



<b>Trial project:</b> <b>Cookham Wood</b>	<b>New delivery model / procurement route:</b> <b>Two Stage Open Book under PPC2000</b>
<b>Cost savings achieved:</b> 20%	
<b>Other key benefits achieved:</b> Increased cost and programme certainty, innovation and reduced prospective operating costs	

<b>Trial report sequence:</b>	Kick off meeting	Brief / Team Engagement	Decision to Build	<b>Build and Occupy</b>
<b>Cost saving basis:</b>	Outline saving aspiration	Challenging cost target	Award Cost	<b>Outturn Costs</b>

Trial project details	
<b>Project title</b>	Cookham Wood Youth Justice Board New Build Young Offenders Institution
<b>Client department</b>	Ministry of Justice
<b>Project value</b>	£20 million (including construction cost, fees and escorts)
<b>Form of project</b>	New Build Young Offenders Institution
<b>Main contractor</b>	Interserve
<b>Lead designer</b>	Interserve supported by Arup
<b>Key suppliers</b>	SSC – Pre-Cast Volumetric Cell Provider EMCOR – Mechanical and Electrical Specialist Faithful & Gould – Client Representative HLN-Client architect/technical assessor Fob Deisgn Tier Consult Arup MJ Patch ICL



**Executive summary:**

Ministry of Justice have created a collaborative culture so as to bring together the consultants, Tier 1 and Tier 2 contractors at the earliest stage and to develop cost savings innovations and improved efficiency prior to start on site.

The Cookham Wood Trial Project combines collaborative working under Two Stage Open Book with the adoption of BIM, Project Bank Accounts and informal implementation of Government Soft Landings. A fully integrated team have worked to a tight timescale to commence delivery on site of a new build Young Offenders Institution that to date has exceeded cost saving targets.

Despite problems on site with severe weather, the originally contracted project works were completed within both the agreed timetable and the Agreed Maximum Price.



**Project summary**

The Cookham Wood project comprises the construction of a new build Young Offenders' Institution comprising a 180-person Housing Block and an Education Block. The project is located adjacent to the existing Cookham Wood prison.

**Project time line**

- Ministry of Justice Internal Business Case, March 2011
- Introduction of BIM through HLN Architects, December 2011
- Selection of Interserve as Tier 1 main contractor (and Tier 2 subcontractors including SSC and EMCOR) after competition between Interserve and other shortlisted Ministry of Justice Framework Contractors, February 2012
- Preconstruction appointment of Interserve (with Arup, SSC and EMCOR and other approved subcontractors) under PPC2000 Project Partnering Agreement to govern agreed timetabled preconstruction activities, July 2012
- Integrated preconstruction phase team-work between client, consultants (including HLN), Interserve and Tier 2 subcontractors (including Arup, SSC and EMCOR), July 2012 to October 2012
- Preconstruction phase enabling works authorised under PPC2000 Pre-Commencement Agreement, August 2012
- Approval of agreed maximum price reflecting agreed savings by reference to developed designs and construction programme, enabling authorisation of construction on site under PPC2000 Commencement Agreement, October 2012
- Project Completion and ready for occupation January 2014.

**Key project features**

- Substantial cost savings
- Prospective operational cost savings
- Improved programme certainty/visibility and agreed time savings
- Collaborative working by integrated team
- Innovative design solutions using BIM
- Features of Government Soft Landings
- Project Bank Account

**Client objectives and vision**

Ministry of Justice appointed its shortlisted contractors and consultants under frameworks that established Two Stage Open Book as the means of delivering individual projects. Ministry of Justice have developed consistent systems for preconstruction phase working, for lean programming and for measured performance and those systems were applied to the Cookham Wood project. Ministry of Justice was also keen to establish the ways in which BIM, Government Soft Landings and introduction of a Project Bank Account could support more efficient team working and could benefit its construction and operational needs.

Ministry of Justice created an EU compliant framework within which early contractor involvement is an established system. Over the course of successive projects, framework contractors build up designs and solutions that they know will meet MoJ specifications, and are able to transfer these from one project type to another as part of their selection proposals.

This approach was expected to be enhanced through the use of BIM as developed for the purpose of team selection as well as ongoing design, construction and asset management.

The Cookham Wood team needed to build on the contractual commitments and processes set out in PPC2000 to develop their own team culture. For this purpose leadership has been shown by individuals appointed by the client, architect, Tier 1 contractor and key Tier 2 subcontractors so as to embed new behaviours.

**New procurement techniques and processes**

Ministry of Justice adopted the PPC2000 standard form of contract (with minimum amendments) to define its processes for Early Contractor Involvement (ECI) under Two Stage Open Book. Ministry of Justice consider that PPC2000 actively promotes collaborative working at all stages. Ministry of Justice also concluded that PPC2000 does not require any amendments to provide for BIM Level 2 or any contractual BIM Protocol.

The PPC2000 form of contract is a single multi-party contract with a two stage structure that embeds ECI. It sets out timetables for integrated team working that describe key deadlines for each team member's activities during the preconstruction phase and construction phase of the project. It has been used with minimum



amendments.

ECl commenced when Interserve worked with its preferred subcontractors (including SSC and EMCOR) to develop innovative proposals at the point of selection by Ministry of Justice from a shortlist of framework contractors.

This collaboration continued among Interserve and its subcontractors who worked with Ministry of Justice and its consultants as an integrated team to undertake agreed preconstruction phase surveys, design development, risk management, cost reviews, enabling works and other preconstruction activities that delivered further innovations.

Two Stage Open Book under PPC2000 created a culture of collaboration throughout the integrated team that has continued during the construction phase of the project to improve both project delivery and prospective asset performance. For collaboration to span both the capital build activities and the ongoing maintenance and operation of the facility is in line with the Government Soft Landings strategy.

**Cost targets and savings**

Ministry of Justice set a target of 10% cost savings between selection of Interserve and commencement on site. Taking into account value indicators of similar projects, cost savings achieved (as analysed by the client and by cost consultant Sweett Group) show a cost saving of **20%** from the rate of £2,910 per square metre anticipated for a comparable project and the rate of £2,322 per square metre achieved in relation to Cookham Wood by the time of establishing the £13,917,505 agreed maximum price.

These savings have been achieved through the following means:

- Joint working by Interserve with Tier 2 subcontractors in developing innovative proposals at the point of selection
- Further joint working by Interserve and its Tier 2 subcontractors with the client and its consultants throughout the contractual preconstruction appointment
- Additional information provided at the point of selection and throughout the preconstruction phase through the use of BIM

*Standard list to be addressed by every case study:*

**Percentage saving: 20%**

**Baseline Benchmark:** £2910 per square metre for a comparable project

**Target Benchmark:** £2411 per square metre

**Actual Benchmark:** £2332 per square metre

**Specific savings:**

- Collaboration between Interserve and its specialist SSC resulted in a pre-cast volumetric cell proposal for the construction of the project. As a result, the construction programme was reduced from 50 to 44 weeks with a saving of £85,000 in time-related site overheads.
- Additional savings were achieved through Interserve working with Ministry of Justice to review certain works packages and obtain early cost/quality proposals from Tier 2 on an open book basis in advance of start on site. This validated prior selections and ensured other early selections to establish best value solutions and led to additional cost savings 1.5%.

**Additional benefits**

KPIs for the project are based upon Ministry of Justice's Guidance for Consultants and Contractors and are measured monthly throughout the project. Information for the monthly monitoring is collected and fed back to the project team.

