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# Final Project Report

## Innovation Driven Procurement (IDP) Project

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Nottingham Trent  
University



**CONSTRUCTION  
COACH**

## Foreword



**Dr Emmanuel Manu, Associate Professor in Quantity Surveying and Project Management at the School of Architecture, Design and the Built Environment, Nottingham Trent University (NTU)**

“The CITB funding commission on Improving Performance through Procurement (IPP) provided us with the opportunity to collaborate with our industry partner Morgan Sindall in developing supply chain capacity in the UK construction sector. The IDP project aimed to promote collaboration, innovation, and value addition among small businesses in the construction sector and help them address their own productivity challenges through training and tailored support. For the past 3 years, we have worked in partnership with Morgan Sindall and Construction Coach to deliver training, coaching and consultancy support to many small businesses in the construction sector. We have also created legacy resources that can help small businesses in construction to improve productivity. These resources will be used to sustain the long-term impact of the IDP project”.



**Darren Eaton, Commercial Director, Morgan Sindall Property Services**

“This is a crucial time for the construction industry as well documented skills shortages and volatile prices require innovation to be at the forefront of our thinking. The project was designed to support development of ideas from operatives on site and SME’s to give them the confidence and tools to drive innovation. We hope that by bringing this diverse team together we have added to the collective efforts and success that our industry continually shows in delivering an amazing built environment”.



**Maria Coulter, Founder and Managing Director, Construction Coach**

“I was delighted to be a delivery partner for the IDP Project. Seeing the positive impact of coaching, specialist consultancy and training has been really insightful and hugely rewarding. We have gained valuable knowledge into the mindset of SME’s and Micro-businesses, the challenges they are facing in the market and the barriers to receiving support.

This work is only the start. We now have case studies showing the impact taking time out to work on their business can have on both mindset, productivity, and profitability. We also have a bank of solutions covering a range of procurement challenges to showcase what can be done to improve procurement opportunities, deliver value to clients and the start of a community to support construction businesses with innovation”.

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## I. EXECUTIVE SUMMARY

The Construction Industry Training Board (CITB) funded the Innovation Driven Procurement (IDP) project which was aimed at improving productivity in construction through procurement. The project objectives included the design of training content, engagement and delivery of in-person and virtual training to supply chain participants, and delivery of innovation challenge support projects to assist supply chain firms adopt processes and tools that add value and improve productivity for all stakeholders. The IDP project also involved evaluation training impact and dissemination of lessons learnt across the wider industry.

This report highlights the outputs which were delivered for the IDP project which include:

- 12 in-person workshops
- 4 e-learning modules on the Supply Chain Sustainability School (SCSS) e-learning portal
- 4 e-learning modules on the Construction Upskill App.
- 7 virtual masterclasses which doubled as dissemination.
- 48 innovation workshops
- 46 innovation challenge projects.
- 5 dissemination events in addition to masterclasses
- 85+ construction SME members on the IDP online community hub

The positive outcomes and impact that have resulted from the outputs include:

- 550+ participants trained via in-person workshops and e-learning modules.
- 150+ participants engaged in virtual masterclasses.
- 300 participants engaged in own dissemination events.
- 190+ participants engaged in shared dissemination events.
- 38 out of 46 firms reported an increase in future work opportunities.
- 36 out of 46 supply chain firms reported proposed time-saving benefits from innovation challenge projects.
- 30 out of 46 firms reported proposed cost-saving benefits from innovation challenge projects.
- £790,700 tracked as a direct increase in profitability from innovation challenge projects.

Some of the lessons learnt and recommendations for future training are summarised below:

- Due to the time demands on the micro and small builders in the sector, training provision will need to be simplified to content that they can easily engage with. These can be through bite-size videos and clear visual messaging that can easily be accessed on the go as many construction people are visual learners.
- Lack of respect is a key barrier to engaging tradespeople in innovation and productivity improvements due to the “us” and “them” mindset they perceive to exist between themselves, site management and other professionals in the industry. Tackling this mindset is necessary to achieve meaningful collaboration productivity but will require a wider industry campaign though through the IDP project, this work has already begun.
- The net zero agenda will continue to provide future work-winning opportunities for small builders, especially with retrofit procurement. However, a lot of builders will need to upskill their workforce to deliver these contracts, secure relevant accreditations and comply with new standards and this remains an area for future support by industry training bodies like CITB.
- To ensure that the micro firms in the construction sector receive the necessary training and capacity-building support, future training programmes will need to build in the time flexibility that is needed to engage and support this segment of the supply chain.
- Support peer-to-peer learning communities for the wider supply chain such as micro and small builders where they will feel comfortable to share challenges and receive immediate support.

## II. INTRODUCTION

### Project Overview

The Innovation-Driven Procurement (IDP) project was initiated by Nottingham Trent University (NTU) in collaboration with Morgan Sindall Construction as an industry partner with funding from the Construction Industry Training Board (CITB). The primary objective was to address the lagging productivity in the construction industry by improving procurement processes across the supply chain. Productivity growth in the construction sector has been negative, non-existent, or sluggish, with productivity defined as the rate of output per unit of input (CIOB 2016). The IDP project was in response to CITB's "improving performance through procurement" funding commission. To drive productivity through procurement improvements, the IDP initiative focused on delivering training and capacity-building activities across the construction supply chain. These training and capacity-building activities were to embed principles of early engagement and collaboration across the supply chain, adoption of innovative products, processes and business models and a focus on value addition (economic, environmental, and social value). The emphasis on innovation was twofold. Firstly, creating a procurement environment where innovation in the supply chain can thrive and secondly using innovation to improve the procurement process. The Construction Playbook clearly states that innovation across projects and programmes will be needed to tackle the low levels of productivity and future skills shortage in the construction sector (HM Government, 2022).

To deliver the IDP project, NTU had to work in collaboration with Morgan Sindall as an industry partner alongside Construction Coach as a delivery partner to coach and mentor the supply chain as part of the support they were provided.

### Objectives and Scope

The key objectives of the IDP project were to:

- Design training content for the supply chain that helps to improve productivity by focusing on the IDP principles of supply chain collaboration, innovation, and value addition throughout the procurement process.
- Engage and deliver hands-on IDP training workshops to the construction supply chain that are aimed at productivity improvement through a focus on IDP principles.
- Design, launch and promote IDP virtual training modules for the construction supply chain that can be accessed on-demand across the wider industry.

- Deliver innovation challenge support projects to assist supply chain firms in embedding innovations that add value and improve productivity for all stakeholders.
- Evaluate the impact of training activities and innovation support challenge projects.
- Disseminate training and lessons learnt across the wider industry to increase uptake of the IDP procurement approach.

Procurement activities in construction involve a range of fragmented supply-side firms performing various functions to ensure that the demand-side requirements of clients have been achieved. Therefore, procurement links the highly fragmented supply side of the construction industry (e.g., engineers, architects, contractors, builders, surveyors, suppliers, and labourers) with the less fragmented demand side comprising project owners and representatives (Ruparathna and Hewage 2015), to create value for all the parties involved. Value is a function of both the benefit or worth of a project and cost, and can be adjudged by the economic, environmental, and social value they deliver. The scope of procurement activities and procurement phases that were the focus of the IDP project is shown in Figure 1.

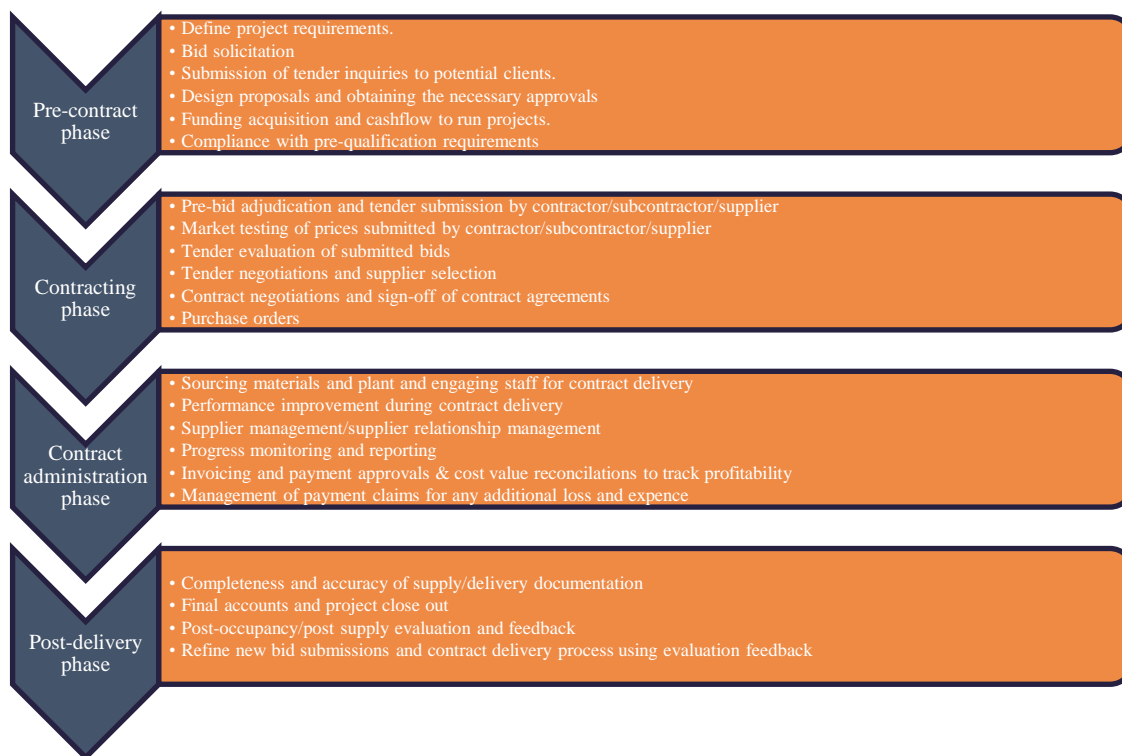


Figure 1: Scope of construction procurement activities (Adapted from Ruparathna and Hewage 2015)

Value creation during procurement extends beyond the strategic outcomes for the client to include that which accrues to the supply chain and society at large. To deliver the best value

outcomes during procurement, a collaborative environment is required to ensure that information and resource flows across supply and demand-side actors are smooth and timely and that the most innovative solutions are mobilised.

### III. METHODOLOGY

#### Training Design and Development

Procurement tends to be dominated by a transactional approach that inhibits trust-based collaboration (Manu et al., 2015) and ultimately affects the productivity of the construction workforce. The IDP project sought to tackle the productivity challenge in construction by leveraging collaborative principles, processes, tools, and support mechanisms to drive innovation and add value for all the parties involved. As such, the 3 features of the IDP project were collaboration, innovation, and value. The focus on collaboration was to overcome wasteful procurement practices (Sarhan et al., 2017, Sarhan et al., 2018), add value and improve productivity. To embed collaboration in the supply chain, an emphasis was placed on collaborative behaviours, design, and risk management. The focus on collaborative behaviours was meant to equip the supply chain with the soft skills that are necessary for joint problem-solving. These include, for example, clear communication, active listening, taking responsibility for mistakes, and respect. The focus on design collaboration was to tackle design issues as a common cause of low productivity in construction (Jarkas et al, 2015; Naoum, 2016).

The focus on collaboration in risk management was to ensure that the supply chain contributed to make-ready (flow) planning (see Ebbs and Pasquire, 2018) as part of early engagement during procurement. Supply chain productivity is reduced because they resort to “making do” when they start or continue a task on the site without all the standard inputs (Formoso et al, 2011). Supply chain involvement in early planning is critical in ensuring that all the inputs for smooth delivery are ready so that productivity is maximised. Training on collaborative risk management sought to engage the supply chain in early identification and prompt resolution of risks to workflow and productivity before they manifest on-site. The focus on innovation and value was to ensure that the supply chain is equipped to constantly seek out innovative solutions that increase productivity and add value. This was backed by a support package for the supply chain to implement innovative solutions that add value for all stakeholders. The emphasis on value went beyond conventional notions of cost savings for the client and

monetary value for the supply chain to encompass the social value contributions as well. Social value in this context refers to the positive social, economic, and environmental impact that any organisation, project, or programme makes on the lives of stakeholders affected by its activities (Raiden, 2019).

To support the objectives of the IDP project, design development and delivery were undertaken in 2 phases as shown in Figure 2. Phase 1 involved face-to-face workshops and innovation support with selected supply chain participants on a live project site whilst Phase 2 involved virtual training and innovation support to extend the IDP process to the wider supply chain.

