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Technical Insights

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# Research Insights: Embedding Change Control in Construction

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## Introduction

As part of the Transforming Construction Challenge, Construction Innovation Hub analysed the current conformity assessment infrastructure for construction in UK to help overcome challenges to scaling up Modern Methods of Construction (MMC) and Platform-based construction. Key gaps were identified within existing factory control processes in areas such as change control, product validation and conformity assessment. The gaps identified resonate with many of those findings from Hackitt report and translate them for construction product manufacturing.

The Hub identified change control as one of three key priority areas for further research to help enable the sector to move towards a platform-based approach.

In February 2022, the Construction Innovation Hub interviewed participants from UK Construction Companies, Consultancy Firms and Product companies in the MMC space, on their views and experiences of change control within construction. The following document provides some of the highlights and recommendations from this research and key findings were also used to inform the development of Platform Rulebook.

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## Key Research Findings

The research uncovered a number of issues within UK construction related to Change Control:

- **There is no formally recognised, standardised process for Change Control today.** How organisations facilitate their Change Control programs ranges from fully paper-based programs to fully digitized ones. The size of the business is not a factor in the likelihood of digitalisation and methodologies are not always applied consistently across the entire organisation.
- **There is no 'one size fits all' approach or software package to help with the process.** Contracts, procurement tools and project management software are all also used in different ways to record elements of change control. We heard anecdotally that email is still used regularly to agree on and 'record' changes.
- **Processes are not always followed.** When a change is made the most common approach to recording it is by updating the drawings. This allows changes to be made, tracked and new versions signed off and released. This process is not always followed as the funding needed to pay designers to revise the drawings is not always there.
- **Change Control is not consistent across the building lifecycle.** The information collected in the change control process largely depends on what stage the program is at. For example, in the design phase (before RIBA stage 4), changes are not always captured. This is rationalised by the fact that drawings are issued at the end of this stage (before handover to the contractor) and as such, they need to be signed off by the client. This approach is fraught with risk when a client is not fully versed in the changes before these final drawings are released.
- **Risk ownership is fragmented.** In terms of signoff, there are different people responsible for this. Usually, the person who owns the risk has the final say in the design. Once the design process is complete (after RIBA stage 4) and the design is handed over to the contractor, the contractor then owns the risk moving forward including any further changes dictated by technical outcomes such as those mentioned above.

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## Benefits of Change Control

Change Control is a fundamental part of any quality management system and is used in almost all industries to manage risks from the outset. However, despite a general acceptance that improved change Control within MMC would result in better outcomes (less change and errors, resulting in more profitability), research findings from the Hub have found there is not a standardised process being used for MMC in the construction sector.

A formalised and comprehensive change control process can result in the following:

- Reduction in errors
- Reduction in material waste
- Reduction in additional costs due to errors
- Shorter time for completion of projects
- Reduction in non-conforming materials making it to site
- Full traceability of materials and processes
- Creates consistency across projects and working groups
- Supports and enables quality control and assurance staff

## What is Change Control?

Change control is the process of documenting changes that are made to the original plans or principles of a process or design. It is about making sure that any changes to components are determined at a system level – namely, that changes are flagged, checked, and analysed within the manufacturing process to ensure that specification and performance can be maintained.

Within construction, the Change Control process is largely determined by two factors: the contract and the client's requirements. The type of contract that exists for the program largely governs how change control takes place in most instances. Outside of this, many construction companies look to their client to request Change Control rather than initiating it themselves.

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## Why is Change Control needed in construction?

In any manufacturing and design process, change is constant. In construction, it can happen either when the vision of the client changes or when technical outcomes determine the need for change, such as material availability or new processes being identified by the contractor.

Throughout all aspects of a product lifecycle, managing risks created by change is key to maintaining product safety both in managing specific changes in product manufacture and assessing risks created by wider factory management changes, such as organisation or systems changes.

It should be noted that change can also take place across a building's lifecycle, long after the design and build process is complete, affecting the original design parameters and creating new risks.

We have also witnessed the aftermath when change control is not in place. The **Hackitt Report** following the Grenfell Tower Disaster highlighted the need to understand the implications of making changes once the asset is built and to assess changes not just at a component level but at a system level where components interact.

A solid change control process enables traceability throughout the building lifecycle. It is crucial in ensuring that non-conforming materials do not make it to building sites, potentially reducing the need for technical inspections.

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## New legal requirements mean cultural change is urgently needed

Following Grenfell, the Building Safety Act has now introduced a legal requirement for Building Safety Cases to be presented at different stages of the building process, for high-risk buildings. Evidence of conformity, as well as a golden thread of information that details changes and the decision-making process behind them are a requirement throughout a building lifecycle. This makes comprehensive change control processes vital.

Meanwhile, the instruction of BS99001 has introduced a specific benchmark for quality management systems in the construction industry, including a fundamental new requirement to embed new change control processes and capture better information.

These new requirements, and the emergence of new industry standards and secondary legislation, mean the Construction industry can no longer stand still. It has to innovate and embed better risk and change controls across supply chains to ensure compliance. Large-scale cultural change is needed, especially if the industry is to move to the MMC led platform manufacturing approach specified in the Government's Construction Playbook.

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## Advancing change control at the Hub

The Change Control research project was designed to inform a new standardised change control process for the construction industry and to support the development of an overarching quality assurance framework for platform systems, as set out in the **Government's Construction Playbook**.

The Hub has also developed a number of tools through its Quality Assurance and Conformity Assessment programmes which can support the proper implementation of a change management programme. These include:

- Platform Rulebook
- The Construction Products Quality Planning (CPQP) framework and toolset
- Verification & Validation guidelines
- First Article Inspection

The hub's guidance on change control can also apply to the remediation work needed for high-rise buildings in the UK. The tragedies of Grenfell have shown us that change to any high-risk building across the country needs robust controls on site and in factory components, validated by a 3rd party. The need to verify these changes at the system level are also imperative.



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Find out about solutions developed by the Hub's  
Quality Assurance and Conformity Assessment  
teams [here](#)

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