Examples of additional benefits achieved through Two Stage Open Book include:

**Lean programming:**

- Early enabling works were undertaken under a PPC Pre-Construction Agreement
- Lean programming was adopted under a developed Ministry of Justice system linked to the PPC2000 Project Timetable
- Due to adverse inclement weather conditions, the project fell behind programme on site, but collaboration between Interserve and SSC has brought construction back on programme

**Innovation through Collaboration:**

- The use of solid pre-cast floor slabs in place of pre-stressed resulted in a time saving of 12 days



- To address the need for lighting to be indestructible in Education block, EMCOR provided a bespoke alternative light proposal. This solution reduced the amount of trunking and ensured that lighting was located in the centre of the rooms, achieving a significant cost saving and a better lighting solution

Examples of innovation achieved through Building information Modelling (BIM) include:

- Improved design coordination and change management at an early stage prior to construction, including liaison with the Governor of HMYOI Cookham Wood, who praised the benefits of a *"walk through of the buildings highlighting views into and out of areas that normally I couldn't do until completion"*
- Development by Arup and EMCOR of a model for service ducts and cell risers as Ministry of Justice had to be satisfied that these could be serviced by repair and maintenance engineers without reference to a computer. It is expected that this will result in whole life benefits
- BIM: Planet FM agreeing COBIE Drop 4 will make further data available to FM database and will allow more efficient repairs and maintenance that in turn should save Ministry of Justice money.

Project Bank Account:

- This was introduced and implemented by the team.

Government Soft Landings:

- This was agreed in principle and ground rules established for use on later projects. Also, the innovations proposed by the Tier 1 contractor and by Tier 2 subcontractors and sub-consultants included improvements in maintenance and operation of the completed facility.

**Overall assessment**

Ministry of Justice have created a collaborative culture through their national frameworks, so as to encourage Tier 1 contractors to bring together their Tier 2 supply chains at the earliest stage

and to develop innovative proposals. This has enabled the wider team to commence collaborative working at the earliest stage and to transfer lessons learned and ideas developed on other projects.

Ministry of Justice has demonstrated the characteristics of a mature client through establishing an EU compliant framework within which early contractor involvement is an established system. Over the course of successive projects, framework contractors build up designs and solutions that meet Ministry of Justice specifications, and are able to transfer these from one project type to another.

This approach has been greatly enhanced through the use of BIM for designs developed and costed at the point of team selection and those developed, prior to and during construction.

This integrated approach has been embraced by Ministry of Justice's consultants, Tier 1 main contractor and Tier 2 subcontractors through systematic contract-led engagement in clearly defined preconstruction activities, enabling works and construction phase delivery.

The team have built on contractual commitments and processes set out in PPC2000 to develop their own team culture. Leadership has been shown by individuals appointed by the client, architect, Tier 1 main contractor and Tier 2 key subcontractors so as to embed new behaviours.

The implementation of BIM has created improved value in the pre-commencement and construction phases of the project. Virtual and actual prototypes have been produced to engineer out potential defects and clashes. It is also envisaged that the data that BIM will capture will positively inform the future facilities management of the project.

The assessment of the Trial Project Support Group at this interim stage is that there is clear evidence that the agreed collaborative engagement by all parties involved in the project has achieved significant cost savings and other added value. The processes and protocols for productive collaboration have been embraced by the entire team, including a willingness to offer and share innovative solutions that have enhanced the project delivery and future asset performance.



**Key lessons**

The project team considered that the early contractor involvement period of six to eight weeks should be increased to achieve more significant innovations and savings, for example if the Tier 1 main contractor and its Tier 2 supply chain members can be appointed sufficiently early in the process to be involved in the full planning submission. As a result, Ministry of Justice has established a much longer period of Early Contractor Involvement under the PPC2000 Partnering Timetable on its next Trial Project, the North Wales Prison.

