

Prospectus

Insurance Backed Alliancing

A game-changing journey on the first project using the IPI model at Dudley College



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School of the Built Environment Construction Management & Engineering

DUDLEY COLLEGE Advance II Alliance



INDEPENDENT ASSURERS



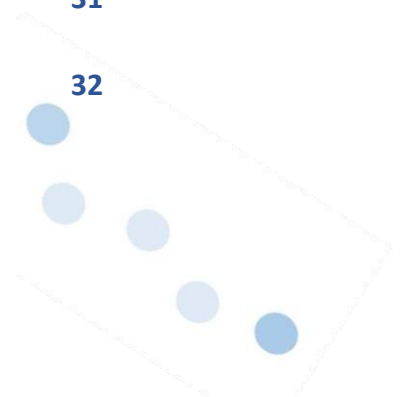
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With thanks to Speller Metcalfe for the use of their project photos



FOREWORD

The Integrated Project Insurance model is the most innovative of the new models of procurement promoted in the Government Construction Strategies 2011 and 2016 – 2020, and as such must undergo successful trials under the Trial Projects Delivery Programme before it can be rolled out across Government Departments.

Research funding from Innovate UK under its “Rethinking the Build Process” competition has supported the project under the title “Delivering more for less under the IPI model”, and a cross-industry consortium with the University of Reading as academic partner has collaborated with Constructing Excellence in rigorous monitoring and analysis of the first IPI pilot project, the design and construction of a further education facility called “Advance II” at Dudley College, West Midlands.

This report presents the IPI model as the first of a new generation of alliancing models, bringing together established collaborative working practices with independent risk assurance and a unique cost-overrun insurance, capable of being applied to a vast range of projects in the public and private sectors. The approach offers a game-changing opportunity for the future, and it is ideally suited to modern off-site delivery models which the Autumn Budget 2017 committed central government departments to adopt by 2019.

We commend this report for its transparency on the successes and challenges from the first pilot project. It should be a spring-board for further pilots where even better outcomes can be expected.

The three co-chairs of Constructing Excellence.

David Whysall



Mark Farmer



Phil Wilbraham



EXECUTIVE SUMMARY

The innovative concepts and processes of the Integrated Project Insurance model have now been consolidated with those of alliancing and undergone their first trial on the Advance II pilot project at Dudley College.

Central to these innovations has been the alignment of participants through an IPI Alliance Contract and IPI Policy which together empower the alliance members and their integrated project team to collaborate in the environment of a no blame/no claim culture and the limitation of losses due to the indemnity provided by insurers.

With the benefit of rigorous monitoring by Reading University and funding from Innovate UK, our consortium has gained invaluable insight into the way in which Insurance Backed Alliancing under the IPI model has benefited the Advance II project. Each stage of the procurement process, commercial alignment, Phase 1 preconstruction, and Phase 2 detailed design and construction are reviewed in turn, and the successes and challenges which arose during the project are openly discussed

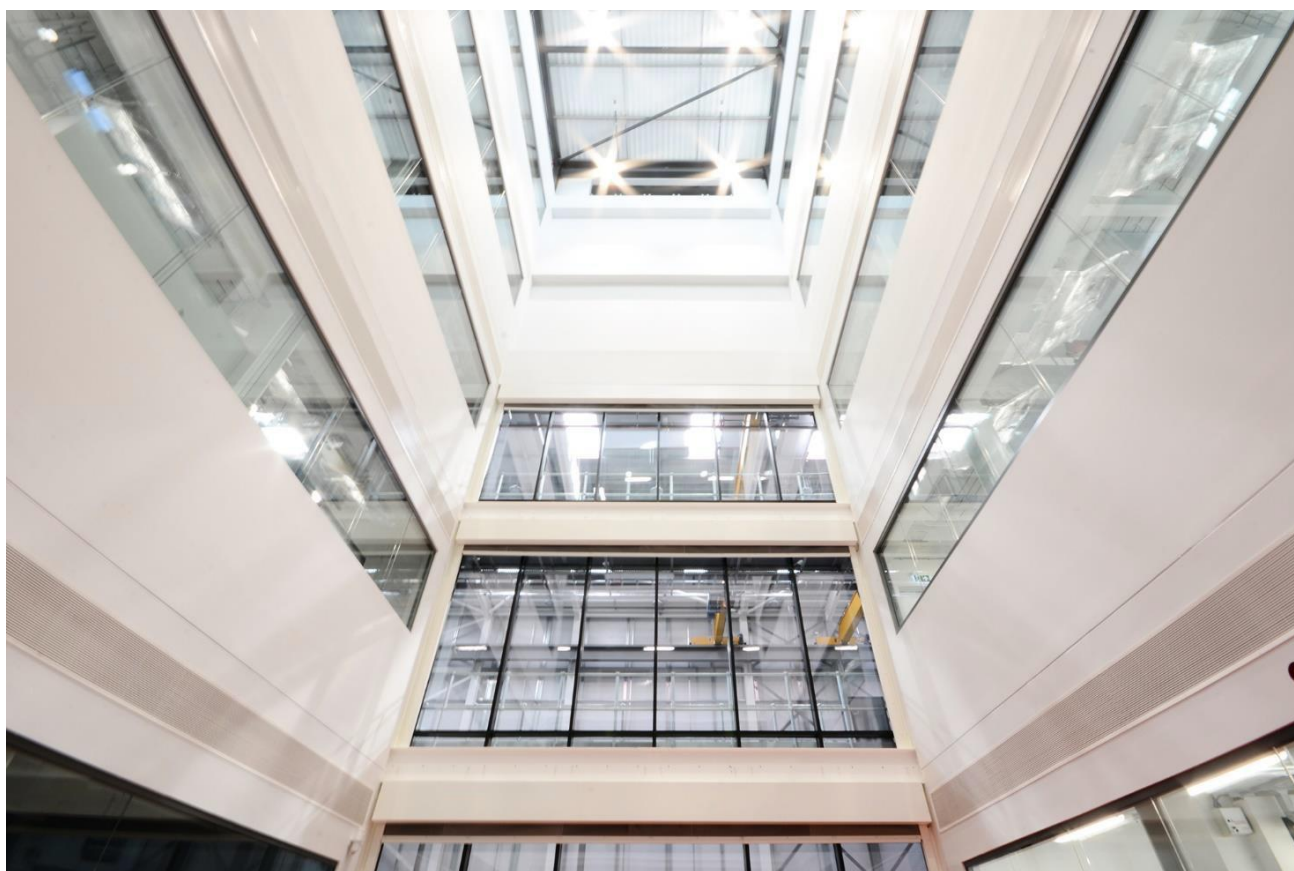
Highlights include:

- (1) Delivery of (a) Dudley College's vision to provide a facility which introduces advanced construction methodologies to the educational curriculum and (b) the first project to be successfully completed under the novel IPI alliancing model; both of which have the potential to be transformational for the industry
- (2) Successful cohesion of the alliance through "thick and thin" through a combination of a new form of alliance contract and IPI policy, and active independent facilitation
- (3) Application of BIM from the outset, unfettered by silos and traditional blame/claim scenarios
- (4) Unequivocal focus on delivery of the success criteria agreed with the College
- (5) Provision of a facility which has been performance-proved in readiness for the start of the academic term

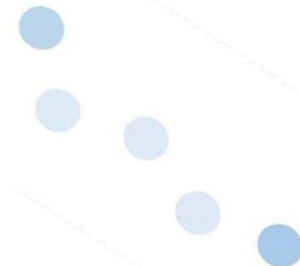
The outcomes in terms of delivery against the success criteria of quality, time and cost are summarised and are consistent with the strengths and weaknesses revealed through the project. What is clear is that the IPI model has unleashed the power of alliancing, exposed the embedded areas of inefficiency, 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".

The action plan identifies training as the urgent prerequisite to realising the full potential of Insurance Backed Alliancing: training in procurement, cost planning, management of opportunities as well as risks, logistics and fundamental leadership. Such training will most effectively be delivered in the environment of “live” alliances.

The final section looks to the future and to a growing population who can develop their skills and deliver continuous improvement on a series of Insurance Backed Alliancing projects under the IPI model.



**DUDLEY COLLEGE LIKED THE IPI MODEL SO MUCH THEY ARE USING IT
AGAIN ON A NEW £26M PROJECT FOR TRANSFORMATIONAL
TECHNOLOGIES - MARCH 2018**



INSURANCE BACKED ALLIANCING

A game-changing journey

Background

Following a call for new methods of procurement the “Integrated Project Insurance (IPI) Model” was included in the [Government Construction Strategy in 2011](#).

In 2014 the Cabinet Office moved to give further impetus to its Trial Projects Delivery Programme by publishing guidance on the new procurement models.

