

# Building an NHS Estate that's Fit-for-the-Future...

What you should know about next-generation  
volumetric modular construction.



Crown  
Commercial  
Service  
*Supplier*



NHS  
Commercial Solutions  
*Awarded Supplier*



Construction... **Evolved**

# Looking to the Future...

The National Health Service (NHS) has to build an estate that is Fit-for-the-Future, so it can continue to provide world-class healthcare across the United Kingdom. The following White Paper has been written to explore how the best use of Volumetric Modular Construction can provide a solution that enables real-term efficiencies and Modern Methods of Construction (MMC) delivery as we look at what good should look like in the future.

Since its founding in 2006, Darwin Group Ltd's mission has been to support the NHS Long Term Plan, to deliver an infrastructure that is truly fit-for-the-future with a dedicated focus on quality, flexibility, sustainability, and resilience, that provides innovation and efficiencies through deep partnership. Our expertise in delivering fast track projects for the NHS saw us deliver a range of volumetric modular accommodation across England and Wales that assisted the NHS in combating the global pandemic. This is just one of the reasons why Darwin Group is the only Volumetric Modular Design and Build Main Contractor to feature on Crown Commercial Service's (CCS) ProCure23 Framework.

Understanding next-generation volumetric modular systems and MMC design and build continues to be one of the biggest challenges for the NHS as they look to the future. With poor expectations based on older style modular buildings and the limitations that these presented for the NHS still prevalent, at a time when the Cabinet Office's Construction Playbook calls for wider-scale adoption of MMC requires both a new mindset and education into the benefits and the evolving solutions provided by the industry.

Breaking the barriers between the preconception of volumetric modular being a temporary facilities rather than a permanent building solution is one of the first steps towards the adoption of next-generation solutions providing an agile response to a changing clinical, technological, and population health environment. We need to rationalise the choice to invest in new rather than repair using vital capital released in the Capital Departmental Expenditure Limits (CDEL) set across the NHS and ICS/ICB whilst reducing backlog maintenance and standing up to the challenges of elective recovery backlog, winter bed pressures, and an aging population.

Lastly, understanding how best-of-breed next-generation volumetric modular design and build can be achieved that allows you to meet the 65% pre-manufactured elements, and targeting 80% standard repeatable rooms across your project as outlined in Gardiner & Theobald and NHS Property Services Primary Care/Community Health Premises Schedule of Standards and Minimum Design Requirements will truly allow you to create an NHS Estate that is truly Fit-for-the-Future.



# Table of contents

Looking to the Future... Pg.2

Contents Page Pg.3

Challenging Temporary... Pg.4

New Build over Repairs... Pg.5

Design and Build... Pg.6

Efficiencies and Repetition... Pg.7

Why you should partner with Darwin Group... Pg.8

# Challenging Temporary...

One of the biggest misconceptions about volumetric modular construction is that the buildings are only designed for a temporary use. Whilst this may have been the case for older style modular solutions, in recent years the development of next-generation volumetric modular systems has enhanced the levels of quality and longevity versus traditional builds. 'Bouncy' floors have been replaced with poured concrete and composite steel frame that offers a multiplying factor of between 0.6 and 0.7 against a requirement of 1.0 in HTM 08-01 for Continuous Vibration enabling its use in theatres and cardiac catheterisation laboratories.

Providing a design life of more than 60 years for the volumetric modular superstructure allows all buildings to be designed and built as permanent structures but often in half the time of a traditional build. With innovative design to the modular grid enabling all steel work to be 'hidden' within internal walls or architectural features, all internal walls are non-load bearing

with structural load points being transmitted on to the foundations at key points allowing future adaptability and flexibility.

Matched with a 'best-of-breeds' on-site fit-out process that sees traditional M&E and HVAC completed after the superstructure is water-tight the ability to create a permanent solution that provides the NHS with an estate that is Fit-for-the-Future has never been easier. However, this isn't just theory. For many years vertical markets have been employing volumetric modular for permanent accommodation in their industries, most notable the education sector.

For the last 16 years Darwin Group has delivered over 300 MMC Volumetric Modular School Buildings as permanent projects. These schools have stood the test of time as monuments to the permanent use of volumetric modular and how one sector could challenge a system that had previously only been considered as a temporary solution, opening that way to the NHS.



# New Build vs Repairs...



In 2022, the NHS Backlog Maintenance hit an all-time high of £9.8 billion. Coupled with a call by both the NHS and government to address the backlogs built up during the COVID-19 pandemic and tackle long waits for elective care, trying to increase capacity across an ever-aging estate has proven to be a challenge as more buildings fall below condition B requiring either major repair (over one-third of the sub-element's replacement cost) or in imminent danger of breakdown with significant cost.