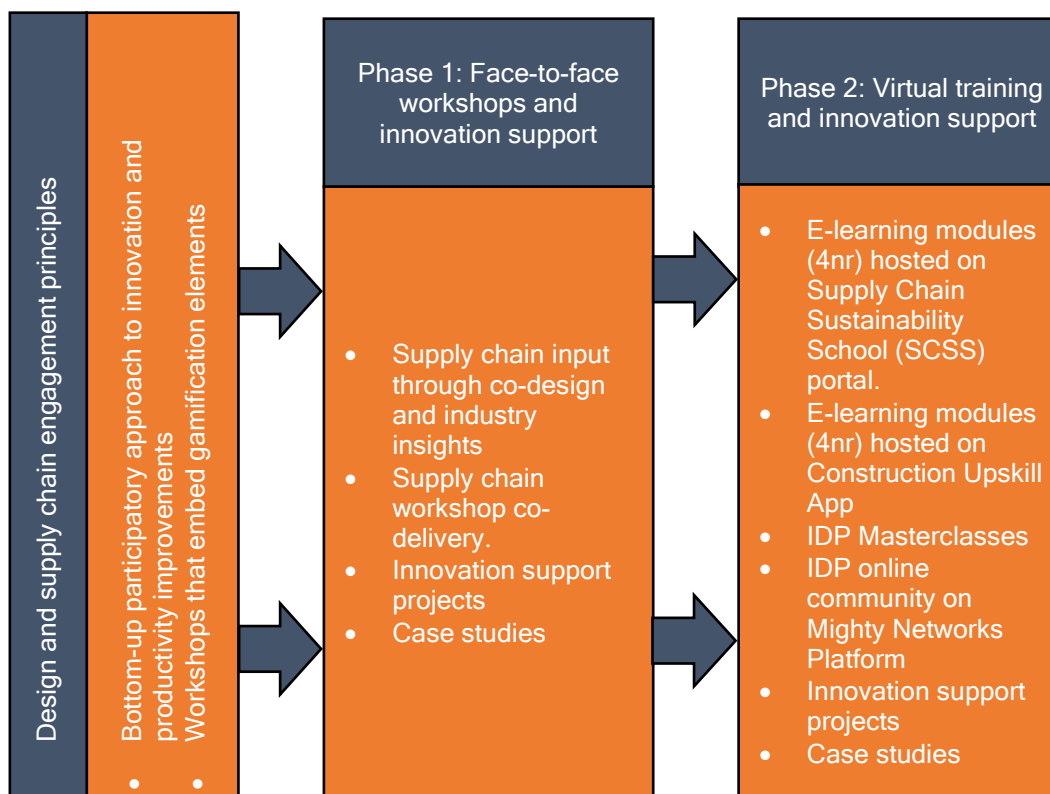


Figure 2: Design and Supply Chain Engagement Framework for the IDP Project

A fundamental aspect of the design and supply chain engagement framework adopted was to avoid a top-down approach to how the supply chain is engaged and trained. This is because productivity initiatives in the construction industry are often top-down driven with limited input from the site-level construction workforce. Similarly, most industry training programmes on productivity are designed for middle and senior management without much input from the specialist trades to reflect their needs. This limits the extent to which the site-level supply chains are empowered to address their productivity challenges. However, the site-level supply chains



have considerable experiential knowledge of the day-to-day productivity challenges they face and the best solutions for addressing these.

A participatory methodology involving the “Plan>Do>Observe & Reflect>Plan” cycle was implemented for phase 1 of the project. The IDP project delivery team indicated in Figure 3 initially designed 4 interlinked workshops on collaboration, innovation, and value. These were (1) collaborative behaviours, (2) collaborative design, (3) collaborative risk management, and (4) innovation and value, which were all aimed at improving productivity. Workshop activities were also designed to incorporate gamification elements. Gamification is the addition of gameplay activities in a non-game context (Wood and Reiners, 2015) to encourage participants to enhance their engagement, learning, and impact (Liu et al, 2023). This is because the site-level supply chains are more accustomed to doing things with their hands and will be more motivated and engaged if learning activities involve some game-based activity.

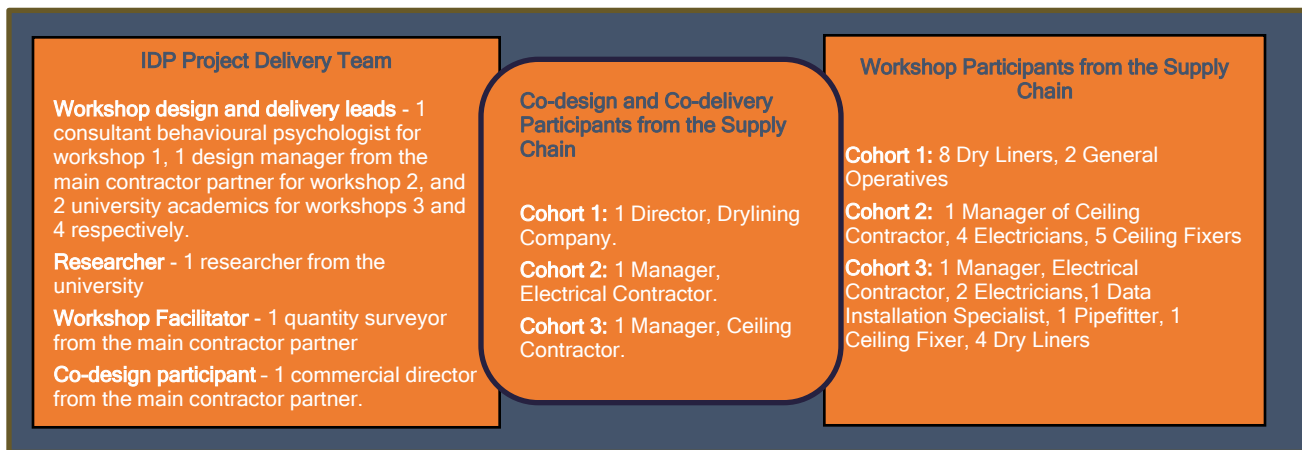


Figure 3: IDP project team and supply chain participants involved in Phase 1.

Supply chain representatives were then engaged through Morgan Sindall as an industry partner to provide their input into the final workshop content as co-design partners. The 3 supply chain representatives who were engaged for the co-design of the training content were a dry lining specialist, and ceiling and interiors specialist and a mechanical and electrical (M&E) specialist. The final briefs for workshop content have been provided in Appendix A.

## Engagement and Training Delivery

The delivery of IDP training was performed across two phases:

- Phase 1: engagement and delivery of face-to-face workshops
- Phase 2: engagement and delivery of virtual training

The supply chain representatives that were engaged for the co-design were also to act as conduits for engaging their workforce for the Phase 1 workshops as part of the supply chain engagement strategy. They were also required to further co-deliver these workshops with the IDP project delivery team and help manage any potential divide between the university academics involved in the project. The IDP project team produced short video introductions for each of the workshops for dissemination by the tier 1 contractor to tier 2 and consequently tier 3. The purpose was to:

- (1) To provide an overview to the tier 2 and tier 3 contractors of each of the subject areas of each of the modules to be later delivered in class.
- (2) To obtain feedback and opinion on the supply chain as to the suitability and usefulness of the short videos as part of the engagement of participants to undertake the full training package.

Phase 2 of the IDP project involved the engagement of the supply chain virtually through e-learning modules, a supply chain training app, and virtual masterclasses. Supply chain insights gathered during the face-to-face workshops fed into the e-learning design to reflect the supply chain co-design approach taken for the IDP project. As much as possible, aspects of the gamification were replicated in the e-learning version of the modules to enhance engagement.

The follow-on innovation support package comprised mentoring and consultancy input to support the supply chain in adopting new processes, products, and business models. This support package was opened to participants from both Phase 1 and Phase 2 of the project and was supported by Construction Coach as a delivery partner working in collaboration with the IDP project delivery team.

## IV. DELIVERY OF PROJECT ACTIVITIES

Based on the methodology adopted for training design and development, and engagement and delivery, the project activities that were delivered comprised co-design meetings, face-to-face workshops, virtual training and online masterclasses, innovation challenge support and peer-to-peer community support to address supply chain challenges and promote innovation.

### Phase 1: Engagement and delivery of face-to-face workshops

The training sessions were conducted by subject matter experts in an interactive and participatory manner with co-delivery input from supply chain representatives, allowing participants to gain hands-on experience. The intended audience for Phase 1 were specialist trades at tier 2 and 3 levels thereby making access to this segment of the supply chain challenging given the level of fragmentation. The IDP project addressed this through collaboration with Morgan Sindall a major tier 1 contractor who has regular contact with this part of the supply chain. The engagement principle that was adopted for the IDP project was to reach the site-level supply chain through the party that engages them directly on the project. This meant that the tier 3 supply chain was engaged through the tier 2 specialist trades supply chain representatives and the tier 2 was engaged through the tier 1 main contractor.

This engagement strategy was to provide opportunities for both the IDP project to collaborate with 30 participants from across tier 2 and 3 levels. This structure of engagement was first applied to a Drylining Specialist Subcontractor who brought along 10 participants. This approach was repeated across the other 2 trades in the supply chain ( $10 \times 3 = 30$ ). Thus 4 workshops per round and 3 rounds in total for the 3 cohorts resulted in 12 face-to-face workshops in total with tier-2 and 3 participants ( $4 \times 3$  workshop rounds = 12 workshops) as shown in Table 1. In terms of delivery, the IDP project delivery team decided to use the tier 1 partners' on-site facilities as the central Hub for the IDP face-to-face training. The workshops were thus held face-to-face in the site office of a live construction project site in Birmingham, United Kingdom. This was a £57m project to construct a new five-storey research facility that will provide 12,790 square metres of space for cutting-edge research and improve the research capabilities of the client in the areas of chemical, environmental and bio-molecular sciences. Each workshop was delivered one day per week and spanned approximately 5 hours. This was after a previous attempt to deliver the workshops in a conference facility in February 2020 before the COVID-19 pandemic.

Table 1: Co-design and face-to-face workshop sessions with the supply chain on site.

	Co-design meetings with main contractor representatives	Co-design meetings with specialist contractor representatives	Workshop 1: Collaborative behaviours followed by participant evaluation.	Workshop 2: Collaborative design and the supply chain followed by participant evaluation.	Workshop 3: Collaborative risk management followed by participant evaluation	Workshop 4: Innovation and value in the supply chain followed by participant evaluation
17 <sup>th</sup> Jun 2021						
14 <sup>th</sup> Dec 2021						
31 <sup>st</sup> Jan 2022			R1: Cohort 1			
8 <sup>th</sup> Feb 2022				R1: Cohort 1		
15 <sup>th</sup> Feb 2022					R1: Cohort 1	
22 <sup>nd</sup> Feb 2022						R1: Cohort 1
4 <sup>th</sup> Apr. 2022						
12 <sup>th</sup> Apr. 2022						
17 <sup>th</sup> May 2022			R2: Cohort 2			
24 <sup>th</sup> May 2022				R2: Cohort 2		
31 <sup>st</sup> May 2022					R2: Cohort 2	
7 <sup>th</sup> Jun 2022						R2: Cohort 2
21 <sup>st</sup> Jun 2022				R3: Cohort 3		
28 <sup>th</sup> Jun 2022					R3: Cohort 3	
5 <sup>th</sup> Jul 2022						R3: Cohort 3
20 <sup>th</sup> Jul 2022			R3: Cohort 3			

R1: Round 1 workshop; R2: Round 2 workshop; R3: Round 3 workshop; R4: Round 4 workshop.

Co-design activities that were undertaken with the supply chain before the pandemic have not been provided in this report because this process had to be repeated to reflect the post-pandemic requirements of the project as required by the funders.

The face-to-face delivery spanned from January to July 2022 as shown in Table 1. As was anticipated, the gamification activities that were embedded into workshop content enabled engagement and participation in the supply chain as can be seen in Figure 3. These comprised a ‘Zim Obelisk’ or ‘Who Drinks the Water and Who Owns the Zebra’ card game for workshop 1, a Lego design game activity for workshop 2, a flow activity game for workshop 3, and a creative connections game for workshop 4. These game activities helped to embed the main learning objectives.



Figure 3: Photo of cohort 2 during participatory workshop 3 on collaborative risk management

After each of the cohorts completed their round of 4 workshops, they were issued certificates to recognise their participation as shown in Figure 4.



Figure 4: Photo of cohort 1 after completion of the four workshop sessions.