As the IPI Project [Procurement and Delivery Guidance](#) explains, the roots of IPI are founded in Integrated Collaborative Working in the UK construction industry and the experiences and innovation of key programmes and projects including Building Down Barriers, FUSION , Andover North Site, Heathrow Express and Heathrow Terminal 5. But despite these successes, the industry was not transforming itself as envisaged by Sir John Egan. Below are two observations in [“Never waste a good crisis”](#) in 2009.

In 2012 the Technology Strategy Board issued a competition for R&D funding under the title “Rethinking the Build Process”. The creators of the IPI model IPInitiatives and brokers Griffiths & Armour came together to be the delivery vehicle for the trial IPI projects, and a consortium of interested parties was formed to bid under the heading “Delivering more for less under the IPI model”.

The bid was successful and was scheduled to run for 4 years between 2013 and 2017. This



enabled the new model, complete with its new Alliance Contract and IPI Policy, to be tested under the scrutiny of both leading construction practitioners and Reading University’s School of the Built

Environment Construction Management and Engineering, the academic partner.

“Since 1998 we could have had a revolution and what we’ve achieved so far is a bit of improvement”.
Sir John Egan

“Since Sir John Egan’s Task Force published its report Rethinking Construction in 1998, there has been some progress, but nowhere near enough. Few of the Egan targets has been met in full, while most have fallen considerably short. Where improvement has been achieved, too often the commitment to Egan’s principles has been skin-deep. In some sectors, such as housing, construction simply does not matter, because there is such limited understanding of how value can be created through the construction process”.

Andrew Wolstenholme

Growth of alliancing

Integrated project teams and collaborative working under alliancing frameworks have produced exceptional results for the oil and gas industries¹, water and other utilities over the last few decades. But it has only been utilised on major projects where the client can afford to invest in bespoke procurements, team-building and discerning incentivisation.

A series of infrastructure projects in Australasia² starting in 1994 likewise delivered exceptional results against tailored success criteria, but again the projects were large.

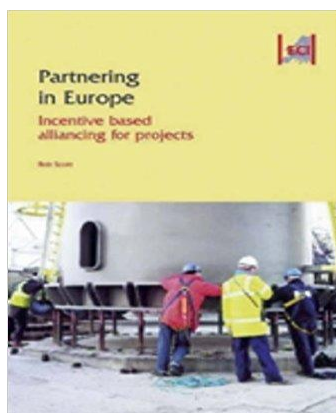
In 2014 Infrastructure UK published a report “Improving Infrastructure delivery: Alliancing Best Practice in Infrastructure Delivery” which signalled the positive approach HM Treasury is adopting to alliancing, and brought together a valuable compendium of case studies of alliancing projects undertaken by infrastructure organisations in the United Kingdom.

What is alliancing?

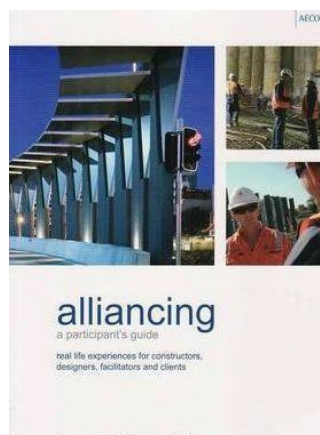
“A commercial/legal framework between a client and other participants for delivering one or more capital projects, characterised by:

- *collective sharing of project risks*
- *no fault, no blame and no dispute between the alliance participants (except in very limited cases of default)*
- *payment of the other participants under a three-limb commercial model*
 - *reimbursement of direct project costs on 100% open book basis*
 - *a fee to cover corporate overheads and normal profit*
 - *a gain share/pain share regime where the rewards of outstanding performance and the pain of poor performance are shared equitably among all alliance participants*
- *unanimous principle-based decision-making on all key project issues*
- *an integrated project team selected on the basis of best person for each position”*

[Definition taken from the Project Alliancing Practitioners’ Guide (Victorian Government 2006)



¹ Partnering in Europe: Incentive Based Alliance for Projects – January 1, 2001
by [R. Scott](#) ISBN-13: 978-0727729651

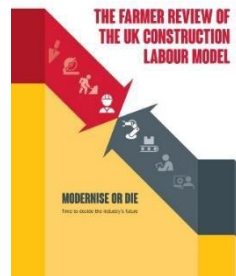


² Alliancing : A Participant's Guide by [Richard Morwood](#) , [Deborah Scott](#) , [Ian Pitcher](#)
ISBN13 9780646502847



The construction industry in the UK – an up to date diagnosis .

The last 5 years have seen a growing national economy and an upturn in the construction workload. Yet according to the [Farmer Review \[2016\]](#) the industry, particularly in the housing environment, does not show an improved picture – quite the reverse:



“This review warns of potential marginalisation and deterioration that might not be recoverable. I do not believe construction’s perilous future state was so clearly evident at the time of Latham’s Constructing the Team in 1994 or Egan’s Rethinking Construction in 1998. If this review does only one thing, it must be to bring the likely reality into greater focus” [Introduction]

“Root causes:

- (1) The Industry has deliberately evolved a ‘survivalist’ shape, structure and set of commercial behaviours in reaction to the environment in which it operates. That environment is fundamentally characterised by low levels of capitalisation/investment and high demand cyclicity*
- (2) The Industry and its clients usually have non-aligned interests reinforced by traditional procurement protocols and a deep-seated cultural resistance to change pervading both parties*
- (3) There is no strategic incentive or implementation framework in place to overcome the issues above and initiate large scale transformational change across the industry. This includes lack of governmental policy or wider public client measures which more positively impact not only shape of demand but the way in which the industry responds to that demand. The issues of variable demand, conservatism and lack of alignment/integration with clients highlighted in the first 2 causal statements above have therefore become de facto accepted norms for the industry” [Page 42]*

An up to date overview of all construction by Constructing Excellence members is also pertinent:



“Positively disrupting the industry delivery model to deliver a transformation in superior value for all”. This was the summary of our co-chairs’ shared vision for the next phase of Constructing Excellence’s programme, which emerged from our members steering group and members forum.... This is a client-led and client-focused delivery model which requires increased standardisation and pre-manufactured content and digitally enabled integrated teams working collaboratively with long-term relationships and aligned commercial arrangements throughout the supply chain. In short, integrated and collaborative working as we have defined it for many years”. [18 July 2017].

Government's Construction Strategy 2016-2020 has reiterated the role of new models of construction procurement ("NMCP") in driving improvement through these objectives and action plans:



Drive a coordinated approach towards collaborative procurement, including framework development, operation and best practice.

2016-17: Engage with industry and local government to coordinate approaches and drive good practice

2017-18: Continue to establish and monitor trial projects to contribute to evidence base to inform adoption of NMCP. Annual publication of NMCP trial project case studies and disseminate any lessons learned.

Insurance Backed Alliancing under the IPI model for building projects .

