Trial project: Dudley College Institute of Transformational Technologies	New delivery model / procurement route: Integrated Project Insurance

Case Study 1

Key Specific Objectives:

- Predictability of completion at a cost which is below the agreed Target Cost
- Build quality to give an exemplar to learners and staff, with a high-quality learning environment that inspires
- 'Function over form' to ensure the best possible facility for training within the investment target and the maximum possible delivery space is achieved within the envelope
- Highly efficient methods, including off-site manufacturing and new methods of construction are considered in the design and delivery of IoTT eliminating waste in materials, processes and procedures
- It should create 20 apprentice positions and a live training environment for the college and its partners as part of its construction
- The IoTT is required to achieve an EPC A rating.

Trial report sequence:	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

Project title	Institute of Transformational Technologies
Clients	Dudley College
Overall Project value	£25.7m including land, equipment & fittings and VAT
Investment Target (capital cost)	£17.36m
Form of project	New build educational facility
Independent facilitation and risk assurance	IPInitiatives Technical: Building Life Plans Financial: Rider Levett Bucknall
Alliance Members	Dudley College Cullinan Studio: architects GCA (UK): structural and civil engineers Cundall: multi-disciplinary engineers Fulcro: digital co-ordination Speller Metcalfe Malvern: constructor Derry: building services specialist
IPI Brokers	Marsh

Key Suppliers	Traditional Structures: steel frame MSW UK Ltd: structural floors Uponor Ltd: TABS System (heating & cooling) BC (Roofing Contractors) Ltd: external cladding Dunton Environmental: ground remediation Walsh Construction Ltd: groundworks All Glass Systems Ltd: windows & curtain walling Monarch Roofing Co.: roof system Planet Partitioning: glazed partitions Roskel Contracts Ltd: drylining

Executive Summary

This Institute of Transformational Technologies ("IoTT") facility is the second project to be procured and delivered on behalf of Dudley College under the Integrated Project Insurance model which 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

Dudley College had elected to use the Integrated Project Insurance procurement & delivery model on its Advance II project. The outcomes are recorded in three Case Studies and were such that the College selected the IPI model as the procurement route under its application for funding under the Government's Institute of Technologies programme and the Black Country LEP.

This Case Study describes how the designers, specialist contractors, constructors and project coordinator/integrator were appointed in compliance with the current EU Directive and UK Public Contracts Regulations at the outset under an "Alliance Contract" which has been developed for fully integrated collaborative working under the IPI model; it concludes with a description of the early Phase 1 activities.

Project summary

Project timeline

- 8 March 2018: invitation for Expressions of Interest ("EOI") in OJEU
- 15 March 2018: Industry Day
- 16 April 2018: return of Standard Selection Questionnaire ("SSQ")
- 4 June 2018: return of Invitations to Tender ("ITT")
- 18 - 29 June 2018: interviews and behavioural workshops
- 4 July 2018: announcement of Award under OJEU
- 2 August 2018: Alliance Contract signed by all the Alliance members.
- 27 September 2018: Commercial Alignment of Alliance Partners completed
- 27 September 2018: Phase 1 start and design validation
- 25 January – 18 April 2019: suspension awaiting approval of initial funding from DfE.
- 15 May 2019: admission as a trial project under the Cabinet Office/Constructing Excellence Trial Projects Delivery Programme
- 24 February 2020: commencement of site enabling works.

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
- Efficiency gains whilst cutting process waste
- Free of liability inhibitions to BIM
- Free of insurance limitations for SMEs

Client objectives and vision

Vision

The IoT will support the development of a technically skilled workforce responding to the region's STEM skills gap and the deficit of adults with L4+ qualifications. The IoT's focus will be careers not qualifications including pathways for product design engineers; manufacturing technology engineers; digital engineering technicians (Building Information Modelling); construction assembly technicians; science industry maintenance technicians; biomedical systems engineers.

Strategic Brief

Accommodating over 1,200 learners per annum by year 5 of operation, including full-time, part-time and Apprenticeship study, the outline planning and funding applications for the IoTT main campus were for two distinct buildings comprising the following facilities:

- Construction Manufacturing workshop for 36 learners
- Advanced manufacturing labs and workshops for 90 learners
- Materials testing laboratories for 40 learners
- BIM suites for 120 learners
- Medical engineering suite for 36 learners
- Laboratories for 160 learners
- A lecture theatre for 100 learners
- A conferencing facility for 35 delegates
- Learner services facility
- Suites of rooms including IT, general classrooms, tutorial/meeting rooms
- A Café bistro for 140
- Common room spaces for each building
- 'iPoint' learning zones for 80 learners
- Staff rooming for 60 staff
- Sufficient associated storage facilities

