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Healthcare design & build supplement including mental health & care homes

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FROM THE EDITOR

The UK healthcare sector is very much at the forefront of the public consciousness, with the increasing pressures on the NHS and the adult social care sector regularly making the headlines.

Despite the much-discussed funding issues, the good news is that the country still continues to provide new, high-quality healthcare-related facilities to help meet the needs of an expanding and rapidly ageing population.

It is here that architects play a crucial role. Good building design is pivotal to efficient and effective healthcare delivery, whether it be through a patient-friendly hospital, sophisticated medical research and test facility, or a residential care home.

In this issue we look at some great examples of healthcare design, such as the new woodland campus-inspired Dumfries and Galloway Royal Infirmary hospital in south west Scotland. As our in-depth feature reveals, a huge emphasis has been placed by the architects and their clients on designing a building that endeavours to create an uplifting, health-promoting environment for patients, visitors and staff.

In rural Wiltshire, we put the spotlight on Wadswick Green, a new kind of retirement village with attractive, spacious homes that adapt to meet residents' changing care needs as they age, enabling them to live independently in the same accommodation for as long as possible.

Jess Unwin explores the Jack Copland Centre, the new headquarters of the Scottish National Blood Transfusion Service (SNBTS) and a sophisticated centre of excellence set to provide vital blood processing and testing services, among other services, when it opens this year.

Guest commentator Heather Fennimore argues the case for creating buildings that promote health and wellbeing using the concept of generative space, while Gordon Hudson asks if a new approach is needed to improve the sustainability features in health sector buildings.

Elsewhere, our experts offer guidance on specifying flooring and hoist systems; the importance of including appropriate drinking water systems in the design phase; and reducing the risk of burns and scalding in healthcare facilities by choosing the right radiators and mixer taps.

There's certainly plenty inside to give you food for thought.

Ray Philpott
Editor

ON THE COVER... © MIR
The £297m Midland Metropolitan Hospital has seen an important milestone with construction beginning on its rainscreen cladding by specialist contractor Prater. Midland Metropolitan Hospital will provide acute, emergency care to the Smethwick area.
More information opposite.

GLASS PALACE

Screens up at major new Midlands hospital

The £297m Midland Metropolitan Hospital, under construction in Smethwick near Birmingham, has seen an important milestone with construction beginning on its rainscreen cladding by specialist contractor Prater.

Midland Metropolitan Hospital will provide acute emergency care to the Smethwick area including 670 beds and 15 operating theatre suites. It includes around 80,000 m² of accommodation.

The design by London-based Edward Williams Architects is intended to "provide under one roof cutting edge technologies in medicine in a beautiful environment," and at a "human scale." The building has been hailed by Sandwell and West Birmingham NHS Trust chief executive Toby Lewis as "a glass palace" due to the extensive glazing to the facade. He told the *Birmingham Mail* that the hospital would mean "moving towards acute care seven days a week" – completion is scheduled for mid-2018.

The architects commented: "Analysis of the brief produced a natural stacking of functions with wards at the top, clinical areas in the middle and the car park at the bottom – a unique arrangement for a building of this type." They continued: "Clear and logical stacking of floors and functions maximises usable floor area and achieves desired clinical adjacencies."

The exterior palette includes terracotta and timber as well as glazing, ETFE pillows, concrete, painted metal cores and metal louvres. Edward Williams Architects said: "The facade materials are organised by vertical elements to break up the mass of the building and reflect the rhythm of the structural grid."

Appointed by main contractor Carillion, specialist building envelope contractor Prater's scope of works includes extensive roofing systems comprising inverted brown roofing and extensive green roofing, as well as over 2,500 m² of waterproofing. In addition, Prater will also provide SFS and render rainscreen, windows, doors, louvres and composite cladding to courtyard areas of the site.

"We're delighted to have work underway on such a large-scale project," said Kate Prater, associate director for marketing at Prater.

AWARD

Ashford dementia care project wins design award

What's thought to be the first fully dementia-friendly housing scheme in Ashford, Kent scooped an award at the 2016 Kent Design and Development Awards.

Farrow Court, designed by PRP Architects, was named a joint winner of the 'Residential-Major' category

Phase one of the two-phase, £15.4m project was completed earlier in the year, providing the scheme's existing residents with 33 new, more energy efficient homes built to the council's Space standards and Lifetime Homes standards.

Careful consideration was made in the design of the project to incorporate colours and visual signs, such as "memory shelves" outside front doors and plenty of natural light. The gardens were also securely designed to enable residents to enjoy them safely.

As well as these design features the scheme includes Age UK's day centre, communal facilities, a restaurant and an on-site hair salon. A resident-run shop is also in the pipeline.

Tracey Kerly, chief executive of Ashford Borough Council, commented on the project: "We're very proud of what we have created here and are thrilled that it has been recognised with this award. The council has worked hard to design not just a sheltered housing scheme but somewhere residents can really feel at home."

He continued: "With an increasingly ageing population it is imperative for us to prepare for the growing demand on housing schemes and we are looking ahead to phase two of Farrow Court which will see a further 71 homes and eight recuperative care units being built on the site."

SKANSKA

Major expansion underway in Vestfold, Norway

Construction has begun on the expansion of a hospital in Vestfold, Norway, following a contract being signed by Skanska (together with Cura-gruppen) and public health trust Sykehuset Vestfold HF, worth NOK1.7bn (£160m).

The project includes a new psychiatry building with a gross floor area of about 12,000 m² and a building for 'somatic' care of 33,000 m²

The project also includes alignment of the infrastructure, energy facilities, and demolition of existing hospital buildings.

The contract is based on the IPD model (Integrated Project Delivery), where the parties will "cooperate in the implementation phase with common incentives," including sub-contractors. Skanska has gathered expertise from Norway, Sweden, UK and USA to work on the project. Skanska's share of the contract is worth about NOK 960m, (£90m), and the work will be divided between Skanska Norway and Skanska UK at a ratio of 70:30.

The additions comprise a psychiatry building scheduled to be completed in March 2019 and a building for 'somatic' care (nervous disorders) during the first quarter of 2021.

SWEDISH COLLABORATION

NCC to build Finspång Medical Centre

Swedish developer NCC has been commissioned to design and build the Finspång Medical Centre in south eastern Sweden to replace outdated healthcare facilities, in a contract estimated at approximately SEK500m (£45m).

The project, which is being developed with the region of Östergötland, will comprise about 17,000 m² across five floors including space for a doctor's office, a laboratory, child health centre, midwifery clinic, child and youth health centre, specialist nurse-led clinic, residential rehabilitation, investigation service, and a home care and local care department. The building will be environmentally certified according to Sweden Green Building Council (SGBC) Silver.

Stefan Fredriksson, property development manager at Region Östergötland commented: "We need to adapt our operations to tomorrow's healthcare, which is becoming increasingly sophisticated and demanding. The new building will not only replace old and dilapidated premises but also promote the development of the region's and the Municipality of Finspång's healthcare operations."

The project will take the form of a partnering contract – a "structured cooperative format" including NCC and Region Östergötland jointly drawing up system documents, project budget and detailed design plans.

Henrik Landelius, Sweden head at NCC Building commented on the partnering aspect: "It's good to become involved as early as possible in a project of this nature. It benefits all parties concerned and enables our competence and experience to be utilised in the best possible manner. Such an arrangement means that expertise in the design and function of tomorrow's healthcare facilities can be effectively leveraged." The project recently commenced with "a short period of project engineering and budgeting work." The new centre is expected to be opened in autumn 2020.

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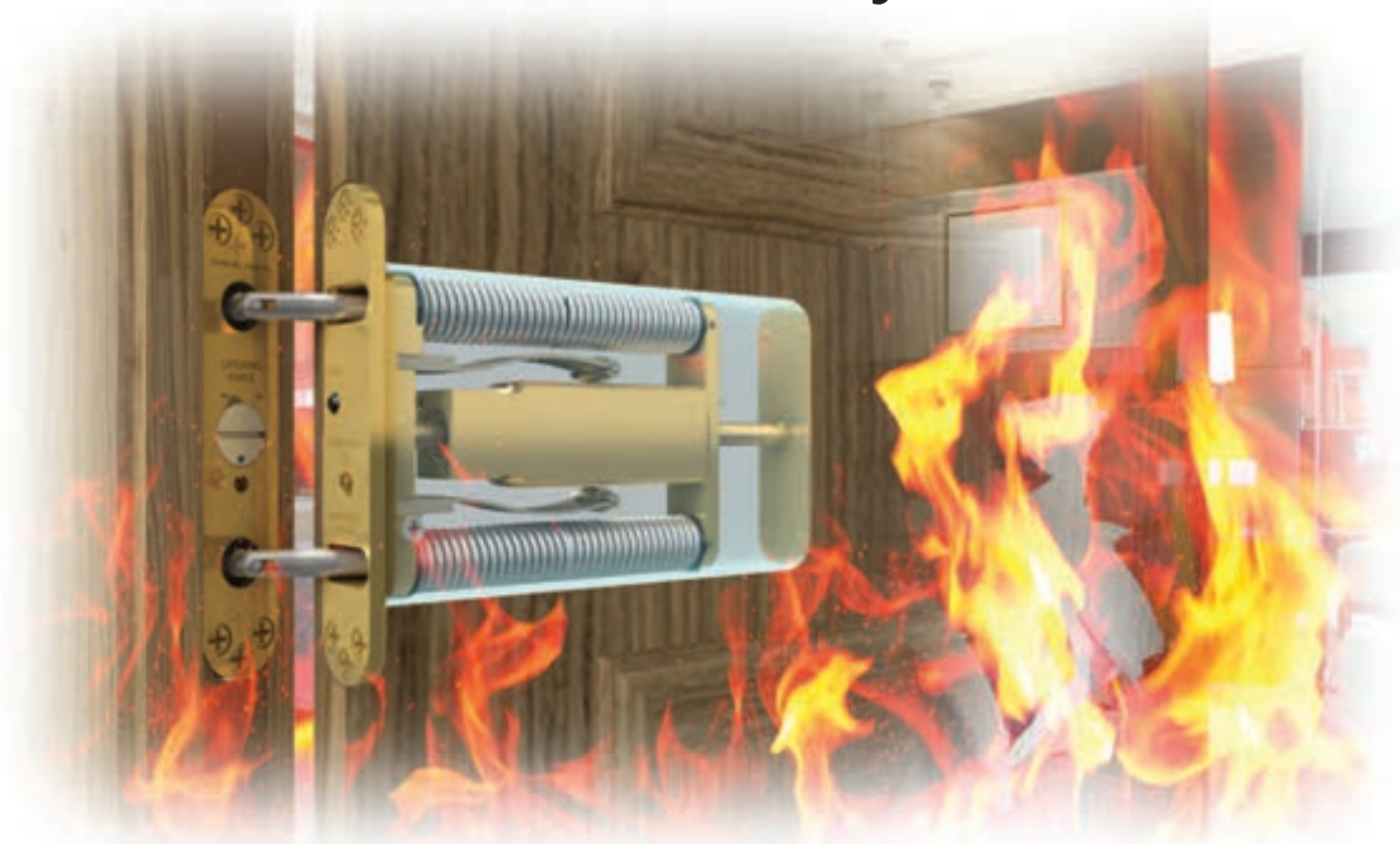

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FRAMEWORK

Modular firm wins place on framework

Actavo Building Solutions, claimed to be "the UK's fastest-growing modular building company" has been awarded a number of lots on the new four-year, £750m NHS modular building framework.

The firm commented: "With NHS bed availability at an all-time low, increasing facilities in a limited timeframe is essential." The new framework has been set up by the NHS, solely for the supply of modular buildings, promoting "faster, cheaper and greener building solutions," said Actavo.

The new framework has been split into 11 lots. Actavo, along with the other successful contractors, will act as the principal contractor and will provide a wide range of services – from full architectural design for the initial concept, to services, site works and completion of bespoke modular buildings, modular healthcare units and modular education units.

