

Construction Innovation Hub Response to Ofwat Innovation funding and competition: further consultation on design and implementation

About the Construction Innovation Hub:

Launched in November 2018, the Construction Innovation Hub (the Hub) is a £72 million R&D programme, funded by UK Research and Innovation (UKRI) under the Industrial Strategy.

Bringing together world-leading expertise from the Manufacturing Technology Centre (MTC), the Building Research Establishment (BRE) and the Cambridge University Centre for Digital Built Britain (CDBB) and structured around the four core themes of Value, Manufacturing, Assurance and Digital, our mission is to change the way buildings and infrastructure are designed, manufactured, integrated and connected within our built environment.

There are strong parallels between the Construction Innovation Hub's strategy for transforming UK construction and Ofwat's strategy for addressing the challenges the water sector faces in the current price control period and beyond. Both our organisations are committed to embedding innovative technologies and processes to drive better outcomes for the environment and society at large.

As the water sector is a critical stakeholder for UK construction, the Hub would like to offer our response to a number of key questions as outlined below.

Response to questions 6,8,13,14 &17.

The Construction Innovation Hub strongly supports the core role of innovation as set down in PR19 and Ofwat's efforts to promote technological and cultural transformation together with industry, supply chain and other sectors, by putting medium-term structures and funding in place to accelerate and focus delivery of a shared longer-term innovation strategy.

This is very much the model of the £420m 4-year Transforming Construction Challenge¹ to which the Hub is central and we offer our views based on this experience. In the course of delivering our transformation programme we have also experienced the dramatic impact of Covid-19 on construction projects and the construction supply chain. We have worked closely with industry stakeholders and individual businesses to construct a response which demonstrates the role of innovation in supporting recovery, a process which will likely be ongoing well into the timeframes of both the Hub and the Ofwat Innovation & Funding Competition.

¹ <https://www.ukri.org/innovation/industrial-strategy-challenge-fund/transforming-construction/>

Q6: Do you agree with the overarching approach we set out here?

Q8: Do you agree with our proposal for ensuring roll-out is at the heart of the innovation competition? How might we reward both leaders and fast followers in this space?

We support the intention to build flexibility into the programme within the framework of an overarching strategy. Technological and cultural transformation across a large and complex sector with many stakeholders cannot be achieved through the execution of a plan fixed from the outset. It is a classic Wicked Problem² in that there is no simple definition of the problem nor the solution, and is itself a compound of other problems which will be apparent as the work progresses. The Construction Innovation Hub has applied rolling-wave planning, adapting its programme to align with opportunities to accelerate development and deployment with external stakeholders. This approach promotes buy-in to the overall mission and enables an agile response to external factors including Covid-19.

Coordinated action at sector level such as creating common facilities and non-proprietary standards is cost-effective in terms of minimising duplication but more importantly increases collaboration on interoperable and consistent solutions designed to deliver system-level benefits, not merely process improvements. The Hub provides expertise and manufacturing & testing facilities on behalf of the construction sector. This capability was deployed rapidly by forming a partnership of three existing, established and complementary research and technology centres. However, the Hub also articulates and champions the future ecosystem and co-develops the necessary concepts with sector stakeholders. For example, the Hub is spearheading the introduction of a new industry-wide quality management process³ for construction manufacturing.

Roll-out at scale is critical to delivering measurable impact from investment and demonstrating value for money. The Transforming Construction Challenge works to a clear framework of economic, social and environmental impacts which are the ultimate metrics of success. These are set and monitored by Innovate UK which has a strategic goal to deliver measurable economic and societal impact across the UK⁴, and which has extensive experience of designing, delivering and measuring innovation programmes.

Impact through roll-out should be a programme priority at the top level of the Innovation & Funding Competition. The Hub has put in place Impact Directors⁵ individually and jointly responsible for steering workstreams and outputs to meet not just sector needs but specific at-scale deployment opportunities. In this way, roll-out impact can be actively targeted, managed and reported and made central to project decision-making and review. Consideration should be given to the TRL balance of activities and to situating outputs on a change route map. Funding should be made available for enabling activities as proposed, not restricted to purely technical innovation, platforms and facilities but to support roll-out this should include elements of business process, engagement and core skills for implementation.

² K Grint *Wicked Problems and Clumsy Solutions: the Role of Leadership Clinical Leader*, Volume I Number II, December 2008, ISSN 1757-3424, BAMM Publications

³ <https://constructioninnovationhub.org.uk/construction-sector-recovery-needs-a-transformed-delivery-approach-to-assure-safety-and-quality/>

⁴ <https://www.gov.uk/government/news/innovate-uk-releases-2019-2020-delivery-plan> As the UK's innovation agency, Innovate UK has succeeded in investing over £2.2 billion more than 11,000 projects over the last 12 years. These have created as much as £16 billion in gross value added to the UK economy and 70,000 jobs.

⁵ <https://constructioninnovationhub.org.uk/key-members/>

Q13: Do you agree with our proposed amendments to the principles? Are any further amendments to the principles required to reflect our approach to outstanding policy issues outlined in this document?

The principles should reflect a broad logic model for the transformation the funding is intended to effect. For example, the Transforming Construction Challenge is to bring digital manufacturing technologies and enabling processes to transform value, productivity, quality and environmental outcomes in the built environment. It is suggested that themes of the IF&C could include climate change, ecology and resilience as well as other government priorities and elements of public value. Focusing these into a clear vision of the future will help to engage participants and stakeholders in the goal of sector-wide transformation through roll-out and impact, and to determine the enabling framework required.

If the purpose of the IF&C is to de-risk transformational innovation that companies otherwise would not invest in, then a vision of the transformation and an understanding of the barriers is necessary to determine which projects meet this criterion. For transformational innovation, we would expect that the barriers will be not merely the financial investment in R&D but include barriers to sector adoption which can only be addressed through collective engagement around the future vision.

We support the principle of better use of data and information management. This goes beyond data openness to the common language by which digital twins of the built and natural environment can communicate securely and effectively to support improved decision taking by those operating, maintaining and using built assets and the services they provide to society. This is the goal of the Information Management Framework whose development by CDBB was recommended by the National Infrastructure Commission in 2017's Data for the Public Good report and HM Government's Construction Sector Deal.⁶

⁶ <https://www.cdbb.cam.ac.uk/news/pathway-towards-IMF>

Q14: Do you agree with our proposed focus, major strategic themes and overall approach for the competition? Q17: Do you agree with our proposed approach to key implementation considerations outlined here?

See also above with regard to future vision and themes being shaped into a clearer logic model. See below for a simplified diagram of the Hub approach:



We agree with the proposal for a pilot year. This is an opportunity to engage on the content of the future vision, to review the logical and thematic structure of the programme and to identify pivots required for future years. This will require a close management, monitoring and review regime to respond quickly to learning and to implement changes.

Sector transformation is a complex long-term problem requiring visible leadership and collective engagement to deliver culture change and impact. An integrated thematic approach is required to maximise the opportunities for outputs to reinforce each other as part of a movement for change. The Construction Innovation Hub would welcome the opportunity to provide Ofwat with further insights on how this approach could deliver improvements for the water industry.

Contact the Hub: