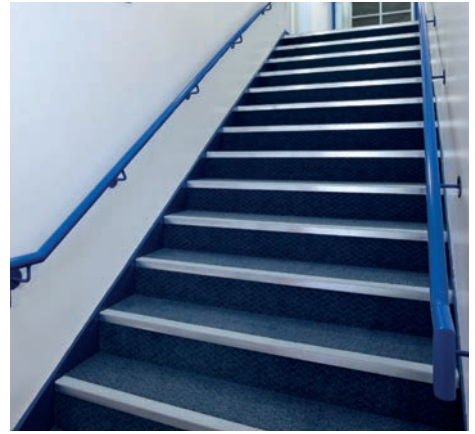


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Design for health & social care supplement

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FROM THE EDITOR



Sometimes, the term ‘healthcare,’ like many other conjoined business terms, can itself be part of the problem. The problem being that the corporatisation of such services that rely on embodying the crucial, tailored ‘care’ part of the term in order to be successful for patients may end up being too homogenised as a result.

‘Healthcare’ as an industry, brings health together with care, which in itself is of course not a major downside, in fact the care should always reflect the health of a patient, and looking after their health necessarily involves a caring approach. However when it comes to design, simply turning out ‘healthcare’ buildings according to a manual risks treating them with a cookie cutter approach, such as you could risk by simply bandying around terms like ‘wellness’ and ‘stakeholder’ without a discrete focus on at least smaller groupings’ needs, if not absolute individual customisation.

Of course there needs to be some systematisation, in designing a hospital with 500 beds in it. However when there are probably innumerable examples of designers performing gymnastics to please the often conflicting demands of clinical teams, it would be good to hope they will remain able to try and do the same for patients.

To use another slightly clunky business term, more and more design thinkers are beginning to think about how to ‘leverage’ measurement of the effect of buildings on healthcare users in order to introduce more patient-centred environments. One example, raised by Kelly Watson, ex-Arup and now of consultancy Hatch Regeneris, (in a round table debate report on page 7 of this supplement), is how professionals are looking at measuring ‘social value’ – in line with the 2013 Social Value Act requiring public bodies to seek wider social, economic and environmental benefits from projects. This is one way in which a ‘one-size fits all’ approach might be held at bay, with the focus always needing to be on a distinct set of benefits – benefits specific to their context.

In the UK, although remaining free at the point of delivery, NHS care has been forced to behave as a business, with a network of commissioning bodies theoretically picking from a list of ‘providers,’ in other words, hospitals. However whether this has worked to provide more focused, tailored, or good quality facilities is debatable – in reality, contracts don’t tend to move much, it’s probably too complicated apart from anything else. And it’s certainly true that PFI/PPP has tended to replicate some of the older, district general hospitals – which have their pros and cons.

Do we need a much more incisive focus on measuring real return on investment from projects – not just health outcomes, but something more all-encompassing – to enable the more unusual, and yet fit for purpose solutions to emerge? Otherwise we risk creating more of the same, which hasn’t exactly created the perfect system.

James Parker
Editor

**ON THE COVER...**

Samson Assuta Ashdod University Hospital is the first public healthcare facility to be completed in 40 years in Israel. It combines a state of the art, wellness-oriented healthcare facility with a design offering a high degree of resilience against attacks. For the full report on this project, go to page 12
Cover Image © Itay Sikolski

DEMENTIA

TODD Architects completes dementia 'village' in Newtonabbey, NI

TODD Architects have completed The Croft, a state-of-the-art supported living development specifically designed for people living with early stage dementia in Northern Ireland. The architects worked with Choice Housing, the Northern Health and Social Care Trust and the NI Executive to develop and deliver the bespoke scheme located in the Abbots Cross area of Newtownabbey. The 24 newbuild self-contained apartments have been arranged as a 'village,' encouraging residents to follow a "conventional life pattern, designed for their safety, therapy, wellbeing and ease of accessibility," said the architects.

The design "surpasses current standards for supported housing and dementia care, setting a new precedent of quality, enabling people with a care need to continue to live independently in the community," with the completed building providing a bright, secure and pleasant place in which to live.

The Croft residential arrangement is intended to function as a village community, containing a central social hub where communal facilities are located. The hub is linked via four internal street branches to clusters of six apartments or 'communities', each with their own shared social spaces and benefitting from shared private road access.

The architecture is modern while "domestically familiar in scale," and widely accessible. The scheme design is aimed to combat any stigma associated with supported living and dementia healthcare, providing excellent facilities and a welcoming environment, which is safe, comfortable, and attractive. There are three different types of apartment, which vary in size and layout depending on the resident's needs.

All the apartments have been designed to Lifetime Home Standards, with colour incorporated to aid wayfinding. Each apartment has its own external front door, allowing for independent access. Visitors not accessing the apartments directly can enter the building via the easily identified



reception space. A shared communal lounge has been located next to this reception area, close to the staff zone behind.

The scheme offers a "durable, easily maintained and environmentally friendly solution," providing a sense of autonomy for residents, with controls for optimum lighting and ventilation and excellent acoustics for privacy and dignity. A warden call system has been installed in the communal area and apartments.

The landscaping has been carefully considered to allow for accessibility and limited maintenance. The courtyards have been positioned between apartment clusters, offering each apartment direct access to the landscaped gardens and spaces.

The main entrance faces the central courtyard and is linked to each cluster of apartments and gardens via a main internal street. Entrance and admissions offer a "generous and easily identifiable reception space that optimises natural daylight and offers garden panoramas." The shared

communal break-out facilities and amenity spaces are located along the main internal street to encourage interaction to take place between residents.

The design incorporates a great deal of transparency with its glazed internal walkways and meeting alcoves. These offer external views, generous light penetration, clear wayfinding and allow for effective observation.

The apartment clusters are simple in composition and have been designed to be domestic in both scale and character. These residential blocks are finished externally in buff tumbled brick and painted render with colourful canopies signifying the front door.

The communal block is much larger in scale, with the main entrance emphasised by an oversailing mono-pitch roof supported by an eight metre-high column painted out in bright yellow. The building "sits comfortably on the site and takes due consideration of the adjoining and neighbouring properties."



