Institution: King's College London		
Unit of Assessment: 18 Law		
Title of case study: Collaborative construction contracts: A new way to deliver improved value		
Period when the underpinning research was undertaken: 2014 – 2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
David Mosey	Professor of Construction Law	From 06/05/2013
Period when the claimed impact occurred: Jan 2014 – Dec 2020		
Is this case study continued from a case study submitted in 2014? N		

1. Summary of the impact

Construction projects repeatedly suffer from poor value for money, dissatisfied clients and expensive legal disputes. Research at King's College London's Centre of Construction Law, led by Professor David Mosey, identified shortcomings in contracts as the source of many of these avoidable problems. To remedy these failings, King's researchers created, tested and supported a new type of contract designed to: (i) improve integration of the roles of consultants, contractors and subcontractors; (ii) ensure the timely sharing and agreement of accurate designs, costs, programmes and risk information; and (iii) embed learning from one project to the next. The resultant Framework Alliance Contract (FAC-1) was rapidly accepted by the construction industry and its clients. With training and guidance from the King's research team, FAC-1 has been used to procure social housing, schools, highways and public buildings with an estimated total value of GBP45,000,000,000. In 2020, new UK Government guidance, known as the *Construction Playbook,* formally recommended FAC-1's use as a contract that can achieve many of the government's stated ambitions for 'better, faster, greener' construction procurement following the COVID-19 pandemic.

2. Underpinning research

Large-scale construction projects are notoriously difficult to manage. Drawing upon government and industry reports from over many years, Mosey sought to identify the sources of problems and to offer solutions.

Understanding the problems with contracts

King's research found that inefficiency and excessive disputes in the construction industry were attributable in part to the use of fragmented, reactive contracts. This held back the progress of the industry and led to many misunderstandings, disputes and poor quality, unsafe constructions [1]. In particular, Mosey found that traditional contracts focused primarily on allocating risks and did not integrate or connect the roles of the different team members.

In addition, the research highlighted that contracts tend to govern only the construction phase of the project rather than connecting the design, construction and operation phases of a project [1]. This leads to reliance on incomplete and inaccurate information and to inefficient, fragmented working practices. General contractors and specialist subcontractors are appointed too late in the process for them to influence the optimum approaches to design quality, safety, cost and timeliness, and to the effective management of risks [1]. As a result, construction contracts have not supported the long-term relationships necessary to embed learning between projects and encourage investment in new technologies and modern methods of construction [2]. The researchers also examined the confusion and problems caused where collaboration relies only on the principle of good faith, and considered the large number of disputes resulting from this vaguely expressed relational commitment [1,3].

Identifying areas for improvement

King's researchers examined the key components of collaborative contract models and the ways in which these components improve relationships and working practices. With a variety of key stakeholders, they explored how new contractual relationships and systems can improve project

outcomes by creating lateral relationships between team members and integrating the roles of consultants, contractors and subcontractors. By examining a large number of live projects, they revealed how contractual systems that use collaborative procurement can lead to improved designs, better risk management and enhanced working methods. The researchers found that this shared knowledge can lead to not only significant cost savings but also social value, such as improved employment and training opportunities that are not available to the parties individually [1]. This work revealed the potential benefits of a new, more collaborative strategy, based on multi-party alliance contracts that provide for joint analysis of design, cost, time and risk data [1].

In addition, King's research found that embedding learning from one project to the next and connecting successive projects delivered more effective, sustainable and socially valuable outcomes. It revealed that multi-party contracts governing long-term collaborative relationships, supported by collective performance measurement and decision-making [1,2], lead to improved outcomes that capture enhanced knowledge and lessons learned as well as the prospect of a long-term pipeline of work [1,2].

The Framework Alliance Contract

King's researchers explored the possibilities for mitigating the challenges associated with traditional contracts through a new overarching contractual integrator. They drafted a new standard form known as FAC-1 that integrated the work of the parties engaged on multiple projects or on the components of a single complex project. It was designed for use in any common law or civil law jurisdiction [2].

