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# SPECIAL REPORT: A FRESH APPROACH TO CONSTRUCTION

Offsite construction methods are increasingly being used by healthcare trusts looking to expand their estates. But the Coronavirus pandemic has seen adoption of Modern Methods of Construction soar at an unprecedented rate. *BBH* editor, **Jo Makosinski**, investigates

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**Traditionally, building a new acute hospital can** take up to 15 years as trusts meander through business case and planning approval to design and construction.

But the country's response to the COVID-19 pandemic has highlighted how, with collaboration and through the use of Modern Methods of Construction (MMC), infrastructure can be delivered in much-shorter timescales.

Since 2019, the Government has taken a 'presumption in favour' of an MMC approach to construction programmes across all major departments, including health.

And this has made offsite construction methods, in particular modular and mobile facilities, an increasingly-popular choice for health trusts.

Tony Wells, managing director of Merit, said: "Offsite construction has really taken off in recent years.

"We first adopted the approach in 2004 and saw immediate benefits in productivity, co-ordination on site, and project control.

"However, the dramatic improvements on the software side in the last few years have enabled an acceleration in offsite manufacturing, and, as a result, we now only offer offsite manufactured project execution.

"Offsite construction is an opportunity to change long-standing practices in construction, an industry that has been resistant to change.

"And establishing a construction assembly line offsite can save significant amounts of time and money, which are crucial aspects for all construction projects."

### Less disruption

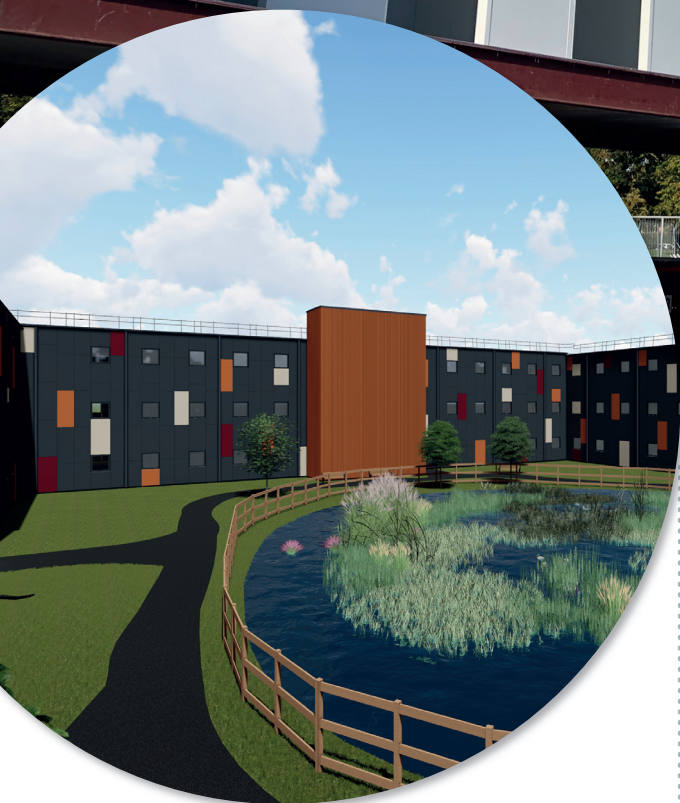
David Harris, managing director of Premier Modular, adds: "Offsite technology has improved significantly over the last five to 10 years, as has the sector's ability to manage the delivery of these projects with the least disruption possible.

"There is now much greater confidence in the

ModuleCo cranes in fully-fitted buildings for Phase 2 of works at the Royal Orthopaedic Hospital at the height of the COVID-19 pandemic







ability of the offsite sector to deliver high-quality building solutions rapidly – whether for temporary or permanent healthcare facilities. .

“The sector is also much more mature, and the technical and project management capabilities among the leading offsite healthcare specialists have advanced hugely – to the benefit of healthcare providers needing fast solutions to expand capacity.”

And never has this been more evident than since the outbreak of Coronavirus, which has put increasing pressure on already-overstretched NHS services.

Modular and mobile buildings have been utilised across the country in the past 12 months to provide extra capacity for COVID-19 patients, to help segregate patients in hospital for other

reasons, and to deliver vaccination and COVID testing facilities.