Success Criteria

- Predictability of completion at a cost which is below the agreed Target Cost
- Build quality to give an exemplar to learners and staff, with a high-quality learning environment that inspires
- 'Function over form' to ensure the best possible facility for training within the investment target and the maximum possible delivery space is achieved within the envelope
- Highly efficient methods, including off-site manufacturing and new methods of construction are considered in the design and delivery of IoTT eliminating waste in materials, processes and procedures

- It should create 20 apprentice positions and a live training environment for the college and its partners as part of its construction
- Leading BIM level 2 or better methods and technologies are adopted from commencement including soft landings considerations from BSRIA from the start
- Durability of the building making it robust, easy to maintain and clean, with life-cycle cost considered in all capital investment decisions
- Design, delivery and operation of the IoTT will engage all organisations in leading edge practices. All parties will promote their involvement and the successes achieved and provide legacy support to the educational functions to be delivered
- It is preferred that the buildings will be predominantly naturally ventilated
- Flexibility of the facility to be remodelled to meet future changes in demands and training methods, rather than adaptability for short term change
- Design aesthetics of the building must make a statement of its quality and that of the Institution it represents
- Where possible local and regionally based staff, operatives and SME organisations will be involved in delivering the project
- The construction site will be well organised and clean, highlighting the aspiration of the efficient procurement and construction methodology being used

- Whilst the IoTT is not required to achieve BREEAM excellent, there is an aspiration that the best from BREEAM combined with a highly efficient external envelope, in terms of air tightness and thermal efficiency, will result in a building of very low running cost
- The IoTT is required to achieve an EPC A rating.

New procurement techniques and processes

The project has been procured through the Integrated Project Insurance (IPI) model championed by the Cabinet Office. The design and construction team, headed by an Alliance Board, a group of lead executives from the project team, and the College's Capital Build Lead will oversee the design and construction process for the build, reviewing progress, risk management and programme delivery, reporting progress to the Transformational Technologies Partnerships Ltd Board. The Alliance Board meets monthly to ensure the build project is fully monitored and timely actions and decisions are made.

Tender process

Details of numbers of Expressions of Interest, Pre-qualifications and Tenders received from the Industry are below.

	Category/Lot	Expression of interest	Pre-qualification	ITT Tenders	Interview /behavioural workshop
1	Designers				
	1.1 Architect	6	5	3	2
	1.2 Building Services	4	4	3	2
	1.3 Structural	5	4	3	2
	1.4 Civil	5	4	3	2
2	Specialist Contractors for Digital Co-ordination and BIM Information Management	2	2	2	2
3	Specialist Contractors for Mechanical & Electrical	3	3	3	2
4	Constructors	2	1	1	1
5	Project Co-ordinator /Integrator	2	2	2	1

New procurement techniques and processes (cont)

The processes of analysis and scoring were similar to those adopted on Dudley Advance II, with interviews being followed by behavioural workshops, and then alliance award. It did however become clear that the unique arrangements for calculation of corporate overheads and basic profit were not readily understood by bidders, particularly those from the contracting and subcontracting part of the industry; they have therefore since been rationalised and clarified.

Alliance Contract

The Alliance Contract, being an integral part of the IPI model, remains under trial, and Revision 3 of Edition 1 was signed on Dudley IoTT. The revisions entailed no fundamental changes; rather drafting changes to remove inconsistencies, simplification of complex issues such as grounds and remedies for determination, and clarification.

Commercial Alignment

For some of the partners this was their second IPI project, although the personnel were not all the same. The BIM coordinator, from Fulcro, was however the same and became the catalyst for the other receptive partners to adopt a federated digital model from the outset. Digital recording and 4Projects were used, and later utilisations will be described in the second Case Study.

An early step in commercial alignment is the appointment of the alliance manager by the Alliance Board. The decision was for a joint appointment: Steve Johnson, the Executive Director of Estates and Capital Projects of the College (who understood the benefits of close client involvement and wanted to have a direct but light touch) and Louise Lado-Byrnes, a director of IPInitiatives (who would handle the day-to-day role).