The contract was evaluated in consultation with 120 organisations in 14 jurisdictions, at numerous conferences and workshops, and was tested with early adopters. The team found that the early direct connections between team members established by the contract improved the mutual understanding of their responsibilities. The new integrated relationships and long-term appointments also improved their commitment to collaborative working [2]. They found that FAC-1 enabled cost savings and more sustainable designs; reduced defects and carbon footprint; extended warranties; increased opportunities for small and medium-sized enterprises; created new employment and training initiatives; jointly managed risks and reduced potential disputes [1,2].

Mosey worked alongside the UK Cabinet Office with seven trial project teams engaged in constructing social housing, highways, schools and other municipal buildings to explore the effects of collaborative early contractor involvement and Building Information Modelling (BIM) on the delivery of economic and social value [1,4]. King's researchers found that the new contractual relationships and processes helped the trial project teams to minimise inaccurate assumptions regarding designs, costs, programming and risks that can arise from late contractor appointments.

3. References to the research

[2,3] were peer reviewed. A review of [1] said: *"In this book, Professor Mosey has demonstrated through extensive research that collaborative construction procurement, supported by robust contractual structures, has achieved measurable success across a range of projects. It is now up to the industry to take note."* David Sawtell, *Construction Law Journal*, 2019, 35(6), pp. 384-389.

[1] Mosey, D. (2019). *Collaborative Construction Procurement and Improved Value,* Wiley Blackwell. DOI: 10.1002/9781119151951

[2] Mosey, D. (2017). The origins and purposes of the FAC-1 framework alliance contract, *International Construction Law Review*, vol. 34, no. 4, pp. 391-405.

[3] Mosey, D. (2015). Good faith in English construction law, *International Construction Law Review,* vol. 32, no. 4, pp. 392-403.

[4] Mosey, D., Howard, C. & Bahram, D. (2016). *Enabling BIM Through Procurement and Contracts*, published online by King's College London.

Funding

Association of Consultant Architects (GBP5,000) and the Society of Construction Law (GBP10,000). The trialling of FAC-1 attracted funding from the Centre for Digital Built Britain (GBP185,000) and the Department for Business, Energy and Industrial Strategy (GBP25,000).

4. Details of the impact

The empirical testing conducted by Mosey demonstrated the potential advantages of the FAC-1 as an effective collaborative contract, in particular for public bodies, local and central government. As a result, FAC-1 has been used extensively, underpinning new UK construction guidelines responding to COVID-19 and changing practices on construction projects in the UK and other jurisdictions.

Impact on key projects

The success of the early stages of the project led to Mosey's appointment as lead mentor and academic partner for the UK Cabinet Office's 'trial projects' initiative in 2013. This enabled the publication of guidance by the UK Cabinet Office in January 2014, recommending the use of preconstruction phase contractor appointments governed by collaborative contracts, incorporating the FAC-1 principles [A] and in turn leading to the publication of FAC-1. The results of these initiatives were compelling, with FAC-1 being adopted on procurements totalling over GBP45,000,000,000 in five countries between 2013 and 2018 [B]. From these initiatives, a range of tangible benefits emerged.

The use of FAC-1 has led to significant cost savings. For example, Surrey County Council and Kier Services Highways achieved savings in excess of 12% which were sustained over a five-year programme of work on local road infastructure. The Surrey-Kier alliance then secured savings of approximately 8% against prices under their previous contract model [C]. Futures Housing Group (which provides affordable housing) created an FAC-1 alliance with Travis Perkins and 21 small contractors which achieved average savings of 9**%** against their previous framework in its first year [D]. These savings were partly due to FAC-1 connecting small contractors directly to national supplier Travis Perkins on more favourable terms than they could have obtained separately. Agreed alliance savings have since risen to between 16% and 22% [D]. Ian Skipp, Group Finance and Resources Director of Futures Housing Group, stated that in using the FAC-1 alliance, *"the sense of truly belonging to a collaborative group is clearly apparent"* [D].