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The value of good healthcare design

Tasked to deliver more wellbeing in healthcare facilities, designers are looking to harness data on the 'social value' benefits of buildings to drive better outcomes. This was a key focus for a recent industry panel session, as James Parker reports

A panel session staged recently by automatic door systems manufacturer GEZE saw healthcare design thought leaders looking at how the scene is changing, and how social value as well as wellness is moving up the agenda.

The panel consisted of Anis Abou-Zaki, partner, Environmental Design and Sustainability at Foster + Partners, Tim Whitley, Building Services Engineering director at Arup Associates, Kelly Watson, senior consultant at Hatch Regeneris, and Will MacDonald, London regional director at Aecom and a facade engineering specialist. Chairing was Karen Sum, GEZE's head of global account management.

Among a variety of key themes covered was the concept of 'healing architecture,' and how it can be achieved in the UK. Research studies have shown that healthcare buildings designed with 'people-centric' approaches in mind can have a positive effect on recuperation and recovery, as well as general health and wellbeing of users. The discussion, held on a boat moored on the Thames, was fittingly titled 'Changing Tides in Healthcare'. A key subject for debate was how technology and data on the effect of buildings on users is being used more actively to show 'social value' and how this will form part of business cases for future facilities.

While looking at the opportunities, and examples of success however, panellists didn't shy away from tackling the obstacles remaining to creating holistic facilities.

Wellbeing in new settings

Karen Sum opened the discussion, saying the industry and the wider care sector "there was an increasing focus on wellness in many aspects of the economy", but there was a "debate as to whether it should be seen as the same as healthcare."

She also speculated as to whether we are "going to see a wider range of mixed facilities, as a lot more healthcare can be done at home," and said that return on investment in facilities was a subject increasingly in focus



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for a cash-strapped healthcare sector.

Will MacDonald was critical of recent funding vehicles such as PFI, saying "we are having to pay for a lot of mistakes we've made in the past," to the extent that "we are not giving a lot of benefit in today's market."

Tim Whitley said the industry "was at a turning point," with wellbeing "high on the agenda in every sector," however adding that "the healthcare sector needs to catch up." He said: "In the past, a lot of healthcare design was codified, standard solutions, and they've missed the softer side."

He cited Maggie's Centres as exemplifying human-centred design, although "niche," and that the impact of "centres that are

The Social Value Act is a really interesting driver for adding value to projects

Kelly Watson, Hatch Regeneris

completely focused around individuals' experience, which affects wellbeing outcomes, is really significant." He added: "It's a shame that some of the larger schemes don't at the moment have the opportunity to



© Richard Wakefield

incorporate as much of that as they could.”

Anis Abou-Zaki told the audience that Fosters + Partners was experiencing a “push” for wellbeing among users, but also staff and visitors, “at all scales.” He said that an increasingly ‘human’ focus in healthcare was backed by evidence: “There have been a lot of studies on impact of design on health and wellbeing in patients, but the challenge is how we combine that with science, and that will include not only environmental quality but things like HVAC and cladding systems.” Whitley added that there was a tendency to over-service healthcare facilities: “We’ve got operating theatres, therefore we’ll comfort cool the entire building.”

In answer to a point from the chair on the “challenge of the sheer number of stakeholders in healthcare design,” Kelly Watson said that while there is a trend for more “social spaces” in healthcare, these need to cater for “a wide variety of different users, from patients to staff to visitors.” She added: “Understanding how they are designed and fit with other functions is really important to getting the most of the end user experience.”

Watson cited a further trend presenting the challenge to “pull certain services out of larger developments into smaller, more ‘consumer-focused’ spaces,” such as wellbeing spaces within mixed-use developments, or outpatient services in the community. She said these could reduce anxiety for users, and be promoted as social spaces which add to community cohesion: a “challenging as well

as exciting” opportunity.

Tim Whitley said that the carbon agenda will increase the necessity for retrofitting existing buildings, and this was a “significant opportunity” to achieve other benefits: “when you retrofit for carbon, you can retrofit to improve wellbeing and functionality.” He added however that it was “tougher – you are working in a live environment.”

Counting the cost

Will MacDonald told the audience that while the NHS’ budget was only increasing 1 per cent year on year, its costs are increasing by 3 per cent. He said as a result hospital projects “push the cost too much at an early stage, and we don’t always get some of the good qualities we’d want.”

Tim Whitley said: “There is a complete disconnect between capex and opex costs; if we looked at them together we could make real progress. You can have as many early conversations as you want, but it always comes down to a capex number; there’s always significant value engineering.” He added: “As architects and engineers we know what can save significant costs long term, but also provide healthier, better environments, but so often that’s lost along the way.”

Anis commented that healthcare “is facing a big problem of staff retention, so focusing on providing a design people enjoy is becoming key.” Where it comes to the cost of providing it, he said “there should be directions from the Government, because cost is one side, and what we are

doing for the people is another, so we need the right balance.”

Social value

According to Tim Whitley, one answer to trying to drive better quality in the face of continuing cost pressures might be to work within the framework of legislation on ‘social value.’ If you look at the legislation, it’s a real opportunity in terms of how things can be measured by social value, because it’s quantifying stuff in a way people can understand.” He added: “We have to find new metrics to show it’s not just about cost, it’s about value, and positive outcomes.”

Kelly Watson added: “Current thinking about ‘value’ tends to be quite construction supply chain-focused, such as apprenticeships. The Social Value Act is a really interesting driver for adding value through the asset you’re building; what does it do over the long term for the end users and staff, and equally for the local community.” The Act will mean the “added value a new asset will pay back over time will be really key to making the business case,” she said, adding that community initiatives could be part of the methods to add value over time.

Smart buildings was another topic covered in the wide-ranging debate, with Tim Whitley saying that the concept had evolved from “automating everything” to a building that “uses a BMS to give as much control to users as possible while maintaining optimum efficiency.” He said that integrating wearable and personal tech would be an increasing feature in the future in helping users control their space. The panellists agreed that collecting data on users’ experience could usefully feed into post-occupancy evaluation to help show whether what was designed works in practice, and a new British Standard in this area would be a key driver in future.

