Introduction

It is now four years since the Government announced its strategy to use BIM on all centrally procured projects by 2016 and less than one year until it becomes a reality. In preparation for that reality, we recently invited representatives from all sides of the industry to meet under Chatham House Rules to take stock of their experiences to date and consider best practices for the future.

The discussion was structured around the RIBA Plan of Work 2013 so as to consider the impact of BIM on each different phase of a project. In the note below we have focused on the area which drew most attention at each stage, identified the underlying issue and suggested how it might be addressed.

What is clear is that whilst some organisations are further advanced than others in their adoption of BIM, clarifying the procedures and approaches in relation to BIM at the outset of a project would benefit everyone. We thank those who gave their time to discuss their experience for their valuable contribution.

1. Stage 0 - Strategic Definition, Preparation and Brief

The use of BIM on any particular project is very much dependent upon the Employer, the type of project and the supply chain involved. It is therefore important to clarify at the outset what the Employer expects from the supply chain in relation to BIM and what the supply chain will provide.

Some Employers are starting this process by understanding and articulating their own commercial and management objectives in relation to BIM on a project at the outset. This includes understanding what the Employer needs project data for before they identify the project data they want. The Employer then clearly sets out what project data it needs from the supply chain in an Employer’s Information Requirements (“EIRs”).

This pragmatic approach means that there is no one-size-fits-all approach to using BIM to procure assets. For example, the data needed to minimise maintenance costs over the thirty-year asset life of a road or railway is likely to be very different from the data to upgrade the clinical equipment installed in a hospital.

If the EIRs are incomplete, unclear or non-existent, it may well indicate an underlying lack of clarity. This could create uncertainty as to how the project team and the employer agreed to use BIM on the project and those involved in the project could incur wasted time and/or costs. In such circumstances, to provide best value to the Employer the supply chain should discuss with the Employer how the supply chain can provide information in a way which helps the Employer manage the project or asset following completion.

Informed Employers recognise that the whole industry is on a learning curve. Employers may therefore have to put in more work upfront to clarify their requirements and develop clear EIRs. Such work at the outset should enable the Employer to obtain the full benefits of BIM by reducing waste. It should also mean that the Employer is provided with
information which the Employer (or its facilities manager) can use efficiently to manage the project following completion (see below).

2. Stages 2 – 3 Concept Design and Developed Design

Collaboration is fundamental on any project and particularly if BIM is used. Each member of the supply chain is likely to have different levels of experience of using BIM and different approaches to doing so, but for them to be able to use BIM in a collaborative way, it is important that they agree a consistent approach to doing so on the project.

It is therefore common for the supply chain to agree a BIM Execution Plan (“BEP”) at the outset of a project, which reflects the EIRs.

On some projects, the Employer may wish to be involved in the development of the BEP or even make it a contractual requirement for the project team to comply with the BEP. However, generally the BEP can be more efficiently and quickly prepared by the project team alone. The BEP may change during the course of the project to adapt to changed circumstances, but ultimately, one version should be agreed by the project team.

The BEP, broadly speaking, sets out how information is to be produced and delivered on the project. On the one hand, it could be argued that the Employer does not need to see the BEP and the BEP should not be a contractual document as it does not set out the supply chain’s deliverables, but rather how they should be produced. On the other hand, the way in which information is produced will determine the structure, type and amount of data provided to the Employer and, therefore, the Employer is clearly interested in the BEP. Parts of the BEP may therefore become contractual, as was anticipated by the inclusion of Information Requirements at Appendix 2 to the CIC BIM Protocol.

On BIM projects, given the increased collaboration and the central role of technology in the design process, there is a risk of data corruption. If data is provided in a format which cannot be accessed by a member of the project team or is to be used for clash detection, it may need to be converted into a different format. This conversion process is where we understand there to be a real risk of data corruption. To mitigate this risk it is therefore essential that the BEP sets out a way in which information can be produced, accessed and used whilst minimising the risk of data corruption.

As shown by the above, the BEP is a key document on any BIM project.

3. Stage 4 - Technical Design

On a BIM project, given the increased collaboration, it is essential to clarify what information has to be provided by the supply chain and when and how that information can be used.

