In 2002, BAM started work on the new Wharfedale Hospital in West Yorkshire. The 9,500m², 76 bed facility replaces the original outdated Victorian building and comprises an endoscopy suite; minor injuries, outpatient, physiotherapy, pathology and radiotherapy departments and two operating theatres. Built around a quadrangle the three/four storey hospital has been designed to provide a patient friendly building that is easy to navigate. The PFI project was delivered by BAM PPP, who worked with BAM Construction and BAM FM to build and now maintain the hospital.

Using REVIT and BIM360Field BAM is transforming the way maintenance is planned and undertaken, this has included:

- Creating a 3D model of the hospital containing 4000 assets.
- Digitising the condition survey process.
- The use of QR codes placed on assets, to automatically update the model and information as checks are carried out.
- Using BIM360Field to create issues that are sent to the design consultant to keep the model updated during the assets lifecycle.
- Expanding our approach to cover building operations and provide tickets for PPM activities.

Key Features:

- RetroBIM model of the hospital containing 4000 assets
- Digitised maintenance procedures including the annual condition survey and asset checking
- QR code tagging to provide the latest asset data
- More effective work planning
- Greater efficiency - surveys can now be carried out 33% quicker than before
- The creation of floor layouts enabling FM managers, the Trust and funders to see at a glance a 5 year programme of works
- Use of BIM360Field and REVIT
Faster and more efficient maintenance procedures

Retrospective Building Information Modelling (BIM) was used to develop an operational 3D FM model containing all the assets in the hospital that require servicing and maintenance. The data contained within the model is easily accessible using BIM360Field on an iPad, putting FM information at the users’ fingertips and cutting the time taken to undertake tasks. In total over 4,000 assets have been recorded, improving the accuracy of data and increasing the speed of the information transfer to the technician on site or to the client. This has resulted in a 45% improvement in the speed of reactive jobs and a 54% improvement in the completion of PPM tasks per month.

Using our hospital asset model, we were able to quickly locate and provide information on all of the hospital’s smoke and fire dampers, during a recent fire inspection. In addition, we have also used the model to carry out regular checks to ensure that water is being cooled to below 40°C at all taps. Each valve is tagged with a QR code and when this is scanned by a technician using his mobile device, they receive the latest information on that unit, including: the date of the last inspection, issues identified and when the next check is due. Once a new check is undertaken, data is updated automatically.

Recently, we have added additional data to the model to meet the requirements of the NHS Trust. This has included the creation of essential electrical distribution drawings, which highlight electrical cupboards and the areas they serve, making it easier to carry out electrical work.

More effective work planning

Building on our work to digitise the condition survey process, BAM has now visualised the survey results by creating hospital floor layouts that show the condition of each room. These allow BAM and the NHS Trust to see at a glance what work needs to be undertaken over a five year period and schedule these activities so that they cause minimum disruption to the hospital’s daily operations. Currently the layouts are paper based, but we are working to take this information and place it within the BIM model so that the client will be able to have all the information they need at their fingertips, while having the confidence that what they are seeing is the latest version.

BAM PPP is also using the layouts in their discussions with their funders, who need to see work plans before they will release funds. The diagrams give the team a visual tool, which is quick to explain and easy to understand, helping them to secure the money they need.

“...condition survey drawings linking back into the BIM model are excellent and definitively represent the way forward. As a visual aid these are far more valuable to clients and the banks allowing them to easily see the high-priority (and low-priority) areas and understand that our lifecycle replacement choices are based on sound evidence and a forward-looking plan of works.”

Richard Oxley, BAM PPP

Saving energy and money

The BAM FM team are continually looking for ways to keep the building’s energy consumption at a minimum, while maintaining a safe and clean environment for patients and staff. We have helped the hospital to cut electricity usage in its operating theatres by 28% by shutting down the heating, ventilation and air conditioning (HVAC) system when the theatres are not in use. Sensors were fitted to reduce ventilation by 50% when the theatre was unoccupied for one hour and shut down completely at night and over the weekends. A quick restart sequence was programmed into the Building Management System to switch on the ventilation in case of an emergency. These changes have resulted in annual electricity savings of more than 13,600 kWh and over six tons of CO₂ emissions.