Tim Whitley concluded that there was a need to avoid a purely codified approach and “going to the lowest common denominator,” in achieving people-focused healthcare design. “It’s of no use if people don’t feel their wellbeing has been improved, and that’s the bit that’s missing.”

He added: “Unfortunately our procurement routes and the way we focus on capex mean that gets lost.” A further problem was that: “Too many buildings are designed from the outside in; you have to create a mass of the building to show to the planners, and it doesn’t matter what’s happening inside. If we want human centred-design, we have to be focusing on the people and designing from the inside out.”

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COMMENT

The future is already here

Architect Paul Mercer discusses how designers and planners can learn from the past, as they contemplate how to adapt to the future of healthcare

Recently published, the 2018 Annual Report of the Chief Medical Officer is subtitled 'Health 2040 – Better health within reach'. This 280-page document, overseen by Dame Sally Davies, with contributions from numerous health visionaries, explores potential health and care provision in 20 years' time.

Early on, the report suggests that much of what will be of relevance then is available now. From Prof Davies Report, "The management writer Peter Drucker once noted that the best way to predict the future is to look around you."

For designers and planners of healthcare facilities, this might come as a relief. The NHS in England is currently experiencing further organisational change as Primary Care Networks, STPs and other configurations move goalposts again. But these changes are irrelevant to a future in 2040.

Looking backwards can be valuable but beware dwelling on the historical. There's a place for post-occupancy evaluation – what happened; did it all work out; what can we learn? Looking forwards armed with current best practice and systems will equip our newest facilities best.

But best practice is often hard to pin down. Healthcare designers and planners are often under pressure to deliver quickly. Many clients are as transient as their organisational changes – and the temptation to repeat previous design models is pervasive.

Healthcare designers and planners should be visionaries, understanding the present and future of health facility design, helping clients envision well beyond the couple of years it takes to build and open something new. This presumes that designers and planners have knowledge and skills to develop that narrative and, sadly, this is not always the case.

So, designers and planners need to up their game. To be the forward thinkers in times of austerity and short-termism is a tough call but keeping on top of what is happening across nations and internationally is vital. To paraphrase Peter Drucker – look carefully at what is happening now (best practice) and devise healthcare environments that enable this.

Led by technology

Look around you – what do you see? Look for the positive, the innovative, the unexpected. We have a huge amount of clever tech, from big surgical and diagnostic to tiny personalised and even microscopic. Common factors with all of this tech are improved

outcomes and better lives for people – often remotely from medics and nurses.

However, it is not practical to conduct all consultations and treatment remotely. It is well understood that unwell people prefer to be at home. It is also well understood that face to face consultations should be as local as possible, whether at a health centre or hospital.

As health centres and hospitals begin to adopt new tech, so will people at home. Something as simple as a telephone conversation between patient and GP is now much more common: video or Skype consultations are being trialled, and personal and wearable monitors are proving effective.

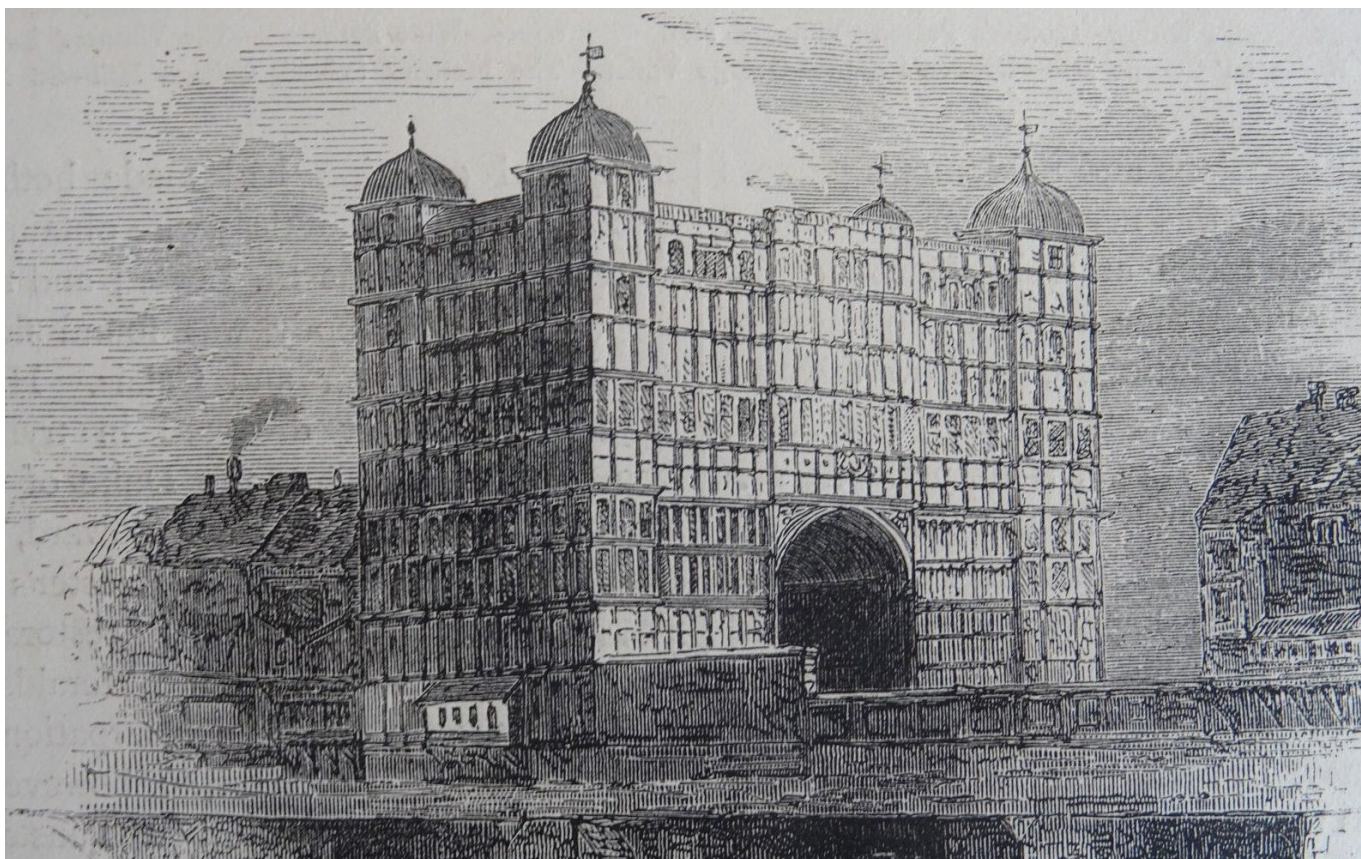
For designers and planners, there are implications not only in considering increasingly widespread tech but also the probability that what happens in community health buildings will change radically.