Harris said: “The current pandemic has definitely shone a spotlight on the offsite sector.

“It has raised awareness of what is possible with a higher level of collaboration and partnership working.”

He added: “We brought together a range of suppliers to help us deliver fully-serviced community COVID testing centres.

“And we have been installing up to three sites per week, from Inverness to Portsmouth, and are on site for just two to three days.

“We often hand over the sites just a week after receiving the initial notification and that really is a phenomenal achievement.”

### Doing things better

Speed of delivery is a key reason more and more health organisations are opting for offsite construction methods.

“The sector is simply doing things better,” explains Harris.

“This means even-shorter lead times for both temporary facilities and bespoke hospital buildings and extensions, which will really help healthcare providers expand capacity to meet changing local, and national, needs.”

Charles Pierce, managing director of Darwin Group, said it was this quick turnaround which

Left: Darwin Group has delivered the new Lakeside Wing at the University Hospital of Wales, which will provide a temporary COVID surge facility



has helped the company to deliver three critical care hospital facilities for the NHS since the outbreak of Coronavirus.

“The use of offsite construction methods enables us to significantly reduce the turnaround time of a project, allowing us to react to urgent demand,” he adds.

“This benefit has been crucial for our healthcare clients during the pandemic, many of whom have needed new facilities faster than they could have ever imagined.”

The first of these builds was a permanent emergency Nightingale Ward for Wrightington, Wigan and Leigh NHS Foundation Trust at the Royal Albert Edward Infirmary in Wigan.

Modular construction techniques, and the ability to do much of the construction and fit-out offsite in a controlled and COVID-secure environment, meant the facility was delivered in less than 40 days.

At the height of the UK lockdown, Darwin Group was then appointed to deliver a permanent, state-of-the-art medical block for New Cross Hospital in Wolverhampton.

#### Extra capacity

The two-storey, 1,744sq m building, consisting of 54 beds across two floors and providing two ward spaces for critical respiratory care, was completed within 12 weeks.

Finally, the company was also responsible for the new Lakeside Wing at the University Hospital of Wales in Cardiff, which will provide a temporary COVID surge facility.

Working around the clock, the team was able to install all 280 modules in just 70 days, the company's most-efficient build to date.

Pierce said: “We believe the use of offsite construction is going to continue to grow in popularity as healthcare trusts begin to realise the significant benefits of modular construction over more-traditional methods and understand that MMC can provide a quick – but permanent – solution that is very cost effective, without the need to compromise on quality.”

Also important for hospitals is the fact that offsite construction methods dramatically reduce onsite disruption, helping to maintain services while new facilities are being delivered.

This is proving particularly critical during the pandemic to maintain social distancing and prevent further spread of the virus.

Harris said: “Hospitals occupy some of the most-congested and constrained sites, so reducing disruption and programme times when redeveloping or expanding facilities is absolutely vital.

“This all combines to give healthcare providers much greater certainty of delivery and reduced risk of project delays or budget overruns.”

Pierce adds: “Offsite construction is the ideal solution for delivering healthcare infrastructure since significant amounts of a project can be manufactured away from a live site in a controlled factory environment.

“This causes considerably less disruption onsite, which is a huge bonus for healthcare organisations.

**WE BELIEVE THE USE OF OFFSITE CONSTRUCTION IS GOING TO CONTINUE TO GROW AS HEALTH TRUSTS REALISE THE SIGNIFICANT BENEFITS**

ModuleCo has installed an operating theatre facility at Bedford Hospital







“In the past, more-conventional building work would have tended to cause interferences with what are usually busy hospital environments.

“With offsite methods, disruption can be heavily reduced, or avoided entirely.”

### Carbon reduction

Other benefits include helping the NHS to achieve the Government’s target of net-zero carbon emissions by 2040.

Wells said: “Offsite construction could significantly contribute to these efforts, as we are already able to offer zero carbon emission designs for new builds at no extra cost.

“While retrofitting and improving energy efficiency in existing healthcare facilities is important, when considering new builds, why not choose the zero-carbon option?”

The rapid uptake of offsite construction methods by NHS organisations is evidence, too, that fears modular and mobile solutions are not as robust as traditional builds are no longer prevalent.

