and involve residents (1)

Google undertook studies to improve organisational and operational performance. *'Re:Work with Google'* describes how *'much of the work done at Google, and in many organizations, is done collaboratively by teams. The team is the molecular unit where real production happens, where innovative ideas are conceived and tested, and where employees experience most of their work. But it's also where interpersonal issues, ill-suited skill sets, and unclear group goals can hinder productivity and cause friction.'*

In 2012, Google launched *'Project Aristotle'* to better understand what key factors contributed to effective team working. They identified the following five essential dynamics:

Psychological safety: *'Psychological safety refers to an individual's perception of the consequences of taking an interpersonal risk or a belief that a team is safe for risk taking in the face of being seen as ignorant, incompetent, negative, or disruptive.'*

This is supported by Amy C. Edmondson in *'The Fearless Organization'* (2019), where she illustrates how the concept of *'psychological safety'* is gaining significant traction in other industries, for example in healthcare and multi-media. She defines psychological safety as *'a belief that neither the formal nor informal consequences of interpersonal risks, like asking for help or admitting a failure, will be punitive. In psychologically safe environments, people believe that if they make a mistake or ask for help, others will not react badly. Instead candor is both allowed and expected'*.

Re:Work with Google offers the following recommendations:

- Establish a fundamental understanding of the principles behind psychological safety
- Solicit input and opinions from the group.

- Share information about personal and work style preferences and encourage others to do the same.

Dependability: *'On dependable teams, members reliably complete quality work on time (vs the opposite - shirking responsibilities).'*

Re:Work with Google offers the following recommendations:

- Clarify roles and responsibilities of team members.
- Develop concrete project plans to provide transparency into every individual's work.

Structure and clarity: *'An individual's understanding of job expectations, the process for fulfilling these expectations, and the consequences of one's performance are important for team effectiveness. Goals can be set at the individual or group level, and must be specific, challenging, and attainable. Google often uses Objectives and Key Results (OKRs) to help set and communicate short and long term goals.'*

Re:Work with Google offers the following recommendations:

- Regularly communicate team goals and ensure team members understand the plan for achieving them.
- Ensure team meetings have a clear agenda and designated leader.
- Consider adopting Objectives & Key Results (OKRs) to organize the team's work.

Meaning: *'Finding a sense of purpose in either the work itself or the output is important for team effectiveness. The meaning of work is personal and can vary: financial security, supporting family, helping the team succeed, or self-expression for each individual, for example.'*

Re:Work with Google offers the following recommendations:

- Give team members positive feedback on something outstanding they are doing and offer to help them with something they struggle with.
- Publicly express your gratitude for someone who helped you out.

Impact: *'The results of one's work, the subjective judgement that your work is making*

a difference, is important for teams. Seeing that one's work is contributing to the organization's goals can help reveal impact.'

Re:Work with Google offers the following recommendations:

- Co-create a clear vision that reinforces how each team member's work directly contributes to the team's and broader organization's goals.
- Reflect on the work you're doing and how it impacts users or clients and the organization.
- Adopt a user-centred evaluation method and focus on the user.

■ Lessons for collaborative relationships that improve commitments and involve residents (2)

In *'Team of Teams'* (2015), General Stanley McChrystal describes how the Joint Special Operations Task Force successfully eliminated siloed working in favour of effective collaborative working amongst a series of diverse teams, to produce superior results as opposed to more insular competitive or non-collaborative working. In a construction context, this principle illustrates how independent *'centres of excellence'* or expertise, such as those within Client, adviser and supply chain organisations, can be maintained while at the same time encouraging highly effective collaboration and communication between them.

The Royal Air Force Aerobatic Team, the Red Arrows, place great emphasis on their debriefing sessions following each training or display sortie. Those sessions are conducted in a highly structured manner, where the sortie is analysed in detail with the purpose of confirming adherence to established operating procedures and also to identify opportunities for improvement. Each team member has an equal opportunity to comment (irrespective of rank) and all team members are expected to hold each other to account but in a constructive and non-judgemental way.

■ Lessons for collaborative relationships that improve commitments and involve residents (3)

Resident (customer)-centric relationships are vital, especially in the context of safety and effective engagement in relation to designs and specifications. McKinsey & Company describe how *'following specialisation in end-*

use segments, companies invested heavily to build strong brands within their market niches and segments. In car manufacturing, brands tell stories that are centred on the customers – and customers let the products shape their lifestyles. Given changes in how consumers acquire and use cars, automakers have emphasised their use of technology and innovation to enhance the customer experience.'

The Cleveland Clinic, one of the most innovative and forward-looking medical institutions in the USA is renowned for developing an approach that is patient-focused, more effective, more humane and more affordable. The 'Cleveland Way' is predicated on the active use of multi-speciality collaborative working to improve performance throughout all aspects of a patient's care and treatment. In 'The Cleveland Clinic Way' (2016), Toby Cosgrove describes how doctors are 'reorganising themselves to increase collaboration in dealing with specific patients and their illnesses' and how 'this collaboration is helping to produce breakthrough innovations in care'.