There will inevitably be a receptionists' desk and waiting room, but beyond these, a very wide range of facilities and professionals could be installed: from GPs, nurses, therapists and counsellors – much as now – to healthy food prep and cafe, exercise and yoga, voice coaching (aids breathing and lung function), discussion groups, reading groups, knitting groups, gardening and so on.



INNOVATION

Bromley by Bow Centre – a wider than normal range of wellbeing activities



These are all acknowledged to aid better physical and mental health. In the spirit of the future being already here – for example, the Bromley by Bow Centre has been offering many non-medical but highly beneficial health and wellbeing activities for some years.

What are the implications for designers and planners? Three answers – location, space and flexibility. Technology will never fully surpass the experience of meeting other people, whether for health reasons, or doing something they enjoy. That has to happen within a local community, so locating community health facilities appropriately is vital, with proximity to other communal functions such as shopping, leisure and learning/libraries.

As town centres suffer decline, there should be opportunities to make appropriate interventions by health and care bodies, working with social care and health promotion organisations and also charities and support groups.

Over time, as centres begin to flourish, they will need space to grow – and this is sometimes a challenge in town centres and urban environments. But availability of a garden as well as potential for extending the buildings should be considered as part of location.

Flexibility to morph as services change can be a challenge but a good starting point is the suite of spaces set out in guidance HBN 11-01. This approach may appear rather modularised, and suggest formulaic built formats. It is tempting to assume that ‘modular’ is the same as ‘prefabricated’ – or using preferred terminology, off-site construction.

Many health facilities are peppered with sad, grey sheds, serving as additional space for anything from offices to inpatient wards. These are inexpensive prefabricated buildings and are generally

OFFSITE PIONEER

Nonsuch House, assembled on the original London Bridge in 1579, was thought to be the earliest known building constructed offsite

Looking backwards can be valuable, but beware dwelling on the historical; there's a place for post-occupancy evaluation – did it work out, what can we learn?

unappealing – but don't be afraid of modular building when well considered and crafted. These techniques have been around for centuries – the earliest known off-site building was Nonsuch House, completed on the old London Bridge in 1579, having been prefabricated in Holland and shipped to England.

So we can learn from the past as we contemplate the future – which is probably already here if we know where to look. A full reading of the 2018 Davies report should be required for anyone involved in thinking about the future of healthcare in 40 years' time. If there is one limitation to Dame Sally's work, there is no mention in all 280 pages of how the health estate might evolve.

Paul Mercer is a former director of Tangram Architects, and is a member of the Architecture and Design of the Built Environment Technical Platform at the Institute of Healthcare Engineering & Estate Management (IHEEM)



**BUILDING
PROJECTS**
**SAMSON ASSUTA ASHDOD UNIVERSITY HOSPITAL
ISRAEL**

Citadel of care

A new hospital in a sensitive location in Israel combines a state of the art, wellness-oriented healthcare facility with a design for resilience against attacks. Roseanne Field reports

Situated in Ashdod, a large city in southern Israel, the Samson Assuta Ashdod University Hospital is the first public healthcare facility Israel has seen completed in 40 years.

Ashdod's location just 25 km north of the Gaza Strip means that it's also a potential target for long-range attacks. As a result, the hospital has been designed to be able to continue operation even under rocket fire.

Despite this threat, the population has grown quickly in recent years, with increasing levels of immigration, making Ashdod the fastest growing city in Israel. A major healthcare facility, and one which included an A&E, was desperately required. "There were 300,000 people having to travel 40 minutes or more to get to a hospital," explains Davide Macullo, founder of the Swiss-based architectural practice which bears his name. "It was not possible anymore." The hospital has been planned to serve half a million residents of the city as well as the surrounding region.

The practice was appointed by client Assuta, a subsidiary company of Maccabi Group. They visited another project the architects had worked on – Vimercate Hospital, just outside Milan – and were reportedly "excited" by what they saw. The practice had also worked on various 'health and wellness' hotels.

Given its location, and being the first project of its type built in the country for decades, this project held a lot of significance. "Of course, there were a lot of expectations," says Macullo. "The team that had been appointed for the construction were under pressure, from a point of view of feasibility and time schedule."

According to Macullo, despite the lack of

healthcare facilities in Ashdod, Israel is "very competitive" in the sector, and so the ultimate objective was a state of the art hospital that was a success on all fronts, as he explains. This meant working closely with advisors from all necessary fields and competencies – who would ultimately employ the staff working in the building – and keeping the needs of the patients in mind. Most of the staff didn't join the hospital until it was completed which, says Macullo, was one of the biggest challenges of the project.

This 'advanced digital hospital' has a wide range of departments, in common with many major facilities of its type. There are 12 operating theatres, as well as A&E, ICU and imaging, and eight labour and delivery rooms.