FAC-1 has a focus on social value, ensuring that those at all levels of the construction process are considered. By enhancing collaboration and focusing on social value, FAC-1 has led to the development of significant employment and training initiatives. Futures Housing Group used FAC-1 to agree and implement support for small contractors through local training and employment initiatives, including creating their own Training Academy [D]. In addition, the Surrey-Kier alliance developed the award-winning S-Skills Programme that attracted almost 100 apprentices in 2019. All of them had been through the Youth Justice System and were generally people seen as *"furthest from employment"* [C]. The Surrey-Kier alliance also developed the Surrey Infrastructure Academy, aimed at filling professional and managerial shortages in the construction industry. Commitments from supply chain alliance members included local employment and skills development opportunities and encouraging local recruitment [C]. The positive environmental impact of FAC-1 has ranged from the greater use of local businesses and local workforces, to design innovations of subcontractors and manufacturers, and the improved recycling of materials [E]. FAC-1 has also helped to improve safety, user satisfaction, sharing of data and sustainability of projects.

Underpinning UK guidance: FAC-1 in national construction guidelines

The results from early adoption of FAC-1 in the sectors of social housing, highways and education led King's research [1,2,3] directly to influence UK Government procurement practices. For example, as a result of close collaboration and consultation with King's researchers, the UK Crown Commercial Service now uses FAC-1 for all its new frameworks [F]. In 2020 the UK Cabinet Office also recommended FAC-1 as the contract through which clients and teams can achieve improved outcomes from long-term commitments [G].

In response to the COVID-19 pandemic, the UK Government sought ways to stimulate the economy and, as part of this, the 'build back better, build back greener, build back faster' strategy seeks to accelerate construction procurement. On the basis on his published research, Mosey was the only legal academic invited by the Cabinet Office to join the consultation. He was part of the drafting group that produced *The Construction Playbook Government Commercial Guidance*,

which gives specific advice on sourcing and contracting for public works projects and programmes [G]. FAC-1 underpinned this pan-government publication.

The Construction Playbook:

- Establishes 14 new policies for improved procurement practices designed to deliver 'better, faster and greener solutions' that support recovery from the pandemic, helping to build the economy while improving building and workplace safety, and including green initiatives to minimise waste and greenhouse gas emissions [G]. The 14 new policies are required to be adopted on a 'comply or explain basis' and the guide recommends FAC-1 to help achieve *"many of the ambitions set out in this Playbook"* [G].
- Details how government and industry can utilise collaborative relationships and contractual systems of the type underpinning FAC-1 to deliver public sector works in a more modern and efficient way. It states: *"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. This should then be combined with transparent performance measurement and work allocation procedures. The FAC1 framework is a good example of a standard form framework contract that can achieve this"* [G].
- Recommends FAC-1 as the means by which public sector clients and their teams should adopt long-term contracts, invest in modern methods of construction, embed the use of BIM as a digital solution, procure using early supply chain involvement and outcome-based performance measurement, and apply benchmarking for a better understanding of costs. It endorses FAC-1 as an effective contract that is structured to enable the efficient exchange of data, to drive collaboration, to improve value and to manage risk [G].
- Includes a Compact with Industry signed by representatives of 48 professional bodies, consultants and contractors. These signatories recognise the value of FAC-1 as the preferred medium for delivering better, faster, greener solutions through the establishment of new lateral relationships between team members and of new systems of timely information exchange [G].

The UK New Prisons programme is described as a pathfinder project for implementation of *The Construction Playbook*. Sue McElroy, Deputy Director, New Prison Capacity at the Ministry of Justice, stated: "*[Mosey's] work has influenced and enabled the adoption of FAC-1 on our New Prisons procurement as a vehicle for the creation of a multi-party sub-alliance, a supply chain system for modern methods of construction and a collaborative BIM protocol*" [H].

Influencing practice guidance: FAC-1 in industry

As a result of Mosey's work in the construction sector and in developing the UK Government's guidelines, the governing bodies of the construction industry have begun to move away from traditional contract models and to advocate the use of FAC-1 contracts. Practice guidelines across a wide range of governing organisations have changed significantly in using FAC-1 to address problems arising from the sector's previous reliance on fragmented two-party appointments of consultants and contractors.