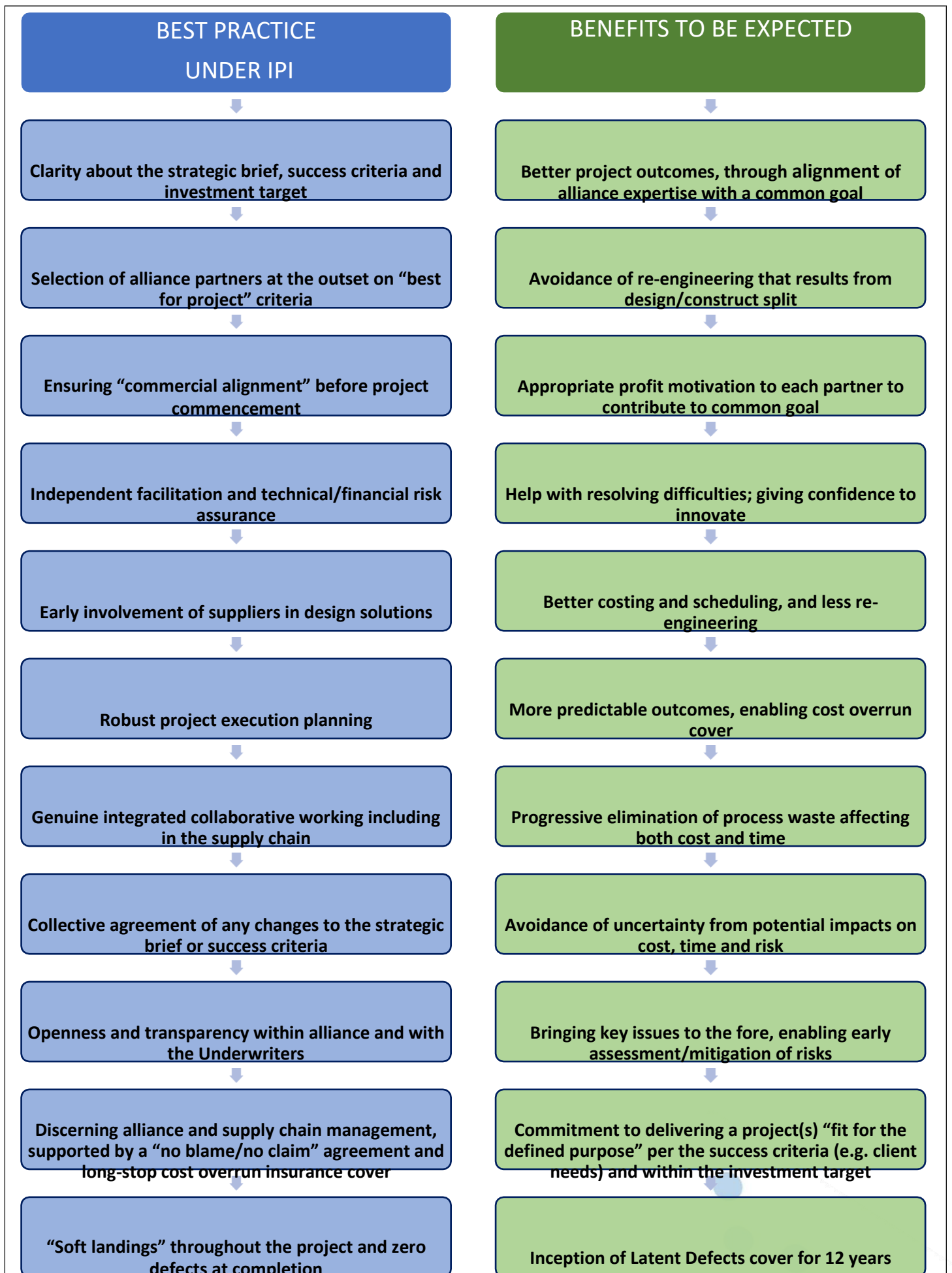
The IPI model is the first in a new generation of "Insurance Backed Alliancing". This model aligns the interests of all the participants and cost-effectively brings with it independent facilitation and risk assurance, cost overrun cover and latent defects insurance. So far it has been made available for building projects and programmes valued between £10m and £25m, enabling the transformational and disrupting measures referred to in the Farmer and Constructing Excellence thought-pieces mentioned above to be initiated and tested, initially with the facilitation and mentoring of IPI initiatives under the Trial Projects Delivery Programme. With the success of the Advance II project it is expected that this cover will be available for larger projects.

Summaries of the key provisions of the "IPI Alliance Contract" and the "IPI Policy" are included in the Guidance referenced above.

The purpose of this Prospectus is to show how Insurance Backed Alliancing under the IPI model works in practice and to analyse the results (good and bad) of the Advance II project, showing how the model has been developed over the project in the light of experience, the successes achieved and the challenges for improvement.

Listed in the table on the following page there is the best practice which is integral to the IPI model, and the benefits which might be expected as compared to the current performance since Egan:





Trial of Insurance Backed Alliancing under the IPI Model on Advance II

Before Advance II there were a number of partial IPI trials which stalled, primarily due to funding. Advance II (with LEP funding) was identified in 2014 and accepted on the Cabinet Office Trial Projects Delivery Programme (with monitoring by Constructing Excellence). It also became the nominated project under the Innovate UK grant.

Milestones:

2014: Dudley College identified the “cost certainty” of IPI in being able to make an earlier than planned start:

“To be perfectly honest, the college hadn’t really intended to start building this building until 2018, because financially we wanted to build up a bit of a reserve under the old design and build process to give us financial cover in case things did go wrong which they may do”

2015: After procurement without challenge, the new IPI Alliance Contract was signed by Dudley College and all alliance partners (May 2015)

2016: Phase 1 (pre-construction) completed, first IPI policy (with cost overrun cover) inception, and Phase 2 commenced (February 2016)

2017: Phase 2 completed and Latent Defects insurance for 12 years inception (September 2017).

Key activities and innovations during each of these stages are now examined in turn. Detail about the process at each chronological stage, together with the culture/activities and the tools and techniques available, can be found in the [Strategic Forum’s Integration Toolkit](#) under “resources/tools”, and relevant cross-references to the IPI model will be found at different stages.



Sign on site mentioned the partners down the left-hand side together with all key supply chain members. The Independent facilitation and risk assurance was by IPInitiatives, SECO/BLP, RLB.

Procurement

In “Public Procurement Policy” [2017] Crown Commercial Services make this key statement about “Value for Money”:

“Value for money is a key concept. It means securing the best mix of quality and effectiveness for the least outlay over the period of use of the goods or services bought. It is not about minimising up front prices. Whether in conventional procurement, market testing, private finance or some other form of public private partnership, finding value for money involves an appropriate allocation of risk”

Fortunately, in alliancing there is little opportunity to indulge in the traditional procurement flaws of lowest cost selection, fragmentation and risk-dumping. With all the key design, construction and specialist alliance partners appointed simultaneously at the outset, the selection process can only focus on finding the “best for project” team. This begs the questions:

- What is the need to be met by the project?
- What are the criteria that will mean it is a success?
- What is the affordable investment target, which is not to be exceeded?

Since all the skills required to deliver a “best for project” outcome will be found within the alliance, the client and his advisory team should be careful to avoid specifying solutions in advance unless this is absolutely essential (for example, the need to specify essential bespoke security products for incorporation in a prison).

The procurement process itself was developed for public sector projects which are – at least for the time being – governed by the EU Directive 2014/24/EU and the corresponding UK Public Contracts Regulations 2015. Although regularly blamed for imposing constraints on procurement, the processes adopted by the client on Advance II in compliance with the above Directives/Regulations have not been found to be counter-productive, and with minor simplifications can be used on private sector projects as well. They have now been updated with the benefit of experience on Advance II, and advice from lawyers who have specialised on setting up major infrastructure alliances in the UK and a leading QC specialising in public sector procurement.

The stages of IPI procurement are as follows:

- (1) Preliminary market consultation: many SMEs may not be aware of IPI, and in many cases specialist contractors don’t have access to OJEU since they generally respond to invitations from Tier 1 contractors
- (2) Invitations to express interest: Lots are established for each discipline of design, construction, and other specialist services to be represented on the alliance; the overall investment target is given, together with an indicative value (or percentage value) for each Lot; both on a “not to be exceeded” basis

(3) Prequalification Questionnaire ("PQQ"): this is identical for all Lots and includes the strategic brief, success criteria (including likely completion dates), and the investment target not to be exceeded; headline details of the alliance contract and IPI policy are given; and the questions (itemised under the PAS91 categories) and scoring system are also set out. During the PQQ period "Industry Days" are held, with time for questions and answers (which are subsequently confirmed to all bidders)

(4) Invitation to Tender ("ITT"): this is identical for bidders shortlisted from all Lots from the PQQ process, and the overall undertaking they give is that, if appointed into the alliance, they will collaborate and together create a solution that is "fit for the defined purpose" set out in the strategic brief for an agreed target cost that is within the overall investment target specified. It is therefore made clear to all bidders that they will be assessed on their suitability to join the alliance (not for an individual appointment). Key issues include:

- a. Are they culturally ready to accept a no blame/no claim arrangement under which their share of profit (or loss) might depend on others' failings, not just their own?

b.

How well will they collaborate in forming a "lean" team, working together to avoid duplication and gaps in resources?

- c. Will they genuinely enter into common information management practices?
- d. Will they genuinely enter into a fully collaborative way of working, and in doing so challenge traditional "silo" processes?
- e. What will they do to ensure best for project and best value outcomes?

It should be noted that recognition by both the EU and the UK governments of the pivotal importance of project staffing came with the addition into the 2014 Directive and 2015 Regulations (67(3)) of this award criterion:

- (b) *Organisation, qualification and experience of staff assigned to performing the contract, where the quality of the staff assigned can have a significant impact on the level of performance of the contract;*

The questions therefore focus on the qualifications, experience and costs of management, professional, technical and supervisory staff and resources, together with supporting overhead resources and profit earning. This information (when correctly derived) is capable of being compatible between all bidders, of enabling "quality/price ratios" to be assessed, and thereby of facilitating the

formation of a “lean” integrated team. Other questions are directed at determining whether there is a good understanding of

- the challenges of integrated collaborative working,
- performance measurement and monitoring,
- managing risk and adding value, and
- cost and cost-effectiveness

together with an understanding of the desired approaches to the resourcing of materials, labour, equipment and site facilities, directly or by subcontract (as appropriate)

The evaluation process and associated scoring system for the ITT must be clearly set out.