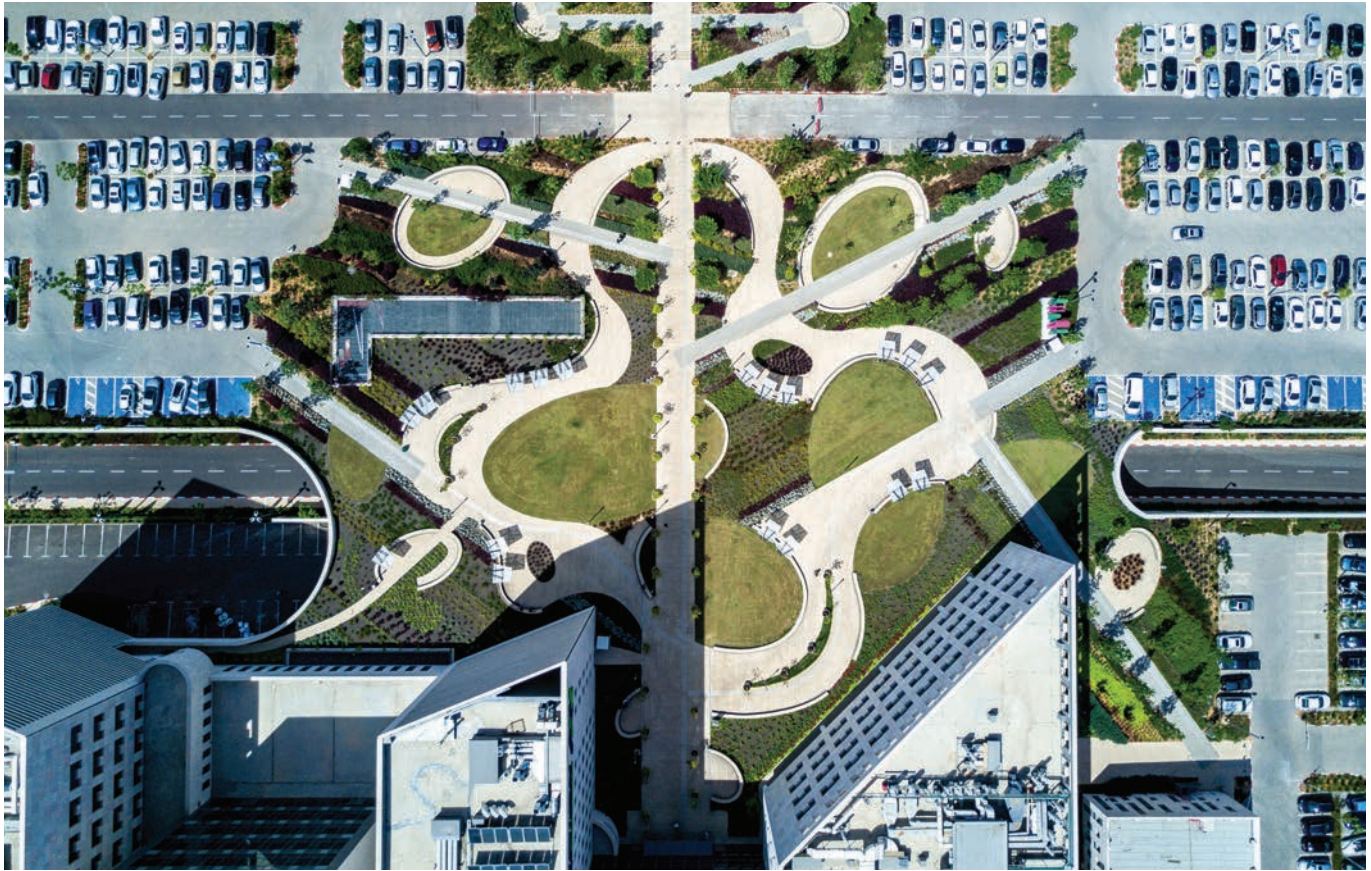
The building, part of Assuta's chain of facilities, includes two 'Centres of Excellence' – a Community Cancer Centre, and a Heart Centre. The former includes advanced imaging, chemotherapy and radiotherapy, IMRT equipment, and outpatient clinics.

The Heart Centre integrates clinical services with ongoing research and education programmes with the aim of promoting disease prevention and rehabilitation in the community. It includes a sophisticated coronary care unit and cardiac catheterisation lab, as well as imaging, diagnostic units, and clinics. As well as being close to the city it serves physically, the hospital also closely integrates research and academics, who have their own facilities on the site.

A 'feel good' hospital

Macullo speaks highly of the close-knit team that worked on the project. "It was a





great experience working together,” he says. “We encountered a very clever client, they were very sensitive and from the first concept onwards, every detail that was designed was shared with the whole team and implemented.”

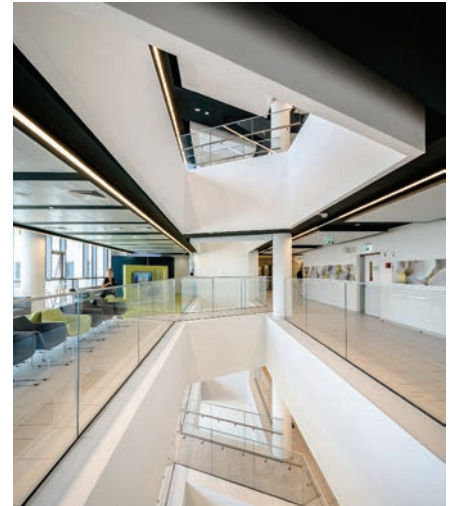
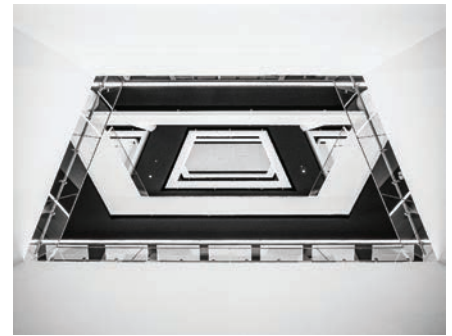
There was a focus on designing a health-care building that would in itself make people feel good. “We work on the psychology of space, this is our field,” Macullo explains. “Our objective is to build spaces that are balanced and make people feel good.” This objective was shared among the team and therefore carried through right to the end.

The meetings held throughout the project were attended by a variety of people, including Assuta CEO Rachel Shmueli, chairman of the board Professor Joshua (Shuki) Shemer, Pnina Shleifer (who is in charge of all Assuta’s nurses), two partner architects (Tel Aviv-based Marcelo Brestovesky, and Italian firm Studio Redaelli Vimercate), landscape architect Orit Elhaiany Perez-Haifa, specialist advisor Dan Oppenheim, and a range of nurses and doctors. “In every meeting all these people were interacting and making decisions together, always based on the

psychology of the patients and staff,” Macullo says. “Everyone was so committed to get the best out of this project.”