- **Lessons for systems that sustain and enhance a collaborative culture**

In 'The Business of Excellence' (2016), former Red Arrows pilot Justin Hughes refers to the importance of adhering to 'world class basics'. Notwithstanding the highly complex and high-stress environment in which the Red Arrows operate, they nevertheless focus on doing simple things exceptionally well, such as expecting full and timely attendance at meetings (literally counting down to the prescribed start time) and being fully prepared to contribute.

The principle of striving for performance improvement is echoed in elite sport. For example, in his work with the British Cycling Team, Dave Brailsford popularised the phrase 'aggregation of marginal gains' and illustrated how improving each element of competing on a bike by only 1% led to a significant aggregated and measurable increase in performance.

- **Lessons for using strategic collaboration to embed economic, social and environmental value**

In July 2020, McKinsey & Company surveyed 400 construction industry leaders for its report 'The next normal in construction: How disruption is reshaping the world's largest ecosystem'. Of those surveyed, a majority believe these nine disruptions will impact the industry within the

next five years. McKinsey analysed shifts in four industries with similar attributes, namely shipbuilding, commercial aircraft manufacturing, agriculture and car manufacturing. By studying these industries, it identified a number of patterns of relevance to collaborative procurement in the construction industry:

- **Product-based approach:** In shipbuilding, commercial aircraft manufacturing and car manufacturing, players shifted to a product-based approach for which production facilities became assembly sites. The most famous example is Ford's innovation of the assembly-line manufacturing process for its Model T. Most of the auto-manufacturing industry adopted the process within ten years. In this model, prefabricated and modularised subcomponents are inputs, and ships, airplanes and cars are outputs.
- While the manufacturing process was significantly standardised, products remained customisable because subcomponents could take various forms and sizes within an industry-wide, standardised framework. When early movers boosted their productivity and profit margins, competitors adopted the innovation over time. Toyota's lean manufacturing and use of robotics, and further innovations in the assembly-line manufacturing process, boosted the company from a small player to one of the largest in the industry.
- **Specialisation:** As industrialisation started to reform these industries and processes became standardised, companies targeted specific niches and segments (for example, tankers, freight ships, and cruise ships in shipbuilding and budget, luxury, and utility autos in car manufacturing). As a result of this specialisation, players created a competitive advantage by developing knowledge and scale in their market segment.
- **Value-chain control and integration with industrial-grade supply chains:** As ship, aircraft and car manufacturing shifted to assembly lines, the supply of critical components was increasingly important. In many cases, those components were the basis of differentiation: in car manufacturing, for example, the quality of engines could be a distinctive factor. Therefore, it was important to control the supply. Vertical integration or

partnerships along the value chain were common in each industry.

- In commercial aircraft manufacturing, engines were, and are, produced by external suppliers but, in order to develop better-quality and more efficient engines than their competitors', manufacturers hold integrated partnerships in R&D and testing. Also, Boeing recently decided to build the 777X wing internally (formerly outsourced) and also set up an internal avionics division to reduce reliance on suppliers of navigation, flight controls and information systems.
- **Investment in technologies and facilities:** Industrialisation created the need to invest in technology and facilities: manufacturing plants needed to be built, machinery needed to be acquired. Product and manufacturing innovation became important sources of competitive advantage, which led players to boost R&D spending significantly. In the four comparable industries, greater R&D spending led to short-term gains and advantages for the companies, while customers have benefited over the long term. Consider that the current cost of a car or airplane has changed little in the past ten to 20 years, but both cars and airplanes have significantly more value-adding technologies and other features.
- The trend has continued with investments by original-equipment manufacturers in the electric-vehicle-battery market – from R&D and packaging to cell production. Volkswagen recently invested in a battery-cell factory that it is developing in partnership with SK Innovation in Germany. It has also struck major supply deals with LG Chem, Samsung and Chinese battery maker CAT. Overall, the company's ratio of R&D spending to total revenues is now close to 6% compared with an average across the construction sector of less than 2%.
- Volkswagen alone invested more than \$13 billion in R&D in 2019 – equivalent to the combined amount invested by the 25 largest construction and building materials players, according to the 2019 EU Industrial R&D Investment Scoreboard. That level of R&D spending contributes to a current automotive-sector average of almost 5%, which represents a significantly higher commitment to R&D than is typical in construction. Across multiple industries, winners continue to

heavily invest in technology, many with a focus on digitalisation and data-driven products and services.

- **Investment in human resources:** Employee attraction and retention became a priority when industrialisation affected the four comparable industries at scale. Firstly, players built up their technical knowledge in order to create a competitive advantage. Secondly, improved production processes have, over time, resulted in a need for constant retraining of the workforce.
- **Sustainability:** The growing global emphasis on sustainability is being felt across all industries. Most notably, automotive has already embarked on a material transformation toward zero-emission vehicles. In Norway, airport operator Avinor and Widerøe Airlines vowed to fully electrify all domestic flights by 2040.