Model clients

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Using building information modelling for refurbishment is a less straightforward proposition than it is for new builds. Andy Radley looks at the implications

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In these austere times, clients seem to be stretching budgets by redeveloping existing estate, and along with contractors are using building information modelling (BIM) and other digital tools the better to understand the challenges of refurbishment.

Traditionally, BIM is underpinned by the creation, collation and exchange of shared information. But when it comes to the refurbishment of existing assets, its use has become less structured, and the lack of a clear understanding is leading to less well-defined outcomes.

There appear to be fewer obvious benefits to using BIM with these assets, largely due to the difficulty of obtaining detailed models and the limited amount of useful data that can be extracted from or added to them. Without the practical ability to test everything invasively, the data set built up to represent visible entities is in most cases fairly generic.

Refurbishment risks

Additional challenges are often uncovered on refurbishment and heritage projects that can lengthen the programme of works, which in turn affects the budgets. However, using BIM properly can mitigate risks, and while the emphasis is still on multidisciplinary collaboration, it is clear its application is slightly more nuanced than in its conventional use. Managing and sharing the risk by setting the right contractual framework is also critical.

While there is no doubt that multidisciplinary model coordination and BIM collaborative workflows will promote better outcomes, using BIM on existing assets may need a slight shift of focus

Recent Kier research has shown that the use of NEC contracts is becoming the mainstay of procurement and contracting strategies for refurbishments. In particular, the use of Main Option C , together with the pain?gain mechanism, encourages the project team to focus on creating the right scope with the right budget and schedule. It is also important to recognise the need to reward innovative practice and the solving of shared problems.

Absence of data

A common issue on refurbishment projects hoping to use BIM is an absence of data. This is attributed to inaccuracies, deficiencies or simply the lack of an as-is model; access to the latter is fundamental to enable the benefits of using BIM on some challenging refurbishments. Historically, the lead designer will be commissioned to procure a

high-definition laser scan and model, but the accuracy of this is difficult to benchmark.

At Keir Group, we are seeing more and more clients proactively sourcing accurate models of their assets to get maximum benefit from any future refurbishment or repair work. Some universities are now digitising entire estates with a view to making better-informed decisions on future capital works.

King?s Cross Central Limited Partnership (KCCLP) meanwhile recognised the internal benefits of having digitised most of its portfolio of central London properties, some of which are listed, and released these models to consultants as new projects came online. Owning accurate information in this way helps clients when it comes to assessing the scope of works and costs accurately.

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Case studies

When Kier successfully won the King?s Cross Midland Goods Shed scheme, the client, KCCLP, had already issued a detailed model of the grade II listed structure to all tendering parties (see image, below). Not only did this provide Kier with a detailed insight into the condition of the building, it allowed for more detailed engagement with the supply chain, in terms of both accurate pricing and scope.

Figure 1. The King's Cross Midland Goods Shed refurbishment project successfully used BIM

Kier was also the appointed contractor to restore the Glasgow School of Art?s Mackintosh building to its original condition after the fire there in 2014. The client procured a highly detailed 3D point cloud scan of what remained of the building, which Kier used extensively.

This could be incorporated into a 3D-modelled environment, and it ensured any items that had to be removed could be rebuilt or repositioned as was originally intended. The point cloud was also the focus for discussions carried out off site. The high level of detail in the scan was instrumental in discussing approaches to construction methodology, temporary works, restoration and gaining approvals, while keeping site visits to a minimum.

In many ways, new-build projects are much more predictable than refurbishment. Understanding how to get the best out of BIM on such projects is as much down to experience as technology and process.

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Further information

- Related competencies include: Building information modelling (BIM) management , Design and specification , Design economics and cost planning
- This feature was taken from the RICS Building Surveying journal (March/April 2018)
- Related categories include: Building surveying , Building information modelling