## Phase 2: engagement and delivery of virtual training

The supply chain input from the first phase fed into the design of module content for phase 2 which involved the engagement and training of the supply chain virtually. The 4 IDP workshops were converted into virtual on-demand modules. These modules were promoted through a marketing campaign aimed at supporting the IDP project. These modules were hosted on the virtual learning portal run by the Supply Chain Sustainability School (SCSS). This learning portal (<https://www.supplychainschool.co.uk/>) offers free learning for the built environment sector and attracts more than 44,000 users from across the construction supply chain. This was achieved through the ongoing partnership with the SCSS and Civil Engineering Contractors Association (CECA), who were leading 2 other productivity improvement projects funded by the CITB. Nottingham Trent University (NTU) had teamed up with SCSS and CECA to establish the Collaborative Construction Procurement Training Hub (CCPTH) (<https://tinyurl.com/5ysr4wnz>) to co-create and promote procurement training for the construction sector.

Due to the recognition that the site-level supply chain, who were the main target participants do not often undertake training on web-based platforms, the e-learning modules were converted into an App version. An alternative was also offered by making a bite-sized version of the modules available via the Construction Upskill App which was available to freely download on the Android and Apple app stores. Marketing activities to promote the IDP project were conducted through the IDP social media channels LinkedIn and Twitter (now X), alongside periodic press releases. A series of 7 masterclasses were also held on various other topics that emerged as being of interest to the supply chain in terms of current challenges. This helped to further promote the IDP project to interested firms as they were signposted to the virtual training packages and follow-on innovation challenge support. Once supply chain firms expressed an interest in engaging with the IDP process, initial meetings were held using virtual communication platforms such as Microsoft Teams and Zoom.

## Innovation Challenge Support package

The innovation challenge package was used to support the supply chain to improve various aspects of the procurement process and to create a procurement environment where innovation in the supply chain could thrive. This support package comprised 12 hours of consultancy support per innovation provided to help embed innovation in addition to mentoring calls provided to establish an action plan and capture the outcomes. Before the innovation

support package, Maria Coulter of Construction Coach organised innovation workshops for 48 innovation champions to identify areas of challenge that could be supported through the IDP project. Innovation champions (ICs) were the designated persons from the supply chain firms that were leading the initiative to identify an area of challenge for support. A total of 46 innovation challenge projects were supported through the IDP project. 12 hours of consultancy support were provided for each of these 46 projects by 21 consultants, including NTU acting in a consultancy capacity for 3 of the projects. This was in addition to the mentoring and coaching support provided by Maria Coulter of Construction Coach throughout the innovation challenge process.

## Dissemination Activities

Dissemination activities for the IDP project were mostly undertaken as shared events with the CCPTH. The IDP masterclasses were also used for the dissemination of IDP project activities and outputs by marketing and opening these events up to the wider sector rather than those who were going through the innovation challenge support process. The number of participants in dissemination events organised solely by the IDP project team achieved the target requirement of disseminating to 300 participants. Shared events in collaboration with others, including with the CCPTH resulted in dissemination to 191 participants out of the 120 required.

Table 2: Examples of dissemination events

Date	Event	Link
26/11/2021	Collaborative Construction Procurement Training Hub Launch Event	<a href="https://tinyurl.com/5t3jwwk9">https://tinyurl.com/5t3jwwk9</a>
24/03/2022	Supply Chain Risk, Resilience and Capacity Conference	<a href="https://tinyurl.com/yzdatpbh">https://tinyurl.com/yzdatpbh</a>
12/10/2022	Solving the Productivity Puzzle	<a href="https://tinyurl.com/5n6fbw4j">https://tinyurl.com/5n6fbw4j</a>
01/02/2023	Procuring in Challenging Economic Times	<a href="https://tinyurl.com/mv2dmbcp">https://tinyurl.com/mv2dmbcp</a>
03/02/2023	Masterclass - Brand	Accessible via IDP community hub
28/02/2023	Masterclass - Marketing	Accessible via IDP community hub
28/03/2023	Masterclass - Contracts	Accessible via IDP community hub
31/07/2023	Masterclass - Tendering and Cost Monitoring	Accessible via IDP community hub
21/04/2023	Masterclass - Recruitment	Accessible via IDP community hub
26/05/2023	Masterclass - Information Technology	Accessible via IDP community hub
04/08/2023	Masterclass - Sustainability	Accessible via IDP community hub
05/10/2023	UK Construction Week main stage presentation with Tim Balcon of CITB: The Innovation Driven Procurement Project.	<a href="https://tinyurl.com/5dr3rw55">https://tinyurl.com/5dr3rw55</a> <a href="https://tinyurl.com/3tss8fpf">https://tinyurl.com/3tss8fpf</a>

## IDP Community Hub for Peer-to-Peer Support

Supply chain firms that had engaged with the IDP project were invited to join the IDP virtual community hub that had been set up on the Mighty Networks Platform (<https://the-idp-community.mn.co/>). The Mighty Networks platform was used to create an online community for ongoing peer-to-peer support to further embed learning and innovations, access mentoring support for any challenges, and drive productivity improvements. Mentoring support for the online community was provided by the IDP delivery partner that specialised in mentoring and coaching Construction SMEs. The target for the online community was 120 business owners from across the construction supply chain. As of September 2023, the IDP community hub had achieved a membership of 85+ construction SMEs. This online community has also contributed to the legacy of the IDP project.

## V. RESULTS AND IMPACT

In total, delivery outputs for the IDP project comprised of 12 in-person workshops, 4 e-learning modules on the SCSS e-learning portal, 4 e-learning modules on the Construction Upskill App, 7 virtual masterclasses, 48 innovation workshops and 46 innovation challenge projects. Through the in-person workshops and e-learning modules hosted on the SCSS learning portal and via the Construction Upskill training App, over 550 participants were trained across the 4 modules developed as part of the IDP project as shown in Figure 5.

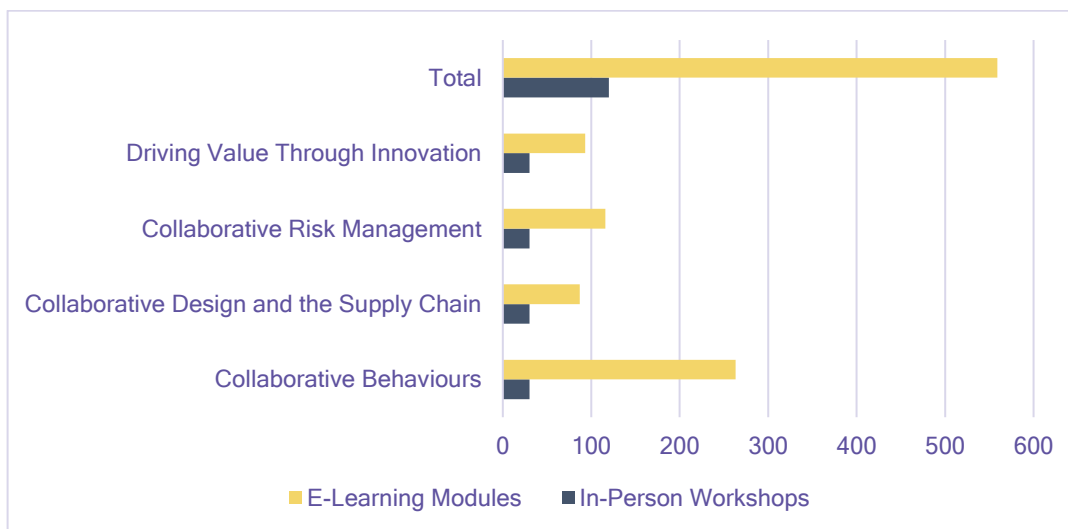


Figure 5: IDP training delivered via in-person and e-learning modules.



The 7 virtual masterclasses also attracted a total of over 150 participants as shown in Figure 6. Some of the micro businesses in the supply chain had to find work by marketing themselves to potential clients rather than go through a formal tendering process. Masterclasses on brand and marketing were organised to support the supply chain to improve work winning. A significant challenge in the SME supply chain was also low profitability due to poor pricing for work, poor cost monitoring processes during delivery and the absence of simple contracts or understanding of how to evaluate and manage the commercial risk in contracts. It is for these reasons that masterclasses were organised on contracts, tendering and cost monitoring. The masterclass on information technology was to enable the SME supply chain to understand the opportunities for improving productivity through the adoption of digital technologies. The sustainability masterclass was aimed at exposing the SME supply chain to developments on the low carbon agenda, sustainability development goals and how these can be embedded within their business to support value addition and contribute towards work winning.

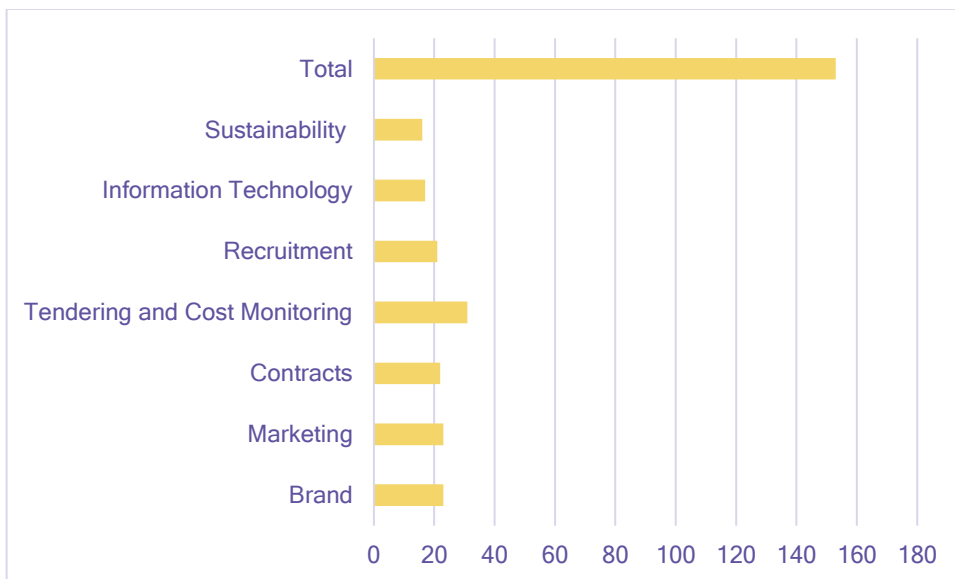


Figure 6: IDP virtual masterclasses

The category of firms supported as part of the 46 innovation challenge projects comprised of general builders, trade specialists in the building and civil engineering sectors, architectural practices, property developers, a facilities management specialist and other consultancies and advisory specialists as shown in Figure 7.

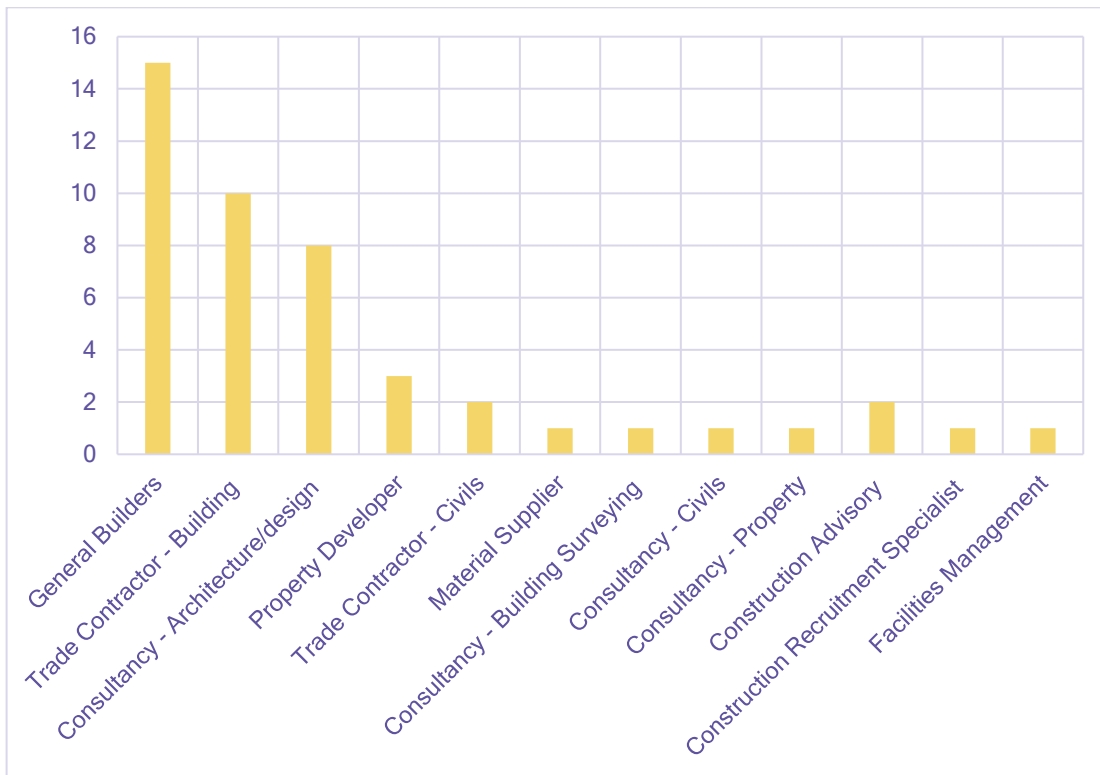


Figure 7: category of firms supported for the IDP innovation challenge projects.

