

Good rapport makes light work of tight site

Working in a tight three-sided courtyard location within two metres of existing walls, while minimising noise, dust, and other disturbance which could have affected the recuperation of neurological patients housed in adjoining wards, and simultaneously co-ordinating its work with that of another contractor undertaking a separate, major building project extremely close by, were among the challenges successfully met by MTX Contracts during its recent completion of a new, modular three-storey extension to The Walton Centre in Liverpool. The Centre is a field-leading facility for neurological and neurosurgical treatment. Jonathan Baillie reports.

Located next to the Aintree University Hospital, a large teaching and tertiary hospital some six miles north of Liverpool's city centre, The Walton Centre was completed in 1998 by AMEC, and is said to be unique in the UK in being operated by the only specialist standalone Trust treating patients suffering from a range of neurological conditions.

Dealing with conditions ranging from multiple sclerosis and Parkinson's disease to motor neurone disease, stroke, spinal and head trauma, and some types of cerebral and spinal cancers, the Centre treats around 3.5 million patients annually, drawn from a sizeable catchment area stretching from the Isle of Man and North Wales in the west to Merseyside, Cheshire, and parts of Lancashire and Greater Manchester, in the east.

Increasingly, as part of the UK's only specialist neurosciences Trust (The Walton Centre NHS Foundation Trust), the hospital also deals with referrals from hospitals elsewhere in the UK, lending its expertise particularly in treating "complex and difficult" conditions, such as Devic's disease, an inflammatory disease of the central nervous system which affects only around 400 UK patients a year. The hospital's 800-strong workforce includes some of the UK's leading neurological surgeons, neurologists, and pain management consultants.

At a meeting at the hospital to discuss MTX's recent successful completion of a three-storey modular extension containing offices, education and training facilities, and staff changing rooms and rest facilities, The Walton Centre NHS Foundation Trust's head of procurement and facilities Paula Staniland explained



Externally, the modern-looking extension features traditional brickwork, and a "brick slip" system on certain fascias at high level, a pitched Kingspan roof, powder-coated aluminium-framed windows, and striking green Corus steel cladding contrasting with the brickwork. The overall result is an extremely close "match" with the neighbouring structures.

that the need for the new extension had been highlighted following publication of a report by the Trauma Audit and Research Network (TARN) at Manchester University. TARN undertakes research into instances of injury UK-wide leading to death, and aims to improve response to, and treatment of, serious "trauma" injuries by providing "accurate and relevant" information to doctors and nurses, to help reduce mortality rates in the future.

Paula Staniland said: "One particular TARN report, published in 2006, strongly endorsed, using statistical data, what many working in neurological surgery and therapy had long believed: that patients suffering some form of neurological trauma – for instance a head or back injury following a car accident – tend to recover faster when treated in a specialist neurological hospital rather than in the 'neuro' department within a traditional acute hospital.

Trust conclusions

"One of the conclusions the Trust came to following the report's publication," she added, (with the case for the new facility further strengthened by a year-on-year increase in demand in the region for neurological surgery) "was that we should add a further seven critical care beds to our existing critical care unit, or CCU, and also provide additional ward space on the floor above by creating a 15-bed acute ward, which we have done recently by converting and refurbishing a space previously used by the Trust's human resources department and for administration and training.

"To enable us to complete all these works," she continued, "we needed to decant the staff and facilities in the area to be used as the acute ward to an adjacent building on the Aintree University Hospital campus, which we did with the help of both the Aintree



Some of the key project stages: the groundworks completed; a module being lifted into position and, with all 15 modules in place, the building begins to take proper shape.

University Hospitals NHS Foundation Trust, and the Mersey Care NHS Trust (the Walton Centre NHS Foundation Trust's human resources and training and development departments remain in this Cherry Tree House building to this day, along with some of the Trust's therapy staff), and extend the ground floor CCU to accommodate the extra beds.