Matthew Goff, director of UK operations at Actavo Building Solutions, commented: "Modular building is the NHS's construction dream. It delivers sustainable, cost-effective buildings in tighter time frames which gives a high degree of certainty in meeting specific needs."

He continued: "As modular buildings are manufactured in controlled factory environments and assembled onsite, it means that, in many cases, ward blocks, A&E departments, theatres and clean rooms can be designed, built and delivered in a matter of weeks, reducing the pressure on bed availability and the need for short-term hire." The firm has been working with the NHS for the past four years.

During the tender process, Actavo Building Solutions completed a comprehensive, pre-qualification submission involving quality and pricing returns with proposals for a standalone modular office, a GP surgery, an operating theatre, a single and double classroom block and a full school facility.

Carbon reductions see £300m in NHS savings

A million tonnes less carbon and £300m in savings have been generated by hospitals that have adopted energy efficiency measures, according to a green energy firm.

Vital Energi, which installs and manages energy solutions to 14 hospitals and seven NHS Trusts and Health, reported the significant milestone to mark NHS Sustainability Day (23 March).

Project development director Ashley Main said the savings could help fund frontline services, adding: "The fact that just 14 hospitals can generate over £300m in savings and one million tonnes of carbon reduction is a great indicator of how much potential there is in the NHS, with regards to revolutionising the way it generates and uses its energy."

The company has worked on the projects for the NHS for the last three years, delivering various energy conservation measures and energy generating solutions such as combined heat and power or biomass systems.

The projects, procured through the Carbon and Energy Fund, require the energy firm to guarantee minimum financial savings and carbon reductions for the duration of the contracts, which range from 15 to 25 years.

One of the first hospitals to take advantage of the scheme was the York Teaching Hospital NHS Foundation Trust, where a 1.2 MW combined heat and power engine was installed along with lighting upgrades and other maintenance services. This was followed up with similar projects at the Trust's Bridlington and Scarborough hospitals, with 87,000 tonnes of CO_2 reductions expected over the 15-year contract.

Under a similar contract, the Cheltenham General Hospital expects its carbon emissions to be cut by 40 per cent (equalling 40,000 tonnes) over the course of the 18-year agreement with the energy company.

VIEW POINT

What's in a label?

While BREEAM has made significant progress in many areas of the built environment, it is struggling to have the same impact in healthcare. So is a new approach needed to incentivise sustainable design? Mott MacDonald's UK healthcare lead Gordon Hudson discusses the issues

When the Department of Health embedded BREEAM into the design process for healthcare buildings in 2008, it did so with the aim of producing better conditions for staff, outcomes for patients and overall environmental performance. Unfortunately, it isn't fully achieving this vision.

Together with John Holmes and Graham Capper from the School of the Built Environment at Northumbria University, I have undertaken research that shows only 15 per cent of NHS buildings have achieved BREEAM certification. Breaking this down, of the 110 buildings that are BREEAM certified, half received an 'Excellent' rating and a third were judged as 'Very Good'. To put this into context, more than 150 office developments in the UK are rated 'Outstanding' on the BREEAM scale.

So why is this the case? One reason is a lack of value in BREEAM labelling. Looking again at the office sector, BREEAM has made a big difference in normalising sustainability and eliminating false claims. However, hospitals aren't competing to rent out floor space, so the key commercial driver that's made BREEAM such a success when it comes to office developments is not a factor.

We need to take a deeper look at the role buildings play in healing and recovery. While there will always be certain design and engineering constraints – operating theatres and wards should be mechanically ventilated for example – designers can specify healthier materials, combat noise and vibration, embrace natural light and pursue energy efficiency. All these factors can play a part in helping patients get better faster, which in turns frees up bed space and reduces operational costs. BREEAM doesn't allow much flexibility in its assessment however, as the context of the site and clinical function often result in a bespoke approach to sustainability that cannot be easily measured in a standardised assessment matrix scoring.

The healthcare-specific BREEAM credits introduced in 2008 were not compulsory and not universally used, with generic assessment criteria replacing them three years later. With no specific conditions to meet anymore, facilities have been designed to standards that only partially apply. With tight budgets prevalent in the healthcare sector, low priority has been given to obtaining points that do not contribute to improved patient care.

However, it may also be true that BREEAM has made the design of buildings too prescriptive. Our research also found that many projects were doing the bare minimum required to pass the 70 per cent 'Excellent' banding. It would make more sense to take a comprehensive approach to the design of healthcare buildings that encourages creativity and innovation. What is needed is more freedom for designers and clients to set the sustainability agenda for each project and embrace the robust evidence that is needed to prove performance and delivery. This might mean that labelling could be a little inconsistent, yet the label itself it not the real aim in healthcare – the ultimate goal is better outcomes for patients, staff and communities.

I'd love to see the NHS and BRE work together to figure out what the next 20 years should look like. There are big opportunities for the NHS to link social and economic benefit with outlay. BRE needs to be more challenging, looking at each site in more detail and how each building will be used. ■

More freedom is needed for designers and clients to set the sustainability agenda for each project, Hudson believes
© DLT Photography

I'd love to see the NHS and BRE work together to figure out what the next 20 years should look like. There are big opportunities for the NHS to link social and economic benefit with outlay

VIEW POINT

Design for life

The concept of creating 'generative spaces' is leading to a significant evolution in the approach to healthcare design, according to Heather Fennimore of ergonomic design specialist Humanscale. Here she explains the thinking behind the idea

In 2003 forward-thinking American architect Wayne Ruga formally defined his long-standing 'generative space' concept for designing environments that both systemically and sustainably improve lives. Today the Caritas Project, the US-based non-profit organisation founded by Ruga, works globally to pioneer a new and more desirable and healthier future for individuals, organisations, and communities by developing and creating more generative spaces.

The generative space concept

In essence, generative space is creating 'a place to flourish' – one where users are able to state, in their own terms, that their lives have been improved as a result of their experience in that space.

Generative spaces represent the next generation of designing for health and it is a methodology that is applicable to all aspects of our designed environments, beyond healthcare.

Simply put, the design of a generative space requires the designer to understand what a user requires to improve their life, often involving gestalt psychology to enable a user to harness their experience to inform the design.

Any experience is the combination of the social and physical, which is a new approach for many design professionals, as historically the physical design and aesthetic has been the priority.

A generative space will deliver measurable improvements. For example: to comply with requirements for sustainability, productivity in work and work outcomes, retention of employees, minimising staff absenteeism, and improved patient outcomes, it's necessary to begin with a baseline metric. Using generative space should then demonstrate improvements beyond the baseline that continue over time.

Applying design research at Macmillan

After Ruga defined and developed 'generative space' for designing environments to improve lives, he initiated the Leading by Design Research Project (LBD) under the auspices of The Caritas Project.

The LBD project works with individuals around the world who learn about generative space from Ruga and apply their learning to their lives, projects, organisations, and communities.

One of the LBD participants in Simon Henderson, formerly head of cancer care environments for Macmillan. As Simon Henderson experimented with a variety of initiatives to create generative space at Macmillan, he developed the Macmillan Quality Environmental Mark to advance the quality of cancer care with the healthcare provider organisations throughout the UK.

Today, Macmillan's Quality Environment Mark (MQEM) is delivering its purpose and was accredited in 2016 by the Care Quality Commission (CQC) as an official information source for their inspections.

Subtle shift

Creating generative spaces is not difficult – but it does require a subtle shift in the traditional way of thinking that many architects and design professionals have learned about in school and practice.

Generative spaces require an entirely pragmatic and practical approach, working with individuals to develop environmental solutions that support the advancement of users' aspirations – from their perspective.

As stated earlier, generative space is one that creates 'a place to flourish.' It really is quite simple: if the user says they are flourishing, the space is a generative one, conversely if the user cannot claim to be flourishing, the space is simply not a generative one for them.

Active listening is crucial

The more active, 'listening' design professionals can do, to support the user requirements, the more chance they have to be 'accountable collaborators.' The process requires investment in the front-end of the design process, playing back the user feedback so a mutual understanding of requirement is reached, before the physical design solution event starts.

Although the concept of generative space has it roots in healthcare there is much that can be applied to all aspects of architectural design, peoples lives and the varying environments they use.

Creating life-enhancing spaces that make individuals feel better and happier will lead to more productive people, whether children and teachers in a school classroom, employees in an office or healthcare-givers and their patients – the end result of a generative space can only be positive. ■

Heather Fennimore is a Partner and President of Global Healthcare & IT Distribution with Humanscale, Chair of the Scientific Advisory Committee for Cornell University's Atkinson Center for Sustainable Futures and a member of the Hoover Council at Stanford University

BUILDING PROJECTS

WADSWICK GREEN CORSHAM, WILTSHIRE

Retirement accommodation reaches a new level

As the affluent baby boomer generation reaches retirement age, there's growing demand for attractive, spacious retirement accommodation that can also meet changing healthcare needs. Ray Philpott looks at one project that tackled the challenge

Older people who are capable of independent living often find themselves moving into comfortable, retirement homes only to face a disruptive shift to care-based accommodation when their health begins to fail.

There might be suitable accommodation at their existing residence but often it means moving to another address. Either way, such accommodation is most likely to be designed more for delivering efficient care than providing a pleasant lifestyle.

Wadswick Green is different. It's been designed to provide attractive, high-quality modern accommodation offering independent living that can also be easily and practically adapted for changing care needs, enabling over-55s to enjoy interactive,

Apartments, which radiate out from the Central Pavilion, offer views of the courtyard and countryside

communal life in the spacious home they bought for as long as possible.

The landscaped 25-acre residential estate sits in a picturesque stretch of countryside between Bath and Chippenham on the site of Royal Arthur Park, a former Royal Navy training station at Corsham in Wiltshire that closed in 1993. The 221-apartment, £60m scheme gained planning permission in 2009 with Phase 1 starting in Jan 2014 and completing in November 2015.

The site rises gently north to south, surrounded on three sides by rolling countryside with ancient woodland to the west. A central, three-storey pavilion and an adjoining catering and entertainment building is set against the woods, well below the treeline to avoid dominating the site.

Radiating out from the pavilion is a series of two and three-story apartment buildings, laid out to form five triangular, landscaped courtyards rotating around the centre but significantly separated from it.

Vital element

Wadsworth Green is a project close to the heart of architect Dale Jennings, owner of Pencil and Ink, who was approached about the project by client Rangeford Holdings in early 2007.

The triangular-shaped courtyards provide social interaction opportunities while tailored care can be provided at each apartment

"We had a large space to play with, giving us the opportunity to take a different approach to prevailing retirement and care home concepts," he says. "In essence, we're providing highly flexible care provision for people living in spacious, high-quality homes, designed to promote communal living in beautiful grounds.

"The care aspect is a vital underpinning element of the Wadsworth Green's concept. Unlike other places, we've avoided creating differing types of accommodation designated for 'independent living', 'assisted care' or 'extra care – all apartments are specifically designed to adapt to residents changing care needs."

All apartments are fully wheelchair accessible and designed to accommodate a hospital-style bed with Rangeford providing the full range of care available in a typical care home.

Jennings adds: "Uniquely the combination of site and staff creates a therapeutic environment where people, even with challenging conditions like dementia, can be supported and lead independent lives despite significant care needs.

Should their health begin to fail the vast majority of residents can stay in the homes they bought, unless they require constant specialist support."

Plans to further enhance medical support include building two doctor's surgeries operated by local GPs as Wadswick Green's population expands.

Social interaction

With the scheme placing a strong emphasis on community-based lifestyle, significant opportunity for social interaction has been designed in.

Much of this is centred around the reception, library, spa and 14-metre swimming pool in the main Pavilion building and the lively restaurant and bar areas, known as 'The Greenhouse' where indoor events are also held. In good weather, outdoor events are staged on the entrance plaza.