The innovation challenge projects addressed issues that spanned from pre-contract to post-delivery phases of procurement. As shown in Figure 8, 15 of the projects supported the pre-contract phase of procurement, with an emphasis on supporting firms to improve tendering, tender pricing and work winning processes.

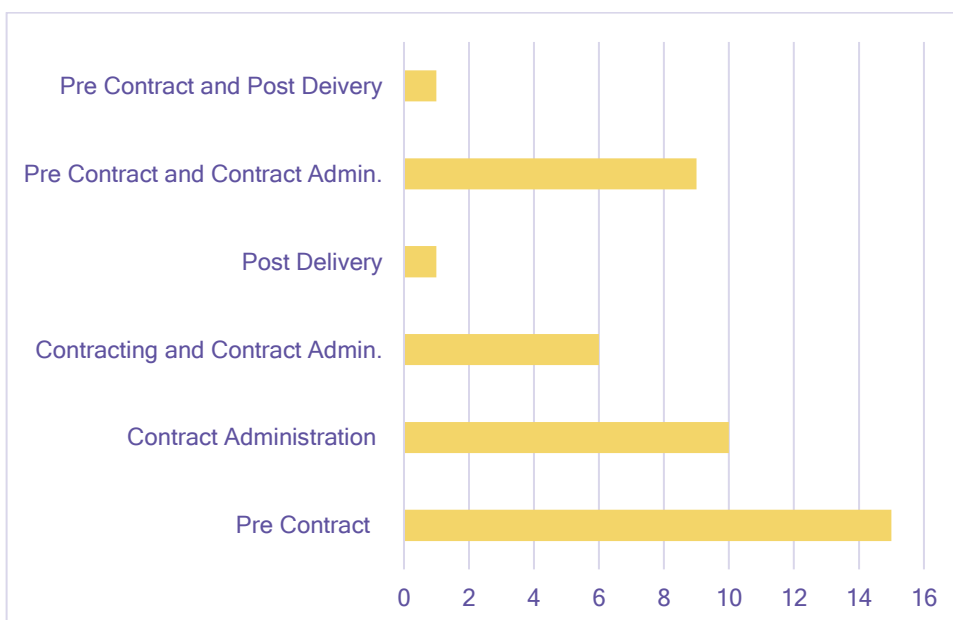


Figure 8: Phases of procurement supported for the IDP innovation challenge support projects.

Another 10 projects were aimed at improving efficiencies and productivity during the contract administration phase where projects were being delivered. Only 2 projects focused on the post-delivery phase of procurement. This could be an indication that at present, the construction supply chain does not place much emphasis on capturing learning from the post-delivery phase to improve future work winning. This could be an area for further development in terms of procurement improvement. As shown in Figure 9, 39 of the support projects (85%) focused on implementing process improvements (process innovation) whilst 4 (9%) were on product innovations and 3 (6%) were on the adoption of new business models (business model innovation).

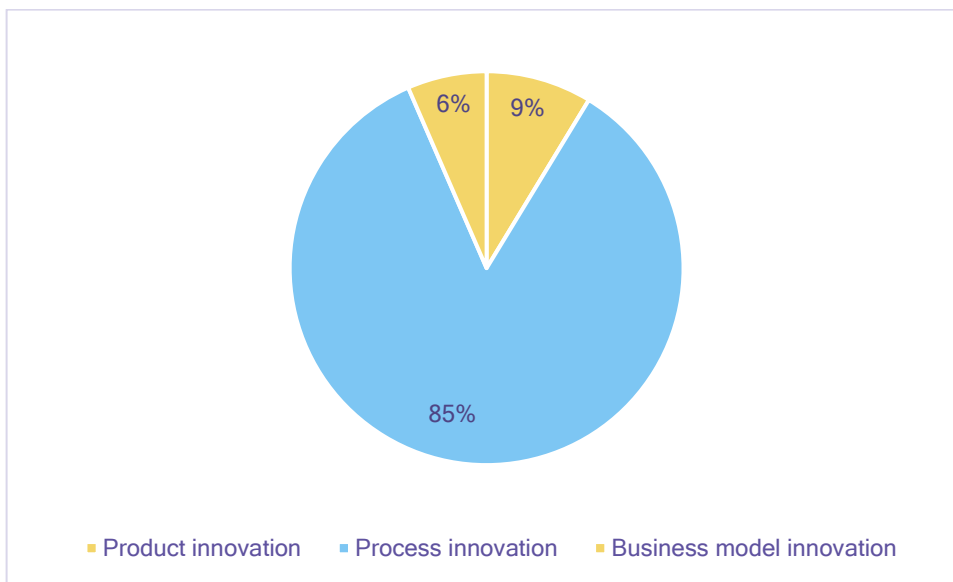


Figure 9: Type of innovation support as part of the IDP innovation challenge project.

Details of the various projects that were supported have been provided in Figure 10. Given the productivity emphasis of the IDP project, most of the projects focused on efficiency improvements. This was followed by projects that focused on performance management, tender pricing and cost control, and support for firms to tender for public sector contracts.

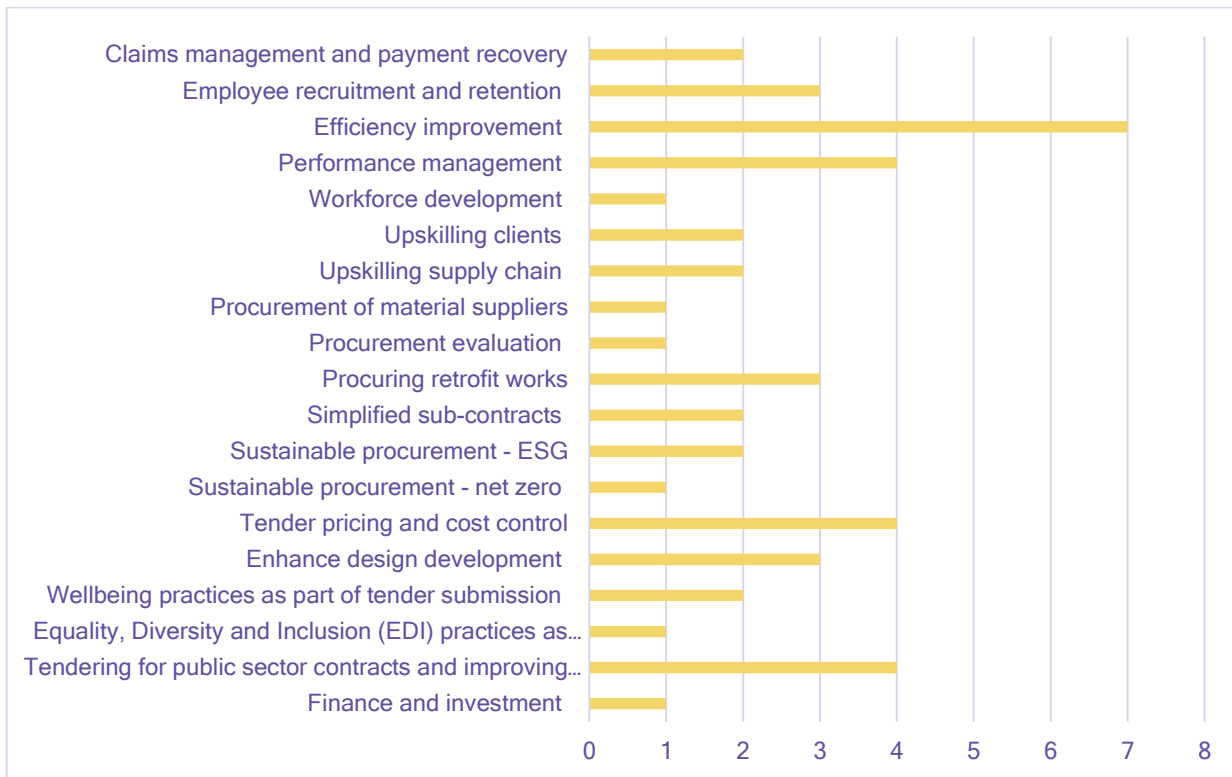


Figure 10: Areas of procurement supported for the IDP innovation challenge project.

Results from the evaluation of the 46 innovation support projects have been shown in Figure 11 and Table 3 below. Due to the number of projects that focused on improving tendering and work-winning opportunities as part of improving the procurement process of the supply chain firms that engaged with the IDP project, 38 firms reported an increase in future work opportunities due to the consultancy and mentoring support provided.

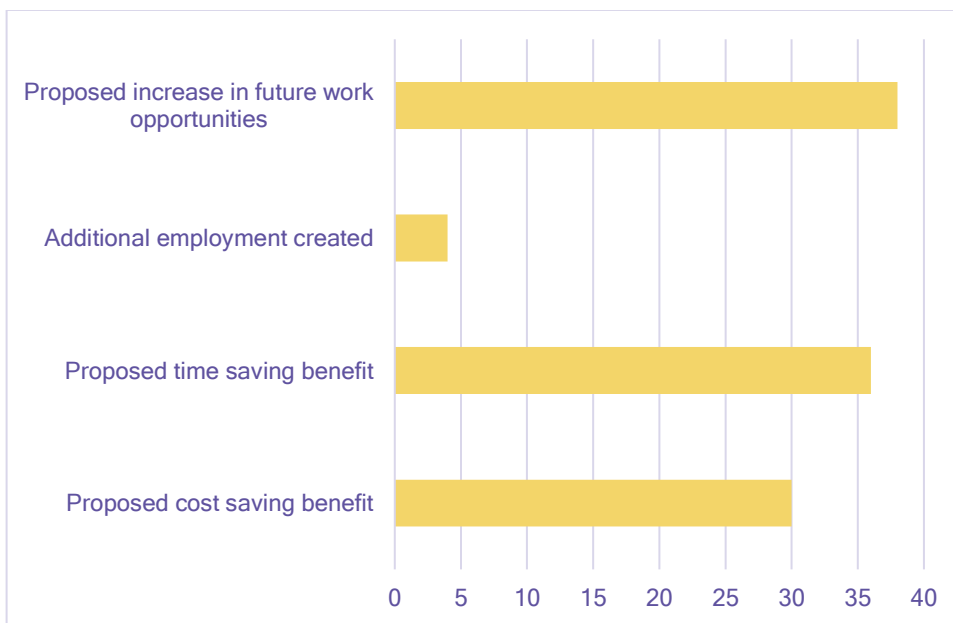


Figure 11: Number of supply chain firms that reported proposed benefits.

This was followed by 36 firms reporting proposed time-saving benefits and then 30 firms reporting proposed cost benefits. 4 of the firms also reported additional employment that had been created through the support provided. In addition to the proposed benefits, actual benefit measures were captured as part of the evaluation. These were on direct increase in profitability and waste reduction as reported by the supply chain firms involved. The IDP innovation support project resulted in a direct increase in profitability of £790,700 and a 3-4% reduction in plasterboard waste from drylining installations (See Appendix E for breakdown details).

Table 3: Actual impact measured from the IDP innovation support projects.

	Actual Impact and Benefits	Measure
1	Direct increase in profitability	£790,700.00
2	Waste Reduction	3-4% reduction in Plasterboard Waste

Note: see detailed breakdown Table in Appendix E

## Summary of Key Outcomes Achieved

In line with the logic model for the IDP project (see Appendix B), the outcomes achieved include:

1. Awareness creation and behaviour change amongst micro and SME construction firms on their role in driving productivity from the bottom-up throughout the procurement process. This is very important as the firms that dominate and drive the construction sector are SMEs. However, most productivity improvement initiatives in the construction sector have not focused on the micro firms due to the difficulties in securing their engagement. The construction workers engaged during Phase 1 became more willing to collaborate and share ideas (see evaluation answers in Appendix C) and demonstrated that throughout the workshops (see Appendix D for suggestions they offered).
2. Capacity building support on product, process, and business model improvements (see Figure 9) that drive productivity and improve performance (see Figure 10 and 11).
3. Contribution towards industry and national debate on construction productivity improvements and procurement improvements through dissemination activities as part of the CCPTH and other events. This includes the high-profile presentation at the 2023 UK Construction Week in Birmingham (see Table 2).

