



A report by: Stuart Huggins

'Better Building Performance' the CIBSE HCNW Region's event was held at Pushkin House on the 15<sup>th</sup> February. The event's discussion was focussed around collaboration, integration of user requirements into design, the role of FM, how new technology can add value to Post-Occupancy Evaluation, and how this could feedback to designers. Chris Jones hosted the event and opened the workshop discussing the uncertainty that Brexit has brought about with regards to EU legislation and building compliance. As Building Service Engineers our reputation is at stake when our designs and buildings are not performing as expected; the sheer volume of papers and articles discussing 'The Performance Gap' highlights this as a real concern and something that we should be taking every endeavour to rectify. The room seemed united in agreement that Post-Occupancy Evaluation was still not being widely implemented across the sector, and if any assessment was conducted on installations, it was usually after something had seriously gone wrong. Jones also noted how clients rarely seem motivated to install renewable technologies - due to cost and reliability concerns - unless it achieves a BREEAM credit or meets mandatory obligations. Designers often get involved in projects too late when key strategic decisions have already been made, scoping completed and value engineering undertaken. To provide effective designs that work in practice, it is essential to implement the required level of complexity, enabling systems to be operated as intended seamlessly.

Three key speakers were in attendance. Kevin Barrett, David Stevens and Mike Darby each focused their discussion on different areas of building performance and its assessment, drawing from their experience. Stevens, a recent member of the panel at the CIBSE Building Performance Awards, proved to be very positive about the best practice demonstrated within the submissions recently judged for the awards. He explained that a number of operators are successfully reducing their carbon footprint through following a fabric first approach, before turning their attention to technological improvements. One of the key points taken from Stevens' discussion was the need to align the objectives of the client's organisation, specifically that of Capital Project and Maintenance departments. Capital Project teams are required to deliver projects within budget and often the easiest way to do this is through a design and build contract; this can lead to loss of control over the



process if not specified properly. Detailed Employer's Requirements (ERs) or Employer's Information Requirements (EIRs) (where a BIM process is being implemented) can help the client keep control over this type of contractual arrangement. These documents must highlight what is business critical to focus the project delivery team's attention. Delivering a successful project requires an informed and intelligent client to drive a holistic approach, enabling key project stakeholders such as designers, users and maintainers to collaborate as early as possible, and continue to do so throughout the whole project lifecycle. Another positive element of Stevens' discussion noted that improvements across the sector are starting to be seen. Landlords, owner-operators and even developers are becoming more aware of the value in sustainable construction.

Kevin Barrett with over twenty years experience operating and maintaining buildings focussed his discussion around the requirement for a deeper understanding of users' needs. Barrett explained how in his experience, clients, end users' and designers' do not collaborate early enough. This leads to briefs being produced ineffectively or misinterpreted. Often the best solution in practice is the simplest one, and if designers met with end users to discuss potential and alternative solutions, it could eliminate the installation of overly complex systems that are not fit for purpose. Designers often stick too closely to briefs and do not advise clients of better solutions as this can often lead to proposing higher budget costs in tender submissions, resulting in losing their bid. This restricts innovation and contributes towards the blame culture that often appears when a system or design does not perform as predicted. Barrett also discussed how if not managed closely, the value engineering process can lead to inadequate cheaper components being introduced to the design, or even completely removed, contributing significantly to the gap between design and actual performance. Often systems are designed and installed correctly but ineffective value engineering and commissioning ruins the good work put in and the effectiveness of the systems performance. Commissioning programmes are regularly reduced with commissioning engineers being procured at the last minute by the contractors, which could also be considered a conflict of interest. Barrett found that using his in-house team to survey new installations and assess their performance following handover proved successful in identifying faults early on. Aside from the shortfalls recognised in project delivery, it was also noted that there is a skills



shortage within the controls sector where there aren't enough engineers or engineers with the required expertise.

Mike Darby has worked within controls and Building Services Engineering throughout his career. His experience covers the whole project life cycle, including installation, commissioning, designing and writing software. Currently, he utilises his own software alongside BMS data to inform Post-Occupancy Evaluation, identifying faults and potential improvements. Darby explains that since BMS faults often go undetected, these faults could have been present since Practical Completion as a result of poor commissioning. Maintenance engineers tend not to have a broad enough understanding of all components of controls systems to identify these faults. Different engineers seem to work on separate elements of the system, not looking at the system holistically. Darby also agreed that Capital Projects and Maintenance departments are often disconnected. This can result in maintenance teams having to mobilise projects post Practical Completion that are not fit for purpose. To limit this Darby feels that specifications need to be simplified and focussed on performance in use metrics, crucially keeping designers involved post-handover. Current contractual arrangements and Practical Completion do not enable this to happen, and these processes need to be overhauled to do so. Business cases need to demonstrate the value of whole life cycle costing. It is clear that short-term savings in Capex investment often lead to increased Opex costs. The increased running costs of a building due to this approach will be much more significant than the original savings made when considering whole life cycle costing. However in some situations, developers are only concerned with the short term, and service charge arrangements can pass the increased running costs on to tenants. Incentives need to be devised to stop this.

The audience made many valuable contributions to the debate, and education proved a significant talking point. It was noted that education is fundamental for improving collaboration between key project stakeholders, particularly architects and engineers. It was also identified that Integrated Performance Contracts (IPC) and mechanisms such as, Seasonal Commissioning, After Care packages, Building Performance Evaluation and Post-Occupancy Evaluation can ensure designers are kept accountable for the actual performance of their designs if implemented correctly. The much talked about Soft Landings framework utilises a number of these



mechanisms in a pragmatic and systematic approach. However, these must be administered effectively if the full benefits are to be realised.

Unfortunately, as one member of the audience identified, the majority of the items discussed were not new. There are many different issues that are contributing towards 'The Performance Gap', but this appears to demonstrate that the key mechanisms discussed are not being utilised widely or effectively enough. The UK Government's BIM mandate emphasises the great promise BIM and GSL provide to improve this, but can this change be driven across the whole sector?

It is clear that there needs to be a step-change in the way projects are procured, delivered and measured. Most notably 'Practical Completion' needs to provide clients and operators with more control and ensure designers and contractors do not disappear once the legal liabilities have been handed over and retentions released. A lot of the responsibility to implement measures that minimise this sits with the client. Detailed specifications, ERs/EIRs and contracts that state performance in use outcomes, integrated with the appropriate mechanisms to measure the outcomes, will enable clients to manage projects more effectively and ensure optimum performance is achieved. The more widely and regularly these components are utilised, performance in use will rise up the agenda and gain more recognition. Post-Occupancy Evaluation has long been identified as vital to improving designers understanding of performance in use, feeding into continual improvement cycles and informing future designs.

Creating and enforcing a standardised Post-Occupancy Evaluation that incorporates Building Performance Evaluation testing, end user feedback, performance in use readings and measurements could build a national database of quality data. This would assist clients and designers identify what works and what does not. Jones suggested replacing the existing building control sign off with a provisional one. This would be subject to a Post-Occupancy Evaluation that demonstrates the building or project is performing as designed or optimally before achieving full sign off. The full sign off, for instance, could be achieved one year on from practical completion so that the performance against seasonal variances is fully evaluated prior. If a building cannot perform as expected, it must be stated why, ensuring lessons are learnt.



Although, potentially a legal minefield, are Integrated Performance Contracts the way forward? Could enforcing Post-Occupancy Evaluation as suggested by Jones prove to be another step towards ensuring the whole industry starts to gain traction in tackling 'The Performance Gap'?