"The restaurant and bar interiors were designed to high standard by the Lovely Pubs group, to create a lively, atmospheric venue that is offered to local people as a bookable destination venue in its own right," says Jennings.

"The outer apartments are based on Oxbridge-style 'courtyard living', where people can meet and talk in the triangular grounds. Apartment balconies overlook the

The three-storey central Pavilion contains hotel-style apartments and leisure facilities like the spa, while the bar area and restaurant are located in the glass-sided Greenhouse, to the front

courtyards where people can sit and feel involved with the daily goings on."

Residents have opportunities to mix with members of the local community, who have free access to the grounds via the country roads and footpaths linked to it. Dog walkers, ramblers and people from the nearby villages regularly use the wooded, parkland-style grounds, and are encouraged to use the central facilities and participate in social events.

A golf buggy service moves people around the site and a regular 'on demand' bus service is available for trips outside the estate.

Courtyard living

Each courtyard captures unique views and that defines its individual character, rather than varying architecture or colour schemes. Between 45 and 50 apartments form the two long staggered sides of each courtyard, with natural countryside completing the triangle," explains Jennings.

The rare benefit of having lots of land available has been exploited to spread the accommodation out, making it more spacious, elegant and attractive to live in. This contrasts with many residential care homes where accommodation is typically concentrated in a few buildings adjoining the centre, primarily designed for delivering care.

Architecturally, the courtyard apartments are unashamedly modern but utilise traditional materials such as brick, render and timber to give them a soft, familiar finish. Critically, the apartments are built around staircases, forming a series of staggered blocks to create the triangular courtyards. There are no communal corridors,but stairwells and shared hall areas are lit by skylights.

Jennings says: "The aesthetics of the two and three-storey courtyard apartments are inspired by Eshrick House, a classic 1960s flat-roofed woodland home by American architect Louis Kahn. It's finished with simple materials and beautiful joinery and features a double-height living room and huge glazed windows. I wanted to capture the spirit and feel of that building.

"All courtyard apartments are spacious with elegant proportions featuring large areas of glazing at both ends of a wooden-floored lounges, so there's plenty of light and interior finishes are of superior quality.

FACTFILE: WADSWICK GREEN

Total development area: 25 acres
Residents: up to 400
Central community building footprint: 12,000 ft^2
Luxury courtyard apartments: 90 (phase 1)
Two-bed courtyard apartment: 1,200-1,500 ft^2
Standard retirement flats: 75
Phase 1 completion: November 2015
Car parking: 1 space per resident (at accommodation), 50 staff and visitor spaces

Wood cladding and reclaimed stone walls feature on an external terrace overlooking a communal plaza

"The supporting red brick walls are built in Flemish bond for a more interesting appearance. All the buildings have flat roofs, the taller ones featuring single-ply membranes. Lower-lying buildings, usually on the edges of the development next to parkland, have sedum roofs sympathetic to their location."

At one end of the lounges a large picture window offers superb countryside views. On the exterior these windows are framed by tall, eye-catching, white-rendered rectangular features sitting proud of the walls. At the other end of the lounges glazed doors lead to wide, flush-floor balconies with hardwood railings overlooking the courtyards.

"You get two experiences in one room: a private sense of escape with the countryside view and visibility and engagement with the neighbourhood at the balcony end," says Jennings.

Various strengths of low-e glass provide solar control, depending on the orientation of the building, while ventilation and cooling is achieved through opening double-glazed windows. Underfloor heating is provided, powered by central gas-fired boilers serving the whole site.

Central buildings

Structurally, the central, three-storey Pavilion holds communal facilities including the 20-metre swimming pool and spa, hairdressing service and reception, plus back-of-house facilities such as laundry, staff changing rooms and a small number of offices. Above it are two floors containing 24 well-appointed one and two-bedroom hotel-style apartments with balconies.

With a 12,000 ft^2 footprint, the Pavilion is constructed from modular concrete slab up to the first floor clad with vertical cedar boarding and the two floors above made from a Metsec metal stud and joist system finished with modular brick cladding and a flat, single-ply membrane roof.

"Overall, it's a fairly simple structure enhanced by The Greenhouse to the front of it," says Jennings. This is a 3,000 ft^2 single-storey, glass-sided structure containing the restaurant and bar, two terraces, one covered and one completely open, overlooking a communal plaza. "We've used a single-ply membrane to look like a traditional rolled lead roof on the Greenhouse."

Internally, the Greenhouse features timber framing with floor to ceiling, aluminium-framed glazing with doors that

Mature, parkland-style landscaping is a key design feature of the Wadswick Green project

PROJECT DETAILS

Client: Rangeford Holdings
Lead architect: Dale Jennings, Pencil and Ink
Managing architect: CMS Group
Main contractor: Morgan Sindall
Landscape: Churchman
Interior design: Aqua Platinum (Spa) Lovely Pubs (Greenhouse)
Structural and civil engineers: Hydrok
Services: Jones King

open to provide natural ventilation and a timber soffit to the brise soleil around its perimeter.

Rural spirit

The mature, parkland-style landscaping is central to the spirit of the place and capitalises on the rural location, with the layout designed where possible around existing mature trees.

Residents even have their own private access road, a leafy 1 km lane with passing points and country estate-style fencing.

Natural golden coloured Cotswold stone, dug up during construction, is reused to build low walls and low-lying ancillary buildings with sedum roofs, complemented by garden-style plantings and beds often used to increase privacy for ground floor homes.

Paved footpaths form an attractive network of walkways lit by subtle, wooden-posted LED downlighters designed to minimise light pollution although in appropriate locations trees are also subtly up-lit as a visual feature.

The other day a resident's daughter said to me, 'My mum has never been happier than she is here now' – for me, that's the true measure of success

Dale Jennings, owner, Pencil and Ink

The grounds also contain two visually appealing natural wildlife ponds, containing protected great crested newts. They have been carefully planted to deter casual access, while two roosts have been specifically built for the common pipistrelle and brown long-eared bats native to the site.

With so much thought going into the concept, layout and architectural design, Jennings is confident that the Wadswick Green model works.

He comments: "The other day a resident's daughter said to me, 'My mum has never been happier than she is here now.' For me, that's the true measure of success. ■

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BUILDING PROJECTS

SCOTTISH NATIONAL BLOOD TRANSFUSION (SNBTS) CENTRE OF EXCELLENCE EDINBURGH

Design team gets the desired result

Edinburgh-based Reiach and Hall Architects has found some smart design solutions for Scotland's new blood processing and testing centre. With work on site approaching completion, Jess Unwin finds out more

Inspiration to design buildings fit for purpose is the lifeblood of every architectural practice – but rarely can that phrase have been as apt as it is for one of Reiach and Hall's current projects.

The Edinburgh practice is now very close to seeing its vision for a new £33m, state-of-the-art blood transfusion centre serving the whole of Scotland become a reality.

Developed through a joint venture partnership of Kajima and Interserve, the Scottish National Blood Transfusion Service (SNBTS) centre of excellence, or Jack Copland Centre as it will be known, should be fully operational by summer this year.

It's being constructed at the Heriot-Watt University Research Park on the south-western edge of Scotland's capital and will combine processing and testing laboratories currently in Glasgow and Edinburgh, along with the Service's national headquarters.

Richard Coe, project director at Kajima, explains: "SNBTS will be able to consolidate at one site and move forwards with lean pharmaceutical production and testing of blood, cells and tissues, plus provision of a range of other clinical services, to meet anticipated increase in demand in a safe and cost-effective way."

That sums up the service goal for the facility but the demands of the design challenge are enough to raise anyone's blood pressure!

Unique challenge

While Reiach and Hall's Andy Law says his company has a track record of designing buildings with laboratories, he admits: "This is a unique facility. It's a hugely technical brief, but there's a social brief too – it needs to be a good place to work. With these sort of facilities, the social side is the one that normally suffers. Our challenge was to manage the technical side in such a way that you still have an environment that people enjoy working in. I think we've achieved that by taking both challenges on at once."

The project is in its final stages before expected completion this summer
(Image courtesy of Kajima)

Artist Steven Aalders used a range of colours in a very striking geometric pattern – it is the dominant feature in the Arcade

Andy Law, Reiach and Hall

So, what will the Jack Copland Centre do and what is the technical challenge? Its primary function is the collection of blood donations from five static donor centres along with those from community and workplace collection sessions across Scotland. These donations will then be tested and processed into red cells, plasma and platelets before distributing those end products to patients.

Additionally the Centre will process, test and store tissue and cell products, as well as house a hub for cutting edge cellular therapy, research and innovation.

All of this work is subject to strict guidelines and inspections, designed to ensure a safe and secure working environment. One way this was achieved in the design was to ensure that waste would have a specific route out of the building which would never 'cross paths' with incoming materials or outgoing products. Law explains: "We started with a diagram of the flow pattern that's like a very complex bowl of spaghetti.

"It's the SNBTS mindset to be incredibly rigorous about keeping everything separate. A failure by SNBTS can mean serious risks to patients so they must be incredibly careful."

Designs that separate and connect

In order to keep materials and products apart, yet ensuring staff still feel connected with each other and different parts of the building, Reiach and Hall developed a two-part solution: accommodate the facility's different functions in strips built alongside and above each other, and extensive use of glass throughout.

Law explains: "The solution we presented, which people didn't expect, was to make part of the building over three-storeys rather than two. We put the testing and Research, Development and Innovation (RD&I) function on the top floor and linked these down to the blood processing hall on the ground floor with dumb waiters for samples to go up and down. That really cracked some of the difficulties of getting the complex circulation systems to work."

In between, half of the first floor is a dedicated plant area filled with services equipment. This is one way the building's design tackles the issue of the sheer volume of services needed yet ensuring they are close to where they're needed.

At the heart of the Jack Copland Centre, and running parallel to the blood processing hall, services floor and top-floor testing and RD&I, is a space known as the

Arcade. Law says: "It's called the Arcade because you do walk along it but it is also a three-storey atrium, with open galleries looking into it and containing the vertical circulation."

With the facility's main entrance at one end and a cafe/bistro at the other, Law says the Arcade plays an important role in "pulling the building together." The use of glass here and numerous glass partitions elsewhere in the facility, produce a transparency that provides visual connection between different areas, as well as an ambience of space and light.

On the other side of the Arcade is the office area spanning three floors. Not only does this office space look out onto landscaped parkland but internal glass partitions mean staff in this space can also view the processing hall and top-floor labs across the Arcade.

This transparency is repeated elsewhere. A glazed partition on the north side of the blood processing hall allows views through a tree-lined courtyard to the tissue and cell labs beyond.

All this glass, says Law, helps achieve the social aim at SNBTS of making the Jack Copland Centre not only a pleasant place to work but also a place that makes people feel "connected to each other and to the countryside outside."

