




Trial project: Dudley Advance II		New delivery model / procurement route: Integrated Project Insurance		
Cost savings targeted: 15% - 20%				
Other key success criteria: <ul style="list-style-type: none"> • Programme certainty at below Target Cost • Highly efficient methods, including off-site manufacturing where best for project, and new methods of construction, eliminating waste in materials, processes and procedures • Leading BIM methods and technologies from commencement • Flexibility of the facility to be remodelled to meet future changes in demands and training methods 				
Stage at which first report will be published:	Kick off meeting	Brief / Team Engagement	Decision to Build	Build and Occupy
Cost saving basis:	Investment Target	Challenging cost target	Agreed Target Cost	Outturn cost
Trial project details				
Project title	Dudley College Advance II (formerly "CABTech")		The finished product   	
Client department	Dudley College (with regional growth funding via the Black Country LEP)			
Project value	£11.685m			
Form of project	New Build Educational Facility			
Independent facilitator (IF) and risk assurers (TIRA/ FIRA)	Integrated Project Initiatives Technical: SECO (Belgian) / BLP Financial: Rider Levett Bucknall			
Alliance Members	Dudley College Derry Building Services: specialist Fulcro: engineering services and project coordinator Metz: architects Pick Everard: structural Speller Metcalfe: constructor			
IPI Brokers	Griffiths & Armour			
Other Key Suppliers	Adstone: steelwork BC Roofing: hangar cladding H&H: cladding and glazing Glosfords: structural insulated panels Kone: lifts MSW: metal decking SDP: ceilings and partitions Terex Demag: hanger cranes Uponor: thermally-active building structure			

Executive summary:

Dudley College selected the Integrated Project Insurance (“IPI”) model to procure and deliver a new Centre for Advanced Building Technologies, termed “Advance II” (was known as “CABTech”). Not only was Advance II approved as a trial project by the Cabinet Office via the Roll Out Management Group but it also became the primary nominated project under the Innovate UK “Rethinking the Build Process” project 101345 with a consortium of eight industry partners and academic partner University of Reading.

The IPI new model of procurement applies an integrated collaborative working approach throughout to a level which exceeds any other previous procurement routes the College has used. It requires the adoption of a Project Bank Account, BIM, and lean design and implementation practices. Via IPI the College seeks to achieve cost, time and carbon savings in line with the “Government Industrial Strategy: Construction 2025”.

Guidance on the IPI model was published by the Cabinet Office in July 2014 and is accessible at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/326716/20140702_IPI_Guidance_3_July_2014.pdf

The successful designers, specialist contractors, constructors and project coordinator were appointed in compliance with the EU Directive and UK Public Contracts Regulations (current at the time) at the outset under an “Alliance Contract” which has been developed for fully integrated collaborative working under the IPI model. This “Brief/Team Engagement” stage was described in an earlier Case Study

This Case Study, the last in the series for this pilot project, concentrates on the outcomes, both in terms of the finished product and also the time and cost of delivery. Insights by both the client and the supply side about the model are also included. It is relatively brief, because it cross-refers to a Prospectus entitled “Insurance Backed Alliancing – a game-changing journey on the first project using the IPI model at Dudley College”. As stated in its Executive Summary:

The outcomes in terms of delivery against the success criteria of quality, time and cost are summarised and are consistent with the strengths and weaknesses revealed through the project. What is clear is that the IPI model has unleashed the power of alliancing, exposed the embedded areas of inefficiency, and opened new doors to improve performance, delivering (at differing levels) on all three goals of quality, time and cost, and unequivocally achieving “fitness for the defined purpose”

This Case Study and Prospectus are further supported by an academic report prepared by the School of the Built Environment Construction Management and Engineering, University of Reading which has been reviewed and approved by the consortium of partners with supporting funding from Innovate UK, all as referred to above.

Project Summary

Project time-line

- 30 July 2014: Acceptance on the Cabinet Office Trial Projects Delivery Programme
- 12 September 2014: Invitation for Expressions of Interest (“EOI”) in OJEU
- 24 October 2014: Return of Prequalification Questionnaires (“PQQ”)
- 19 December 2014: Return of Invitations to Tender (“ITT”)
- 12 February 2015: Announcement of Award under OJEU
- 24 March 2015: Commercial Alignment of Alliance Partners completed
- 8 May 2015: Alliance Contract signed by all the Alliance members and Phase 1 commencement
- 23 February 2016: Phase 2 commencement (IPI policy inception)
- 8 September 2017: actual completion, “fit for the purpose defined in the strategic brief”

Key project features

- Integrated collaborative working assured
- Strategic brief that includes affordable investment target
- An IPI “Alliance Contract” that empowers the team
- Alliance owns solutions and outcomes
- Financial exposure capped to insured limit, client financially responsible in the unlikely event it exceeds this limit
- Outcomes insured – including overspend
- Fitness for purpose as defined in the Strategic Brief
- Reduction in periods of design, construction and proving
- Efficiency gains whilst cutting process waste
- Free of liability inhibitions to BIM
- Free of insurance limitations for SMEs

Client objectives and vision

The project is being procured using the Integrated Project Insurance (IPI) methodology. A key element of the IPI process involves appointing the whole project team, including the constructors and specialists, at inception.