4. Improved productivity, performance, and efficiency throughout the supply chain as evidenced by the impacts and benefits results presented in Figure 10 and Table 3.

## Participant Feedback and Success Stories

For any training and capacity-building initiative of this nature, it is important to gather evidence of the impact regarding any changes that occurred and to evaluate these against the intended objectives of the initiative. Evaluation results from Phase 1 have been provided in Appendix C. Results indicated that overall, the supply chain felt the workshops were relevant to them and their business rated this 4 out of 5 or over. Some of the captured comments from participants on what they had learnt from the workshops include:

*"Learning about plans that cannot be achieved"*

*"Listing out and identifying what can hinder the flow of works on site"*

*"The innovative Ideas that suggested that can help make work on site more productive"*

*"How to better communicate"*

*"It will influence me to think more about innovative solutions"*

*"Today's workshop will influence me to try and avoid things that can affect the flow of works"*

*"A better understanding of other contractors and how we can work collaboratively"*

*"Expressing our concerns about working on site"*

For Phase 2 of the project, it was not possible to obtain feedback on e-learning modules hosted on the SCSS portal so no evaluation results can be presented. However, evaluation feedback has been captured from some of the supply chain firms and consultants that supported the 46 innovation projects. The feedback below was provided by an innovation champion (IC) for Logan Construction who received support on promoting wellbeing practices as part of a tender submission and procurement:

*'I think it's been valuable for [us] personally it's allowed [me] to say what [I] needed to say and it to be discussed to an external provider. As I work on this in isolation as I'm in a solo position, I have a narrow view on this but now I have a wider perspective. This has also enabled individuals who were part of the workshops to take accountability to work on this. We have highlighted challenges and are clear on what we need to focus on. Our board are now looking into tendering which means this come in handy as I will now be able to show how this work can add value to our tendering process' - IC for Logan Construction*

Feedback from the consultant who supported Logan Construction through this improvement process is also provided below:

*'I have found this project really interesting to work on and have enjoyed hearing their stories and understanding some of their challenges. The two organisations were at different stages in their mental health at work journey but were both committed to making positive change. They will need more support to really achieve this but hopefully they will be able to use this report as a guide to get started. The importance of demonstrating that construction businesses are really embracing wellbeing and implementing a programme that supports mental health and social value will help them gain an advantage when decisions are made about contracts for the public sector. Developing the business case*

*should help convince senior managers that there is value in investing the time and resources needed to change culture, attitudes, and behaviours in a predominantly traditional male orientated business environment.* - Consultant from Mates in Mind

## VI. CHALLENGES AND MITIGATION

### Obstacles Faced and Mitigation Measures

Despite the project's success, various obstacles were encountered throughout the project. These have been summarised below:

1. In June 2021, a mock run was held for all four workshops so that these could be scheduled for delivery to the supply chain in September 2021 after the summer break. However, whilst reviewing the engagement plan for the innovation grant pot with CITB in August 2021, a significant issue developed as it became apparent that the existing mechanism did not comply with CITB's legal requirements. This was a significant setback for the IDP project as the supply chain had been engaged on the basis that they could pitch their ideas and compete for small grants to initiate and develop innovations that could drive productivity in the sector as part of the innovation challenge projects. CITB tasked the IDP project team to search for a new mechanism that was legally compliant, leading to the cancellation of all the scheduled supply chain workshops until this deadlock was resolved.

It took until the 21<sup>st</sup> October 2021 before an agreement on a revised innovation mechanism was reached following a series of earlier meetings and iterations. This also introduced a variation to the project agreement, leading to the reprofiling of the spending for CITB's approval. The variation agreement incorporating all revisions was signed by CITB on the 24<sup>th</sup> of January 2022.

The momentum of the project was negatively impacted by another 4-5 months of negotiation with CITB to determine an acceptable mechanism for administering the innovation challenge projects. This was after the 1-year suspension due to the Covid-19 pandemic which also affected the momentum of the project. Due to the time that is required to reach a critical mass with supply chain engagements, these starts and stops that were experienced during the project were a big obstacle to achieving steady progress.

To mitigate the effect of these breaks in project delivery, the IDP project team had to negotiate extensions and variation agreements with CITB and ensure that these

compensated for the time lost. The extensions granted by CITB reinstated the IDP project to the original 3-year delivery period. This made it possible to achieve all the project outcomes.

2. The requirement by CITB to collaborate with 2 other funded projects to establish the collaborative construction procurement training hub (CCPTH) after the Covid-19 suspension in April 2021 was a good initiative. This aided the joint hosting of e-learning modules on the SCSS learning portal. However, NTU was unable to undertake much work during the suspension period whilst the other 2 projects carried on developing training content with their internal resources during this period. This meant that after the suspension, the IDP project had not achieved the same progress as the other 2 projects but were required to collaborate. This impacted the effectiveness of the collaboration as the IDP delivery team had to focus more on the delivery of their outputs rather than on the collaboration. The LCI UK, which lead another project funded by the commission opted out of the collaboration altogether. To mitigate this challenge, NTU made the best out of the collaboration by focusing on only 2 priority areas, which were hosting of modules on the SCSS learning portal and joint dissemination events.
3. The reality is that many SMEs in the construction sector are driven by their immediate and short-term needs (6 months - 1 year) and are not looking 5-10 years ahead. This has implications for how they choose to engage in initiatives that are aimed at securing their long-term sustainability and profitability. During the IDP project, significant effort had to be made to engage the SMEs who also had a multitude of immediate business challenges to address in a very turbulent environment with high inflation, rapidly increasing interest rates and an energy crisis. To mitigate this, additional masterclasses were organised on challenges that most SMEs were facing. This was also backed by intensive marketing campaigns that helped to increase engagement.
4. Construction site workers face an “earn versus learn” decision, which can impact their willingness to engage in activities that distract from their immediate work, irrespective of how this will enhance their long-term productivity. They barely have time to stop and critically reflect and take actions that can improve their present situation. This contributes to the situation where most construction SMEs are locked in cycles of low productivity and profitability despite the impact and opportunities that training can offer them in the longer term. This is linked to the previous issue of construction SMEs focusing on their immediate short-term needs to survive.

To mitigate this, efforts were made to align workshop activities to the ongoing challenges in the construction sector during the delivery of the IDP project. Having strong insider



links through Morgan Sindall as an industry partner who facilitated and promoted workshops to their supply chain was instrumental to the success of the IDP project. The supply chain insiders who engaged with the IDP project delivery team to co-design and co-deliver the workshops during Phase 1 were instrumental in the high levels of engagement and participation that were achieved. Hosting the Phase 1 workshops on the construction site was also very significant to the success of the workshops as it was in the natural environment of the construction workers.

5. Difficulty in achieving timely uptake of the innovation challenge support project by construction SMEs due to the turbulent economic environment and supply chain difficulties that most of these firms experienced during the same period the support package was launched. During Phase 1 of the project, it was anticipated that 30 innovation support projects would emerge. Despite many suggestions from the 3 cohorts that participated in Phase 1, only 1 viable project was supported (see Appendix D). All the other innovation challenge projects had to come from virtual engagements. To mitigate this, there was an increase in marketing activity to promote the IDP project and innovation challenge. Also, additional resource, and time allocation was made to reach the required number of projects specified in the funding agreement. Construction Coach, who was a delivery partner, had to expand their role on the project from coaching and mentoring construction SMEs as part of the innovation challenge project to include promotion and engagement by leveraging their industry networks.
6. Difficulty in getting full engagement of construction SMEs to ensure that their innovation support projects are completed on schedule. This was because most of these firms had a single individual who was responsible for the day-to-day administration of the business, working on-site to deliver their jobs whilst also seeking to engage with the IDP project to address issues that affect their profitability and long-term sustainability. To mitigate this, flexibility had to be maintained in the delivery programme to accommodate the time slippage in supporting these firms during the IDP project, which was made possible by the funders. The risk management process was also used to flag up and discuss these challenges with CITB as funders and as part of mitigation efforts, more resources were deployed to constantly follow up with SMEs on their innovation projects as part of the coaching and mentoring process.
7. Due to the growing retrofit market, some of the innovation support projects focused on the procurement of retrofit works. However, there seems to be a bigger challenge around the mobilisation of SME builder capabilities on the supply side and stimulation of the demand side in terms of energy-saving measures to consider. There is an issue for SME

builders as to whether it is worth the time to re-train or learn new skills when the majority have sufficient order books of other more familiar work. Evidence from this project suggests that many SME builders think it is not worth the hassle of tendering for renewable energy retrofit work for Local Authorities or Social Landlords as it is time-consuming, and sometimes complicated (if they have never done it before). To support SMEs in this area, a guide on retrofit procurement was produced as part of the IDP project, and a further call to CITB for more support in this area has been offered in this report as part of the lessons learned.

8. The productivity measure for construction can be quite restrictive in capturing very important issues such social value benefits of projects. It is important that beyond labour productivity in relation to time and cost savings, social and environmental benefits become a prominent part of productivity measures in the construction industry given the impact that the industry has on achieving a low carbon, socially enriching built environment. Whilst social value was not a direct productivity outcome for the IDP project, it was considered and evaluated as a productivity-related benefit. This can be seen from the evaluation of additional employment created through the innovation support projects (see Figure 11).

## VII. LESSONS FOR FUTURE PROJECTS AND CONCLUSION

The project offered valuable insights that can guide the planning and implementation of future skills and training initiatives.

- The training process that is targeted at micro and small builders will need to be simple and clear. Many micro and small builders do not have the time and utilising simpler messaging e.g., a series of short videos on a topic might help - many construction people are visual learners. This is what led to the development of bite-sized versions of the IDP e-learning modules on the Construction Upskill App though further work is needed in this area of how to develop training that micro and small builders and construction site workers could easily engage with on the go without spending much time.
- Lack of respect emerged during Phase 1 of the IDP project as a key barrier to engaging the tradespeople in innovation and productivity improvements in the construction sector. Tradespeople narrated that meaningful collaboration was difficult to achieve because on almost every project, they had experienced this “us” and “them” divide between senior site management staff who have the power to effect change for which their views were not respected. They had internalised the perception that “no one will listen” despite the

experiential vast knowledge that can be unlocked from tradespeople to drive productivity on site.

This mindset was tackled during the IDP in-person workshops but across the wider construction sector, further work is still needed to address this “us” and “them” mindset between tradespeople, site management and other professionals in the industry if meaningful collaboration can be achieved to drive productivity improvements in the sector. This work has already commenced through the IDP project and should remain an important agenda for achieving meaningful transformation and productivity improvement in the construction sector.

- The net zero agenda will provide future work-winning opportunities for small builders, especially with retrofit procurement. There is currently a skills gap amongst builders in terms of getting onto frameworks for delivering renewable energy retrofit schemes in the public sector despite the wave of government grants on procuring retrofit projects. A lot of builders will need to upskill their workforce to deliver these contracts, secure relevant accreditations and comply with new standards e.g., PAS 2030. However, feedback received from some builders indicates that many will not bother if there is no easy way to fund the training and secure accreditations due to the cost and time-consuming administrative requirements involved.

The other issue is how accreditation is achieved. Inspection of work in progress will be required as part of accreditation however, builders will need to secure the work before being accredited and this process will need to be clearer.

- To ensure that the micro firms in the construction sector receive the necessary training and capacity-building support, future training programmes will need to build in the time flexibility that is needed to engage and support this segment of the supply chain. Otherwise, most of the training interventions that are provided will continue to be more suited to firms that can allocate dedicated staff time for training and capacity development which a lot of the micro firms in the sector currently struggle to achieve.
- Peer-to-peer learning emerged as being important during the first workshop with Cohort 1 (Drylining workers). Some of the issues that affected the drylining trade were best resolved through engagement with the electrical trade. Due to this learning, the trades had to be mixed for Cohort 2 and Cohort 3 (Electricians and Ceiling Fixers) to facilitate this peer-to-peer learning among the trades. This peer-to-peer learning has been extended through the IDP online community hub as part of the legacy of the project to

ensure that supply chain firms can learn from each other to tackle common challenges. CITB can provide support for peer-to-peer learning communities where the supply chain such as micro and small builders will feel comfortable to share challenges and receive immediate support.

In conclusion, the IDP project has made a significant contribution to enhancing productivity in the construction industry by embedding collaboration, innovation, and a focus on value throughout different phases of the procurement process. The outcomes achieved can be attributed to a well-designed approach, dedicated trainers and support provided by the industry partners, CITB as funders involved and various other stakeholders. Achieving these outcomes has been a collaborative endeavour.