Focusing on the psychology of the patients was particularly pertinent given the location of the hospital. There was a conscious effort to not make the building feel like a ‘bomb shelter,’ despite the fact it’s well protected against any potential attacks – so much so there’s no need to relocate patients or staff in any department in such an event. “It was a balance between being strict and being free,” Macullo explains. “When you look at it from the outside, we took away the tension of the idea of the building being a bomb shelter.” He says he wanted the building to feel like a “contemporary castle” to patients: “The feeling that we give is it’s institutional – it has to be – but it’s like a real castle, if you have the misfortune to go to the hospital, at least it’s not a simple box.”

Outside the A&E department the architects included a 100 metre long, V-shaped canopy in order to create the feeling of a covered courtyard. Macullo says: “It reduces the scale of the space and takes away the shock of going from an urban



environment to inside, you naturally flow into the hospital without changing scale dramatically.” He admits it serves no key practical benefit: “It’s not really necessary, besides the fact it gives a good feeling.”

Nature inside and out

It was the idea of making people feel good that inspired Macullo to use a botanical theme throughout the hospital, and outside it. To get to the main entrance visitors walk through a large landscaped area, filled with plants and trees indigenous to Israel. This has been continued into the building, with each hospital speciality being assigned its own flower for wayfinding signage, helping make the process more intuitive for patients. “The trees that are outside become flowers inside, reproduced as art,” Macullo explains. “The architecture is a production of the nature.”

The images of flowers – taken by an Israeli photographer – begin with petals only as patients proceed along the corridors, “emphasising that you have movement,” says Macullo. When they reach their department, an image of the entire flower is on display, making it clear they

have arrived. All common areas are represented by lilies. “You can understand just by following the images,” Macullo explains.

The use of colour extends beyond the garden and flowers. The tiled flooring features a subtle pink-coloured sparkle, to add some interest for unwell people who often tend to look down. The visual contrast of the black and white ceiling, says Macullo, “gives you strength.” The flower imagery at eye level, provides a balance between the two.

Accents of yellow have been used subtly throughout, in areas such as the entrance and around windows. “There’s always a shining element everywhere, even in the dark parts of the building – this small yellow stripe, it looks like some life is there.”

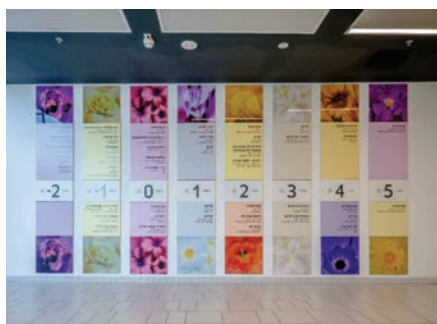
Form & layout

Aside from colour, the other key elements for making people feel good were including as much natural light as possible, and keeping the building layout simple. “When I first visited the site, the project manager said ‘Ashdod has such a beautiful light. We have to build with this light.’” Macullo explains. “The building expresses the strong, beautiful

LIGHT

The hospital has been designed to allow as much natural light into the building as possible

Aside from colour, the other key elements for making users feel good were including as much natural light as possible, and keeping the building layout simple



WAYFINDING

With a nature theme used throughout, flowers denote each speciality on wayfinding to simplify it for patients

All images © Itay Sikolski

clean air and light of Ashdod.”

The main block of the 70,000 m², 300-bed hospital was designed in an ‘H’ shape, with as much glass as possible in order to maximise on the amount of daylight. The main volumes are linked by an atrium, and “each arm enjoys natural light,” explains Macullo. The north and south facing facades feature extensive glazing so patients and staff have views out over the gardens. “You feel connected to the outside,” he says. “It’s a hospital full of light.”

The hospital, which cost approximately £216m to build, is thought to be unique in its inclusion of a seven-storey “day clinic,” connected to the nine-storey main hospital via a glazed bridge and meaning patients can seek more specialist or urgent care if required without travelling to a different location. “The day clinic has the support of the hospital, it’s very clever,” he explains. “If you need intervention or research then you just go up to the bridge and into the hospital.”

Designing a hospital layout is of course never a straightforward task, and the team’s determination to keep wayfinding as simple as possible caused some headaches. “It was very difficult finding the most efficient way to locate all the departments,” explains Macullo. In the end, they decided to give priority to the maternity and children’s departments, ensuring these were placed closest to the entrance. “The most ‘difficult’ spaces are closest and the furthest from the entrance are the more intimate, less-used spaces.”

One thing Macullo wanted to avoid was long, institutional corridors. “It was very important to take care of what you experience moving from one point to another,” he says. “It affects your senses enormously.” It was also a key aim to help staff to do their job in the most efficient manner.

Parallel walls have been avoided – one is

always at a slight diagonal, changing direction every few metres. “You walk 10 steps then the space becomes larger,” explains Macullo.” There are just two departments on each floor, meaning it’s an easy ‘left or right’ decision for patients.

To help patients feel at home, they used a type of stone commonly found in constructions in Israel (along with the native plants). “The idea is it’s like a house for everyone,” Macullo explains. Although the patients are mostly from Ashdod and its surrounding areas, the city is home to many emigrants from all over the world, so Macullo felt it was important to display elements of Israel in order to make people feel welcome and “give them a sense of belonging”.

The major external shell of the building is formed of concrete, as the major contributor towards its ‘rocket-proof’ credentials, but the practice used terrazzo tiling on the floor, another popular material in Israel, further reinforcing the ‘home-like’ notion for patients and visitors.

To allow for future modifications and upgrades, gypsum board was fixed to a series of pillars internally: “In hospitals there is continuous innovation, so you need to be totally flexible,” says Macullo. This also allowed a certain degree of flexibility during the construction phase. “We were replacing things constantly so things were at their optimum from an operational point of view.”

The hospital, which last year won a WA Award for its design, is the first in a series of buildings that will form a new university campus, and there is already talk of expanding it. The possibility of adding an additional 500 beds via an underground extension has been suggested. It’s had a major impact on the community, and thanks to a strong team effort, says its architect, “you really feel that it has been built with love.” ■

COMMENT



Efficiency and safety, in synergy

Kevin Belben of water management specialists Cistermiser and Keraflo discusses the evolution of water temperature monitoring systems, and how the Internet of Things can offer the healthcare sector efficiency savings as well as patient safety benefits

A tax-funded NHS is dependent on a well-performing UK economy, so it's inevitable that over the last seven decades funding to support our celebrated NHS has followed the ups and downs of wider economic cycles. Given the huge pressures on NHS providers, it is not surprising that the reported funding deficit last year was £960m, and the gap is widening between what the UK is asking the NHS to do, and what we're funding it do. With 44 per cent of trusts overspending on their budgets, the pressure on the NHS to cut waste and increase efficiency is only going to increase.

