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Construction Quality Assurance Initiative

An introduction to the initiatives and interventions being used to improve construction quality across four projects

AUGUST 2020

Purpose of this document

To introduce the Construction Quality Assurance Initiative and encourage wider consideration of a more comprehensive and collaborative approach to quality management and assurance on future projects.

Context

A series of well publicised events, including, Edinburgh Schools and the DG One Leisure Centre, each accompanied by subsequent reports into their causes, created a loss of confidence in the public sector's ability to successfully manage the procurement, design, construction and delivery of compliant building projects to the level of quality expected.

In the summer of 2018, the Scottish Futures Trust (SFT) launched the Construction Quality Assurance Initiative. The objective was to come alongside projects to encourage a collaborative dialogue between clients, delivery partners, designers, contractors and sub-contractors about achieving a compliant, high-quality outcome.

A report will be produced on each project at the end of their construction, focusing on the final delivery and the impact of the initiatives and interventions. This interim review describes the themes which were developed and provides details of the initiatives and interventions which are being implemented.

“ This enhanced, collaborative approach to quality management and assurance has brought all the team members together. The early results demonstrate a much greater focus on delivering a quality product”

**Patrick Brown, Capital Programme Team Manager
City of Edinburgh Council**

The Construction Quality Initiative Projects

Queensferry High School

Client: The City of Edinburgh Council
Contract: Design, Build, Finance and Maintain (DBFM) form of contract, through the Hub Initiative
Main Contractor: Morrison Construction
Construction value: c£40m
Programme: Completion: Achieved July 2020

Alness Academy

Client: The Highland Council
Contract: Design & Build Development Agreement (DBDA) form of contract, through the Hub initiative
Main Contractor: Kier Regional Building
Construction value: c£34m
Programme: On site - Completion of construction due September 2020

Greenock Health Centre and Stobhill Mental Health Unit

Client: NHS Greater Glasgow & Clyde
Contract: Design, Build, Finance and Maintain (DBFM) form of contract, through the Hub Initiative
Main Contractor: BAM
Construction Value: Greenock - c£21m Stobhill - c£10mm
Programme: On site - Completion due Greenock – January 2021 and Stobhill – August 2020

Perth High School

Client: Perth & Kinross Council
Contract: Design & Build Development Agreement (DBDA) form of contract, through the Hub initiative
Main Contractor: Robertson Construction
Value: Construction value - £50m
Programme: In early stages of design development

“ The experience of working with our multiple stakeholders at Alness has been really positive. We have been especially impressed with how everyone has embraced the use of technology on a common platform to assist us deliver a high-quality outcome and share information. We think this will set the standard for future project delivery.”

Sean O’Callaghan, Area Operations Director
Kier Regional Building

Applying the initiatives to drive improvement in compliance and quality... across five themes

Each project was encouraged to form a single project quality team. This had representatives from each of the Client, delivery partner (hubCo or DBFMCo), the Tier 1 contractor and those responsible for monitoring quality (Independent Testers, Clerks of Works etc.). The team was then tasked with considering what enhancements could be made to existing processes and procedures. It was found that the resulting initiatives could be grouped in to five themes.



The project teams developed and implemented initiatives which would make a difference in the way design, site operations, quality controls, inspections and assurance were carried out. Once implemented these initiatives were discussed and monitored at dedicated regular quality meetings.

“ Morrison Construction have welcomed the opportunity to participate in the Construction Quality Assurance Initiative on our project at Queensferry High School. It has become clear through the CQAI that quality management and assurance has to involve all project stakeholders including contractors, designers, project managers, independent testers, clerks of works, building control and the client team to deliver the best possible result. An open and collaborative approach is required to create the required culture shift around quality assurance on construction projects.”

**David Wilson, Operations Director
Morrison Construction**

“ The focus the CQAI has given the delivery team has really impressed us, and their willingness to share their ICT systems has given us access to information which has increased our confidence in compliance substantially. Together with open and recorded communications through the contractor’s systems, this is a verification journey we are actively seeking to apply to other larger projects.”

**Frank Doherty
Building Standards Team Leader – The Highland Council**

Themes

Initiatives

Provided below is a brief description of the initiatives which have been implemented on the projects. Once the projects reach Completion a review of how the initiatives were implemented, and the impact they had on quality, will be published for each project.