"To meet these goals we needed a new location for the offices used by anaesthetists serving the CCU, who play a critical part in managing the condition of neurological patients, as well as a new, purpose-designed, staff changing and rest area, and administration and education facility. This led to our decision to put out to tender the contract for the new building MTX has built for us, which had to be positioned within a three-sided courtyard very close to the CCU and HDU, outpatient clinics, and wards."

Alongside coping with the proximity of other buildings, and an extremely tight site curtilage, which created a challenge in terms of positioning the crane used to lower into place the 15 prefabricated modular steel-framed units that form the core of the new three-storey building, MTX, and W Braithwaite & Son, the contractor tasked with extending the CCU and converting the former administration space into the new Lipton Ward, not only had to schedule their activities so as not to "clash", but also to liaise "sometimes as frequently as hourly" with the Trust's in-house estates team to ensure that patient care was not disrupted. Paula Staniland said: "The close working partnership between all parties saw the job progress smoothly, and indeed so effectively did the main and sub-contractors work together that I know many staff here did not even realise we had building personnel on-site."

Minimising disturbance

The contract for the new modular building, which had a capital cost of £1 million, and could thus be put out to a "straightforward", rather than a full, OJEU tender, was awarded to MTX last August, with the company commencing initial groundworks in mid-September. Managing director of scheme architect Gilling Dod John Mawson said: "The client brief not

only stipulated that noise, dust, and other disturbance be kept to an absolute minimum, but also that the finished block should not only match, and blend harmoniously with, neighbouring buildings externally, but should also project a really high quality feel. Many people, wrongly in my view, consider all modular buildings will look like temporary, functional, cabin-like structures, whereas in our estimation the new building has been so well designed and constructed that it looks as if it has been there since the hospital's original construction."

David Hartley, commercial director at MTX, which has now successfully completed numerous modular UK healthcare facilities, said that while the company had encountered many of the challenges seen on the project on previous jobs, the tight curtilage, the need to work closely, day-to-day, with both W. Braithwaite & Son and the Trust's estates team to co-ordinate particular construction activities to minimise disturbance, and finding a suitable location to site the crane, all required careful pre-planning.



The new building had to be constructed within a tight three-sided courtyard location with some elements within two metres of existing walls.

"In the event," he said, "what happened was that we located the crane in an area to the side of the main hospital immediately adjacent to the Aintree University Hospital boiler house, which enabled the positioning of each of the 15 pre-fabricated modules (which were manufactured by long-term supply chain partner Servacomm of Hull). Each module has the major time-saving benefit of already incorporating all first fix containment for mechanical, electrical, and other key services, when it arrives on site."

Benefits of a modular approach

John Mawson added: "Constructing the new building 'traditionally' would certainly have been feasible, but modular construction provided a far faster solution, one major benefit being that, as soon as the modules, and the pitched Kingspan roof, were in place, the entire structure was watertight, which meant internal works could be rapidly progressed without delay. I had never worked with MTX before, but was impressed both with the way they undertook the new building's construction, and with the harmonious relationship that developed between the company, W. Braithwaite & Son, the Trust's estates team, ourselves, and the other contractors, including, also, structural engineer Alan Johnson Partnership, and mechanical and electrical engineers HFM Consulting Engineers."

David Peacock, contracts manager at MTX, explained: "As with all our modular design and build contracts, everything that could be undertaken off-site was. This was especially beneficial on such a tight site, where we had minimal storage space available for materials and plant, and extremely limited parking." (The lack of parking was exacerbated by the fact that the Walton Centre NHS Foundation Trust has recently been working with the Clatterbridge Centre of Oncology, which is currently building a new treatment centre on land close to the new MTX-constructed building that was formerly available for Trust parking).

MTX explained that getting the sizeable prefabricated steel modules, each 14 m long, 3.6 m wide, and 3.3 m high, to the

site required close liaison between its team, the haulage company, the local highway authorities and police, and both Trusts. With careful planning the job was successfully undertaken over a single weekend. David Peacock said: "The process required close radio communication between the drivers of the low-loader articulated lorries carrying the modules and the on-site team to ensure that each lorry had the required access at a pre-arranged time."