Research supported by The King's Fund and the Nuffield Trust meanwhile found that although technology has the potential to deliver significant savings for the NHS, the service doesn't have a strong track record in implementing it at scale, and needs to get better at assessing the benefits and feasibility of implementing new technology. With the increasing demands on funding, trusts now have to seriously confront these challenges.

Water management in hospitals is one area where technology is coming to the fore, and for good reason. One of the key weapons against diseases such as legionellosis is water temperature control. The bacteria will proliferate between 20°C and 45°C, so keeping the temperature out of this danger zone is essential (with the mantra being 'keep your hot water hot and your cold water cold'). Essential, but not easy, especially in large and complex environments like hospitals. Existing water temperature monitoring solutions usually consist of manual checks, which are time-consuming and involve wasteful water-flushing.

No one likes to think about the worst-case scenario, but there's a reason it's so important to track water temperature consistently in a hospital setting. In 2013, Basildon hospital was fined £350,000 after two patients died in an outbreak of Legionnaire's disease. During the



case, it was revealed that the hospital had been battling the disease for up to 15 years, spending substantial amounts of money each year on maintenance of water management systems.

The hearing found that the showerhead and thermostatic valves had not been properly cleaned after the cleaning budget had been cut. Attempts had been made to control water temperatures with super-heated pipes. The problem that can then occur is that pipes can inadvertently warm adjacent cold water supplies, allowing the cold water to slip into the dangerous temperature range.

While it's essential that we learn lessons from episodes such as this, the key issue to flag is that if there is a shortage of accurate data – it is almost impossible to identify that water temperatures are out of range across a large-scale hospital site, which may have thousands of water system outlets to monitor.

Harnessing technology

Utilising the Internet of Things (IoT) to manage the water temperature in hospitals can be an effective weapon in the battle against water-borne bacteria such as *Legionella* and *Pseudomonas aeruginosa*. It's not only safer, but shows a clear return on investment, while ensuring compliance with the legislative drivers HSE Approved Code of Practice L8 and HSG274.

In any building with complex water systems and multiple washrooms the potential for harnessing IoT is huge. Devices can be installed to monitor the use of water at sentinel points throughout the entire building, flag up any issues should something go wrong, and report this information back to a central database that logs every reading which are date-stamped to provide a complete audit trail.

The next generation of water management

IoT monitoring is a completely new way of thinking for the healthcare sector, so it won't become universally adopted overnight. However, we can be sure that the combination of striving for efficiencies and keeping people safe in increasingly busy hospitals will mean it won't be long before it is adopted mainstream.

With their vital function in the conception, design and improvement of healthcare buildings and communities, architects need to be armed with the facts about the next generation of water management.

Kevin Belben is technical applications manager at Cistermiser and Keraflo

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ROYAL NATIONAL INSTITUTE OF BLIND PEOPLE'S (RNIB) REDHILL SITE
SURREY

A vision of inclusivity

Jack Wooler spoke to the architect of an innovative and sensitive housing project for a mix of visually impaired and open market residents, achieved on a challenging site in Surrey



Work is now underway at the Royal National Institute of Blind People's (RNIB) Redhill site in Surrey, a unique joint venture with developer Countryside to provide 102 dwellings for both the blind and the partially sighted, as well as open market residents.

Designed by Gardner Stewart Architects, the 6 hectare project is to host a mixture of 19 apartments and six houses specifically designed for RNIB residents with differing

needs, alongside a host of contemporary new market homes and a community hub.

Sitting in the Greensand Valley, the site has accommodated charitable services for almost 200 years, being previously owned by the Royal Philanthropic Society, and once hosting a school and a young offenders institute. The RNIB has owned and run the site for a number of years, using the land and buildings as a residential college for blind and partially sighted students from the mid-80s onwards.

Having two councils to deal with inevitably presented challenges to reaching a consensus, with two applications to submit, two sets of committee members to please



This range of prior uses meant that the existing buildings were never really fit for purpose, and as such, the service the RNIB could offer there was gradually dwindling. The charity didn't have the funds to make the changes necessary to these old and dilapidated buildings, so in order to ensure it retained its presence in Redhill, it started looking for a partner that would build enabling development. This was to be Countryside Properties, who would then cross-fund the developments of the RNIB's residential accommodation.

Planning

Though the scheme had an initial level of support from the local councils in principle, gaining planning for the scheme was not altogether an easy process. The project being part of the Green Belt was no small part of this, and the fact the location spans two council districts, Reigate and Banstead, and Tandridge District Council, provided further challenges.

"It was quite a long process," says Manohar Matharu, director at Gardner Stewart Architects, "in order to get to a level of development that the local authorities were happy with in terms of the balance of harm on the green belt, but I think we ended up with a good result for everybody."

"The councils took into account the fact that it is very much a landscape-led development, within the Green Belt limits in terms of its design and layout, while meeting Countryside and RNIB's requirements in terms of the quantum and size of development that was necessary."

The local community was reportedly equally satisfied with the plans, following public consultations held early on in the process. The vast majority agreed that space was previously inaccessible, whereas the new development will provide a landscaped trail "that people can actually walk through and experience."

Having two councils to deal with inevitably presented challenges to gaining a consensus, with two applications to submit, two sets of committee members to please, and so on. "The project did of course go through however," adds Manohar.

The only buildings that have remained in the masterplan are a Grade II listed farmhouse structure called Tudor House – which was the main building from the early days of the site – and an outbuilding once called the Garden Cottage. Now, the Tudor House building has been designated as the "community hub," which will include offices for the RNIB and a multipurpose

meeting space for residents to host functions and gatherings, and the cottage is being extended into one of the RNIB shared houses.

Integrating the RNIB

In part because the RNIB were setting the agenda from the beginning of the development process, as Manohar puts it, "It's not necessarily a typical housing project."