The building will consist of several modern construction method training facilities, some of which are the first of their kind in the FE sector in the UK. Examples include a multi-storey 'hangar' in which students will learn how to fabricate and assemble buildings using the latest available technologies. There will also be a 'digital centre' in which innovative Building Information Modelling (BIM) and digital environment software packages will be used.

Other facilities include a 'carbon-friendly technology centre' where students will acquire skills in, among other things, the installation of air source heat pumps and photo-voltaic technologies and a 'construction manufacturing and assembly centre' where they will develop their building engineering skills.

The building will also itself be a teaching resource. Not only will students experience the sustainable naturally ventilated and adaptive thermal mass environment, they will be hands-on in learning how to optimise its performance and be able to explore a range of examples of innovation in design and logistics, including a teaching version of the 3D model.

The predicted outputs of the venture by 2020-21 are:

Jobs created: 390
 Jobs safeguarded: 765
 Number of new enterprises supported: 25
 Number of enterprises receiving non-financial support: 1405
 Number of learners: 3250
 Number of apprenticeship starts: 725

The success criteria include:

- Cost and programme certainty;

- Inspirational innovation, as an exemplar to students;
- "Function over form" [changed to parity];
- Off-site manufacturing and new construction methods to eliminate waste in materials, processes and procedures;
- Apprenticeships and other employment/training opportunities;
- Leading BIM methods and technologies with BSRIA Soft Landings;
- Flexibility for changes in demand and training methods;
- Aesthetic quality statement for Dudley Learning Quarter;
- Low carbon and reduced prospective operating costs;
- Opportunities for local and regional businesses.

Previous Case Studies

The previous Case Study 3, issued at the "Decision to Build stage" stage, detailed

- Further progress on Phase 1, including the design process and BIM, project coordination, alliance management, and leadership
- IPI policy inception, and
- Initial progress on Phase 2.

<http://constructingexcellence.org.uk/wp-content/uploads/2016/12/20161205-Trial-Projects-Dudley-College-Advance-II-Case-Study-3-FINAL.pdf>

Outcomes – quality

"The quality of what we're getting is excellent...there's nothing in the building I believe is poor ...there hasn't been any need to start chasing quality because it all seems to be at the forefront of their emails. They're already doing their own snagging before we even have to go around and do it. So I think the quality of the building we're getting will be at least as good if not better than we were expecting"

and after Completion

"A leading-edge example of industry standards which inspires learners and employers wanting to develop their skills. The close working relationship between Dudley College and the project team has created a project that is absolutely fit for purpose".

Dudley College

EPC Certificate A rating

The building has received an EPC A Certificate rating for a low energy facility capable of “free running” for long periods of time with no additional heat or cooling required, Using the CIBSE Test Reference Year for Birmingham the thermal modelling has confirmed that it achieves the rating with a CO2 emission at 72% of the “norm” and a regulated energy demand at 79% of the “norm”.

Outcomes - time

The completion date agreed at the end of Phase 1 was 2 June 2017.

Review Events have been agreed by the alliance board accounting for 10 weeks, giving a revised contractual completion date of 11 August 2017.

In the event final completion was achieved on 8 September, a 4 weeks delay. In meeting the September date, however the client’s post-contract fit-out works were accommodated in order to deliver the project proven and ready for use.

At least 4 weeks delay are attributable to challenges in planning, coordination and site management, all of which are discussed in the Prospectus and the academic report. It will be for subsequent pilot projects to demonstrate that, instead of delays, significant foreshortening of traditional programme durations is possible.

Outcomes - cost

The target cost agreed at the end of Phase 1 and insured under the IPI policy was just under £10m. This represented a saving of 6.5% against the investment target after making appropriate adjustments for land, fixtures & fittings, and VAT.

An eventual overspend of c.£180k was funded by Painshare, but when a reduction in the target cost is taken into account, the outcome was better than cost neutral for the client.

It is worth noting that despite contributing to the Painshare, widespread profitability was achieved throughout the partners and their supply chains.

Some client observations about the model

The vision of the building was always that it was going to be way more than just a teaching space, and that it would exemplify the industry that we were teaching the skills in. The building would be a teaching tool in itself and it is absolutely doing that.