Pressure to succeed

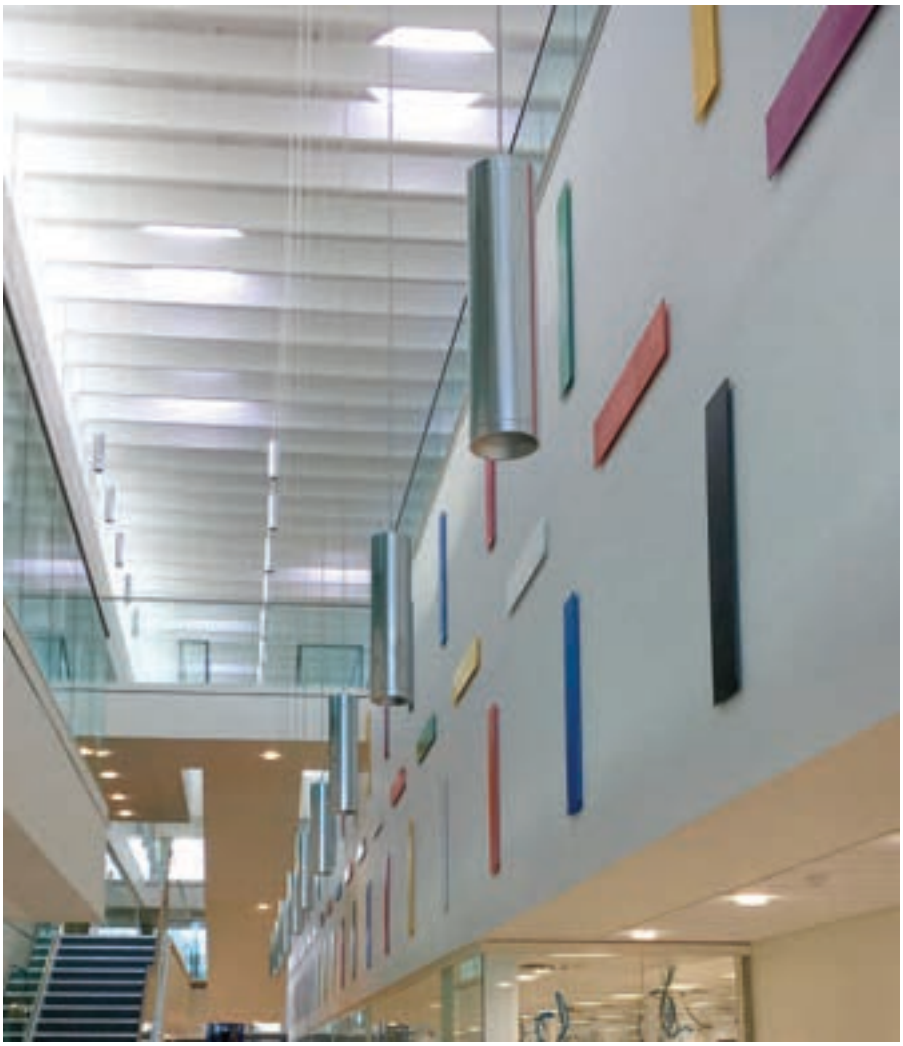
While glass partitions 'dissolve' boundaries visually, they still provide the required separation – indeed, many of the lab spaces need to be airtight. Not only that, different activities stipulate different air pressures.

Law explains. "In some labs staff may be working with samples that could contain something nasty which you don't want leaving that lab in the air, so we negatively pressurised that lab relative to the spaces around it. In other labs SNBTS is guarding against anything coming in so they will be positively pressurised."

Eventually, you need to return, via a 'pressure cascade', to ambient pressure in places like the Arcade. Following discussions with SNBTS this was achieved by putting extra doors across corridors to create 'air locks'.

Specialised glass with specific detailing has been used for higher-grade clean rooms and labs, while a carefully adapted standard glass partition system is used elsewhere.

Another technical requirement demanded of the building design was the need for a dedicated area for staff to change into special clothing and ensure a sterile environment. The solution is to have one starting point for all employees – helping to connect people from different functions – before they progress through further levels of the 'changing regime' as appropriate to their work zones and the tasks they perform.



Structurally, while the majority of the SNBTS facility features a steel framework, the three-storey office element has a concrete skeleton. The concrete contributes to the natural cooling of the office area, along with louvered vents above windows that are controlled by the sophisticated building management system. It is hoped that this natural ventilation – plus photovoltaic panels, combined heat and power systems and enhanced insulation – helps the facility achieve a BREEAM Very Good rating.

On the outside, most of the facility's facades feature a brick cladding. Law

The Arcade (above and left) features open galleries looking into it
© Reiach and Hall

FACTFILE

- Total floorspace of the facility is 11,500 m^2. The blood processing hall alone is 1,000 m^2
- The facility is the workplace for 400 people working in shifts with around 200 people there at any one time
- Resilience measures include fuel storage for the SNBTS fleet of 26 vehicles, water supply and back-up arrangements to safeguard power and IT systems

While most of the SNBTS facility features a steel framework, the three-storey office element has a concrete skeleton
© Reiach and Hall

The concrete contributes to the natural cooling of the office area, along with louvered vents above windows that are controlled by the sophisticated building management system

explains: "The reason was to reflect that this is an important national facility so it needs something that demonstrates its gravitas and its permanence."

A Dutch masterpiece

The use of glass is not the only approach used to also make the state-of-the-art facility a space people will enjoy. Where the services-only floor meets the Arcade there is a 50 metre-long, four metre-high blank wall. This has proved a golden opportunity to involve Dutch artist Steven Aalders.

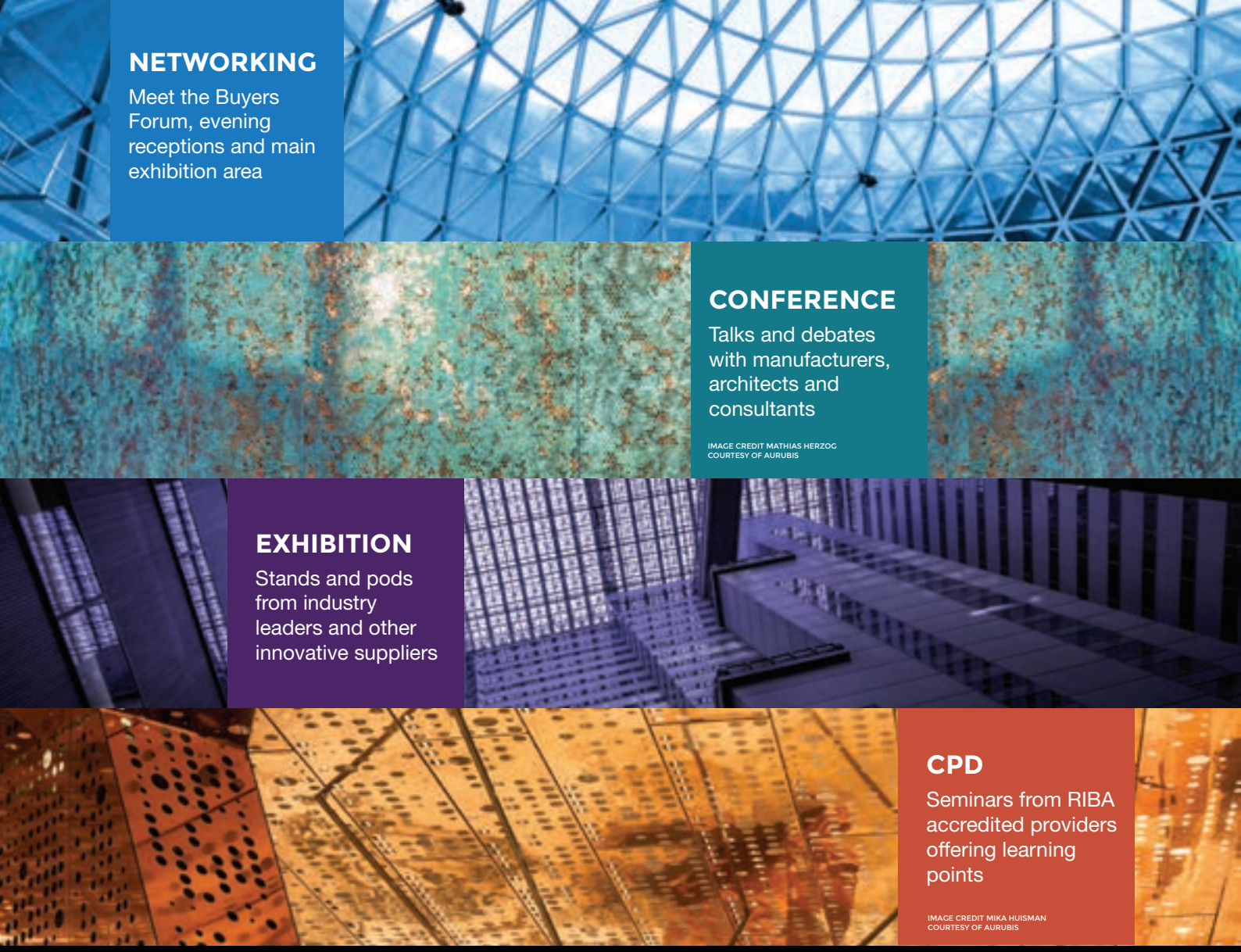
Law reveals: "We've worked with Steven before and for this project he produced some fantastic artwork to fill the space. He's used a range of colours in a geometric pattern that's very striking. It's the dominant feature in the Arcade and we're very pleased with it.

"We've used his colours as a clue in choosing the fabrics of the carpets and furniture of the facility and Steven has also created a floor pattern in the Arcade to relate to his artwork. In addition, we have to include an element of opacity in the glass partitions as a safety measure to stop people walking into them, so we've featured reduced monochrome versions of his artwork in the glass. It all brings a sense of identity, to the Arcade particularly, and helps to make it into more of a social space."

Reflecting on the SNBTS project, Richard Coe is full of praise for the close-working relationship between Kajima, Interserve, Reiach and Hall, SNBTS and the NHS. Richard concluded by explaining: "This is one of the biggest and most significant building projects for NHS Scotland, and is pivotal for the future of the Scottish National Blood Transfusion Service. When in life do you get this sort of opportunity – Andy and I have been very lucky to be involved with this amazing building." ■

PROJECT TEAM

Architect: Reiach and Hall Architects
Construction contractor: Interserve Construction
Hard facilities management provider: Interserve Facilities Management
Engineer: Buro Happold
Landscape Architect: Rankin Fraser
GMP Adviser: eXmoor Pharma Concepts
Natural air ventilation: Naco



NETWORKING

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IMAGE CREDIT MATHIAS HERZOG
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BUILDING PROJECTS

DUMFRIES AND GALLOWAY HOSPITAL

New district hospital campus passes the test

Designing a modern, state-of-the-art hospital on a greenfield site presents sounds like a golden opportunity but also came with challenges, as Ray Philpott reports

CANOPY
A canopied entrance plaza simultaneously welcomes people to both the main hospital and the Women and Children's Unit

Tasked with creating a district general hospital that provides an uplifting, positive experience for people using it, the architects who designed it have skilfully utilised its attractive semi-rural location.

Conceived as a woodland campus concept, the new Dumfries and Galloway Royal Infirmary is an aesthetically appealing, well-organised, user-friendly, low-rise design that brings 'the outside in' while being sympathetic to its surroundings.

The hospital will serve many small, widespread and diverse communities within the 2,400 square miles covered by NHS Dumfries and Galloway in Scotland's South West and is centrally sited in a semi-rural location off the A75 road.

Architecturally, the facility comprises three core elements. A central diagnostic and treatment 'bar' is the primary component, forming the backbone of the campus. Extending out from behind the linear-shaped bar and projecting into the landscape, are three independently linked pavilions of inpatient accommodation. A triple-sided Women and Children's Unit – featuring a curved outward-facing facade and internal courtyard – adjoins the main building.

The district general hospital has been designed by Ryder Architecture in collaboration with NBBJ, to meet the increasingly sophisticated healthcare needs of the region's growing and ageing population. The current district hospital in

LIGHT
The light-filled reception area creates a pleasant welcome to the hospital, and from there the primary circulation routes are obvious

Dumfries itself cannot realistically be expected to meet demand long-term.

Medical facilities in the main building include a combined assessment unit, accident and emergency facility (A&E), a surgical complex with four major operating theatres, oncology and critical care units, and an outpatient centre.

The £212m hospital was procured under the Scottish Government Non-Profit Distributing (NPD) model, with Ryder as the lead architect collaborating with NBBJ and Laing O'Rourke as main contractor.

Key themes

Designing a greenfield hospital from the ground up sounds like an architect's dream but the team had to ensure they also met the detailed healthcare requirements and be sympathetic to an earlier 'reference design' the board had drawn up to obtain outline planning approval.

Working closely with the board, the practice evolved a series of key objectives into four core themes that informed and underpinned the architecture and interior design, with a strong emphasis on quality.