Ahead of schedule

The use of modular construction, and, David Peacock believes, the excellent working relationship between the two main contractors in particular, in fact enabled MTX to hand over the ground floor of the new building, which incorporates changing facilities and a large staff rest area, plus a link corridor to the extended CCU, four weeks ahead of schedule. In all the building was completed on time and within budget, within 17 weeks, in March this year.

"With W. Braithwaite & Son working on remodelling the CCU unit and the new ward above extremely close to where we were operating, our on-site manager spoke very regularly both to his counterpart at that company, and to the Trust's estates team, headed by Steve Holland (The Walton Centre NHS Foundation Trust's head of estates) to ensure the minimum disruption," explained MTX's David Peacock. "Patients with neurological conditions, many in a serious condition for lengthy periods, do not do well when subjected, for instance, to excessive noise, so if a particular building process could be undertaken with, say, a saw which made very little noise, as opposed to a more noisy implement, that is what we did."

The ground floor of the new MTX



The first floor houses offices used by "outreach" nurses and infection control personnel, and a large seminar room (pictured) for training and meetings.

building incorporates sizeable staff changing areas and a staff rest room, complete with shower and kitchen facilities, comfortable seating, and a television. The first floor houses offices used by "outreach" nurses and infection control personnel, and a large seminar room for training and meetings, while the second floor is home to offices for trauma consultants and nursing personnel. "The ability for anaesthetists, especially, to be able to get extremely quickly to a patient's bedside should, say, their condition unexpectedly deteriorate, is absolutely critical," added Paula Staniland, "and this is facilitated by the incorporation of a linking corridor from the ground floor straight into the adjoining CCU."

The building's second floor features a brickwork facade recessed from those at ground and first floor level below as a deliberate design feature, although MTX and the architects stress that a further module could simply be "bolted" on at second floor height to accommodate additional facilities if required.

The building is constructed on pad foundations, has a modular steel frame, and a 25 mm plywood flooring deck, with a double layer of Ecobright floor insulation, while the plasterboard walls incorporate an "eggshell" paint finish.

Flooring is a combination of vinyl in the "wet room" areas, offices, and the staff rest room, and traditional carpeting in the seminar room.

Extensive drainage

David Hartley said: "One challenge we encountered was that there was extensive services and drainage infrastructure, including deep ground drainage, in the central courtyard, and we not only had to deal extremely carefully with this, but also to ensure that all the necessary services connections between the new building and the existing

hospital and the main plant room, which is some 100 m away from where we were working, were connected.

"This element of the work was successfully undertaken through close and ongoing liaison between our on-site team and the W. Braithwaite & Son personnel. In some instances, working with the M&E consultants, we had to coordinate routing of electrical and IT services through the new acute ward while it was still under construction."

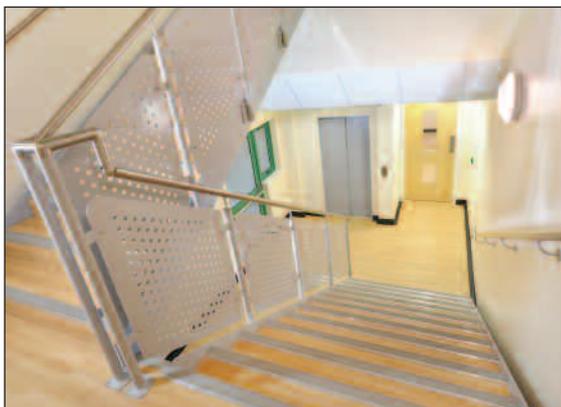
John Mawson said: "The contract included the installation of a lift, and of a new IT and telephone 'hub' on the first floor of the new building, and the linking of, for instance, the telephone and communications network to a master 'hub' within the main hospital buildings. Some of the infrastructure, and in particular fibre optic cables, actually had to be routed through to the Aintree University Hospital, again necessitating good communication between the two Trusts, MTX, W. Braithwaite & Son, and the mechanical and electrical consultants."