For example, some Employers require the supply chain to provide their Work In Progress models and information (‘WIP’) on a regular basis. The obvious risk for the supply chain is that the recipient of WIP uses/reliies on that information for purposes other than that for which it was produced.
The CIC BIM Protocol envisages that models will be shared at agreed stages of the project, as set out in the Model Production and Delivery Table at Appendix 1. Each model is allocated a Level of Detail, which determines both the required content of the model and ultimately, the Permitted Purpose for which it can be used. If the CIC BIM Protocol is used there are therefore fixed points during a project at which models will be shared for certain purposes. On such projects, if the Employer requires WIP to be shared at times other than those stated in the MPDT, one way the supply chain can protect itself is to include clear disclaimers which link the permitted use of the WIP to the Permitted Purpose/Level of Detail applicable to that WIP.

In addition, we understand that the software used to produce information often comes with pre-populated data. Therefore, the WIP provided may be a combination of the supply chain member’s design and standard data. This creates a risk that more can be taken from the WIP than was intended by the provider. One practical solution to this is for models to be very carefully reviewed and validated before they are shared to ensure they do contain too much information.

Some designers are not willing to agree that their models will be a contractual deliverable at this stage. WIP is therefore issued on the basis that in the event of any conflict between the WIP and their hard copy 2D drawings which are contractual deliverables, the drawings take precedence. Very strong disclaimers are also included in the WIP in such circumstances which limit the extent to which it can be relied upon. This is a contrast to the position under the CIC BIM Protocol which states at clause 2.2 that in the case of discrepancy between a model and information extracted from it, the model takes precedence. If a clear framework for collaboration is agreed at the outset, it should be possible for information to be exchanged on the basis that it can be relied upon for defined purposes. The CIC BIM Protocol is being used by some Employers to establish this framework.

4. Stage 5 - Construction

One primary issue regarding the construction stage is achieving the optimum balance of early contractor involvement and the cost of such early involvement.

There is an obvious advantage to having the contractor involved at an early stage in order to contribute buildability to the project and reduce rework. This is particularly the case on a BIM project as early contractor involvement may also mean that the contractor can set out in the BEP how information can be provided by the design team to enable him to procure materials from sub-contractors most efficiently. It is common on current projects for manufacturers to have to produce a model from scratch as the information which has prepared by the design team is in a format the sub-contractor cannot use, or includes heavy disclaimers.

The challenge is that such early contractor involvement is often a cost to the contractor which it will, generally, not recoup if it is not appointed. For early contractor involvement to be a workable option Pre Construction Services agreements are becoming increasingly common, such that the contractor does have some entitlement to payment for pre-construction services. If such agreements are used it is important that they clearly set out the extent of the contractor’s entitlement to payment (if any), with clear mechanisms for either terminating the agreement or concluding the construction contract before construction commences.
5. Stage 6 Handover

If BIM is used as intended, at the end of a project the Employer should be provided with information which it can easily use to manage the project. On traditional projects it was common for the Employer to be handed a number of lever arch files of O&M manuals, but if the Employer wanted to use this information when managing the project a significant amount of time and money would be spent in doing so.

Even on projects on which BIM is used, similar issues can arise if the Employer does not clearly identify at the outset how it requires information to be provided by the supply chain. This underlines again the importance of the Employer (with input from its facilities manager) clearly setting out its Employer’s Information Requirements so that it receives information at the end of the project which can be used going forward.

Conclusion

The use of BIM in the UK is progressing significantly as the government’s 2016 deadline draws near. Nevertheless, for the full potential benefits of BIM to be obtained, we recommend that, going forward:

- the way in which BIM will be used by the supply chain and the Employer’s Information Requirements are clarified at the outset;
- the supply chain agree to produce and use information in a consistent way, in accordance with a project wide BEP;
- the basis on which the supply chain will collaborate is clearly agreed before information is exchanged (if possible in a contractual document, such as the CIC BIM Protocol);
- the benefits of early contractor involvement and the use of Pre-Construction Services agreements are carefully considered; and
- the Employer’s Information Requirements clearly identify how the Employer expects to receive and use information at the end of the project.

May 2015

If you have any queries in relation to this note, or the legal implications of BIM please contact:

Andrew Croft, Solicitor for Beale & Company on +44 (0) 20 7469 0412 or at a.croft@beale-law.com

Or

John Henderson, Partner for Beale & Company on +44 (0) 20 7469 0437 or j.henderson@beale-law.com