### **Acknowledgement**

We thank the CITB for the funding support they provided to make the IDP project a success and for the work they continue to do in fostering skills development in the construction industry. We will also want to acknowledge the support of our industry partner Morgan Sindall Construction and Darren Eaton, and Drywall Contracts Limited (DCL), Titan and Imtech as participating firms from Morgan Sindall's that worked collaboratively with the IDP project team during Phase 1. We acknowledge the support of Maria Coulter of Construction Coach for her remarkable dedication to mentoring and coaching construction SMEs. We extend our acknowledgement to all other construction workers, innovation champions from the supply chain and consultants that have supported the IDP project.

## VIII. APPENDICES

The attached supplementary materials provide additional insights into the project's activities and outcomes. This final report outlines the key aspects of the CITB IDP project.

### Appendix A – Course Briefs for IDP Workshops

<b>Workshop1: Collaborative Behaviours</b>
<b>Workshop Aim:</b> To develop the attitudes and behaviours required to build strong, productive, and lasting relationships that drive collaboration and deliver benefits to everyone.
<p><b>Workshop Objectives:</b></p> <ul style="list-style-type: none"> <li>• Gain clarity on the benefits of building strong relationships and having a collaborative approach.</li> <li>• Identify how behaviour and attitudes impact ourselves and others.</li> <li>• Identify how we can adapt our behaviour to deliver results.</li> <li>• Gain clarity on how to build productive relationships.</li> <li>• Practice using questioning and listening skills that support rapport building.</li> </ul>
<p><b>Overview of content for the workshop:</b></p> <p>To help achieve the aim and objectives, the session will focus on a practical approach, using everyday, real-world examples that build on the expertise of contractors and subcontractors. This will include some interactive exercises both individually and in groups. Content should highlight some behaviours that promote negative group dynamics as well as specific behaviours for positive group dynamics such as Respect, Valuing Diversity and Divergent Opinions, Honesty and Honest Communication, Openness to Constructive Feedback, Being Accountable etc. Exemplar scenarios that reflect day-to-day challenges to building and maintaining collaborative behaviours on site should be built in where possible.</p> <p>*Potential aspects to include in content should be on the challenge of virtual collaboration and how to replicate and build collaborative behaviours on virtual collaborative platforms.</p>
<p><b>Workshop resources produced:</b></p> <ul style="list-style-type: none"> <li>• Presentation with content, interactive activities, and case examples.</li> <li>• 5 mins lite version as taster material for initial engagement of the supply chain.</li> <li>• A short quiz for participants to complete at the end to check that the required learning has been achieved.</li> </ul>
<p><b>Additional content produced for further development into the e-learning module:</b></p> <p>Virtual interactive exercises or interactive case illustrations can be hosted as part of an e-learning package.</p> <p>Short testimonial videos illustrating practical aspects from face-to-face delivery (video captured during delivery for later integration into e-learning module)</p> <p>Checklist of collaborative behaviours for developing positive group dynamics amongst the supply chain on projects.</p>
<p><b>Benefits of the session:</b></p> <ul style="list-style-type: none"> <li>• To be able to identify how to add value through a collaborative approach both for yourself and others.</li> <li>• Be able to adapt your behaviour to help deliver the results you need.</li> <li>• Develop the skills to influence effectively and build productive relationships during face-to-face and virtual interactions.</li> </ul>

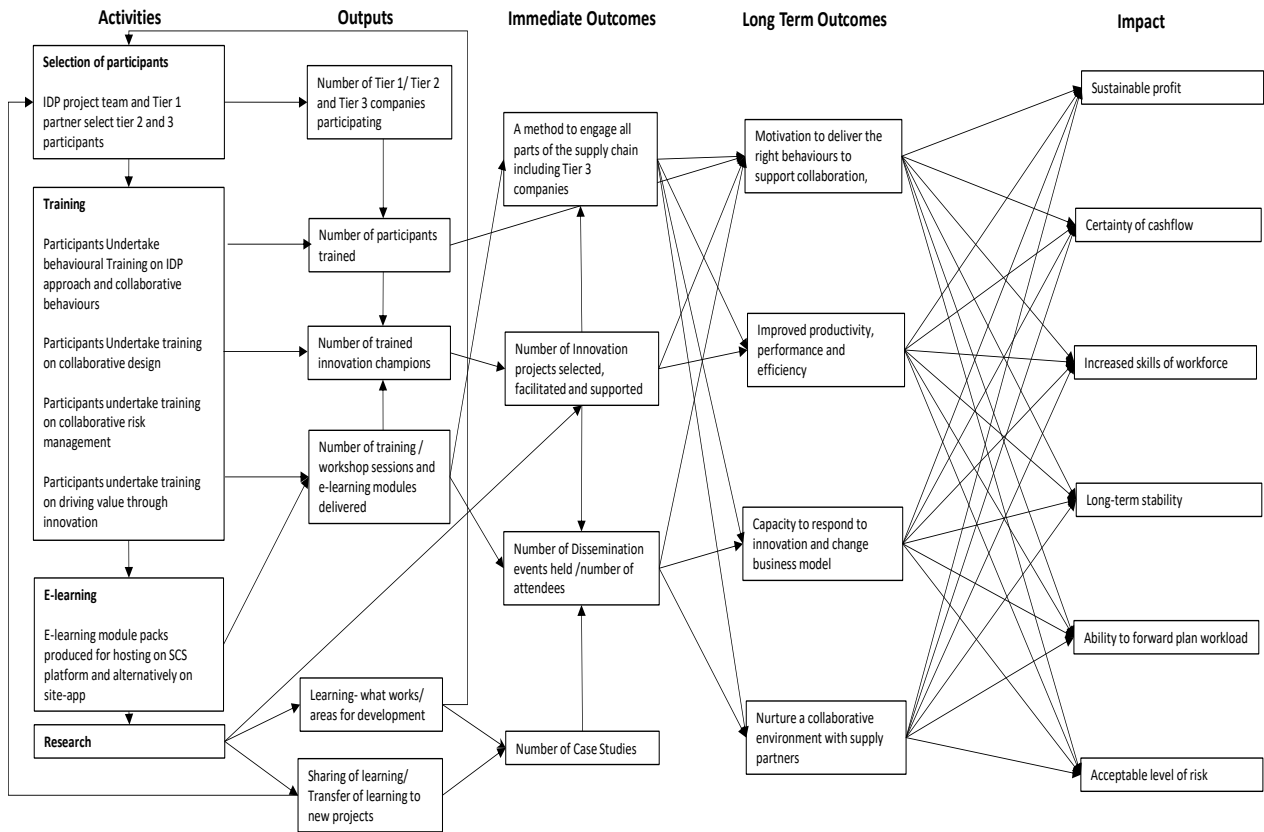
<b>Workshop 2: Collaborative Design and the Supply Chain</b>
<b>Workshop Aim:</b> To engage the supply chain to collaboratively challenge and scrutinise aspects of the design relating to their work and identify any efficiencies that can improve productivity benefits for all.
<p><b>Workshop Objectives:</b></p> <ul style="list-style-type: none"> <li>• Gain clarity on the benefits of building strong relationships and having a collaborative approach (<b>recap from workshop 1</b>)</li> <li>• Identify how behaviour and attitudes impact ourselves and others (<b>recap from workshop 1</b>)</li> <li>• Understand the need for the supply chain to engage in collaborative design scrutiny and associated productivity benefits to all including the supply chain themselves.</li> <li>• Understand the need for a user-friendly process that can allow site operatives to feedback on any design problems they encounter.</li> <li>• Introduce a collaborative software app (Facebook) to support and encourage design scrutiny and feedback by the Tier-2 and Tier-3 supply chain stakeholders on site.</li> <li>• Support the opportunity for a supply chain to practice with existing designs for the case study project.</li> </ul>
<p><b>Overview of workshop content:</b></p> <p>The module objectives will introduce why the involvement of the supply chain as the last designers with responsibility for how designs combine on-site during construction is important to the sustainability and future innovation of the industry. Introduce why the supply chain needs to be enabled with a process and tool for scrutinising designs to flag up any issues before they get on-site and feedback on any design issues they encounter on-site, including identifying the benefits (e.g., minimised defects, productivity, less waste etc.) of being more proactive in scrutinising designs. Finding a suitable communication method since there are multiple digital applications available that can help the supply chain feedback on designs without being in the same physical space, introduce one communication tool that is simple and conducive for site-level staff to use from mobile devices.</p>
<p><b>Workshop resources produced:</b></p> <ul style="list-style-type: none"> <li>• Presentation with content, interactive activities, and case examples.</li> <li>• 5 mins lite version as taster material for initial engagement of the supply chain.</li> <li>• A short quiz for participants to complete at the end to check that the required learning has been achieved.</li> </ul>
<p><b>Additional content produced for further development into the e-learning module:</b></p> <p>Virtual interactive exercises or interactive case illustrations can be hosted as part of an e-learning package.</p> <p>Short testimonial videos illustrating practical aspects from face-to-face delivery (video captured during delivery for later integration into e-learning module)</p> <p>Checklist/guide for evaluating the suitability of collaborative apps to engage the supply chain in scrutinising design and providing feedback on design problems they encounter when on site.</p>
<p><b>Benefits of the session:</b></p> <ul style="list-style-type: none"> <li>• Software for supporting design scrutiny by Tier-2 and Tier-3 supply chain.</li> <li>• Opportunity for the supply chain to gain hands-on practice experience with the app using existing designs for the present project.</li> </ul>

<b>Workshop 3: Collaborative Risk Management using Flow Walks</b>
<b>Workshop Aim:</b> To facilitate early engagement of the supply chain in identifying risks and improve the reliability of collaborative plans using “flow walks”.
<p><b>Workshop Objectives:</b></p> <ul style="list-style-type: none"> <li>• Gain clarity on the benefits of building strong relationships and having a collaborative approach (<b>recap from workshop 1</b>)</li> <li>• Identify how behaviour and attitudes impact ourselves and others (<b>recap from workshop 1</b>)</li> <li>• Understand the need for the supply chain to engage in collaborative design scrutiny and associated productivity benefits to all including the supply chain themselves (<b>recap from workshop 2</b>).</li> <li>• Understand the need for a user-friendly process that can allow site operatives to feedback on any design problems they encounter (<b>recap from workshop 2</b>).</li> <li>• Introduce a “flow walk” as an early supply chain engagement process that enhances collaborative working and improves the reliability of site production.</li> <li>• Understand how “flow walks” as a collaborative risk management approach can be used to improve the reliability of collaborative plans.</li> <li>• Practice the use of “flow walks” in identifying risks before starting on site.</li> </ul>
<p><b>Overview of workshop content:</b></p> <p>A critical and underused part of collaborative planning is the activities needed to ensure the work planned can take place exactly when planned. To ensure planned activities are properly sequenced, appropriately sized, of sound design and free of constraints the people responsible for doing the work need to be involved early enough in the planning process. These people also need to be confident that the blockers and constraints identified can be fully cleared to enable work to take place as planned. The “Flow Walk” will be introduced as a process for ensuring the blockers and constraints are identified enabling the planning and project management to take these into account. This will be practised using live examples involving participants from interdependent trades. This will help ensure that works are completed to a high standard before leaving an area, so it is ready for the next trade to start work, and everything needed for site production is available when it is needed. This process will help everyone get access to complete their work at the planned time without delay or disruption.</p>
<p><b>Workshop resources produced:</b></p> <ul style="list-style-type: none"> <li>• Presentation with content, interactive activities, and case examples.</li> <li>• 5 mins lite version taster material for initial engagement of the supply chain.</li> <li>• A short quiz for participants to complete at the end to check that the required learning has been achieved.</li> </ul>
<p><b>Additional content produced for further development into the e-learning module:</b></p> <p>Virtual interactive exercises or interactive case illustrations can be hosted as part of an e-learning package.</p> <p>A guide for implementing flow walks as an early engagement process for the supply chain to improve the reliability of collaborative plans.</p> <p>Short testimonial videos illustrating practical aspects from face-to-face delivery (video captured during delivery for later integration into e-learning module)</p>
<p><b>Benefits of the session:</b></p> <ul style="list-style-type: none"> <li>• See clearly how the potential for “others” to interfere in your work can be anticipated.</li> <li>• See clearly that far from being a cost to you, being involved in planning can create more profitable work and that removing blockers and constraints in advance is more cost-effective than claiming against your contract later.</li> <li>• Understand that if you want your work to be constraint-free you need to discuss how it interfaces with other trades with those trades, recognising that they will also have requests of you (this is known as the “next customer principle”).</li> <li>• You will also have developed some collaborative workshop skills; have some prior knowledge of the high-level risks associated with the project; and identify some specific actions to address some of these risks.</li> </ul>