Firstly, the design needed to be people-centred, attractive and provide uplifting and therapeutic environments with natural views and plenty of good quality daylight. Secondly it had to facilitate efficient operation, good space utilisation, clear wayfinding, innovative use of IT, long-term flexibility and easy analysis of clinical workflows. Creating a safe, welcoming and accessible building and enabling staff to deliver effective care formed the remaining themes.

Bearing these in mind, Ryder and NBBJ looked at the reference design to see where they could improve it, as partner Paul Bell explains. "The board's aspiration to have an integrated emergency care centre hadn't been realised as the combined assessment unit and A&E were quite separate. We

The architects segregated the main internal circulations by floor to avoid creating shared flows or cross-flow clashes

A key design move was ensuring the main and emergency care centre entrance could both be seen on arrival, so we created a clear 'decision point' at the entrance to the campus

Paul Bell, partner of Ryder Architecture

redesigned the emergency care area to incorporate the combined assessment unit, which in turn meant we could bring the ward buildings much closer to the diagnostic assessment 'bar,' reducing key internal travel distances and improving clinical efficiency."

The architects also segregated the main internal circulations by floor to avoid creating shared flows or cross-flow clashes. Now, the majority of outpatient and visitor movement happens at ground floor, while the inpatient flow, linking the surgical wards and maternity wards to the operating theatre suites and critical care units, is on the first floor. Facilities management-related traffic happens at lower-ground level. Circulation routes include rest spaces for older users and areas designed to promote interaction between hospital disciplines.

Bell adds: "A key design move was ensuring the main and emergency care centre entrance could both be seen on arrival, so we created a clear 'decision point' at the entrance to the campus. In the reference design the position of the Women and Children's Unit blocked visibility of the emergency care entrance, so we moved it to give a clear route to emergency care.

"Repositioning the Women and Children's Unit allowed us to locate its entrance immediately adjacent to the main hospital entrance, sharing a canopied entrance plaza to improve wayfinding."

Sympathetic

Nestling in a semi-rural location, the external appearance of the building has been shaped to be sympathetic to its surroundings.

The precast panels on the main building facias are honey-coloured, reflecting the Glasgow Blonde stone frequently used in south west Scotland. A reconstituted stone finish similar to white Galloway granite gives a contrasting, lighter treatment to the inpatient pavilions and Women and Children's Unit uses.

Pitched-style roofing is used throughout the development to break up the mass of the building, so that it sits comfortably within the hillsides and woodlands stretching from the south west to the north east of the campus.

The gables formed by the pitched roofs are clad with angled concrete panels reflecting the woodland campus idea, with three different designs for the wards, diagnostic and treatment building and Women and Children's Unit.

"Our intention has always been that each of the three 'fingers' of ward buildings projecting south west from the diagnostic and treatment centre, should create an impression of a series of pavilions," says Bell.

GLAZING
Glazing is used to create light-filled, uplifting spaces and walkways throughout the building

The main entrance reception has a suspended wooden ceiling and is lit from above by a long row of skylights and aluminium-framed curtain wall glazing

"Ward accommodation comprises a series of single, en-suite bedrooms in low-height structures naturally dictating a long, linear shape for the ward buildings. We broke up this linearity by incorporating vertical dormer features along the sides of each finger. These are public circulation areas – day space – with large oriel windows allowing extensive daylight penetration.

"Additionally, each ward room features large, tall windows running from the ceiling almost to the floors to punctuate the linearity, while giving patients attractive landscape views from their beds and a good source of daylight."

Natural light streams through two large, unglazed rectangular openings in the roof of each ward building roof, creating light wells inside. The well walls are glazed, forming open courtyards in the wards, giving staff views across from one corridor to another to help them observe patients or see if colleagues need support.

Environmental integration

"Integration of the internal environment with the natural landscape is a crucial component of the project, as is the landscaping on the campus in general," says Bell. "We liaised extensively with landscape architects Fira, to meet the requirement."

He adds: "Between each ward building are spacious accessible gardens where patients can experience various garden environment spaces, paths and glades, some used for therapy purposes, others for walking. The relatively loose grouping of the buildings also permits landscape views for people inside. The central courtyard of the women and children's unit also has a planting area.

"Palliative care rooms have their own garden terrace, and beds can be taken onto them so patients can experience the external environment," says Bell. "The courtyard at the centre of the Women and Children's unit is generously proportioned and attractively landscaped to include children's play spaces and quieter areas.

Car parking is in curved lines on the site's eastern side, softened with extensive planting that extends beyond the perimeter to form a green barrier to the light commercial buildings beyond.

The main entrance reception has a suspended wooden ceiling and is lit from above by a long row of skylights and aluminium-framed curtain wall glazing with countryside views. Bell points out: "This creates a pleasant welcome to the hospital, and from there the obvious primary circulation routes make it is easy to find the wards and other inpatient and outpatient services. The many attractive gardens and landscaped spaces across the campus also act as memory points for navigation."

A ground floor cafe with views over the landscaping features decorative glass

PROJECT DETAILS

Client: NHS Dumfries and Galloway
Architect: Ryder Architecture in collaboration with NBBJ
Main contractor: Laing O'Rourke
Landscape architects: Fira
Structural engineer: WSP
MEP engineer: Hoare Lea

FACTFILE

Campus size: 50 acres
Total building area: 65,000 m^2
Number of beds: 344
Staff on site: 2,000 (approximately)
Population served: 148,000
Overall project value: £212m
Car parking spaces: almost 1,000
Work commenced: February 2015
Final completion: September 2017

partitioning featuring artwork by Scottish artist Liz Myhill, whose designs also appear on glazing elsewhere in the main building. Like the wards, the main building features a number of light wells to bring additional daylight in.

Gas and combined heat and power generators provide electricity and hot water, with excess heat recycled via underfloor heating in the larger ground floor spaces. A mixture of opening windows and mechanical ventilation control the interior environment, and there is a plan to supply much of the water from a natural aquifer under the site. These features, combined with excellent insulation, LED lighting and appropriate solar-controlled glazing, have resulted in a BREEAM Very Good rating.

All structures have piled foundations and are concrete-framed with high-quality precast concrete panels with architectural finishes on the facades. Steel frames create the pavilion shapes, topped with grey aluminium or zinc standing seam metal roofing.

The building extensively uses offsite-manufactured, precast components – a speciality of Laing O'Rourke – bringing the benefits of quick, accurate and cost-effective construction.

A 'hospital without compromise'

With the building now firmly on target for completion in September, Bell says: "We set out to deliver a hospital without compromise to provide excellent healthcare for people in the region. A hospital that maximises the potential of its wonderful location by bringing the qualities of the surrounding landscape into the site and capturing the healing properties of light and views to nature, to provide excellent healthcare for people in the region.

"The successful delivery of a project on this scale within such a demanding programme, will be a significant achievement only made possible by a great team effort.

"We hope we've created an uplifting, healing campus environment offering an attractive and highly effective setting for patients, staff and visitors – a truly person-centred hospital." ■

Design in Mental Health returns in May

Now in its fifth year, the event awaits its biggest audience to date of architects, contractors and their clients on the 16-17 May at the National Motorcycle Museum in Solihull

Design in Mental Health focuses on creating therapeutic environments in mental health facilities that are safe and secure for patients. The event consists of the Design in Mental Health Network's annual conference and an exhibition that showcases the latest product innovations designed for mental health facilities and the challenging environments within them.

The conference

The annual conference is the ideal focused forum for architects who will be delivering the country's next generation of mental health facilities.

Day 1 of the event will include leading speakers from the House of Lords, Department of Health, the National Mental Health Task Force, Architects for Health and Procure 22 as well as organisations led by NHS employees focused on Psychiatric Intensive Care (NAPICU) and fire safety (NAHFO).

Day 2 will focus on the Design in Mental Health Network's work in creating design standards and creating standards for product testing, alongside sessions focused on CAMHS environments and the use of technology in the patient environment.

The exhibition

Design in Mental Health is also the platform for the launch of a variety of new and innovative products for the sector each year. The exhibition hall will be full of creative solutions to the problems faced by show visitors and delegates. Many of the products showcased at the event annually are born from discussions that have taken place at the event in previous years, so delegates this year are encouraged to share their experiences and the problems they face.

Design in Mental Health Awards

The Design in Mental Health Awards recognise outstanding work in the design of mental health facilities, innovation in product design and outstanding collaboration between project teams and patients in mental health units. The black tie event provides a great opportunity for delegates and visitors to network with a drink in hand and discuss the topics of the day, while also celebrating the success of their peers.

This year's guest speaker will be Jonny Benjamin MBE, an award-winning mental health campaigner, film producer, writer and 'vlogger', who will recount the story behind his notable documentary 'Stranger on the Bridge'.

Online registration for the event is now open at designinmentalhealth.com One or two day delegate rates are available or you can visit the exhibition only free of charge

Elevating the importance of hoists

Whether mobile, overhead or wall-mounted, hoists can be installed and used in any almost any space. Bob Oliver of Innova Care Concepts explains why hoisting systems should be integrated into healthcare building designs from the outset

Multi-user environments are slightly more challenging, when planning a hoist layout

Hoisting systems are one of the most significant pieces of kit in any healthcare environment, providing users with a good quality of life simply by facilitating the need to move from place to place with dignity.

As healthcare environments are designed and built to cater to the needs of the end-user, hoisting systems should be included to guarantee that patients are freely given the tools they might need to get around.

Evolution

Recent industry trends have instigated a makeover on the old faithful hoisting system. Sleeker, smarter hoist units are favoured for their combination of subtle aesthetics and robust functionality that helps reduce patient stress when transferring. The tracking system itself has evolved. The inset track sits in the ceiling and looks a lot smarter while being easier to clean than standard tracking.

Alternative solutions to the tracking system are available; for example, some hidden hoists can be wall-mounted and folded away when not in use, fostering a more homely environment.

Room layouts

Different room layouts require different track set-ups. Straight tracks are fairly self-explanatory: they are a single rail that enable basic movement from one point to another. They can be installed with curves or with transit coupling and track switches that enable change direction.

X-Y systems (also referred to as H frames) offer a wider range of hoisting and greater flexibility of care. X-Y systems have two parallel fixed rails and a perpendicular moving traverse rail that can pick up and hoist across the range of the fixed rails. They can also be adapted to connect to other fixed tracks, or even another X-Y layout, and can be installed and mounted on wooden joists, concrete, or steel fixings.

Operating environments

The next thing to consider is the areas that need to be accessed. Beds, showers, baths, and toilets are all common 'pick up' points. Multi-user environments are more challenging as they require the equipment to meet the needs of every individual and work in conjunction with other apparatus, such as curtain rails.

X-Y systems are designed to be suitable for multi-user space as they offer access to any part of the area. With the fixed, parallel rails installed wide apart, the traverse rail is free to move. Curtain rails can be navigated using track systems and gates that create a gap in the hoist rail or the curtain rail to allow them to pass between one another.

Rooms for bariatric patients need to be larger and fitted with double doors to enable manoeuvring. Here, an X-Y system is best suited as it utilises the width of the room. This system can fit to another X-Y system, with the track passing through the centre of the double-door.

Specifying

When specifying, consideration should be given to the layout of the room, the track fixings and the client's needs. Hoist specialists should be involved to suggest the most suitable track layouts and configurations, while architects can also benefit from professional development sessions.

Bob Oliver is senior contracts manager and hoist specialist at Innova Care Concepts

Providing hot water safely: getting the balance right

Specifying hot water systems in healthcare environments needs to navigate the tricky balance of providing enough heat to destroy Legionella bacteria, while mitigating the risk of scalding, says Carol Armstrong of Delabie UK

Until recently, thermostatic mixing valves were installed as a matter of course in healthcare facilities to prevent scalding incidents.

However, the Health and Safety Executive's guidelines HSG274 Part 2 say "The use and fitting of TMVs should be informed by a comparative risk assessment of scalding risk versus the risk of infection from legionella."