- (5) Bid evaluation: to form an alliance there are three stages:

- (1) Review of the written ITT submissions

- (2) Behavioural workshop with those staff from the bidders preferred to form the alliance, and
- (3) Interview of the proposed key staff offered by all bidders.

Each stage is scored on a declared system. In the case of the behavioural workshop, the focus is on culture, inter-action and collaborative traits, held in a deliberately pressurised environment, with the purpose of confirming that the preferred bidders are likely to succeed together in an alliance through “thick and thin”.

The procurement process concludes with the signature of the alliance contract by the client and his selected partners. But this contract is subject to the proviso that if the parties fail to reach “commercial alignment” within a certain period, the client may either replace a partner with an agreed substitute (a second-placed bidder) or terminate the entire contract.

Commercial Alignment

The essence of “commercial alignment” is the collective agreement of all the alliance members to deliver a project in accordance with the strategic brief at an initial target cost estimate that is within the client’s investment target. The corollary is the agreement of each alliance partner to deliver its part of the project in accordance with the strategic brief at a cost which is within the “not to exceed” value specified for its Lot in the selection process – unless otherwise agreed by all the other alliance members.

Commercial alignment is initially counter-intuitive, and 60 days is now allowed (which

may be extended by mutual agreement between the parties) so as to facilitate a thorough review and agreements founded on the creation of relationships and shared expectations within the alliance. Repeat alliances will of course need progressively less time. There are a number of key activities which have to be ongoing in parallel during this period:

- Selection (from the people put forward by each successful partner) of the “best for project” lean team, with a resource plan and budget for Phase1

- The Alliance Principles by which the members of the alliance will behave and conduct their business –akin to a “partnering charter” but of binding effect under the alliance contract
- The operating principles of the Commercial Model, including a common understanding of the components which make up defined cost, elemental cost planning, and forecasting of payments
- An Audit of each partner’s overhead and profit percentages (“OHP”), to be applied to the cost of its project staff in the lean team
- The parameters of the incentive data in the Commercial Model
- A Trust Deed and operating arrangements for the project bank account
- The selection and appointment of the alliance manager and alliance cost manager (both of whom should owe their allegiance to the alliance).
- Agreement on how the ring fenced sum of fixed overhead and profit allowances will be allocated between the parties.

Such activities demand engagement by some of the very best people within the organisations of the alliance members, who can be expected to forge lasting alliance agreements.



Commercial alignment is also the first opportunity for the alliance members to get properly acquainted with the independent facilitator and technical/financial risk assurers – with whom a collaborative relationship will be crucial throughout the project.

Successes

Because the procurement process is directed at assembling the “best for project” combination of alliance partners, the behavioural workshop is a crucial stage of that process. Commonly, as in the Advance II project, staff from preferred bidders are exposed to the client teams, for the first time, in a pressurised environment. The workshops are designed to see how people react to the situations they find themselves in.

At Advance II this proved to be an important opportunity for the potential team colleagues to commence the cultural alignment aspects of team development, and for the client and the independent facilitator to assess whether the mix of personalities would be likely to collaborate successfully. The behaviours observed were symptomatic of what actually transpired, and that is counted as a success in alliance formation. Changing a member of the lean team during the project is often

disruptive and destabilising, and for that reason generally a last option.

On public sector projects, the Restricted Procedure is considered the most cost-effective option for IPI procurement, although in some instances the Negotiated Procedure may be preferred. It should be noted that under the Restricted Procedure commercial alignment does not commence until after alliance contract signature, so that the commitments and synthetics of the successful partners' bids are firmly established and able to be utilised for the purposes listed above.

The selection and formation of the Advance II alliance was, with limited exceptions, successful. The enthusiasm for collaborating

in an alliance was generally evident from the outset, and despite the inevitable "ups and downs" did not fade during the course of the project. But lessons have been learned: notably that the more thorough the commercial alignment process, the less difficulties are faced in the subsequent Phases.



Challenges

The main challenge related to the enthusiasm by all alliance partners to complete commercial alignment, and thereby win authorisation to proceed with Phase 1. Under IPI Phase 1 (the pre-construction phase) is the opportunity for the first time for the alliance partners to leave their siloed comfort zones and collaboratively evolve innovative solutions that will be "fit for the defined purpose" set out in the strategic brief. But the lesson learnt is that this creativity must be set in the context of an agreed time-frame and budget. The disciplines of a resources plan, task-related budgets and time-frame must in future be established in principle during commercial alignment. The "Phase 1 project execution plan" must be established immediately Phase 1 commences – since otherwise these

disciplines will never be established and followed.

Linked to this is the "trinity" of quality, time and cost, against which these evolving options and solutions must be screened and filtered. Having already committed themselves to meeting the strategic brief and success criteria for a target cost that is within the investment target, the alliance partners should – before starting Phase 1 – set a stretch target built up on the basis of elemental cost planning. Only then can individual options and solutions be assessed in the context of the target and allocated budgets. It will be recalled that, in addition to committing to a "not to exceed" overall target cost which is within the investment target, each partner must individually commit to work within its "not to exceed"

value specified for his Lot in the selection process. The exception “unless otherwise agreed by all the other alliance members” is necessary, for example because of trade-offs between structure and services (as happened with the thermally active slabs in the Advance II project) and to accommodate refinements of the elemental costing generally.

Traditionally budgets are made by clients and their designers and recast by constructors; the collective responsibility of an alliance for cost planning does not come naturally. But without it, there can be no control and no reliable forecasting of cost outcomes. Alliancing under the IPI model provides the framework to overcome these issues, but there will be a major challenge facing all the

disciplines which would benefit from training in how to handle the challenges.

It is also at this early stage that the scene can be set for routing out process waste, with its impact on time and cost. With alliancing there are no silos, no grounds for protectionism, and no need for blame and claim. But there is also the “conundrum of collaboration”: openness, honesty and mutual respect through teamwork do not mean that issues can be avoided and not dealt with. There is no “soft touch” in alliancing, issues must be faced and promptly resolved in the best interests of the project. As will be seen, in the early stages of alliancing there are some difficult judgements which have to be made in how best to use available time.

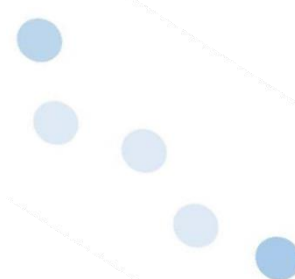
Phase 1 – preconstruction

Under the alliance contract Phase 1 starts when the client and the partners have reached commercial alignment. Payment for staff costs (at whatever level) starts, with the addition of such supporting overhead as is mutually agreed – with the balance of the agreed overhead and profit being paid on the initiation of Phase 2.

The early stages are typically conducted through workshops: having established the “integrated project team” (“IPT”), the alliance board must ensure that clarifications of the brief and formative ideas for solutions are generated under joint ownership, and that for example, the designers do not seize the initiative in their silo. Workshops, under independent facilitation, are a reliable way of ensuring that the IPT “starts right”.

Below are some examples of the issues that should be addressed in early IPT workshops:

- the level and logistics for BIM, with the consequent savings in specification-writing
- collaborative design processes between the design consultants, specialists, suppliers and constructors through the use of the graphical (3D) modelling of BIM
- planning for modularisation, prefabrication and mechanisation of site installation processes
- optioneering, drawing on the international expertise of the independent technical and financial risk assurers