I think the model does encourage designers and builders to really fundamentally understand the client’s needs

Quite early on everyone around the table knew it wasn’t going to fall to pieces. Even when we were at critical points of decision making there was an underlying commitment to the success of the project, underpinned by the model itself. That’s the first test, and then the result of this test is the alliance held together – we’ve got a fantastic building, within a reasonable time, and even the cost overrun is pretty small in the big scheme of things – and it didn’t break the model.

I think the IPI model does something purposeful to hard wiring those [collaborative] behaviours whereas the D&B model is “hit and hope”. I don’t think there was ever a question in my mind that they weren’t going to do the best they possibly could to get us in on time.

I don’t think it would have worked without Kevin or without Louise [the facilitators]....

The [IPI] model is inherently building in the right practices where I don’t think some of the other models do. It’s really conceptually radically different, when you actually get underneath it... It’s actually about a fundamental alignment of people who want to work together.

The cost overrun element of the policy was hugely important as this is one of the most attractive aspects of the model with partners sharing equally in any over runs. As in this case the model helped to ensure any cost overruns were minimal.

We were never trying to save money, we were trying to get the best value for the money we were spending and not be presented with a post project bill – to close down the risk of cost overrun, cost dispute... The quality of the building for what we spent is super, brilliant... It’s probably the best quality building we’ve got per pound, per square meter.

Other participants’ observations

For this new model to be sustainable it must benefit all participants

Architect

I would definitely say from an Architectural perspective that IPI provides benefits for both the business and its people. The opportunity to collaborate directly with the sub-contractors and suppliers with a clean sheet of paper is both refreshing and optimal. We don't have to deal with the soul-destroying grind (and associated erosion of our fees) with designing things over and over again. We get to design something once that is fit for purpose, of good quality and affordable. Not to mention the specialist knowledge we get to absorb from the suppliers. My personal development as a result of this project was huge, as I was exposed to lots of areas that I usually wouldn't have been, and it has, without doubt, made me a better design professional as a result. It solves so many problems we currently face in the industry and really enables the BIM methodology to deliver its full potential!

Constructor

From my perspective, cost overruns and delays are an all too familiar trodden path on many of today's projects. No one wants to accept liability and a blame / claim culture surrounds the parties to the contract, like it or not. IPI drives hard true collaboration between the Alliance delivery partners. Success is the careful selection of the 'right' people who make decisions on a best for project basis; without the fear and retribution of a blame culture. Working as an Alliance gives freedom to all parties to lose their company identity and values for the working conditions of IPI to promote unsurpassed results for all concerned. Would I do it again, yes I would; would I do it differently next time as a result of what I learnt – of course.

Engineering services specialist

The collaborative approach removed many of the barriers of separation that can exist between specialist sub-contractors and designers and the client/end user on more traditional projects.

The development of relationships and understanding between the team to build trust is key to successful collaboration.

Discussions, decision-making and instruction is more open and transparent under the IPI model [than D&B] so the client can see how the sub-contractors perform at first hand rather than relying on a Main Contractor's or Project Manager's version of events.

Project Coordinator

We were able to [solve problems] without commercial barriers. Nobody is going to question that you've spent manhours helping another partner because it's an integrated process, a lot more effective. We wouldn't have got the building we've got under a traditional contract

Insurance broker

Do I think IPI is a workable proposition? Yes, I do. And I think it's going to be attractive to the private sector. It has certainly become a lot more viable because it is not just insurance. It's about culture, procurement, and linking all of that together

Reading University

Overall, the project has demonstrated the potential attractiveness of the IPI approach for all participants – client, suppliers and insurers – and the potential benefits possible when key participants work together in an Alliance supported by insurance, including the provision of cost overrun cover

Lessons learned from this first IPI pilot

- **Procurement:** although the alliance procurement was successful on Advance II, the traditional approach would be to apply lowest cost options to every decision. These risks are even more prevalent in procurement of supply chains. Selection of people requires skilled and balanced judgement which is not widely available; procurement of construction is a weak area.
- **Planning and cost management of design:** the alliance's multi-disciplinary consultant/specialist team needs a planning task-oriented context within which to find creative solutions to the strategic brief; the elemental cost of these flexing BIM-oriented tasks has also to be actively managed, in order to avoid loss of overall cost control.