Trusts are also realising that offsite methods can create the flexibility and adaptability that is key to modern healthcare facilities.

Wells said: “The improved flexibility in building configuration, and easy-access maintenance enabled by MMC, can significantly extend the lifespan of a hospital.”

Harris adds: “With good design, offsite solutions can be completely futureproof.

“Modular buildings can be reconfigured, relocated, and repurposed, which is very sustainable.

“It is also important to note how far temporary healthcare facilities have advanced in recent years.



### Fit for the future

“These buildings can meet short-term peaks in demand; or can accommodate patient services while redevelopment works are underway.

“And the level of finishing and fitting out – undertaken offsite – is the same as permanent facilities, with the installation of services for medical gases, CCTV, nurse call systems, assisted bathrooms, and complex air handling included if they are required.”

And Alan Wilson of ModuleCo Healthcare told *BBH*: “The progressive leaps made by quality offsite modular providers strongly demonstrate how much the market has evolved.

“Modular buildings can be extremely sophisticated and built to a very-high specification.

“While there was once an assumption that modular meant ‘pre-fab’ and of poor quality, most suppliers in the industry have come on leaps and bounds and can now correct this perception.

“We can provide robust structures which can be used for multi-storey developments, and these

Modern Methods of Construction were used to create Nightingale and emergency field hospitals across the country following the Coronavirus outbreak.



have a 60-year structural design life and are compliant with UK building and fire regulations.”

Moving forward technological advancements will play an increasingly-important role in the evolution of MMC.

Wells explains: “We can now see the benefits this method offers for all sectors, including healthcare, partly because we can appropriately utilise the potential of 4D/BIM modelling and other software advancements.

“Offsite construction is an opportunity to change long-standing practices in construction, an industry that has been resistant to change.”

Offering advice to trusts looking to utilise MMC, Pierce said: “When considering a construction partner, opt for a firm that has the capacity to look after the entire project from start to finish, from initial design and planning, through to construction and delivery.

“This process makes things considerably easier for clients as they have one dedicated head of project delivery to turn to, saving both time and money. It also means you can work together to ensure that the needs of the site and its users are carefully considered throughout.”

#### Maximising the benefits

Wells adds: “One piece of advice I would give is to keep an open mind, understand what benefits MMC can offer, and make sure that these benefits are measurable within the scope of the project you are commissioning.

“Also remember that there are new and exciting

Modern offsite construction methods are comparable to new-build solutions, with many having a 60-year structural design life. Image, Premier Modular's Nightingale Hospital, Exeter



At the height of the UK lockdown, Darwin Group installed a permanent new medical block at New Cross Hospital





Darwin Group has used offsite construction methods to deliver a number of COVID-19 facilities, including a Nightingale Ward at the Royal Albert Infirmary in Wigan



suggest taking a fresh look at the way hospital project procurements and frameworks are done.

“The risk of frameworks is that they become too prescriptive and this stifles innovation.

“Ideally, when procuring, you should outline the goal you want to achieve and give space for innovative solutions to be presented.

“Allow your prospective construction partner to showcase the strengths of any new approaches and technologies, without limitation. Innovation often leads to better solutions.”

But Harris warns there are no ‘one size fits all’ solutions.

“Often the best solution for major hospital projects will be a hybrid one – which marries in-situ construction and offsite to meet the precise project needs without compromise”, he advises.

Wilson concludes: “Offsite construction is a cost and time-effective way of supporting our health service to meet current and future challenges and the time has come to recognise offsite construction as a viable solution to the NHS

## OFFSITE CONSTRUCTION IS A COST AND TIME-EFFECTIVE WAY OF SUPPORTING OUR HEALTH SERVICE TO MEET CURRENT AND FUTURE CHALLENGES

capacity crisis in the coming months and years.

“In 2021, decision-makers within NHS trusts are likely to face further difficulties as the demand for treatments inevitably mounts and this is where effective, quality, modular solutions can offer a definitive difference.

“Offsite construction is a practical way to increase healthcare capacity across the UK during the current difficulties.

“It is essential, however, that estates and facilities managers look to collaborate with reputable companies which can deliver on their promises and allow health professionals to continue their vital work.”



Premier Modular has recently delivered a COVID-19 testing centre in Havant