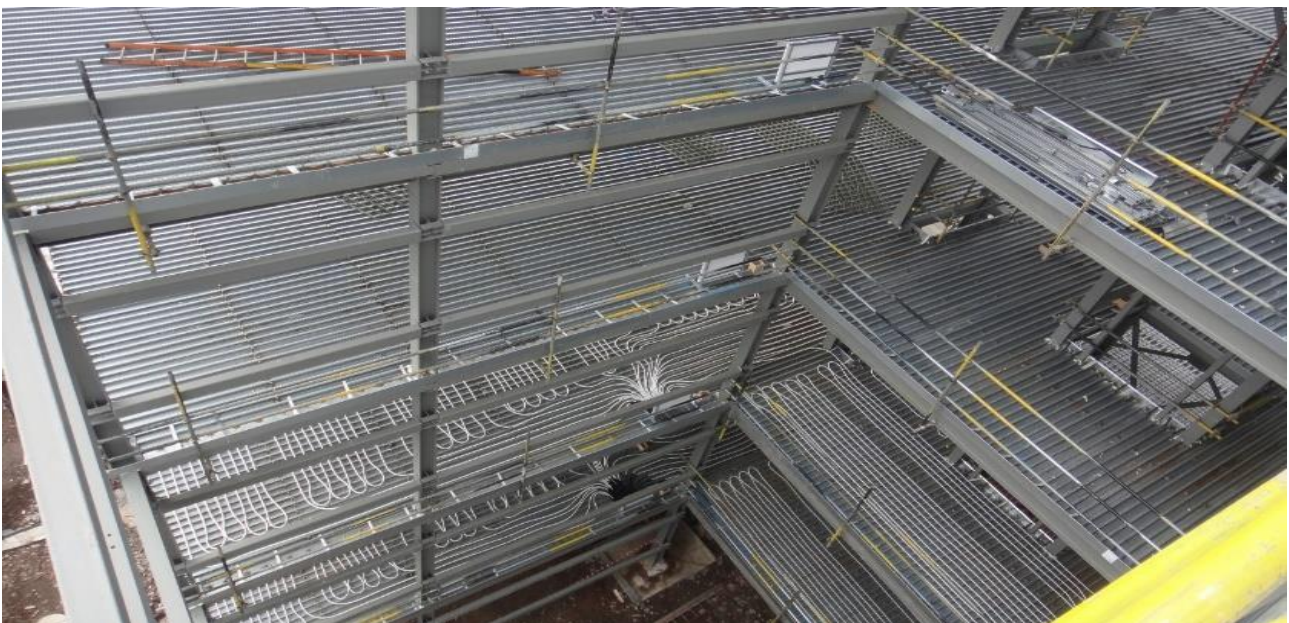


- focus on “fitness for defined purpose in the strategic brief” in preference to non-statutory codes and standards
- procurement strategies that facilitate appropriately early responsible engagement with the supply chain
- cost-planning “top down” against the investment target, subdividing optimum cost and risk allowances
- management of decision making through the evaluation of opportunities and risks

Maximum advantage must be taken from these innovative opportunities during Phase 1. After the end of Phase 1 and policy inception the focus will be on compliance and cost-effective implementation. One notable example of such collaboration on Advance II was the collective decision of the alliance partners during Phase 1 to create a thermal adaptive building structure. This included a high performance thermal envelope, engineered natural ventilation, and active thermal mass using TABS heating. Such an innovative solution for a building with low energy requirements would have been unlikely if the various specialists in the IPT had been working in silos.

In principle BIM enables workshops to deliver “best for project” solutions cost-effectively, with buy-in from all members of the IPT, thereby crucially avoiding the traditional problem of re-engineering. But this is impossible without having available input from relevant suppliers (a term used to include suppliers who also install, such as cladding and ductwork suppliers). For example, an early choice must be made between a steel or concrete structure, whereupon the specialist input to explore opportunities for modularisation, ready-made connections, and the logistics of assembly needs to be available to the IPT – indeed there is an option for a successful supplier whose scope is high value/high risk to become a late-joiner as an alliance partner. However, the preferred course is for early supplier involvement for the reasons given below.

Thermal adaptive building structure (“TABS”) awaiting concrete pour



Traditionally procurement practices tend to delay commitments to suppliers until late on (arguably just too late), and to use the delay to conduct “dutch-auctions” between suppliers. In these circumstances, valuable information may be withheld by the suppliers lest they lose competitive advantage. Early involvement and appointment demonstrates that suppliers will generally respond well to equitable treatment and welcome the opportunity to become part of an alliance which subscribes to ethical alliancing principles. To facilitate this process a new consultative “Supplier Alliance Subcontract”, compatible with the Alliance Contract, has been produced for trial, which

- enables suppliers to be appointed during Phase 1, subject to the proviso that Phase 2 goes ahead
- gives options for supplier design input for payment and with opportunities for risk-sharing incentives
- affords the supplier appropriate status within the wider “alliance family”.

Whilst early supplier involvement is considered essential, it brings with it certain logistical and managerial challenges. But these are just challenges that can be overcome with BIM and a culture of integrated collaborative working. There then open up further opportunities for the alliance to excel against the key success criteria in areas such as sustainability (with low carbon and low operating costs) and the introduction of innovative products that will be best for project and deliver “fitness for the defined purpose”. The IPT is free to do this because codes and standards that do not have statutory authority are not mandated in the alliance contract, and the practice of

handing over specifications to transfer risk from design to construction parties is eliminated.

Phase 1 ends when the partners have decided, developed and documented their proposed solution to the point where they are able to confirm that it will

- be fit for the defined purpose in the strategic brief
- meet the success criteria, including the client’s completion requirements,
- be delivered for an agreed target cost that is within the investment target.

The end of Phase 1 also marks the point when

- the alliance partners have sufficient confidence to agree gain/pain share allocations
- the independent facilitator (“IF”) is able to confirm to the client and the insurers that the alliance members are complying with the alliance principles;
- the independent technical and financial risk assurers (“TIRA” and “FIRA”) are able to confirm to the client and the insurers that the Phase 2 project execution plan and Commercial Model make adequate allowance for all known and foreseeable technical and financial risks associated with executing the project; and
- the insurers agree to incept the IPI policy including the cost-overrun insurance.



Successes

BIM is a fundamental element of the training facilities in Advance II, and indeed the Principal of the College indicated from the outset that he would like the students to be able to see tangible examples of the benefits of BIM in their learning environment.

Enthusiasm and commitment to work with BIM were key points within the PQQ and ITT process, and the resultant alliance was united in its decision to work towards BIM Level 2.

"All IPT members interviewed agreed that IPI and BIM work very well together. The collaborative nature of both techniques has so far worked very well"

University of Reading

The IPT formed a "BIM Subgroup" which helped the College to prepare very detailed "Employer's Information Requirements". This included stakeholder engagement to understand the information requirements, to determine the "Plain Language Questions" and to produce a tailored information set to allow the College to more efficiently and effectively manage the facility. They then produced a single BIM Execution Plan ("BEP") in response – the collaborative nature of the project meant that they did not need to have separate pre-contract and post-contract BEPs. A Common Data Environment ("CDE") was also established early on.

The IPT has also agreed to deliver a COBie file to the College (although it has not been specifically asked for one) as a further part of the educational process. Collation of asset data from the suppliers had however to be organised by the alliance on their behalf, as

realistically most do not yet have the capability.

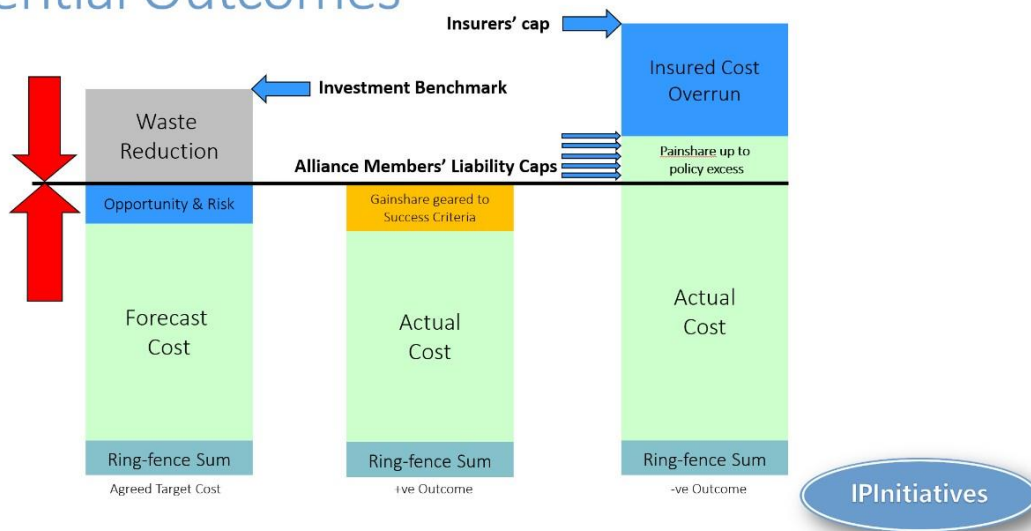
As a more general observation, the IPI model fundamentally changed the design process for Advance II: given clear success criteria, the whole team started by agreeing the sustainability goals, and then arrived at the particular solutions to achieve those goals. There was more early design work than normal, but all parties were involved including suppliers, so a great deal of the design was done only once with no need to redesign later. There was however room for continuous improvement (in the case of Advance II the design of the façade was changed in isolation from the team).

"Having clear success criteria is very important to the IPI approach, and with Advance II the client is very clear on these"

IPT

None of this would have been possible without an environment of integrated collaborative working. Different people from different organisations took initiative at different times to plug a skills gap or undertake a task which was slipping – all facilitated by the integrated costing of IPI. There was huge enthusiasm, particularly on the part of the SME partners, to innovate to improve the quality and performance of the facility, cut out wasted programme time, and to avoid wasted costs. Product and process innovation were therefore being attempted simultaneously, and in anticipation of success, betterment was being volunteered to the client without preoccupation over the costs involved.