**Miscellaneous**

Authors

- This case study was prepared by Professor David Mosey of Trowers & Hamlins LLP/King's College, London Centre of Construction Law as Project Mentor, and by Martin Ball of University of Westminster as Academic Partner

Key contributors

- Ministry of Justice (Client), Interserve (Main Contractor), HLN Architects (Client Architect/Technical Assessor), Sweett (Cost Consultant/ CDM Coordinator), Arup (Constructor Lead Designer), SSC (Pre-Cast Volumetric Cell Provider), EMCOR (Mechanical and Electrical Specialist), Faithful & Gould (Client Representative) and FOB Design, Tier Consult, MJ Patch and ICL

**Background: Trial Projects programme**

The Government Construction Strategy aims to change the relationship between clients and the entire supply chain within the industry. The trial projects perform a central role in delivering the Strategy's sustainable 15-20% reduction in costs and are currently testing three new procurement models (Cost-Led Procurement; Integrated Project Insurance; Two Stage Open Book) that were proposed by industry and developed by a joint task group. Case study reports are therefore an output of monitoring the progress and outcomes of the trial projects. They are produced at four stages: Kick-off Meeting; Brief/Term Engagement; Decision to Build; Build and Occupy. Other case study reports can be found at:

<https://www.gov.uk/government/publications/government-construction-strategy-trial-projects>

**Project contacts**

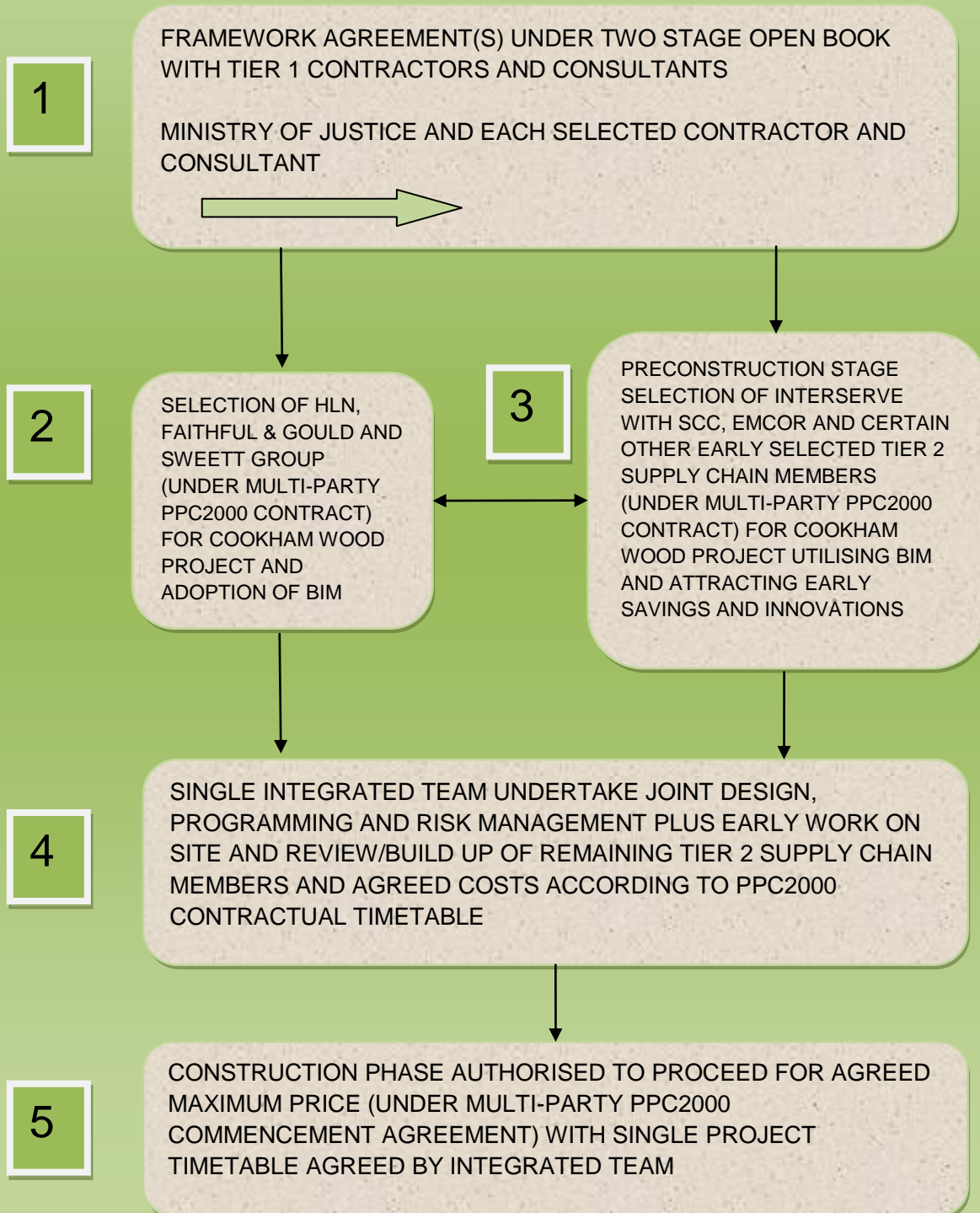
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## COOKHAM WOOD TWO STAGE OPEN BOOK