Current methodology and the urgent requirements would suggest that a repair is carried out on the sub-element to bring it back to a physical condition that is sound, operationally safe and exhibits only minor deterioration. However, for the first time volumetric modular construction can challenge this view.

Whilst construction costs between a traditional build and a volumetric modular building are in the most part similar. The speed at which a

modular project can be designed, built, and commissioned finally offer a true advantage to NHS Organisations. Recently delivered healthcare projects have seen Trusts clinical capacity increased by over 100% ranging from ICU beds to theatres, with the average time to deliver these projects (design and build) falling within a 12-month period.

Thanks to the speed at which volumetric modular design and build projects can be accomplished, the ability to construct a new building rather than repair an older one is a real solution to both the Significant and high risk (CIR) maintenance backlog, elective recovery backlog, winter bed pressures, and aging population. With the ability to future-proof the design and allow a 'hub and spoke' construction phase over multiple years it is even feasible to plan for multi-year capital envelopes and CDEL limits which would see the demolition of aging estate with the replacement of brand-new buildings without loss to bed spaces or services.

# Design and Build...

Modular buildings are by definition boring... is something Darwin Group has heard for many years. However, the truth is far from this in practice. Recent developments in volumetric modular construction have seen the ability to merge traditional design with modular grids allowing architects and planners to work together with Modern Methods of Construction (MMC) to create aesthetically pleasing projects for the NHS and beyond.

Having the ability to create superstructures up to 8-storeys in height using a mix of off-site next-generation volumetric modular systems and other off-site MMC, has allowed designers to push the envelope to literally new heights. Matched with this, is the facility for partnerships to be formed between architects and volumetric modular main contractors to create new hospital projects that will help the NHS continue to provide world-class healthcare for many years to come.

The adoption of early-engagement with all stakeholders, allows the real benefits in the design and build of volumetric modular

construction projects to be realised. Lessons learnt from other projects can be applied to offer real efficiencies in the design process and enable full compliance with the HTM and HBN standards.

Planning for multi-year capital envelopes in the design phase also allows greater flexibility to be designed into the projects. As previously mentioned in New Build vs Repairs by planning a 'hub and spoke' building with centralised shared services and accommodation that can be added over a longer period. This unique approach allows NHS Organisations to stay within their ICS/ICB CDEL limits whilst providing the latest in new build estates, in a planned manner with little to no disruption to clinical delivery.

Challenging the 'status quo' of design and build to NHS Estates finally allows the inclusion of an adaptable, flexible, expandable, and sustainable estate plan. Volumetric Modular construction offers detailed solutions to each of these and provide the ability to build an NHS estate that is Fit-for-the-Future.



# Efficiencies and Repetition...



From the minimisation in waste (building materials) through off-site manufacture to new buildings occupiable twice as fast as traditional build and with greater future adaptability/flexibility, volumetric modular construction provides a host of efficiencies and repetition that adds value for money to the NHS in its drive to create an estate that is Fit-for-the-Future.

Whilst older modular solutions were considered to have inherent deficiencies that led to compromises between the sense of urgency required in the deployment and the clinical needs of the NHS, and quality of facilities. Next-generation volumetric modular systems have removed these and, in most cases, exceeded the clinical requirements. Using 'best-of-breed' building technology and fit out, allows trusts to specify the systems they wish to use within the new accommodation which enables efficiencies in maintenance across the entire estate as a consequence of the consistent systems and equipment.

Volumetric Modular is ideal for repeatable design principles, thanks to the utilisation of

a modular 'grid'. Repeatable rooms come as standard in all projects, whether they are 'Acute single bedroom with en-Suite' or 'Acute Multi 4 bed bays with en-suites', allowing the embracing of standardised designs, C-sheet Data, maintenance requirements, and cost models as a baseline for scheme designs. Maximisation of savings by use of Repeatable Rooms can be achieved when incorporated into the initial scheme design, avoiding abortive design costs.

From a revenue perspective, with the completion of volumetric modular projects in at least half the time of a traditional build project, the NHS is often able to commission the new beds or services in the same financial year as the scheme started construction. With the ability to increase the total number of beds compared to previous accommodation also offering increased revenue generation on volumetric modular projects.

This is why the NHS is starting to move towards volumetric modular as the real solution to an NHS Estate that is Fit-for-the-Future...

# Why you should partner with Darwin Group...

## **Manufactured by Darwin Group Ltd in our Own Specialist Factory**

From day one we have always believed that to supply real efficiencies and innovation you must be in control of the whole aspect of Modern Methods of Construction (MMC). In 2006, we invested in our first factory, manufacturing our own volumetric modular buildings. Over the years we have continued to invest in the latest equipment, personnel, and infrastructure to be able to manufacture the next generation of MMC modular buildings from our own factory located at our headquarters in Shropshire.