Potential Outcomes



This is not to say there were no challenges in relation to time and cost (see below) but the alliance maintained a positive “can do” attitude throughout, which in turn gave confidence to the independent facilitator and risk assurers for a successful outcome. The above diagram shows how the target cost is developed under the IPI model as a challenge to the investment benchmark, and the alternative outcomes, with the insurers’ cost overrun cover kicking in if the maximum excess is incurred.

Policy inception did however inevitably entail a “leap of faith” by all involved, including the insurers, which the Advance II board eventually took due to commitment to the future of IPI and the belief that risks could be contained and opportunities realized, in part because of the “no blame/no claim”

culture and the collective gain/pain mechanism. The client’s primary motivation for taking out the IPI policy was cost overrun cover – in contrast to the possibility of an escalating final account under normal contracting methods. Cost certainty was paramount for the client. Credit is also due to the insurers who agreed to trial the cost overrun cover in an alliancing context. They would not have done this unless they believed in the IPI model which incorporated binding no blame/no claim provisions, the strength of the alliance itself and the independence of the facilitator/risk assurers.

In all these novel circumstances the agreement and insurance of a target cost 6.5% below the investment benchmark was a notable achievement.

Challenges

The early adoption of a single BIM Execution Plan representing the whole supply chain process has already been noted as a success, but the innovative thinking entailed in achieving this detracted from other more

routine good practice. The alliance contract requires there to be a Project Execution Plan for each Phase which is considered essential for discipline and control, but the plan was not as strong as it should have been. The key

elements of a PEP which received lower priority in Phase 1 included:

- identification of roles, activities and budgets for the phase tasks
- cost management procedures and cost and cash flow forecasts
- procurement and contracting strategy
- identification of suppliers and supplier plan
- integrated design and delivery programme listing time and resources required, having regard to the earliest acceptable date for completion (if applicable).

A key alliance partner was the “project coordinator” (a term chosen to embrace candidates from both the consultancy/project management and the contracting/construction management sides of the industry) whose role was to lead on design/BIM management, logistics, waste reduction and associated cost control. This was a demanding role in the environment of IPI, but it became even more difficult in the absence of agreed benchmarks such as those listed above. The alliance partners were therefore prone to condoning events which would inevitably cause delays and/or extra costs, and – in their enthusiasm to make the IPI model work and to please the client – were reluctant to broach them with the client at the time and prior to agreement of the target cost and programme for Phase 2. As will be seen, the financial and scheduling impacts of these betterments became clear for all to see as Phase 2 came to a close.

The involvement of the independent technical and financial risk assurers presented a challenge in Phase 1. Their purpose is to give confidence to the IPT to innovate, by being in a position to give independent assurance (or otherwise) about

the sufficiency of the innovations. On one hand, the assurers cannot offer this advice before an innovative design has been created; but then there is the risk that this design has become too embedded to be changed in favour of another, perhaps more innovative, solution. SECO, the TIRA, is based in Belgium, and they reviewed emerging designs on BIM online, only attending periodic meetings. It would not have been economic for SECO, or their local partner BLP, to attend all IPT meetings. A balance has to be struck (perhaps by structuring early brainstorming and thereafter more regular but smaller meetings), but recent events in the UK underline how correct it is to have embedded independent assurance into the IPI model.

The early engagement of suppliers also became an issue when it became clear that their products and contributions to the design were essential to the successful delivery of the project. Old habits die hard, with the designers wanting to wait for the suppliers to assist with their design solutions, and the constructors wanting to wait for designs before appointing suppliers. The reality is that both the designers and the constructors relied on the suppliers to explain the practical and financial attributes of their products, and until they were appointed and participated in the design process, decisions were either deferred or subject to change.

Although great strides were made in using BIM Level 2 in place of traditional practices (with the pressures they created), experts on BIM in the consortium stress that a further challenge lies ahead on future projects (whether IPI or traditional). To facilitate ongoing asset management all the details of the products installed supplied directly using

data structured in a computer readable format.

Everyone involved found the process of agreeing the target cost difficult, and came to see that the core issue was the need for robust, early design stage cost input with supplier involvement at a building elemental level.

As a result of these issues there was more “competitive tension” in agreeing the target cost and the construction programme than was appreciated at the time or indeed warranted, and time was lost recycling these arguments before agreement was reached. When agreement was eventually reached and the go-ahead given for Phase 2, it was possible to foresee from the opportunities and risks that were “on the table” at the time a very real prospect of a successful project outcome.

Although the first IPI policy was successfully incepted, the process of achieving closure between the insurers and the alliance board delayed the project by about 8 weeks which inevitably shortened the Phase 2 development and construction programme. Particular issues that had to be considered and/or resolved included:

(1) The potential eventual net impact of the risk register

This showed £625,000 of opportunities and £552,000 of risk and required initiative and persistence to resolve. This involved the differences in perception and belief of both individuals and organisations: “glass half fullers” seeing a huge opportunity to eliminate all the risks; and the “glass half empties” seeing failed

opportunities and all the risks coming to bear. In time the team came to realise both were in their control. The degree of technical innovation on Advance II was also duly assimilated by the technical and financial assurers, whose reports were reviewed and discussed with insurers prior to IPI policy inception

(2) The allocations of gain-share/pain-share between the alliance members

Considerations included assessing the importance of achieving the success criteria against pain affordability. The Advance II alliance members opted for equal gain/pain shares (with only one exception)

(3) The maximum pain-share

This was expected to be set at £500,000 but it was soon recognised that this represented a sudden transition of risk from the alliance to the insurers (who had agreed a £2,000,000 cost overrun indemnity). This was largely resolved by the alliance members and insurers agreeing to share the risk incrementally above £390,000 with the alliance taking 10% of the pain and the insurers 90% (the same indemnity). The effect was to increase the pain-share limit to £590,000 in recognition of the significant reduction in financial risk to the alliance members as a result of the shared nature of the cost overrun cover.

(4) The cost of the IPI cover

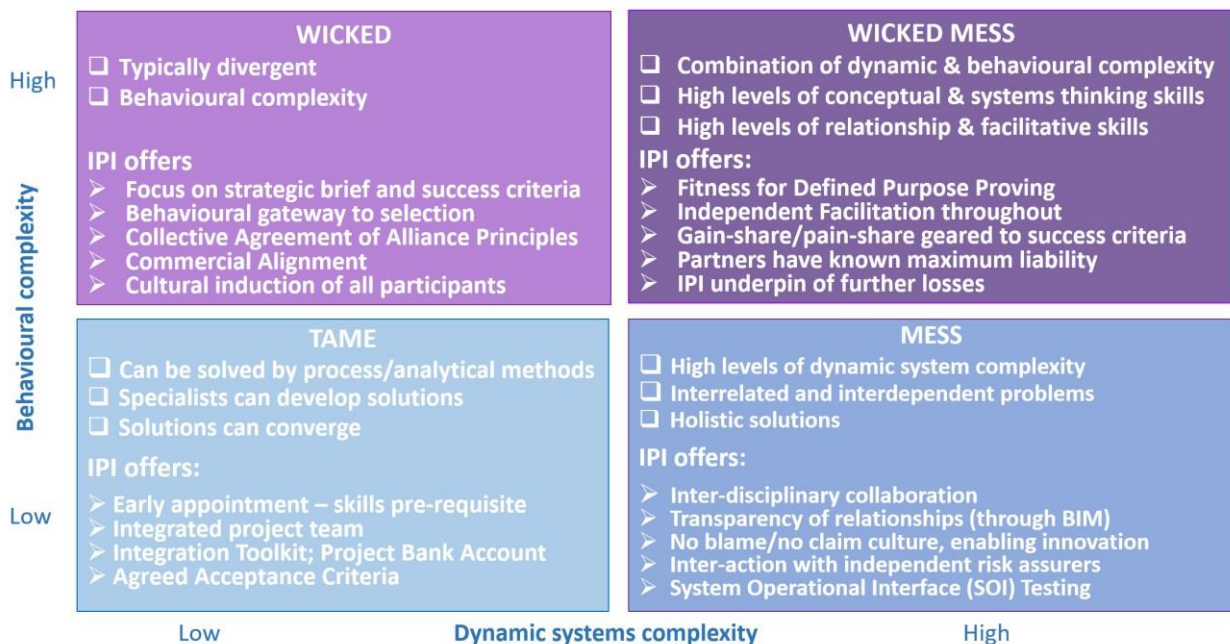
Because there was no precedent for the financial loss element of the cover, insurers had to engage in detailed consideration of the cultural, technical and financial risks

inherent in the IPI process as a whole before they would agree to incept the policy. They also had to achieve internal “sign-off” of this new class of insurance which could only be done at the end of Phase 1 when the project risks and opportunities were reasonably clear. This resulted in an increase of the premium by 1.5% on a “one-off” basis from that originally indicated, resulting in a final premium cost of 4% of the project cost (which it should be noted also covered the cost of independent facilitation and technical and financial risk assurance, and 12 years’ latent defects cover). This increase was included in the agreed target cost. For future projects the percentage is expected to settle around 3% of the project cost as insurers become more familiar with and gain

confidence in the IPI process with experience, depending of course on the specific risks involved.