As a result, there has been marked interest in specifying other technologies to deliver safe, temperature-controlled water.

The risk of scalding depends on the use and the user. A low-level of risk could be a habitual user who is familiar with the outlet and the type of mixer, for example, healthcare workers using a particular basin for regular hand washing.

An intermediate risk level could be hospital visitors who use the public facilities when visiting patients. Although unfamiliar with the facilities, they have no sensory or mobility issues and are able to use the washbasins safely, especially if there are visual warnings about hot water.

Pressure-balancing

Where there is high frequency usage by visitors, pressure-balancing mixers can provide an intermediate anti-scalding solution (see panel overleaf for details).

The ceramic cartridge is sensitive to changes in pressure. An internal shuttle continually adjusts to the incoming hot and cold water supply pressures to ensure a constant temperature at the outlet.

If the pressure suddenly drops at the cold inlet, the shuttle reacts immediately and the hot water flow is reduced to a trickle. Likewise, if the hot water pressure drops, cold water is reduced to a trickle.

The pressure-balancing cartridge also features a maximum temperature limiter so the visitor is protected from temperature spikes due to pressure drops or pressure differences in the system.

Thermostatic technology

HSG 274 part 2 states: "Where a scalding risk is considered significant…then type 3 TMVs [TMV3] that are pre-set and failsafe should be provided."

To fail-safe, the hot water must shut off if the cold water fails and vice versa. This is where pressure-balancing cartridges and thermostatic cells differ. The latter is able to provide a complete failsafe to TMV3 standards.

The most serious scalding risk is where the user is fully immersed in either a shower or a bath, predominantly in non-critical patients' accommodation and residents' accommodation in care homes.

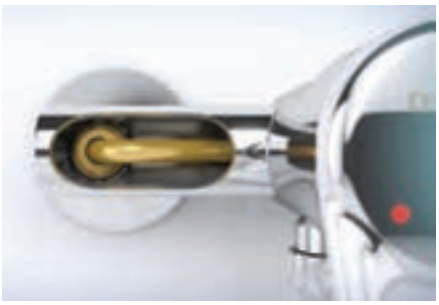
Where the scalding risk is significant – for example the very young or elderly, those with sensory loss, the infirm or significantly mentally or physically disabled people – the guidelines recommend the use of TMVs for sinks or hand washbasins.

Other considerations

A key factor in the development of Legionella bacteria is standing water between 20°C and 46°C. Pressure-balancing mixers feature a single mechanism which controls both flow and temperature. The water circulates from the inlet to the mechanism inside narrow copper tubes.

These have two benefits – standing water is minimised and water flow is accelerated. Both these factors minimise the development of biofilm, which provides shelter and a source of nutrients for bacteria.

Many mixers used in public and commercial environments are cast in brass. The moulds are made from sand and although the external surfaces are plated and polished, the interiors are rough, with niches where bacteria can adhere.



TOP
Composition of a typical pressure-balancing mixer, showing the cartridge (blue) and temperature limiter (red)

ABOVE
Narrow copper tubes minimise the development of biofilm

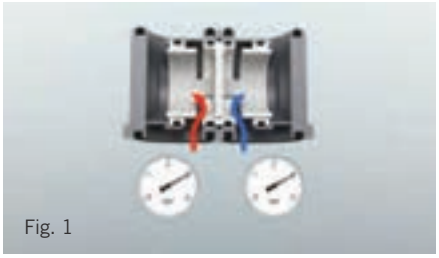


Fig. 1


Fig. 2

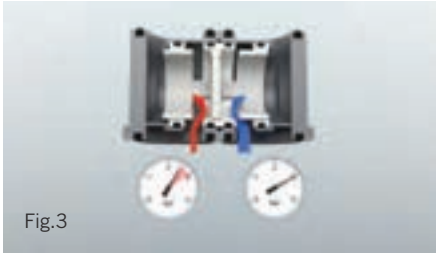


Fig.3

HOW PRESSURE-BALANCING MIXERS WORK

Figure 1 shows a ceramic cartridge where both the cold and hot water supply pressure is 3 bar, and the outlet temperature is pre-set to 41°C. If the cold water pressure drops to 2.5 bar and the hot water pressure remains at 3 bar, the higher pressure at the hot water inlet causes the shuttle to displace, restricting the hot water flow into the mixing chamber while simultaneously allowing more cold water to flow.

As a result, the mixed water at the outlet remains at 41°C (Figure 2). Similarly, if the pressure at the hot water inlet drops to 2.5 bar and the cold water pressure remains at 3 bar, the shuttle adjusts the apertures to increase the hot water and reduce cold water flow into the mixing chamber. (Figure 3).

Taps with smooth interiors have fewer niches where bacteria can adhere, significantly slowing biofilm development. Moreover, as a preventative measure, cleaning mixers in a descaling solution will further reduce biofilm build-up. If those mixers can be removed easily, they can be regularly cleaned or disinfected if a contamination episode occurs.

Advances in anti-scalding technology and infection control have led to a multitude of products that offer different solutions for patient, staff and visitor safety in healthcare environments. Certainly the technologies are not mutually exclusive and not always complex. It is possible to control Legionella and provide scalding safety for most situations and accommodate the comparative risk levels.

Carole Armstrong is the marketing & communications manager at Delabie UK

Healthy intervention

Hospitals and care homes in the UK are under tremendous strain, but architects and specifiers can help improve public health by incorporating high-quality drinking water delivery systems in designs, says Kevin Winchester of BRITA Vivreau

It's worth considering taps with self-cleaning nozzles designed to kill off bacteria

The task of hydrating hospital patients or residents in a care home is vital. When it comes to the drinking water system, the emphasis has to be on hygiene – and the consequences of ignoring it can be dire for vulnerable users.

Good hydration has been shown to have an impressive impact on health and wellbeing but it must be the correct type of hydration – helping clients to meet their duty of care.

Design process

Incorporating drinking water systems into the design process for healthcare buildings is crucial. Architects should start with a rigorous evaluation of the client's needs, the overall design of facility and the nature of the care itself. Is it critical care? How do they manage patient care, and what is their sanitisation regime?

The key question is what's the best option for the patient? Cancer patients are far more susceptible to airborne and waterborne germs and contaminants that pose a greater risk to health. While in non-critical environments, another type of system which prioritises a more person-centred approach over just hygiene could be more appropriate.

The design process should allow for both space and supply. Space is at a premium in hospitals – the risk of patients or nurses bumping into poorly located drinking water systems is a nightmare scenario, one which contravenes duty of care.

The key question is, where are the key areas that water needs to be supplied to? By considering this in the design process, clients are far better placed to ensure patients and residents are at the heart of their plans.

Product options

For chilled still water there is the standard point-of-use water dispenser or bottled water cooler, the kind you see in standard office buildings, but for healthcare environments it's often best to consider self-sanitising equipment designed for hygienically sensitive areas.

In care environments, these systems are tailor-made to combat airborne and waterborne hazards.

It's worth considering a filtered water system that constantly self-cleans the nozzle, killing bacteria, and has a filter preventing bacteria from travelling. These systems are designed to heat up the nozzle to 110°C every 90 minutes and help stop bacteria moving up the pipework into the cooler itself. Coupled with an additional 0.2 micron filter before it goes through the sanitised nozzle area and a 0.5 micron filter for the pipework coming into the back of the machine from the mains-fed water – as a result little or no bacteria travels either way.

Another aspect of the decision-making process is whether to install a centralised system. This eliminates the need to use individual drinking water dispensers at several locations in the building. As well as taking up far less space, these systems can be up to 55 per cent more energy efficient than individual dispenser units.

When it comes to boiling hot water, think about the safety, freshness and speed the water is dispensed at. A lot of healthcare providers use kettles, where time and water is wasted waiting for a full kettle to boil, or large drinking water boilers, where water loses freshness over time.

Instead, architects and specifiers should look at choosing a system which offers mains-fed, purified instant boiling hot water from one single tap with a touch sensor control, and zero splash.

Person-centred

Many healthcare providers are constantly striving to be more person-centred,

A wide range of tap control options are available to meet the needs of different environments

empowering residents and visiting family and friends.

As Jewish Care group's site facilities manager Lindsay Forrest says: "With this system we are confident it is safe for residents as there is a safety mechanism in place for the boiling hot water where you have to touch the button twice and hold, reducing the chances of burning themselves on a hot kettle."

Five minutes can be a long time in a care home and having access to instant chilled, filtered water or instant boiling water can save the extra time waiting around for a kettle to boil. Forrest comments: "It's five extra minutes a relative can spend with their mum or dad. For example, a person with dementia who is still relatively independent may want a cup of tea but after a few minutes may forget why they've boiled the kettle. With this system, they can have a hot drink instantly."

Architects' role

There are clear advantages and disadvantages that architects and specifiers should discuss with their clients. Is hygiene the sole concern or is being person-centred also important? Is a system which may be more expensive in the short-term going to provide long-term value?

Space is at a premium in hospitals – the risk of patients or nurses bumping into poorly located drinking water systems is a nightmare scenario, contravening duty of care

When taking all these factors into account, architects and specifiers are urged to seek innovations which support patient care and not to simply go with the norm.

They have a crucial role to play in educating the client and ensuring the best option for the patients and residents is chosen. Healthcare environments will be all the better for it.

Kevin Winchester is head of business development for BRITA Vivreau

Carpet is a sound choice for care environments

Catherine Helliker of Danfloor UK explains why carpets are an excellent flooring material for keeping noise and dust down and providing thermal insulation

A carefully considered interior design scheme is essential for any care environment, especially where there are residents living with dementia.

The quality of the acoustic environment is a vital component of good dementia-friendly design as noise is regarded as a health and safety issue and should not interfere with a resident's normal domestic activities including sleep and rest.

Noise is transmitted in buildings by both airborne and impact sound sources and UK Building Regulations require that both these noise types are controlled.

People need to be able to hear well in order to make sense of their environment and in order to function well as part of their quality of life. Research from Stirling University shows hearing impairment can compound feelings of isolation and frustration and these feelings contribute to behavioural disturbance.

It is essential that adaptations that simplify and clarify the acoustic environment, and reduce discomfort and auditory 'clutter,' are put in place. Good acoustics can actively contribute to ensuring that a person with dementia can communicate and remain included within their community. Belonging and interacting are highly dependent on communication, which in turn is highly dependent on hearing.

Risk of falls

In addition, as hearing is linked to balance there are greater risks of falls and this can be devastating for an elderly person. Headline-grabbing research carried out by the Royal Society for the Prevention of Accidents (RoSPA) in February 2004 showed that accidents on hard flooring had increased by over 300 per cent in the previous five years.

Carpets can provide a cushioned landing for any trips and falls and studies carried out in 1996 have shown that carpet, when compared with vinyl, can reduce injuries caused by such accidents. It has also been proven that gait, speed and step length is greater in older people walking on carpeted areas than when walking on vinyl.

UK Building Regulations stipulate that a suitable floor covering should have a weighted reduction in impact sound pressure level of not less than 17 dB when measured in accordance with EN ISO 140-8 and calculated in accordance with EN ISO 717-2.

Furthermore, Stirling University in their Dementia Design Series guide – 'Hearing, sound and the acoustic environment for people living with dementia' recommend that the design of rooms within care settings must find ways to minimise transmission of noise from one room to another and that sound impact ratings should preferably exceed British Standards.

BREEAM credits

There is increasing responsibility on the health sector to address sustainability in the procurement and management of their estates. Environmental requirements and targets, including BREEAM Healthcare and the aspiration of zero carbon public buildings by 2018, make sustainability a key priority in the design and operation of health facilities.