<b>How the reported 20% savings were achieved</b>				
<b>Strategic context</b>		<b>Client</b>	<b>Collaborative</b>	<b>Supply chain</b>
Aggregation of demand	<b>Yes</b>	Project formed part of MoJ Alliance		
Significant committed spend	<b>Yes</b>	£900m Alliance Work Programme		
Standardised procurement / streamlined approval processes	<b>Yes</b>	MoJ systems and contractual preconstruction processes under PPC2000		
Lean programming	<b>Yes</b>		MoJ lean system and additional team proposals	
Client cost data base	<b>Yes</b>	Published benchmarks		
Performance management	<b>Yes</b>		Framework performance initiatives	
<b>Common new delivery model characteristics deployed</b>		<b>Client</b>	<b>Collaborative</b>	<b>Supply chain</b>
Challenging cost target / open book	<b>Yes</b>	10% target with open book measurement	20% delivered by Two Stage Open Book	
Affordable standardised output / outcome requirement	<b>Yes</b>	Standardised designs developed through Alliance and captured in BIM library		
Early contractor involvement	<b>Yes</b>		Early appointment of Tier 1 contractor and Tier 2 subcontractors	
Lower tier engagement: fully integrated supply chain	<b>Yes</b>		Tier 2 early appointments	
Lower tier engagement: innovation encouraged / achieved	<b>Yes</b>			EMCOR and SCC innovations saved time/money and improved quality
Standard form of contract with minimum amendments	<b>Yes</b>	PPC2000		SPC2000
Effectively led change in team behaviours and practices	<b>Yes</b>		Personal commitment of all key individuals	
<b>Two Stage Open Book characteristics deployed</b>		<b>Client</b>	<b>Collaborative</b>	<b>Supply chain</b>
First stage selection of integrated team on open book basis and ability to deliver savings / project objectives	<b>Yes</b>	Open-book MoJ Alliance Agreement and two stage delivery under PPC2000		
Joint work of integrated team (incl. Tier 1 and lower tier contractors) on design, risk management, reduced costs under early appointments	<b>Yes</b>		Collaborative joint working at selection and throughout project	
Approval to construct on basis of demonstrable ability of team to achieved targeted costs and progress against project objectives	<b>Yes</b>	Preconditions agreed by team	PPC2000 Commencement Agreement established commitment to start of construction phase	



Other cross cutting initiatives deployed		Client	Collaborative	Supply chain
Building Information Modelling	Yes	BIM Level 2 adopted	Supply chain procured using BIM model	
Procurement Routemap				
Government Soft Landings	Yes		Team commitment	
Project Bank Accounts	Yes		Implemented throughout project	