Guidance on how to use FAC-1 in projects is published by the Association of Consultant Architects (ACA), the national professional body representing architects in private practice throughout the UK [I]. Constructing Excellence, a platform for industry to achieve improvements in the construction industry, also endorsed FAC-1 in 2016 [I]. In addition, the Construction Leadership Council supported FAC-1 as the medium for the construction industry to become more cost effective, including in their 2018 guidance on Procuring For Value [J].

Arcadis' *Global Construction Disputes Report 2020* summarised a survey of the UK construction industry and concluded that *"Greater use of more collaborative standard forms of contracts, i.e. … FAC-1, might provide more confidence in project delivery"* [K].

In September 2020, FAC-1 was endorsed as an innovative contract that can govern programmes of work using modern methods of construction. 'Build Homes, Build Jobs, Build Innovation' – A Blueprint for a Housing Industrial Strategy explained 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" [L].

FAC-1 in action: changing working practices outside the UK

The FAC-1 contract has also been accepted in several civil law jurisdictions where clients and teams wish to adopt a collaborative approach to procurement. FAC-1 has been translated for adoption in Brazil, Bulgaria, Chile, Germany, Italy, Peru, Russia and Spain, and is being used by lawyers and construction professionals on projects in Germany, Italy, Kazakhstan and Spain.

The Liscate School project in Milan was completed in 2018 in collaboration with University of Milan using FAC-1. Professor Valaguzza of the University praised "*the success of FAC-1 in supporting the realisation of this project on site, including the joint management of unforeseen events so as to minimise delays and additional costs"* [M]. Additionally, University of Milan adopted FAC-1 on a EUR655,000,000 public-private partnership with Lendlease to create a new campus [M].

Italian multinational energy company Enel reported: *"When Enel Green Power began looking into 'alliance contracting' and 'collaborative' approaches to procurement, we quickly narrowed our focus on the work of Prof Mosey and his colleagues due to its quality, clarity and empirical support".* Mosey provided FAC-1 training, which gave Enel Green Power the *"knowledge and confidence to trial FAC-1 in practice on the procurement of a wind farm project in Spain and on other pilot projects in Brazil and the USA"* [N]. The wind farm in Spain brings to life the theme of sustainability explored in the research underpinning FAC-1. The Spanish translation and adaptation of FAC-1 was launched in December 2020 at online events hosted in Chile, Peru and Spain. Enel Green Power reported: *"The launch of the translations and adaptations of FAC-1 in Spain, Brazil and other jurisdictions will also assist ENEL in putting into effect our transnational collaborative procurement strategy and systems"* [N].

5. Sources to corroborate the impact

[A] Mosey, D. (2014). *Project Procurement and Delivery Guidance: Using Two Stage Open Book and Supply Chain Collaboration*, published online by UK Cabinet Office.

[B] Mosey, D. (2019), *FAC-1 Briefing Paper*.

[C] Testimonial from: General Manager, Kier Highways, 3 January 2020.

[D] Testimonial from: Finances and Resources Director, Futures Housing Group, 19 March 2019.

[E] Testimonial from: Surrey County Council, 9 May 2019.

[F] Testimonial from: Deputy Director Construction, Crown Commercial Service, 20 May 2019.

[G] UK Government (Dec 2020) *The Construction Playbook Government Commercial Guidance*

[H] Testimonial from: Deputy Director, New Prison Capacity, Commercial & Contract Management Directorate, Ministry of Justice, 15 January 2021.

[I] FAC-1 guidance published by the Association of Consultant Architects [allianceforms.co.uk].

[J] Construction Leadership Council (2018), *Procuring for Valu*e.

[K] Arcadis (2020), *Global Construction Disputes.*

[L] De'Ath, M. & Farmer, M., (2020) *Build Homes, Build Jobs, Build Innovation – A Blueprint for a Housing Industrial Strategy,* September 2020.

[M] Testimonial from: Professor of Administrative Law, University of Milan, 6 May 2019.

[N] Testimonial from: Head of Development Legal Affairs, Enel Green Power, 13 January 2021.