The BRE Environmental Assessment Method (BREEAM) is the leading and most widely used environmental assessment method for buildings. Under HEA 05 Acoustic Performance, which aims to ensure a building's acoustic performance, up to four additional credits can be awarded if impact sound insulation values exceed British Standards for multi-residential and other residential buildings (for individual bedrooms and self-contained

Carpets can provide a cushioned landing for any trips and falls

Research suggests that the insulation provided by carpet is 10 times higher than that of hard flooring, making it one of the most effective thermal insulators

dwellings). Therefore, to achieve a BREEAM Excellent rating it's beneficial to have acoustically sound rooms.

In addition to providing an acoustically sound environment, carpets have extra benefits, especially when installed within the care environment where residents may have breathing difficulties such as asthma.

Throughout the past 10 years there have been numerous studies into the use of carpet versus hard floor surfaces and what effect these two flooring solutions have on air quality. Fine dust can present a significant health hazard, especially for allergy sufferers, as particles may cause irritation when they are breathed in and enter the respiratory tract.

Many of the studies suggest that carpet retains dust particles, unlike hard surfaces where they regularly become airborne. If carpets are regularly vacuumed these dust particles – and allergens that are bound within fine dust particles – are removed from the room without causing discomfort.

Warmth and comfort

Unlike hard flooring options, carpets add a warm and welcoming feel to any room and provides a soft cushioned layer for extra underfoot comfort.

Research suggests that the insulation provided by carpet is 10 times higher than that of hard flooring, making it one of the most effective thermal insulators. Studies have also shown that the temperature felt by residents in carpeted rooms is two degrees higher than in rooms with hard flooring.

Acting as a thermal insulator, carpets improve energy consumption and have low heat conduction. It is estimated that up to 30 days of heating can be saved by installing carpets, resulting in a four to six per cent energy saving and a consequent reduction in energy costs.

Catherine Helliker is marketing manager with Danfloor UK

Taking the heat out of a tricky issue

Radiators are commonly installed in hospitals, care homes and other medical services buildings. However, as Stelrad's Chris Harvey reveals, only certain designs are really suitable for buildings used by elderly and vulnerable people

Low surface temperature (LST) radiators have been part of the heating landscape for several years now, but modern versions offer a number of new benefits.

LST radiators are key where there is a need for specialised heat emitters for safety critical environments – especially those that need to meet NHS Guidance for 'Safe hot water and surface temperature.' This includes hospitals, care and nursing homes, as well as sheltered housing, schools and nurseries.

It's a specification requirement of building designers and architects that the heat emitters in these buildings protect the young, the elderly and the vulnerable, who will live in or visit buildings such as these.

When asking whether LST radiators are needed, you only need to consider the risk of older people falling and injuring themselves on a radiator along with potential dangers from those with a visual impairment bumping into or brushing against radiators.

Some elderly people have a reduced sensitivity to high temperatures and others simply cannot react quickly enough to prevent injury from hot surfaces if they inadvertently touch and come into contact with a conventional radiator, where surface temperatures may be as high as 75°C.

Older people and those suffering injuries have an increased susceptibility to losing their balance and falling, and the possibility of these people falling and becoming trapped against a conventional radiator brings the need for LST radiators sharply into focus.

And of course, the injuries that are possible to the very young are too horrific to contemplate, so it's clear that serious burns can be caused very quickly at these temperatures and that LST radiators are the obvious response to the dangers.

Protection

Incorporating a casing that covers the radiator – providing a physical barrier between the heat emitter and the people they are designed to keep warm – makes huge sense. In the case of most LST radiators, the casing also covers the incoming pipework, making sure all the heated surfaces are concealed and that any exposed surfaces stay at a safe temperature of no more than 43°C.

In addition, LST radiators need to be designed to ensure they offer as much protection as possible to those for whom they are designed to provide heating – including ensuring rounded corners and edges to the design to avoid damage from sharp edges.

Additional benefits

Remembering that LST radiators are in the main installed in buildings to offer protection to older people, additional benefits such as safety grilles, easy to operate heating controls and even arthritic adaptors for people who are unable to grip controls easily, can be incorporated to provide a user friendly 'package' for those they seek to help.

Bearing in mind where many LST radiators are installed, it's vital that they are built to be robust and able to withstand and resist vandalism and day to day wear and tear, from being knocked into by trolleys and wheelchairs – especially in hospitals and nursing homes. With higher quality radiators, the casing is held by security fittings that are quick and easy to install.

The security fittings what is thought to be a unique seam fixing bracket system that prevents unauthorised access to the emitter accommodated inside. For additional protection, good quality radiators have an

additional long lasting, anti-bacterial paint coating, which provides an additional valuable benefit for the environments in which they are installed.

Beneficial

Installing LST radiators has certainly proved beneficial to The Ridings Care Home in Swindon, which has 32 self-contained flats catering for a mix of active elderly individuals and couples, many with 24-hour care needs.

It had been operating an ageing electric underfloor heating system, with electric immersion heaters providing hot water. It was expensive to run and needed replacing with a modern, reliable energy-efficient alternative.

A traditional wet heating system was selected, with modern gas-fired condensing boilers providing the heating source, with two additional gas boilers operating in conjunction with solar thermal and solar PV panels to preheat the cylinder and provide hot water.

But with differing levels of disability and care requirements to cater for it was important to select radiators that prevented the possibility of heat-related injury.

Ultimately, it was the decision to specify quality, high-specification LSTs that made the installation of a desirable, cost–effective wet system viable

More than 80 LST radiators were installed with additional integral remote sensing thermostatic valves to allow adjustment of room air temperature, making them highly energy efficient. They also featured an arthritic adaptor designed to make it easier for older people, who may have problems with their grip, to adjust heat levels in their rooms.

Ultimately, it was the decision to specify quality, high-specification LSTs that made the installation of a desirable, cost–effective wet system viable.

Chris Harvey is marketing manager for Stelrad

Another smart product range by Consort!

Consort Claudgen has introduced an improved range of slimline low surface temperature fan heaters with intelligent fan control. Each PLSTi heater is equipped with intelligent fan control which detects the temperature in the environment and automatically adjusts its fan speed to quickly achieve a warm airflow temperature. This allows the heater to immediately blow hot air, even when initially powered on in a very cold room. Enhanced with one of the latest low energy consumption EC motors, these smart heaters also operate on a very low noise level, are more durable with a strengthened grille and splash proof.

sales@consortepl.com

One operation to open multiple locks

Keeping patients and staff safe within mental health and acute health facilities remains a key priority and to simplify locking procedures a leading designer and manufacturer of anti-ligature products has created a new addition to its range of removable door stops, which is set to revolutionise security. **Intastop Ltd**, has launched its Secura™ Stop Multilock Removable Door Stop where one operation opens multiple locks, to particularly support vulnerable patients in the mental health sector and those that care for them.

sales@intastop.com

Flooring helps to improve acoustics

High performance **Polyflor** vinyl flooring designed to provide dual sustainable slip resistance and improved acoustic performance within a building was recently installed at Downing Drive Surgery. Polysafe Wood fx Acoustix PUR in American Oak was fitted in the surgery's reception and circulation areas while Polysafe Standard PUR in Ash Grey was fitted in all the consulting rooms. Suitable for demanding, high traffic commercial environments like in this healthcare facility, Polysafe Wood fx Acoustix floorcovering provides an impact sound reduction level of 19dB thanks to its integrated foam backing.

0161 767 1111 www.polyflor.com

New Secure Armchair

The Orleton capped armchair from **Tough Furniture** is neatly proportioned and ergonomically designed for comfort, and is fully plywood lined to all faces inside and out of the frame. The frame itself features solid beech rails which are glued, screwed and dowled in construction. The fabric and upholstery, with removable back and seat cushions, is designed and cut to minimise the number of seams with all staples concealed within the body of the chair. The Orleton is available in a wide range of severe contract vinyl and fabric options to crib 5 or crib 7.

01588 674340 www.toughfurniture.com

Established reputation for quality

Wardray Premise Ltd is a 4th generation, family run, British manufacturer which has been trading for more than 100 years. They are accredited to ISO9001:2008 and ISO13485:2012, with an established reputation for quality and reliability. They are based in the UK with two manufacturing facilities. The Company's portfolio includes: Structural radiation shielding products for medical diagnostic and radiotherapy applications; Accessory products and solutions for X-ray and MRI environments; Industrial shielding for non-destructive testing (NDT) facilities.

sales@wardray-premise.com

Clarke's Safety Mirrors Ltd

Clarke's Safety Mirrors Ltd is one of the UK's leading manufacturers of safety mirrors. Made from impact resistant Acrylic or unbreakable Polycarbonate and Stainless Steel, these mirrors have a superb reflection and are widely used in the Educational, Mental Health and Correctional environments. In fact, any environment where public safety is of paramount importance. The company also supply safety backed glass mirrors to BS6206 and impact resistant glass mirrors in stunning aluminium frames throughout the UK. Its experienced sales team would be pleased to advise on any existing or future projects.

enquiries@csmirrors.co.uk

As expectations mount for the healthcare sector, FunderMax continues to meet the challenge

Architecture's role in the healing process

Style and substance are crucial in creating the perfect healthcare environment.

To be at the forefront of design and at the same time, meet the stringent requirements of the healthcare sector, presents a tremendous challenge for manufacturers and planners.

In addition to their primary function - treating sick and injured people - hospitals also need to operate like a business, by becoming more and more efficient, environmentally friendly, financially aware and generally leaner.

The current trend in interior design (with an emphasis on texture and distinctive materials) demands a careful and extremely skilful implementation, particularly for the hospital sector. The specific hygiene needs also requires a high degree of creativity and intuition. Boards with specially developed surfaces which blend design, durability and practicality, offer a great solution for these challenges.

Max Resistance²: The Ultimate Lab Grade Compact – Now also available as a HPL (1mm)

Delivering extreme resistance to even the most aggressive chemicals and daily lab challenges, Max Resistance² is ideal for creating contemporary, cost effective hospital environments. Purpose designed to meet the toughest challenges, this compact laminate offers absolute dependability and immeasurable benefits. Fully enclosed and joint free, it's also permanently resistant to moisture.

Paul Hughes, Director of Sales UK, talks about the extended portfolio. 'We're really pleased with this latest introduction to the Max Resistance² line up, as it truly opens up design possibilities for the sector. As far as I'm aware no-one else on the market is offering anything like this, so it marks a step change for the industry, and once again FunderMax is leading the way.'


Wilhelmine Hospital © Kurt Kuball

Ideal for all kinds of labs, it really is the best in its class. With its double cured urethane acrylic coating it not only offers exceptional chemical resistance, it's also easy to clean and maintain and is completely unaffected by the chemicals it comes into contact with.

A well functioning care system requires carefully thought out solutions. Today, it's the interplay between technology, information and practicality which has become the key focus. As architect Thomas Wawris (Meissl Architects, Vienna) asserts: "A further challenge for the planner is how to create a modern, effective workplace with highly technical equipment in the background - This needs to become the common denominator within a new central idea." Structurally, well thought-out solutions, are integral to the success in creating inspirational, dependable interior designs for the hospital and medical sectors.

The goal is recovery

"As architects, we advocate a move away from the more institutional hospital towards a more inspirational and holistic healthcare environment - A building which promotes the recovery and treatment of patients within a pleasant atmosphere, where family members and friends can aid the process," Thomas Wawris continues.

Good architecture & well-being go hand-in-hand

In recent years so much research has been conducted into the importance of 'good architecture' and its effects on well-being.' Intelligent architecture and design can help to ensure a positive prognosis for the future of healthcare by creating buildings that are good for body and mind. In no scenario is this more important than the provision of treatment or support for those dealing with illness or trauma.'

Applications

Ideal for all situations where the absolute cleanliness of a highly resistant surface is demanded, Max Resistance² delivers.
Find out more:


Wilhelmine Hospital © Kurt Kuball

07946 545733

samantha.palmer@fundermax.biz

www.fundermax.at/en/interior/compact-boards/detail/max-resistance.html

www.architonic.com/en/story/alyn-griffiths-support-structures-architecture-s-role-in-the-healing-process/7000572

Delivering safe water in public places

Water, essential for hygiene, can also be a source of infection if its quality is not controlled. The Health and Safety Executive (HSE) recommend that hot and cold water systems in all buildings open to the public should be monitored for Legionella, including hotels, student accommodation, campsites etc., and not just healthcare facilities.