1. Quality assurance

Under the DBFM contract there was an extended scope of service for the Independent Tester/Clerk of Works on Queensferry High School (QHS). The Clerk of Works role escalated to full-time as the works progressed. Both building fabric and Mechanical & Electrical (M & E) services works are covered in the role. The M & E has a specialist M & E consultant inspecting and reporting on the works.

NHSGG&C appointed a Quality Monitor Consultant on the Greenock/Stobhill Health bundle. This resource is from a Building Surveyor background. Their role includes review of design, Quality Management Plans and visiting site on a regular basis (at least weekly). Frequency of the visit has been determined by the site activity.

The Local Authority's own Clerks of Works at Alness Academy covers the works on a visiting basis with frequency driven by site activity.

The details, implications and outcomes of the different approaches above will be covered in the reports on each project.

All of the projects are using technology to manage information on quality including inspection and test records, sign-offs and comprehensive photographic records. This is a recent development. The systems in use are:

- Alness – Snagmaster
- Queensferry – Field View
- Greenock / Stobhill – BIM 360 Field
- Alness is using photographic capture systems Holobuilder and Multivista. The photographic record is being shared with all parties.

What has proven to be important is that these systems need to be accessible and used by all parties involved in the project.

“ We are continually aiming to strengthen our offering to ensure the highest possible quality standards on all our projects, so we are delighted to be involved in the CQAI initiative. Working in partnership with our clients, supply chain, and SFT, we are demonstrating the commitment of all parties to enhancing quality improvements and laying the foundations for these to be adopted industry wide”

Roddy Clark, Operations Director
Hub South East Scotland

2. On site execution and supervision of workmanship

Key quality risk areas were identified from experience and through lessons learnt input from all members of the project teams on each project. This included Client input of quality issues they have had on previous projects once they were in operation, design team input on areas of design that have previously proven difficult to construct as intended, and from the contractors on aspects of construction that they have previously had problems with. An action plan was developed for these risk items so that known issues should not recur.

Quality benchmarking of the works has been used – identifying key risk areas and carrying out initial sections of work and samples as an agreed benchmark of quality which is available for future reference.

Workshops and “toolbox talks” with supervisors and operatives and designers to ensure understanding and preparedness to achieve the required quality were also employed.

Focus was also given to ensure all drawings/specification/information were available and understood prior to work commencing.

3. Roles and responsibilities

The approach taken was to ensure greater definition and clarity was provided of the roles and responsibilities of all parties involved in the project – client / delivery partner /contractor / design team / quality monitoring resource/ Building Standards.

On QHS the design team appointments were enhanced to require at least regular fortnightly site visits and reporting on quality.

4. Overall project management

The CQAI has encouraged visible Client leadership with a focus on quality.

Comprehensive and project specific quality management plans which are reviewed on a regular basis by parties other than the contractor were also encouraged

Regular dedicated quality meetings involving the client, delivery partner (HubCo), Tier 1 Contractor, Independent Tester, Clerk of Works, Facilities Management Contractor, Mechanical & Electrical works sub-contractor and, where appropriate, members of the design team were instigated. This provides a focus on quality and engenders a quality culture. It is not just reviewing the current non-conformances, snags and defects. The meeting discusses the approach being taken to get the work right first time including review of design activities, trial panels, benchmarking of work and lessons learned from work already carried out.

5. Development and management of design

Building Information Modelling (BIM) Level 2 has been implemented. On QHS enhanced detailing was achieved through input and coordination by an external specialist consultant whose role is to ensure the BIM model is fully comprehensive and integrated.

The scope of service for the design team on QHS was extended to ensure that they reviewed the Contractors' Design Portions (works which are designed by specialist contractors who will deliver these aspects of the works). Contractor's design portion aspects were reviewed by the design team for compliance with design intent. This is essential to avoid gaps in the design which might result in improvisation on site. And designers would attend site on a regular basis to inspect the works and confirm they are in accordance with the design.

Enhanced productions of drawn elements was undertaken – to include layouts and details on the same drawing. Avoidance of cross-referencing and removal of irrelevant information supports the delivery of work to the required quality.

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