## **Pre-Engineered Building Structure**

Safety, Consistency, Efficiencies and Predictability are all easily achieved through our pre-engineered building structures. Our next-generation volumetric modular structures have all been fully tested to all relevant regulations and standards including fire-safety through a composite concrete floor and non-combustible wall frames as a standard. Offering proven value for money and reduced engineering costs with consistency of build quality, our pre-engineered building structures give peace of mind that your project will be delivered on-time, on-budget and in complete compliance with all HTM's and HBN's.

## **In-House Design Team & Track Record of Successful Early Engagement**

Our people are part of our culture and service, by using a full in-house design team we can offer you the ability to have your facility completed sooner and patients treated faster thanks to a shorter design process that also sees a reduction in design costs. Our comprehensive understanding of key stakeholder priorities, funding dynamics and sustainability requirements has been built from working successfully with a multitude of NHS Organisations across NHS England and Wales allowing our experience to lead your design phase.

## **Pre-Designed Solutions for a Full Range of Healthcare Buildings (Repeatable Rooms etc.)**

No matter what your project is, we have a pre-designed solution that can offer you a healthcare building that offer cost-efficiencies, with future flexibility in mind, so you can re-purpose quickly, without the need for a detailed appraisal regarding structural constraints. Learning best practice from the wealth of projects we have completed over our 15 years of working with NHS and other Public Sector Organisations, our tried and tested pre-designed solutions give best in class with peace of mind that we will deliver what you want, for when you need it.

## **Turnkey Construction Delivery**

From concept to completion, our Turnkey Construction Delivery allows us to keep a consistency between the design and delivery team; meaning strong partnerships are developed and budgets and time-scales are delivered against. By owning the complete project, we can reduce the risk to you, our client, and understand your priorities at every stage. Our experienced construction teams work to reduce the impact of the construction phase on your hospital site, and ensure the quality of the finished building quality and handover. We enable reduced project management time for yourselves through on-going relationships built during the design phase saving money in the long-term for the trust.

## **Experience in Delivery of Complex Healthcare Projects (inc. Mental Health)**

With a proven, 16-year track record in the delivery of projects to cost and programme requirements, we have become a tried and tested partner to the NHS. Due to the number of NHS projects we have worked on, we are able to benchmark costs and programme to ensure that Value-for-Money requirements are met whilst balancing the understanding and management of different stakeholders requirements and priorities to achieve positive outcomes for all. Our assurance of quality of building solutions, service delivery and innovation has been built on becoming the leading healthcare design and build modern methods of construction (MMC) main contractor.

## **Multiple Pre-Approved OJEU Compliant Procurement Options**

As the only design and build modern methods of construction modular main contractor modular buildings specialist to be on Crown Commercial Service's (CCS) Procure23, NHS Shared Business Services Modular Buildings, CCS Modular Building Solutions and NHS Commercial Solutions Modular/Prefabricated Building Solutions Frameworks, we can offer a wealth of procurement options for your projects. With over 15 years' experience in successfully supporting and leading bid applications for partner NHS Organisations we reduce the complexity and costs in your procurement with proven value for money, predictability and reassurance concerning a responsible use of public funding.

## **Flexibility and Adaptability of our Volumetric Modular Buildings**

Pressure on NHS Estates to grow with the demands of the community have been a common challenge for many years. Thanks to the next-generation aspects of our point loaded structures we can offer increased efficiencies and the ability for future reconfiguration (Design and Remodelling) to meet a Fit-for-the-Future estate. With multiple cost saving points over the life of the project, this starts with reduced costs of groundworks and finishes with a lower cost for future adaptability or re-location of the accommodation, reducing through life cost and positively contributing to sustainability requirements.

## **Robust Financial Position**

As Darwin Group has grown so has our financial position, allowing us to create a stable and trusted supply chain with a large stock of critical raw materials offering continued assurance of your delivery programme and cost. In 2022, we attracted significant capital investment from Kartesia to deliver our organic growth plans, including further investment in our manufacturing facilities. A family owned and operated business, in 2022 Darwin Group were recognised in the Financial Times 1000 Fastest Growing Companies in Europe.

## **Sustainability through Innovation**

With a 'fabric first' approach to design and build that focuses on the performance of the components and materials that make up the building fabric, and using innovative building-systems technology, we are already leading the way in the drive to meet Net Zero Carbon (NZC) Requirements. By using our volumetric modular buildings, we reduce waste, develop repeatable NZC Strategies, and deliver a positive contribution to the Circular Economy, all whilst delivering Cost and Programme Predictability.