The HSE Approved Code of Practice and Guidance document L8 states that duty holders should: identify and assess sources of risk of exposure to Legionella; put in place precautions to prevent or control that risk; and monitor these measures to ensure that they remain effective. If contamination occurs, point-of-use filters should be used as a temporary control measure until a permanent, safe solution is put in place.

Now fully WRAS approved, DELABIE's range of anti-bacterial BIOFIL point-of-use filters can provide peace of mind if an outbreak is identified. Featuring innovative, hollow-fibre membrane technology to micro-filter the water, BIOFIL filters have a larger filtration surface for increased volumes of water, better resistance to clogging, and a very compact filter.

BIOFIL range of anti-bacterial filters

BIOFIL filters have been subjected to the bacterial retention test in accordance with ASTM F838, and they have a sterilising grade of 0.1µm absolute-rated.

The range consists of sterile and non-sterile antibacterial cartridges and shower heads as well as spout filters, the only ones available on the market. The spouts are also available in sterile and non-sterile versions and can be fitted to all DELABIE's mixers with removable BIOCLIP spouts. All DELABIE's filters have a maximum lifespan of 62 days.

Securitherm mixer with cartridge filter

01491 824449 www.delabie.co.uk

Healthier door closing

Powermatic concealed door closers from **Samuel Heath** are becoming increasingly popular with specifiers, estates managers and clinicians throughout the healthcare sector thanks to the many health, safety and hygiene benefits that they deliver.

Powermatic door closers are totally concealed when the door is closed and offer few surfaces on which dust and potentially harmful detritus can accumulate. Their low mounting height also simplifies inspection and cleaning procedures.

British designed and manufactured, Powermatic door closers are ideal for anti-ligature and anti-barricade applications in mental health facilities. Their concealment also helps to create the less institutionalised, more therapeutic environment valued by clinicians.

Finally, the door closers are less likely to be vandalised, significantly enhancing reliability of the closer and fire door, and reducing repair and maintenance costs.

0121 766 4200 www.concealeddoorclosers.com

Stanley Dura-Care doors for Spire Hartswood Hospital

Five Stanley Dura-Care 7500 telescopic sliding doors have been installed by **Axis Automatic Entrance Systems** at the Spire Hartswood Private Hospital in Brentwood Essex. Halliday Meecham Architects were looking to replace timber doors on the five patient 'pods' used in the recovery area for day-case procedures. The previous doors restricted access for moving beds in and out of the rooms and also created a very closed and detached environment. While researching alternatives they found the Stanley Dura-Care door range featured on the Axis Automatic Entrance Systems website. The fully glazed doors create a much brighter and attractive ambience in the recovery rooms and the breakout facility makes moving beds around much easier. The Stanley Dura-Care range is designed to meet the specific needs of hospital intensive and cardiac care units (ICU/CCU). They offer a selection of sliding, swing, folding and bi-folding door configurations and have all been designed to maximise clear space openings. Project Manager Kevin Hill of M&O Building Contractors was also impressed with the service provided by Axis, particularly the way problems were overcome.

01604 212500 www.axisautomatic.com

Kemperol cures roof ailments at Poole Hospital

Kemper System's Kemperol 2K-PUR solvent-free and odourless water-proofing membrane has been used to refurbish the roof of Poole Hospital's outpatient department, ensuring that the project avoided any odours that could become a nuisance to staff and patients in the unit or the surrounding wards.

The cold-applied liquid membrane was installed by contractor, Hi Tec Roof Systems, overlaying the existing single ply membrane on the 480m² roof.

Despite regular repairs to the existing roof, the single ply membrane had failed due to a number of factors, including the loosening of mechanical fixings, damage caused by seagulls and holes in the membrane caused by cigarette butts discarded from above.

The Kemperol 2K-PUR membrane was selected for the scheme to ensure minimum disruption at the hospital as it is completely odourless throughout the installation process, required no strip out of the existing roof

substrate, no hot works and no wait time between applications of resin.

Explains Steve Mulcock from Hi Tec Roof Systems: "The outpatient department at Poole Hospital is based around a central courtyard and surrounded on three sides by seven storeys containing wards. It was vital, therefore, that we used a system that would minimise disruption while providing a durable solution. The cold-applied liquid system also helped to ensure we could handle the awkward shapes and details of the roof's quadrangle layout."

Hi Tec Roof Systems cleaned and prepared the roof, applying a fungicidal wash to completely remove any contaminants before applying a Kempertec primer. The Kemperol 2K-PUR resin was then applied in a single wet-on-wet process in which the resin is first applied to the substrate; reinforcement fleece is then laid directly on to the wet resin, immediately followed by more resin on top. This ensures complete saturation of the reinforcement fleece. Once cured the resin forms a seamless, elastomeric waterproof membrane that cannot delaminate, is UV stable, and bonds directly to the substrate.

Finally, a non-slip maintenance walkway was created on the completed membrane using tiles fabricated from recycles tyres.

enquiries@kempersystem.co.uk
www.kempersystem.co.uk

Lifting quality of complex needs care

Catalyst Choices, a social enterprise company, has extended and refurbished its Woodleigh residential care home to provide bespoke short breaks and residential care for people with learning difficulties. A key element of the new facility is a fully accessible bathroom – complete with a **Clos-o-Mat** Lima Lift height adjustable wash/dry toilet. Clos-o-Mat wash/dry toilets have in-built douching and drying, so there is no need to wipe clean – or be wiped clean- after toileting; the whole process is automatic, and triggered simply by remaining seated and triggering the flush process.

0161 969 1199 www.clos-o-mat.com

Radiators for safety critical environments

Stelrad's range of Low Surface Temperature radiators are the UK's favourite range of LSTs offering a huge variety of sizes, availability across the sizes from stock and a quality of product that is unmatched. They all meet the NHS Guidance for 'safe hot water and surface temperature' and are finished with antibacterial paint as standard. They can be found up and down the country in hospitals, doctors and dentists surgeries as well as in nursing and care homes, nurseries, schools and colleges, and sheltered housing developments.

0870 849 8056 www.stelrad.com

New anti-ligature radiator guard offers extra practicality and safety

A new anti-ligature radiator guard that allows easy internal access while overcoming the safety issues raised by installation on uneven walls, has just been launched by **Contour**, a leading anti-ligature radiators and guards manufacturer. The DeepClean Extra IP3x anti-ligature radiator guard has been specifically developed for the needs of mental health service providers, and delivers both extra practicality and safety. Gaps between a radiator guard and wall can provide potential ligature fixture points. Traditionally these are filled using an anti-pick mastic however this can stop access to inside the guards for cleaning, unless the mastic is cut way. By using an extra frame that sits between the wall and guard door, the DeepClean Extra's door can be unlocked and opened easily. Gaps between the guard frame and a wall can still be eliminated with anti-pick mastic, but without impeding operation of the door. The DeepClean Extra comes as standard with a grille design using 2mm holes punched directly into the guard case. The grille is compliant with the requirements set out in a Home Office design guide, making it ideal for both secure mental health and custodial facilities.

01952 290498 www.contourcasings.co.uk

Grundfos at the heart of the operation

Hospitals, by their nature, must remain operational 24/7. This means having a reliable, effective and efficient pump system that will give them the assurance they need to maintain and deliver their heating, cooling, water supply and water boosting requirements. With this in mind a hospital Trust, who have responsibility for three hospital sites, asked **Grundfos Pumps** to undertake an Energy Audit to ascertain how their efficiency and energy use could be improved. Grundfos replaced 90+ obsolete pumps with various members of its pump families that support the hospitals HVAC systems. The Trust has been very pleased with the outcome.

01525 850000 www.grundfos.co.uk

A flexible external flooring solution

Levato Mono Porcelain paver system from **The Deck Tile Co. Ltd** is a flexible external flooring solution for the design conscious. The system enables fast, cost effective installation over most surfaces including; single ply membranes, roofing felt and other delicate waterproofing systems. The porcelain pavers are also available in larger formats, are highly abrasion and stain resistant, fire and frost proof and achieve R11 slip resistance. With all it's features such as height adjustable and slope correcting supports, high load bearing and only 45kgs per m^2, over 40 finishes available.

0118 391 4120 www.thedecktileco.co.uk

Naco – Built with you in mind

Naco's Vengen[28] double glazed louvres windows offer a great solution for both natural and passive smoke ventilation. The Vengen[28] is commonly found in many of today's modern retirement homes, providing a healthy, safe and secure environment for residents. Manufactured in the UK using high quality materials, this doubled-glazed louvre window has been subject to a range of independent tests. Built with you in mind the Vengen[28] is available in bespoke sizes with an extensive range of colours and finishes, it's both fit for purpose and fits to any building requirements.

01746 761921 www.naco.co.uk

The complete solution for healthcare

Gourock Municipal Building is a Grade C listed landmark which sits in a prominent position on the banks of the River Clyde. Richard Robb Architects were part of an ambitious renovation project for the building, which is now home to Weir & McClafferty Dental Care. **Knauf AMF** ceilings were installed throughout to provide a clean, minimalist aesthetic for a professional working environment that meets stringent hygiene criteria. Thermofon Hygena ceilings were installed in the surgery rooms to meet the exacting hygiene conditions demanded for healthcare facilities.

0191 518 8600 www.knaufamf.com

Securefast Digital locks, just what the doctor ordered for new Super Surgery

The latest **Securefast** SBL365.SL/91 Mechanical Digital Lock with Sash Lock has been specified throughout the new £7.5 million super-surgery occupying 2,200m^2 over three storeys on the old hospital site in Barton Road Tewkesbury. The new centre will be called The Devereux Centre after the late Tewkesbury doctor Dr William Charles Devereux. The new site provides twice the space of the previous buildings in order to house meeting rooms, a staff room, medical records, additional parking facilities and engineering plant, creating a one-stop primary care facility for the people of Tewksbury and the surrounding area, with sufficient space for a minor operation suite and pharmacy. Selected for its performance and reliability, the SBL365.SL/91 Mechanical Digital Lock with Sash Lock was chosen so that rooms can be entered with a code without having to carry fobs, cards or keys, with the facility that a key holder could lock the door by key if they wish to close off that particular room. The Securefast Mechanical Digital Lock has been tested to 200,000 cycles and fire rated making the product ideal for a cost effective access control system without the heavy investments.

01543 501605 www.securefast.co.uk

New facilities at Honiton Surgery – "Well lit"

Luceco has recently provided an LED lighting solution to meet the needs of visitors and staff at Honiton Surgery. The new extension offers six new consulting rooms, treatment, waiting and meeting rooms. IQ Engineering Ltd, provided consultancy services for the building works, with the installation being carried out by REF Electrics (Taunton) Ltd. Providing instant, safe lighting and being quick and easy to install, LuxPanel offers up to 50,000 hours working life with no maintenance or re-lamping requirements, benefitting the environment in terms of energy efficiency and no lamp disposal. Platinum LED Downlights were also installed, offering running cost savings of up to 80 per cent. Designed to retrofit ceiling cut outs of common compact fluorescent downlights, the Platinum features easy fit positive locating swing out tabs and interchangeable bezel options. Ideal for use with sensors and lighting controls, the downlight has dimmable and emergency versions available. With cost effective, energy saving LED luminaires from Luceco, the patients and staff should enjoy the benefits of a "well lit" environment in which to visit and work at Honiton Surgery.

01952 238100 www.luceco.uk

Clarke's Safety Mirrors

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Framed

Unframed

LIGATURE RESISTANT POLYCARBONATE OBSERVATION MIRRORS

Quarter – 90 Deg

Half – 180 Deg

Full – 360 Deg

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www.csmirrors.co.uk

01952 605557

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