At this juncture it is pertinent to reflect on the management of opportunities and risks – which is critical for successful IPI. Opportunities for savings normally only arise from sacrificing profit down the supply chain; and risks are too often buried in lengthy risk registers. A fresh insight into this problem is afforded in the book “Tame, Messy and Wicked Risk Leadership”³ by David Hancock, chair of the Government Construction Board for the Cabinet Office and Infrastructure and Projects Authority. With his kind permission the matrix of “dynamic systems complexity” and “behavioural complexity” from pages 62 and 63 of his book is reproduced below, and the measures offered by IPI against each risk category in each quadrant are added for consideration.

Tame, Messy and Wicked Risk Leadership, and IPI



³ISBN 978-0-566-09242-8

Phase 2 – detailed design and construction

With the basic concepts and principles agreed during Phase 1 the focus now shifts to detailed design and delivery activity: Phase 2 is all about efficient delivery in accordance with the agreed Project Execution Plan. Not that the time for creativity and innovation has totally passed, as there is always the opportunity to improve delivery processes and procedures and to creatively address unforeseen issues.

The procurement and contracting strategy can now be put into practice as the early key supplier involvements are confirmed and other suppliers are selected. Decisions can be taken as to the appropriate degree of affinity which suppliers should have to partner status – e.g. degree of access they should have to the CDE, 3D model, target cost plan etc.; whether they should be “named” as beneficiaries of the Project Bank Account; whether they should be paid on a reimbursable, measured or lump sum basis; and if/how they should be incentivised in relation to all or some of the project’s success criteria. It is a key role of the independent facilitator to assist in drawing the primary specialists/suppliers out of their “subservient shells”, with lasting benefit to the alliance. The certainty of the new Supplier Alliance Subcontract compatible with the Alliance Contract should help in this process.

Even with the flat structure of an alliance there will be several tiers of the supply chain, but each member should be there for a

specific purpose, and all should collaborate efficiently⁴.



A replica of an ancient Greek trireme in which 170 Athenians rowed in 3 tiers in unison

In the case of Advance II, the IPT settled into two types of meetings:

- 3D model reviews, with the up to date design details on screen (and visible also to distant participants on Skype) where all key design issues were addressed, and
- progress monitoring and reporting, including opportunity development and risk mitigation

The alliance board had a monthly high-level monitoring and decision-making meeting based on the IPT reporting.

Workshops continued to be held focusing on particular issues as required. For example, from a “Build in a Day” workshop using the 4D model, a change in the sequence of the hangar installation was evolved to suit the optimal installation of the façade and water tightness of the teaching block. In “Plan in a Day” workshops, the team including the

⁴ Picture kindly provided by Professor J S Morrison, co-author of “The Athenian Trireme – the History and Reconstruction of an Ancient Greek Warship”

suppliers agreed the optimal installation sequences based on time, cost and interfaces; this led to improvement in the details, innovations being identified, and advance resolution of the kind of issues which normally only come to light during the actual installation process.

Continuity of information was preserved: 3D - generated coordinated drawings and schedules, with some use being made of a 5D (cost) model to analyse quantities and support the cost plan. The team worked through process and procedure issues to ensure they did not delay progress.

Opportunities and risks were identified through a combination of BIM and the focused scrutiny and human intervention it facilitates. The IPT adopted a mix of Soft Landings and Government Soft Landings to cover some parts of the project

The Organisational Information Requirements (OIR) and Asset Information Requirements (AIR) as detailed in PAS 1192-2 and PAS 1192-3 were also defined. The use of the risk register and continuous design review via the 3D model review and progress monitoring and reporting meetings described earlier went some way towards the development of acceptance criteria which clearly defined what would constitute “fitness for defined purpose” sign off, and set the project off with Soft Landings embedded in everyone’s thinking. This was vital in ensuring that the final design solution was practical and achievable, and by constantly comparing the design solutions with the client’s success criteria the outcome met the client’s needs.

Successes

Phase 2 for Advance II started on 23 February 2016 with completion (sign off by TIRA and transition to LDI cover) on 8th September 2017, ready for the start of the Autumn Term. It is worth noting that completion here means ready for use and includes accommodating client fit out and operational readiness. This readiness was assured by the System Operational Interface (SOI) testing and building proving, meaning the facility was ‘dry run’ before use resulting in the handover of an operational facility with remarkably few defects outstanding. An overview by one of the insurers is pertinent:

“I think we’re pretty satisfied... I feel relatively positive about what happens next. ... so let’s try and build something that’s a bit more sustainable. ... I think that there’ll probably be more opportunity or more topics for consideration once [Advance II’s] concluded and there’s a bit more feedback on the merits of the process.”

This focus on quality was a key feature of the reengineered approach to delivery: to quote the client several weeks before handover:

"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 minds. 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."

It is significant that the majority of the alliance members are keen to continue on to the next IPI trial project, confident that this will help to realize the full potential of Insurance Backed Alliancing. Furthermore, with particular reference to Advance II,

Speller Metcalfe have won Building's Contractor of the Year 2017 (up to £300M) award, with the judges highlighting "They embrace a wholly innovative approach with the perfect mindset"

Challenges

Looking back, however, there is huge potential for further improvement, the most significant challenges of course being over cost, time and risk.

On cost, as already mentioned, the traditional divide between design and construction has resulted in some members of the team being unfamiliar with elemental cost planning (as opposed to estimating given designs), whereas cost planning must be integral to all members' decisions. There has been a need to remind the team about "affordability" – which is not just about cost but also the time and effort to make balanced decisions, taking into account the consequences on programme, progress and quality of outcomes whilst maintaining focus on the needs set out in the strategic brief and success criteria. Linked to this is awareness of the dangers of trying to over-please the client, by being overambitious about what is possible, and by agreeing to change or betterment against the strategic brief without simultaneously establishing and agreeing any extra costs or schedule impacts entailed. Likewise, if due to capability gaps on BIM specialists/ suppliers need part of

their service to be undertaken by others in the alliance, this cannot necessarily be offered gratis. Examples of both such situations have occurred on Advance II, and retrospective negotiations are unlikely to compensate fully for the downsides. Such over-enthusiasm and procrastination also created difficulties for insurers.

On time, there have been major lessons and challenges. The first is analogous to the point just made under cost: if delays or associated risks arise which qualify as a "Review Event" – such as a material change to the alliance information proposed by the client or force majeure – then under the Alliance Contract the consequences on the target cost, time for completion, opportunities and risks must be resolved contemporaneously by the alliance board. On Advance II there was informal recognition of this, but formal resolution of the delays and cost effects was left until the end. The failure to comply with basic contractual discipline is not new, but it detracts from the other ground-breaking improvements of the IPI process. The second challenge relates to planning and logistics. Planning should not only go forward

from the starting point: it must also work backwards from completion including commissioning - indeed, the “Soft Landings” process runs right back from operation to inception. Overlaps and gaps at the meeting points can then be ironed out, so as to make efficient use of available time throughout the programme across all areas. Failure to do this inevitably results in a crash of priorities, with the resultant disruption on site, commissioning issues, delayed completion and a disastrous handover⁵

At Advance II this approach was attempted too late, but was also challenging in principle to some. Those specialists and suppliers who became proactive at “Plan in a Day” workshops were often able to propose practical logistics that avoided “dead time”, uncoordinated activities and clashes.

The traditional habit of reprogramming to fix slippage instead of addressing the root causes of the slippage is also a key target, and the discipline of agreeing the sequence and time-line and sticking to them is still not a core competency.



On opportunities and risks, there has been a tendency to dwell more on the obvious risks than the more innovative opportunities, and the facilitators and, to some extent the risk assurers, have had to refocus minds.

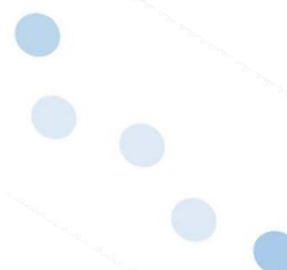
The later such initiatives are left, the more difficult it is, of course, to achieve benefits. There is however a recognition, in hindsight, by both the team and the independent assurers that there was “innovation overload” on this first IPI pilot project.

Outcomes

In terms of the IPI model, its first trial has followed the adage *“If you don’t make mistakes, you aren’t really trying”*.