The new building was designed to be largely naturally ventilated, with the exception of some rooms which required mechanical ventilation units to be incorporated within ceiling voids, obviating the need to position one main AHU enclosure on the building's roof, and the potential complications this might have entailed.

Careful energy monitoring

Heating is provided by ceiling-mounted radiant panels, with elements such as the temperature of individual rooms, and of the water circulated around the low pressure hot water system, managed by a sophisticated building energy management system from Trend Control Systems.

Estates manager Steve Holland explains: "The BEMS also monitors electrical supplies, lighting, and a variety of other key domestic services, extremely effectively for us. Also installed was an



A high quality fit and finish is evident throughout; MTX's contract also included incorporation of a lift, as well as of a new IT and telephone "hub".



advanced intercom system from Commend UK, via which, say, an anaesthetist can be contacted extremely quickly by nursing or other clinical staff in the adjacent CCU / HDU unit if required. This type of 'instant access' to consultant anaesthetists is vital in a neurological facility, as some of the patients spend considerable time connected up to sophisticated breathing and other medical apparatus, the proper operation and adjustment of which is critical to keeping them in a stable condition."

Externally, the modern-looking building features a combination of traditional brickwork, and a "brick slip" system on certain fascias at high level, a pitched Kingspan roof, powder-coated aluminium-framed windows, and striking green Corus steel cladding which contrasts with the brickwork. The overall result is an extremely close "match" with the neighbouring structures built on the hospital's original completion.

Steve Holland says of the project: "When you consider how little space both contractors had to work within, the fact that, at times, we had to ask one or other to cease working on a particular element while particular patient procedures were undertaken, or to modify a working practice for a time, and the very tight completion schedules each faced, my project team and I, and indeed the clinical staff who use the new facilities, have only the highest praise for all involved.

"Neurosurgery, neurophysiology, and the other specialist treatments we undertake here, are not only extremely complex, but generally require a quiet, clean, working environment in order to comply with stringent infection control protocols, and it was thus essential that



Some of the key team members behind the new MTX-built extension to The Walton Centre in Liverpool: (left to right): Brian Sherriff of architects Gilling Dod; Steve Holland and Paula Staniland of The Walton Centre NHS Foundation Trust; MTX commercial director David Hartley, and MTX colleague and contracts manager David Peacock.

all the building works were completed with minimal disturbance, whether via noise, dust, or machinery operation. By working in partnership with each other, and with nursing/clinical staff, as well as with my estates team, the two contractors ensured any disturbance was kept to negligible levels. Consultation with nursing staff also ensured that, wherever possible, ward schedules were not disrupted."

Treating more patients

Paula Staniland said of the new MTX building: "This is a fantastic facility, of which we are very proud, and, in conjunction with the new acute wards and extended CCU unit, will mean we can admit an estimated 750 extra patients and treat around 160 more cases in the CCU/HDU facility annually. I know that the staff using the new MTX-built building

are delighted with it, and feel the project as a whole, in tandem with the work undertaken in the adjacent building by W. Braithwaite & Son, all went off extremely smoothly."

Perhaps the final word on the benefits of MTX's modular construction approach should go to the man who ran the project at Gilling Dod, Brian Sherriff, who said: "As a practice we had never previously worked with MTX. However our experience with them has been excellent. Some of the wet weather we had during the project, and a number of other issues, could have set back a 'traditional' building project around four weeks, whereas the company's modular approach increased both the speed with which the it got the building 'out of the ground', and subsequent phases. We would certainly work with MTX again."

Tight timescales accommodated

Steve Holland added: "Not only did the new three-storey block's construction go extremely smoothly, which was vital given the tight timescales we faced to get both this new facility, and the adjoining extended CCU/HDU and ward, occupied, but I, and I know the architects, have found MTX extremely responsive in the post-completion phase.

"This was a particularly demanding project, due both to the nature of the patients being treated very close by, and because of the very limited curtilage and site space, but both contractors rose to the challenge well, and the results, in terms both of the impressive new office, staff changing, and education building we now have, and the new acute ward and extended CCU facility, really do speak for themselves." +

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