Integrating design, delivery, commissioning and proving into a single plan is challenging for a fragmented and sequential industry to address

- **Opportunity/risk management**: whilst these skills variously exist within both design and construction disciplines, they are not naturally activated in the context of integrated teams – where they can have greatest potential leverage. They entail both systems and behavioural dexterity. Closer synergy with insurers is also required to improve understanding of the risks and their mitigation. Industry is very used to focusing on risk and, more realistically, risk transfer. The focus on opportunity and risk mitigation is a new competency to acquire

Planning and logistics of detailed design, construction & handover: the skill of inspiring and enlisting the early support of the supply chain in the practicalities of detailed design, installation and commissioning is essential if shocks and surprises are to be avoided. There must be synergy with the alliance about the trinity of quality, time and cost under the overarching focus on purpose

- **Leadership**: last but by no means least, fundamental questions are posed about where the leadership should lie, and from what source. On Advance II a distinction was drawn between the “project coordinator” (a technically-based role) and the “alliance manager” (the business manager of the alliance – handling certifications). In practice leadership rotated to the party best able to deliver it, but this was not by deliberate design, and both roles need to be strengthened and clarified. In addition, more attention must be given to facilitate comfort in proactive challenge both in delivery and receipt.

The worst solution to these deficiencies would be to allow new specialisms to emerge: such specialisms should be taken on board by the alliance, IPT and supply chain members themselves. This requires intensive training in the above skills in the environment of “live” alliances which are blame-free and insurance-backed

Prospectus for Insurance Backed Alliancing

This Case Study should be read together with a [Prospectus entitled “Insurance Backed Alliancing: a game-changing journey on the first project using the IPI model at Dudley College”](#). This describes transparently the successes and challenges of the trial and gives the grounds for the identification of the deficiencies already here listed.

Monitoring outcomes

This Case Study and Prospectus are further supported by an academic report prepared by the School of the Built Environment Construction Management and Engineering, University of Reading which has been reviewed and approved by a consortium of partners with supporting funding from Innovate UK.

The Innovate UK project has supported this first trial of the IPI model on the Advance II project. Its duration was 4 years but due to the original trial project with the Defence Infrastructure Organisation for the Royal Marines at Lymstone, Devon being aborted, the duration was extended to align better with the timescale of Advance II.

Dissemination and uptake of the IPI model

Plans are already underway for a series of events to present “insurance-backed alliancing under the IPI model” to the different disciplinary groups of the construction industry, and kick-start training and participation by those who are interested in taking part in further trial projects under the Cabinet Office’s ongoing Trial Projects Delivery Programme in conjunction with Constructing Excellence.

Organisations in both the public and private sector are therefore invited to volunteer projects – or a series of projects – where the successes already achieved can be improved upon and the challenges identified in this paper can be addressed. There is much waste of time and money still to be eliminated. By collaborating together in alliances that are both blame-free and backed by insurance, our industry can rout out the embedded inefficiencies and improve performance, delivering on the goals of quality, time and cost, and producing outcomes which are inherently suitable for the needs which have been agreed.

As insurance-backed alliancing under the IPI model matures through the continuous improvements

brought about by more trial projects, the backing of the insurance market will also strengthen. The IPI brokers, Griffiths and Armour, are already in discussions with insurers to widen the already significant circle of supportive insurers. The underwriting capacity will greatly increase when re-insurers are introduced. Insurance of IPI projects in the £100m range is a reasonable ambition as confidence grows. The cost overrun cover could also provide a cost-effective form of financial security to any funder¹.

Applicants to volunteer trial projects are reminded of the statement below in the Guidance on the IPI model:

“The IPI model comprises a unique process of collaboration and risk management and the trials have to be conducted under protected conditions. The trial outcomes must be the result of the application of the whole model process rather than of selected elements of the model. As such the model cannot be trialled without the involvement of Integrated Project Initiatives Ltd, the owners and custodians of the model and IPI product”.

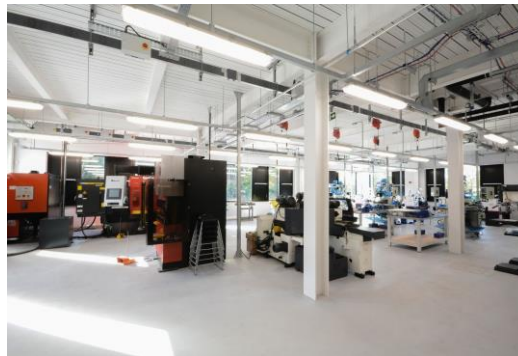
The Trial Projects Delivery Programme

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 www.constructingexcellence.org.uk

Contacts

For further information on Insurance Backed Alliancing under the IPI model or to introduce a potential trial project, please contact Martin Davis, IPI Mentor for the Cabinet Office, at martin.davis@ipinitatives.com or Kevin Thomas at kevin.thomas@ipinitatives.com or Louise Lado-Byrnes at louise.lado-byrnes@ipinitatives.com

Successful applicants who are accepted onto the Cabinet Office's Trial Projects Delivery Programme will then have access to the latest versions of the Procurement documentation and system, Alliance Contract, Supplier Alliance Subcontract and IPI Policy.



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¹ Final Report of Procurement Lean Client Task Group July 2012 page 20

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61157/Procurement-and-Lean-Client-Group-Final-Report-v2.pdf