<b>Workshop 4: Innovation and Value in the Supply Chain</b>
<b>Workshop Aim:</b> To assist the supply chain, identify and capture/embrace innovation and value for their productivity during projects.
<p><b>Workshop Objectives:</b></p> <ul style="list-style-type: none"> <li>• Gain clarity on the benefits of building strong relationships and having a collaborative approach (<b>recap from workshop 1</b>)</li> <li>• Identify how behaviour and attitudes impact ourselves and others (<b>recap from workshop 1</b>)</li> <li>• Understand the need for the supply chain to engage in collaborative design scrutiny and associated productivity benefits to all including the supply chain themselves (<b>recap from workshop 2</b>).</li> <li>• Understand the need for a user-friendly process that can allow site operatives to feedback on any design problems they encounter (<b>recap from workshop 2</b>).</li> <li>• Introduce a “flow walk” as an early supply chain engagement process that enhances collaborative working and improves the reliability of site production (<b>recap from workshop 3</b>).</li> <li>• Understand how “flow walks” as a collaborative risk management approach can be used to improve the reliability of collaborative plans (<b>recap from workshop 3</b>).</li> <li>• Outline aspirations to develop a two-way dialogue as to the understanding and perception of value and innovation.</li> <li>• Identify how to achieve a better, economically sound, and sustainable business with enhanced relationships.</li> <li>• Identify what added value through innovation means for the project and individually, and how the innovation grant can be used.</li> <li>• Launch the innovation grant call.</li> </ul>
<p><b>Overview of workshop content:</b></p> <p>To help achieve the aim and objectives, the session will focus on a practical approach, through facilitated activities and good practice examples. These examples will be used to demonstrate how a holistic appreciation of value beyond price and profitability has allowed other small businesses to become more successful. Emphasis will be on indicating that most of the time innovation is about asking questions, thinking critically and continuous improvement.</p> <p>The concept of value should also be connected to the strategic value drivers (natural, social, human, manufactured, and financial) in the Value Toolkit published by the Construction Innovation Hub.</p>
<p><b>Module resources produced:</b></p> <p>Presentation with content, interactive activities, and case examples.</p> <p>A short quiz for participants to complete at the end to check that the required learning has been achieved.</p>
<p><b>Additional content produced for further development into the e-learning module:</b></p> <p>Virtual interactive exercises or interactive case illustrations can be hosted as part of an e-learning package.</p> <p>Prompts for the SME supply chain in construction to embrace innovation as business-as-usual and take up the innovation challenge to support offered by the IDP project.</p> <p>Short testimonial videos illustrating practical aspects from face-to-face delivery (video captured during delivery for later integration into e-learning module)</p>
<p><b>Benefits of the session:</b></p> <ul style="list-style-type: none"> <li>• To understand the bigger picture throughout the supply chain to realise how you can contribute more widely (beyond pricing for and delivering a contract)</li> <li>• To identify how you can meet the value requirements of the Value Toolkit through innovation.</li> <li>• To identify the benefits of two-way engagement</li> <li>• To be able to articulate and pitch positive contributions to the bigger project.</li> <li>• Develop an enhanced relationship with the main contractor and their subcontractor(s)</li> </ul>



# Appendix B - Logic model for the IDP project



## Appendix C - Phase 1 Evaluation Results

Note: Each cohort consisted of 10 participants.

### Cohort 1: What was the most useful aspect of this workshop?

Cohort 1 provided a range of responses as to useful aspects of each of the workshops as shown below:

Answer	W1	W2	W3	W4
All of it	1	1	0	0
All was good	1	0	0	0
Awareness of others	0	1	0	0
Everything	2	0	0	0
Learning about plans that cannot be achieved	0	0	1	0
Listing out and identifying what can hinder the flow of works on site	0	0	1	0
Make sure I listen more	1	0	0	0
Most informative	0	0	0	1
NA	2	5	5	7
Planning	0	0	1	0
Seeing the program	0	0	1	0
Self-Reflection	1	0	0	0
The innovative Ideas that suggested that can help make work on site more productive	0	0	0	1
Thinking of innovations that can help the industry	0	0	0	1
To help understand	1	0	0	0
Understanding	0	0	1	0
Understanding each other	0	1	0	0
Working together affective communication	0	1	0	0
Working together and communicating with each other to build the Lego	0	1	0	0

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

### Cohort 1: Will today's workshop influence the way you do business / work?

Cohort 1 generally responded with positively. "Yes" or "Yes" followed by further details. This was the most common response for workshops 1 and 2. There were some limited negative responses with 1 participant indicating "No" for workshop 3 and 4 respectively.

Answer	W1	W2	W3	W4
How to better communicate	0	1	0	0
It will influence me to think more about innovative solutions	0	0	0	1
Know more about the process of bidding for work	0	0	1	0
NA	2	5	6	7
No	0	0	1	1
Today's workshop will influence me to try and avoid things that can affect the flow of works	0	0	1	0
Try to talk more	0	0	0	1
Work smarter	0	0	1	0
Yes	3	0	0	0
Yes have respect for others	1	0	0	0
Yes help me work together better with co-workers	0	1	0	0
Yes help me work with a better outlook	0	1	0	0
Yes I will be more open I how I interact	1	0	0	0
Yes it will influence me to communicate better	0	1	0	0

Yes to improve and talk more	1	0	0	0
Yes, more talking to others	1	0	0	0
Yes, to communicate with other trades on site	0	1	0	0

### Cohort 1: Relevance of the Workshops

Cohort 1 indicated overall that they felt the workshops were relevant to them and their business. Most participants scored the workshops 4 or over. A Smaller, number of participants gave the workshops a score of 3, with workshop 3 having more participants giving this score than they had for the other workshops.

Rank Provided by Participants	Number of Participants			
	W1	W2	W3	W4
3	2	1	3	1
4	3	6	4	5
5	4	3	3	4

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

### Cohort 1: What would you like to get out of the IDP project?

The majority of Cohort 1 did not respond to this question as shown below:

Answer	W1	W2	W3	W4
A better understanding of other contractors and how we can work collaboratively	0	0	1	0
A better work environment	0	0	1	0
Better awareness	0	1	0	0
better communication skills	0	1	0	0
Easier work life	0	0	0	1
Information	0	1	0	0
Information to use later	0	0	1	0
More knowledge	1	0	0	0
More Understanding	1	0	0	0
NA	6	6	7	7
Solutions to working collaboratively	0	0	0	1
To talk in front of a group	1	0	0	0
To talk more	0	1	0	0
Took a lot away	0	0	0	1

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

Those participants that responded indicated that they were seeking “*knowledge*” “*understanding*” “*information*” or “*awareness*”. There were also participants that were interested in “*collaboration*” and improving “*communication*”

### Cohort 2: What was the most useful aspect of this workshop?

The cross-tabulation shows the results for cohort 2. There was a wide variety of unique answers from cohort 2 who all answered the question. “All of it” was provided 2 participants on workshop 1 and “Interaction with others” was also provided by 2 participants on workshop 4. “Learn” or “learning” was the most common word used in the responses.

Answer	W1	W2	W3	W4
All of it	2	1	0	0
Communication	0	1	0	0
Exercises Group activities	1	0	0	0
Exercises to make me aware of my influence on others	1	0	0	0
Expressing our concerns about working on site	0	1	0	0
Finding out what problems others had	0	0	1	0
Group activity- discussion	0	1	0	0

Group Discussion All of it	0	1	0	0
Helping the guys understand the importance of communications	1	0	0	0
Identifying values	0	0	0	1
Imtech Way	0	0	1	0
Interaction with others	0	0	0	2
Interesting conversation about understanding on site	0	0	1	0
Learn how listen and think about others	1	0	0	0
Learned how companies tender for the work and to learn about design	0	1	0	0
Learning about all the different values	0	0	0	1
Learning about the other things apart from being on site	0	0	0	1
Learning how the building trade works	0	0	1	1
Learning how the workshop works	0	0	0	1
Learning new things to be nice to others and ask questions	1	0	0	0
Learning team bonding	0	1	0	0
Learning to bond together	0	1	0	0
Learning to listen and understand	1	0	0	0
Self-awareness	1	0	0	0
Sticky notes activity - discussion	0	0	1	0
Talking about the value of work to me and others	0	0	0	1
Talking about underlying issues on site	0	0	0	1
Talking to the Mc Awo. Getting other view from other trade	0	0	1	0
The paper game	0	0	1	0
The views of other people - trades	0	0	0	1
To get more understanding on how to how to approach people	1	0	0	0
Yes-Mixing with a good group of lads	0	1	0	0

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

### Cohort 2: What was the least useful?

There was a mixed response to the question from cohort 2. As shown in the table below:

Answer	W1	W2	W3	W4
Again, having wrong people on course needs more managers	0	0	0	1
Air con	1	0	0	0
Environment	1	0	0	0
How information was received	0	0	0	1
Lack of management	0	0	0	1
NA	1	2	2	3
No aspect of it was not useful	1	0	0	0
No company senior manager representative	0	1	0	0
No senior management	0	1	0	0
No senior management present on course	0	1	0	0
None	2	1	2	0
None all good	0	0	0	1
None of it	1	1	0	0
Not sure	0	0	1	0

Nothing	0	0	1	1
Nothing really	0	0	0	1
Nothing really apart from the lack of managers on course	0	1	0	0
Nothing really apart from the warm room water would have been nice	1	0	0	0
Process of innovation	0	0	0	1
Similar to workshop 2 with the issues that happen on site	0	0	1	0
Too many voices not enough senior managers	0	1	0	0
Unsure	1	0	0	0
Warm room. Facility	1	0	0	0

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

For workshop 1 some of the responses, related to the environment of the venue and the warm temperature of the room being used and the lack of water. The lack of management or senior management was identified by a number (5) of participants as being the least useful on workshop 2 and workshop 4. Representatives from middle management were involved in the workshops but they indicated the need for involvement of more senior management. Other participants identified that none or nothing was least useful about the workshops they had attended.

#### Cohort 2: Will today's workshop influence the way you do business / work?

Cohort 2 generally responded with yes across all the workshops to this question as shown in the table below:

Answer	W1	W2	W3	W4
Again learning to listen and understand	1	0	0	0
Better interaction - understanding with others	0	0	0	1
Get the workforce to mix more	0	1	0	0
I will appreciate people differently	1	0	0	0
Information	0	0	0	1
It will make me think about the benefits of work and just financially	0	0	0	1
Keep pushing for more info	0	0	1	0
NA	0	0	1	1
Question the design - drawing more. Working with other trades	0	0	1	0
Similar to previous workshops with regards to site	0	0	1	0
Speak out more raise issues	0	1	0	0
Talking more about upcoming works before starting work	0	0	1	0
Think of other trades	0	0	0	1
Unknown	0	1	0	0
Yes- will learn how to work with and around different trades to make the job easier	0	1	0	0
Yes-get people to speak up or out	0	0	0	1
Yes-learning about all the different values will help for work in the future	0	0	0	1
Yes - learn more to work with others	0	1	0	0
Yes listen more to key aspects of all parties	1	0	0	0
Yes ask more questions	1	0	0	0
Yes because its shown different ways to talk and go about work	0	0	1	0
Yes by cooperation with others more	0	1	0	0
Yes it is made me more aware of my ability to influence	1	0	0	0
Yes just to be more understanding to other trades when working in same area	0	0	0	1
Yes just to learn more things that wouldn't have known	1	0	0	0
Yes learning how to communicate better	0	0	0	1

Yes listen more	1	0	0	0
Yes not rush on	1	0	0	0
Yes only if it filters up through management	0	0	0	1
Yes raising issues to management Patience whilst on site more understanding	0	1	0	0
Yes think stop more in the future	1	0	0	0
Yes will try and listen and interact with other trade	0	1	0	0
Yes, every aspect of the workshop will have a different influence with the way I work	1	0	0	0
Yes, Learning how to cooperate	0	1	0	0
Yes. I will think about others trades problems more	0	0	1	0

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

One participant responded with “unknown” in their response in relation to workshop 2, However the remaining answers were mainly positive with “Yes.....” being the answered followed by the participants. Some participants view of management was also reflected in answering the question on workshops 2 and 3. Overall the participants answers reflected the interpersonal aspects of working on site and the improving these was the how the workshops will influence the participants.