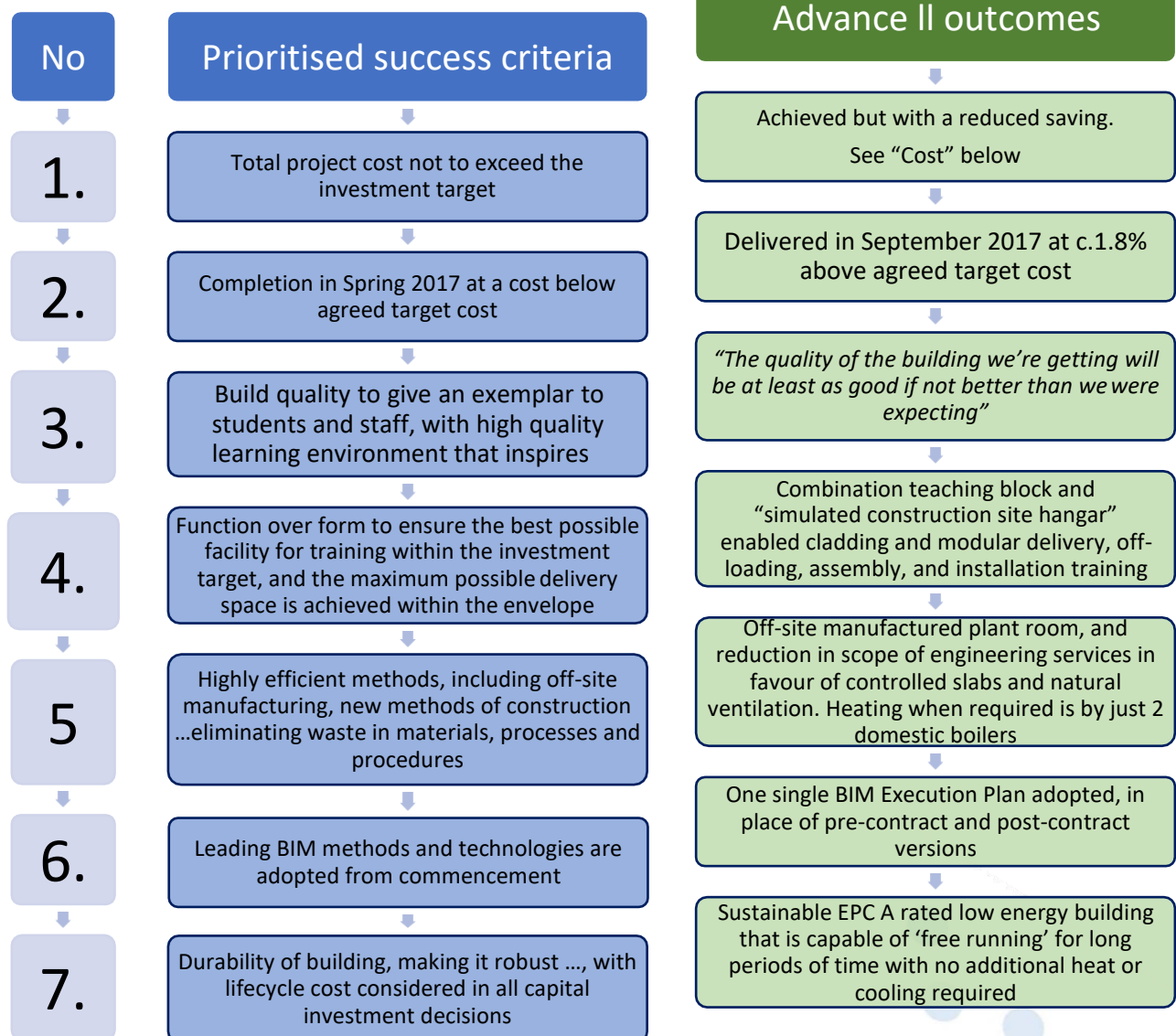
⁵ Copyright “Lee Krystek (2005)” is acknowledged, and reference is made to <http://unmuseum.mus.pa.us/>



The game-changing innovation has been that (a) the IPI procurement approach, (b) the alliance contract, (c) the IPI policy, with (d) the active support of independent facilitation, have collectively changed behaviours from the liability/blame culture of silos to the collaborative and integrated approach of an alliance – despite challenges that have hurt the partners’ “bottom line”. Because of this new approach, the IPT on Advance II went much further than most other construction projects in applying BIM Level 2, doing so to the extent which is beneficial for Dudley College now and for the foreseeable future – a complementary game-changing development. Furthermore, the

updated Integration Toolkit is publicly available for use by those who wish to practice collaborative working in whatever form.

In terms of the Advance II trial project, the Principal of Dudley College made clear from the outset – and repeated at the end – that his only interest in IPI was to give him a successful, timely and cost-effective project. It is therefore pertinent to consider the outcome of Advance II – as delivered under Insurance Backed Alliancing under the IPI model – against the key success criteria of Dudley College.



In elaboration of items 1 and 2, the outcomes of cost and time are shown below, remembering that under the IPI model both time and cost targets are intended to be challenging:

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 and fittings and VAT.

The overspend was funded by painshare with over 80% of c.£180k funded by the partners. When the reduction in the target cost is also taken into account the outcome is 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.

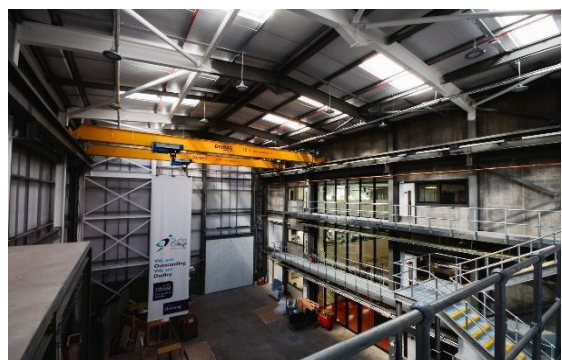
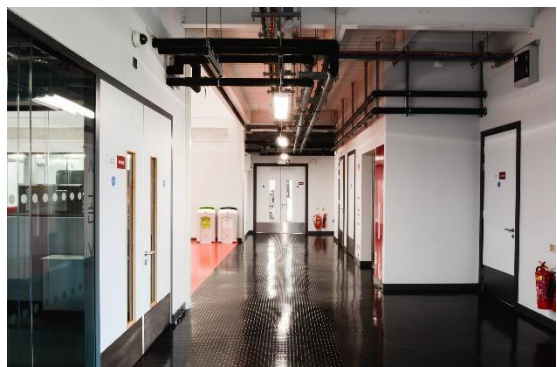
Time

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

Review Events have been agreed 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. After discussion and advice, it was agreed by the alliance board that the time painshare formula in the Commercial Model for this first pilot project was flawed and its effect would, in the particular circumstances, be penal and therefore unenforceable. The impact was moderated accordingly.

Energy Performance

In elaboration of item 7, using the CIBSE Test Reference Year for Birmingham the thermal modelling has confirmed that the Advance II building achieves an Energy Performance Certificate (EPC) of A, with a CO2 emission at 72% of the "norm" and a regulated energy demand at 79% of the "norm".



Some observations by the Client on the IPI model

Although the Principal of Dudley College welcomed the opportunity to be the first client to trial the IPI model, he made it clear that his priority was the successful delivery of Advance II; the model was just a means to that end. The observations below made by the Principal and his successor in interviews after project completion will therefore be of particular interest to prospective clients of IPI.

But for this model to be sustainable it must benefit all participants – whose observations follow on the next page.

“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. It’s 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.”

“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 overruns. 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 metre.”

Other participants' observations

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 "best for project" mentality certainly promoted a genuine holistic approach to problem solving rather than being restricted by individuals typical primary concerns (dependent on their role on a project) i.e. Can we afford it? Can we do it in time? Do we need to do it etc?

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

Action Plan to realise the full potential of Insurance Backed Alliancing under the IPI model

One unequivocal message comes out of this first trial of Insurance Backed Alliancing under the IPI model: skills deficiencies. These lie in the following areas:

- 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 and 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.

The proposed action plan, emerging from this Innovate UK project to “deliver more for less under the IPI model” and the lessons learned from the first trial project at Dudley College, will comprise a video and this prospectus, followed by 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.

The Future

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 funder⁶.

The use of the procurement approaches in this report is designed to reduce construction risk and therefore may be useful in enabling the successful commercial wrap of the risk in private finance schemes. It should be noted that cost overrun cover under the Integrated Project Insurance could provide cost effective form of financial security to any funder

Procurement Lean Client Task Group

⁶ 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

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. 8The 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”.

Initial contact should therefore be made through 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.

Dudley College liked the IPI Model so much they are using it again, on a new £26m Project for Transformational Technologies

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