The alliance principles were subsequently agreed as follows:

I	**Innovation**	**Personal and team growth; Increase self-awareness; Challenge norms; Be curious, refine and develop; Mentor each other; Maximise human potential.**
N	**No Blame**	**A honest and open approach; Be transparent and inclusive; Prioritise 'Best for Project' decisions, techniques, and behaviour.**
S	**Shared vision**	**Collaborate as one team, focussed on a common goal; Group unity and integrated approach; support each other. Remember who we are delivering the building for - DCT students and the local community. A focus on the "Best for Project" Solution**
P	**Passion**	**Show commitment and dedication; Be motivated and resilient; Bring your best game; Respect each other. Have fun as a team.**
I	**Integrity**	**Act ethically; Take ownership of actions; Ask for help. Do what you say you will when you say you will.**
R	**Relish**	**Enjoy the process; Bring light to tense situations; Promote camaraderie - remember we all want to succeed. Make the most of this unique method of working – grasp the opportunity.**
E	**Effective communication**	**Encourage face to face dialogue (talking); Listen to each other; Challenge with confidence; Be compassionate; Be open with each other. Set the right environment.**

Supplier Engagement

One lesson learned from Advance II was the need to engage certain key suppliers as early as possible in the design and optioneering process. The key suppliers listed in the table on page 2 joined the IoTT team in the first wave of selection and contributed during Phase 1 to develop the building solution. They were appointed under the Supplier Alliance Subcontract that was developed and tested on the first pilot project, Dudley College Advance II. This form is designed to signal closest possible inclusiveness of suppliers within the culture and terms of the alliance, and provides various options depending upon:

- the extent of design input/advice required,
- any direct linkage between the performance of the items supplied and the project outcome/performance,
- whether installation and/or commissioning are required,
- the justification for their being "named" for inclusion in the project bank account process, and
- the activities for which early payment is appropriate.

Workshops were held with as many of these suppliers as possible to induct them into the alliancing process and to give them confidence that their design and practical inputs were positively encouraged.

Progress through Phase 1

Initially the project was funded by the College from its own resources in anticipation of winning government funding under the Institute of Technologies scheme. The awards under this scheme were however delayed by the distraction of Brexit, and on 25 January 2019 the College had to suspend work on Phase 1. Although this caused loss of momentum, most of the personnel returned and quickly re-energised after the College lifted the suspension on 18 April 2019, having received notice from DfE that its IoT bid had been successful. There was however a shortfall of some £400k against the College's bid and the project had to proceed in parallel with ongoing negotiations.

Phase 1 has already proved to be a fertile forum for optioneering, even to the point of enabling the College to rethink principles behind the outline planning and funding applications. The challenges created by the original investment target, and how they were addressed, will be discussed in the next Case Study. Whereas originally two distinct buildings were planned, one for advanced manufacturing and modern construction technologies, and the other for medical engineering, the facility is now being developed as one single building. The integrated team was able to initiate improvements such as:

- ground stabilisation instead of piling; measures to minimise the need for culverts;
- reorientation of the "T" shape to obviate noise from the road;
- rethinking the floorplate to facilitate natural ventilation (supplemented by the "TABS" system) to achieve the required EPC "A" rating.

The overriding principle being applied under the IPI model is to deliver a solution that is "fit for the purpose" defined in the strategic brief, in accordance with the prioritised success criteria and within the agreed investment target.

During Phase 1 it was open to the College to refine or even extend the original strategic brief; indeed, the College made changes to the functions of some of the rooms by re-gigging facilities between buildings across its Estate.

Until the balance of funding from DfE was approved, the decision had to be taken to omit the construction of the Prototype Hub; but as it was included as an inherent element of the design, the College had to guarantee that its construction would eventually go ahead. This funding approval was not forthcoming until 8 June 2020, and the alliance had to mitigate the effects in its PEP.

Guidance on the IPI Model

Guidance on the IPI Model is complementary to this case study, and is accessible at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/283331/IPI_Guidance.pdf

Of particular interest will be Section 9 which identifies the benefits the IPI Model is expected to bring for:

- The Client Group
- Lead Constructor/Project Manager Design Consultants
- Specialist Contractors
- Other supply chain members
- Insurers
- Funders
- The Local Community

For change to take off and become "Business as Usual", there must be seen to be benefits for all parties involved. The outcomes in this context will be reported at the end of the project.

The Prospectus on Insurance Backed Alliancing is accessible at https://constructingexcellence.org.uk/wp-content/uploads/2018/04/201803-Prospectus-rev-1-Mar-2018-002.pdf

Authors

This case study has been developed for Constructing Excellence by Martin Davis, as IPI Mentor, with invaluable assistance from his IPInitiatives' colleagues Louise Lado-Byrnes (the Alliance Manager), Phil Sims (Alliance Cost Manager) and the members of the Alliance.

Background: Trial Projects programme

The Government Construction Strategy aims to change the relationship between clients and the entire supply chain within the industry. The trial projects perform a central role in delivering the Strategy's sustainable 15-20% reduction in costs and have been 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/Team Engagement; Decision to Build; Build and Occupy. Other case study reports can be found at: http://constructingexcellence.org.uk/cabinet-office-trial-projects/

Project 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@ipinitiatives.com or Kevin Thomas at kevin.thomas@ipinitiatives.com or Louise Lado-Byrnes at louise.lado-byrnes@ipinitiatives.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.

May 2021