#### Cohort 2: What would you like to get out of the IDP Project?

Again, there were a wide range of answers to this question from cohort 2

Answer	W1	W2	W3	W4
A better understanding	0	0	0	1
A better understanding of how managers work	0	1	0	0
A better understanding of trade	0	0	0	1
Better collaborative techniques. Better life at work	1	0	0	0
Better communication between senior members and operatives	0	1	0	0
Better understanding of other peoples needs and take that away and use it to improve projects going forward.	1	0	0	0
Better understanding on how design teams work to improve on site work	0	0	1	0
Better working environment work flow with ease	1	0	0	0
Confidence more understanding better at communication	1	0	0	0
Good overview	0	0	1	0
Have more understanding of the building trade	0	1	0	0
Just to learn more what goes on with managers	0	0	0	1
Knowledge	0	0	0	1
Make the site life easier	1	0	0	0
More understanding	0	1	0	0
More understanding of how building trade works	0	1	0	0
More Understanding of the chain of command in trade	0	0	1	0
NA	1	1	3	2
Peoples opinions and there feelings of site life	1	0	0	0
Peoples view of other trades	0	0	0	1
See others opinion	0	1	0	0
Self Improvement	1	0	0	0
Sense of value ( self worth)	0	1	0	0
To be more confident and to enjoy my day at work	0	1	0	0
To learn with new things as we continue with course	1	0	0	0
To listen and communicate more	1	0	0	0

Understanding on site	0	0	0	1
useful information I can use for future	0	0	1	0
Value	0	0	0	2

\*W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

*"Understanding"* was a common word in the responses linked with *"better"* or *"more"* across all the workshops. *"Value"* was identified by two participants on workshop 4 as something that they wanted to get out of the IDP project along a participant on workshop 2.

#### Overall, how relevant was this workshop for your business

Cohort 2 responded with high marks overall with most participants scoring indicating a high relevance for their business.

Rank provided by participant	Number of participants			
	W1	W2	W3	W4
3	0	0	3	4
4	9	4	3	4
5	1	5	1	2

W1: Workshop 1; W2: Workshop 2; W3: Workshop 3; W4: Workshop 4.

Most participants indicated a score of 4 or higher across the workshops. Workshops 3 and 4 were the only workshops where some of the participants indicated a score of 3

## APPENDIX D: SUGGESTED INNOVATIONS DURING PHASE 1

Workshop	Innovation Type	Description	Dates
1	Product	<b>*Reduce size of plasterboards to make manual handling and distribution more productive</b>	31/01/2022
1	Process	Marking up of floors for placement of boards ahead of time	31/01/2022
2	Product	<b>*Plasterboard pre-marked by manufacturer with 600 mm line</b>	08/02/2022
2	Process	More direct contact between tiers 1 and 3	08/02/2022
2	Product	Repurpose of finger guards to protect plasterboard	08/02/2022
2	Process	Monthly collaborative meetings	08/02/2022
2	Process	More power points in rooms	08/02/2022
2	Product	Use of WhatsApp	08/02/2022
3	Product	Change in the number of fixings subject to pull tests with Hilti	15/02/2022
3	Product	Guillotine to cut top hats	15/02/2022
3	Product	Rock Steady clips for boards	15/02/2022
3	Process	Engage setting out engineer for ceilings	15/02/2022
4	Product	Adapt the use of Karcher or similar for dust suppression	22/02/2022
4	Process	Social interaction between tiers more day to day mini meeting room. Coffee machine. Break out spaces	22/02/2022
4	Product	Twist fixings for composite dovetail deck	22/02/2022
4	Process	Using social media such as Whats App for the entire site	22/02/2022
4	Product	Greater use of bagged glass fibre	22/02/2022
4	Process	Possible employment from people with backgrounds not in construction looking for a career change (possible competition from amazon)	22/02/2022

\*Suggestions on plasterboards led to an innovation challenge support project.

### Cohort 2: Innovations arising through the workshops

Throughout the workshops that cohort 2 attended, emergent ideas from the participants that may be taken forward as an innovation was recorded.

The table below shows the innovations and how they occurred across each of the workshop

Workshop	Innovation Type	Description	Dates	Contractor
2	Organisational	Estimators and quantity surveyors from the company to spend time on site with fixers	24/05/2022	Titan
2	Process	Workshopping solutions with the experience of the supply chain for items not in the BIM model	24/05/2022	Titan
2	Organisational	Retention of labourers to improve efficiency and accuracy of distribution of materials	24/05/2022	Titan
2	Product	Reduction in the size of plasterboards to make handling easier	24/05/2022	Titan
3	Process	Use of social media such as What's App for the entire site	31/05/2022	Titan
4	Process	Retention of Apprentices so that they complete their training	07/06/2022	Imtech

### Cohort 3: Innovations arising through the workshops

Throughout the workshops that cohort 3 attended, emergent ideas from the participants that may be taken forward as an innovation was recorded.

The table below shows the innovations and how they occurred across each of the workshop

[Note this is based on workshops 2 to 4]

Workshop	Innovation Type	Description	Dates	Contractor
2	Process	Bring first fix services into the plasterboard package	21/06/2022	Titan
3	Product	Creation of a commissioning tile or a protected tile to reduce waste from services being commissioned	28/06/2022	Titan
3	Product	Redesign of pallets so that pallet trucks can used to distribute materials within buildings	28/06/2022	Titan
2	Process	Bring first fix services into the plasterboard package	21/06/2022	Titan
3	Product	Creation of a commissioning tile or a protected tile to reduce waste from services being commissioned e.g. durable and robust commissioning tile manufactured for purpose (potential tile suppliers to contact include Armstrong, BGs).	28/06/2022	Titan
3	Product	Redesign of pallets so that pallet trucks can used to distribute materials within buildings	28/06/2022	Titan



3	Process	Create a new process to ensure that site workers are able to raise any issues that affect workflow	28/06/2022	Titan
4	Process	Sharing positive feedback verbally and continually e.g. green cards. This could apply to the ROM app for reporting health and safety near misses so that it captures positive health & safety practices.	05/07/2022	Titan
4	Process	Employee of the week/month which focuses on positive and meaningful contributions to a project	05/07/2022	Titan
4	Process	Include site teams in the subcontractor awards	05/07/2022	Titan
4	Process	Training middle managers on people skills and how to talk to and listen to people (soft skills).	05/07/2022	Titan
4	Process	Site workers names on safety hats or wear to support communication and addressing people by names.	05/07/2022	Titan
3	Process	Translator vest on the right person to support communication with non-english speakers on site	05/07/2022	Imtech/Titan
3	Process	Process for enforcing clean hand-overs from trade-to-trade despite programme pressures (allow some little time in programme to facilitate this, bins available on floors to facilitate clean-ups).	05/07/2022	Imtech
4	NA	Finding alternatives to single use plastic packaging for materials delivered to site e.g. cable wrappings etc.	05/07/2022	Imtech
4	Process	Compost and recycling bins on site	05/07/2022	Morgan Sindall

\*Note this is based on workshops 2 to 4 and does not include workshop 1]

## APPENDIX E: Increased Profitability from innovation Challenge Support Projects

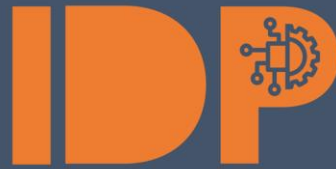
No.	Support Title	Company Name	Evaluation Feedback	Increased profitability
1	Reconfiguration of the size and weight of plasterboards	Company A	For every 400 kg of board, 40 kg is wasted. However, on a new project where the pre-cut plasterboards are being used, <b>the waste has reduced by 3-4%</b> and productivity savings of 5%. For every 10 plasterboards on a typical project, 1 plasterboard is accounted for as waste (10%). With the current project having over 90,000m <sup>2</sup> of plasterboard, 9000m <sup>2</sup> of waste would have been generated the old way, but this waste will be reduced to 54,000m <sup>2</sup> , saving about 36,000m <sup>2</sup> of waste. These pre-cut boards are currently being used on 3 projects. Over a 5-year period, it is forecast that the savings in waste alone could be more than £50,000 if they ordered pre-cut boards on every job. They also save on skips due to less waste, which contributes to a reduction in carbon emissions. This is an easy win for main contractors to reduce their carbon footprint, given the push for net zero. This is in addition to the labour speed in fixing the pre-cut boards which is estimated at about 5% saving in labour time.	£ 50,000.00
2	Efficiency Improvement	Company B	The investment in BuilderTrend is not insignificant as the full package costs approximately £10,000 per annum. By increasing visibility of costs in real time to the entire team you would expect to see less wastage, plant being returned on time and improved cost management. The average build cost is £500k, the expected mark-up is 17.5% which would give a 15% margin. But, margins are closer to 10%. By implementing this solution the cost savings would be a minimum of £100,000 per year, but could be as high as £200,000 per year.	£ 100,000.00
3	Simple Sub-Contract	Company C	Company C did experience the positive impact that having sub-contract agreements can have on the business. Following guidance, a sub-contract agreement was put in place and as a result of this, it prevented a client from going direct to a sub-contractor to get work done on the project. Company C was delivering, safeguarding against the loss of £30,000 worth of work.	£ 30,000.00

4	Recruitment Process	Company D	£5000 in direct costs for abortive or wasted advertising in costs, admin and managerial time. An onboarding process is now in place. Interview techniques have improved. Quote: "Rebecca provided the confidence that was needed to help me develop a robust growth strategy ensuring we have the right people in post to enable me to concentrate on the growth potential of Company D. We have successfully recruited to the two positions available and a potential for a third to participate in work experience later this year". The onboarding checklist frees up time when employing a new member of staff. A new member of staff to the team frees up time for the [Director] and his existing team to work on new business for the company.	£ 5,000.00
5	Recruitment Process	Company E	£5000 in direct costs for abortive or wasted advertising in costs, admin and managerial time. Reduction in admin time in placing adverts and filtering applicants. Reduction in interview time by only interviewing suitable candidates. Avoid wasted costs in advertising in the wrong sector or format. Structured recruitment plan for future use to avoid unnecessary time wasting. More staff available to work on jobs will allow [Directors] to take on further work and increase revenue and profits in the company. Reduction of the workload of existing staff. Greater sense of well-being and positivity of the existing staff. Reduction in overall stress within the office workforce. Employment sends the right signals of growth and security.	£ 5,000.00
6	Recruitment Process	Company F	£5000 in direct costs for abortive or wasted advertising in costs, admin and managerial time. The onboarding checklist frees up time when employing a new member of staff. Increased well-being for the team promotes a healthy working life and ensures retention of staff, allowing [Directors] more time to win new business. A deeper understanding of cash flow allows [Directors] to grow the business whilst being able to take on (and afford) new work. Quote: "Working with [Consultant] was really valuable, having someone removed from the business to talk to, made a difference. Asking questions such as 'why work for you'? really challenged thinking".	£ 5,000.00
7	Tendering and Cost Monitoring	Company G	New, increased rates are resulting in increasing revenue. For example, a project costing between £200 - 300 is now being charged at £2,700. On a £6,700 project, profit is now £1,700 as opposed to 500 previously.	£ 1,700.00
8	Tendering and Cost Monitoring	Company H	There is now consistency in pricing. In the past, would treat commercial projects differently to working in people's houses. Would the price lower for housing rather than commercial. Now everything is being priced consistently. For example, 1 coat of paint used to be priced but 2 coats delivered. Now 2 coats are priced and delivered. Saving of 1 / day week (£500 / week - £2,000 month, 24,000 / year improvement)	£ 24,000.00

9	Commercial Systems Processes	Company J	The intervention led to a recovery of £367,000 disputed cash against works in progress. Process and actions implemented to reduce risk of future repetition of this scenario - potential client assessment checks and validation, prior to accepting awards and opportunities. This will make new business opportunity decisions less risky in future.	£ 367,000.00
10	Procurement Evaluation: Customer Experience Strategy	Company K	Customer enquiries are being dealt with quickly and orders have gone up. Products out the door have increased by approx. 200k. [Director] is now getting weekly reports with data including enquires in, sales orders and business with distribution companies. He can now monitor who isn't ordering and make connections with them to generate more business.	£ 200,000.00
11	Which Guide to Technology	Company L	[Director] was encouraged to question the necessity of technology and looked at the costs currently being paid for BuilderTrend software. Following this, negotiations have now taken place and aspects of the system not being used but being paid for monthly have been removed. This has resulted in a saving of 3.000/ yr. The advice given has encouraged [Director] to understand the 'end game' of bringing in more technology and to keep that in mind when evaluating options.	£ 3,000.00
				£ 790,700.00

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