He continues: "It was very much a case of, okay, we want to create an integrated community here where residents, be they blind or partially sighted, or open market residents just buying a house, will live side by side."

As such, the RNIB and open market residents' dwellings are not separated in terms of their location. The RNIB residents are instead spread across the site based on their needs, with the intention of allowing them to live as independently as possible, but with access to help from the hub as and when they need it.

The residents that are deemed more independent will live in the set of RNIB apartments, though they will still have help just a phone call away if necessary. Those who need more support will reside in the RNIB shared houses, which will have a regular member of staff on hand.

The location of these dwellings on the site also represent the users' needs – the further they are from the hub, the more independently they are deemed to be able to live. Those that need more support for example will be in closer proximity to the Tudor House building.

Level changes & zones

Making things more challenging, these homes are spread across a steeply sloping site, with a 21 metre change in level from the north side to the south side – equivalent to around seven storeys. The design of all the homes and their placement responds directly to this steep topography.

The homes are clustered into different areas from top to bottom. The development of these diverse zones, each with its own character, was partly driven by the idea that the development goes from the more populated town end on the western edge of the site, and the rural countryside in the east, which is reflected in the design of the buildings.

These zones were dictated somewhat by the topography, as Manohar explains: "We were very much looking for clues within how the site itself worked, in order to set out what these character areas should be,





and then the design of the building typologies themselves were adapted to suit the local conditions in terms of levels.”

Manifesting this, there are a number of dwellings in the scheme that either step up or down the hill, taking up the level changes within the buildings themselves. In doing so, the public realm will remain fully accessible. Achieving this of course has involved a lot of earthworks and retaining walls.

The material palette of the buildings are another factor that helps to create a sense of zoning. The Tudor House for example is a red brick structure with pitched roofs, and so the buildings in that location have been specified to reflect that character of building and materiality, while in other areas, the materiality changes to suit the given location.

“As you move down towards what we call The Oaks, we’ve got a number of contemporary flat roofed houses, and then up on what we termed Hawthorn Hill in the eastern quarter – which is the first phase of the development – is more of a rural aesthetic with slate tile hanging and pitched roofs again,” explains the architect.

The landscaping changes as befits the different zones too. As residents and passers by move through the different zones, they will experience varied planting and treatments to signify a certain area.

Not only for aesthetic reasons, the architects have used landscaping to design what they call a “sensory trail,” which runs east-west across the development. This is essentially a pedestrianised footpath, but one that has been designed with various changes in texture and planting so that, as residents pass through the site, they are made aware of where they are via different sensory clues.

Further to this, there are also some physical features that add to this sense of place. These include a sensory garden in the south east of the site, and the Chapel Gateway, a retained part of a chapel bombed during the Second World War. “We’ve kept that as part of the landscape treatment within the site,” explains the architect, “so it becomes a navigational wayfinder as you move through.”

Sensitive, but inclusive

The architects have included many more design considerations for the RNIB residents to add to the sensory trail, following what Manohar says are “best practice principles for the blind and the partially sighted.”

“One of the key things is maximising natural daylight,” he continues, explaining what may seem a counter-intuitive idea. “Good lighting is really important for

people that have issues with visual impairment, because actually a fairly small percentage of the registered blind population in the UK are totally blind – the majority have some degree of vision, ranging from moderate to severely restricted.”

Manoher says clear and logical layouts were another key consideration. “So, thinking about orthogonal plan forms where, if for example someone is having to pace out a route through a building, they can do it very much in a way that’s quite simple.

“This means making clear right turns here and there, and having a linear distance between one point and another that can be counted in steps – then residents can create a mental map of the space more easily.”

Both the practice and the RNIB were clear in that, in the process of making them safe and accessible, the homes would not be made to feel “institutionalised”. One example of a way in which they achieved this was by employing colour contrasts.

For the partially sighted, it is hugely beneficial that adjacent elements of a property, such as the door relative to a wall around it, be of sufficiently contrasting colours so that they can be seen more easily. The designers followed best practice of a 30 point difference in LRV – light reflectance value – between colours specified for adjacent elements.

In a more institutionalised environment, this may be achieved using contrasting colours but, as Manoher reveals, employing tonal contrast can be a more appropriate route. “You may go into an old RNIB building and see that there are lots of blue doors and yellow handrails everywhere, and that’s because those colours contrast quite well, and they also tonally contrast quite well.

“However, you can achieve the same effect using a dark grey and a light grey, which can have the same level of tonal contrast as blue and yellow. This provides more of a refined feel to a scheme, and doesn’t rely on these primary colours that can make it look institutional.”

Anything but simple

There have already been some significant challenges for the practice to overcome in the project, beyond just the difficulties of planning and upgrading existing buildings.

One interesting challenge during the early stages of development was how to present the scheme to the RNIB’s residents and board members. “Ordinarily we rely heavily on drawings and diagrams to describe our designs. In this case we were encouraged to



use very descriptive language and assume that the audience could not see what we were talking about,” says the project architect.

“For example, whenever we talked about the site, we talked about the fact that it’s the shape of the side of a foot, and we tried to describe different features in a way that someone can create a mental picture in their mind.”

The vital process of viability assessment was another challenge, having to ensure, for the client Countryside and RNIB that the business case for the scheme was viable. This included consideration of how the scheme would operate once complete. As Manoher puts it: “You have to make sure that you keep the balance - this is not just a charitable venture, it has got to stand up financially.”

With these challenges now overcome however, the scheme is already shaping up to be a desirable community for both the RNIB residents and those buying in the open market. For the RNIB residents especially, the architects appear to have put a considerable amount of thought into the designs.

“It’s about trying to make sure that it is sensitive, but that it’s not going over the top and making it feel institutional,” says Gardner Stewart’s Manoher Matharu.

He concluded: “Our aim is to create a stimulating sensory environment for all residents. At the end of the day people are going to live here – it’s got to feel like home.” ■

RNIB residents are spread across the site based on their needs, with the intention of allowing them to live as independently as possible

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The health benefits of good ventilation

Patrick Calvey of Siegenia looks at the issue of air pollution and the considerations designers of new facilities and refurbishments need to make in order to combat it

The effects of air pollution and the dangers of exposure to NO_x particles in particular have hit the public consciousness in recent months and with the risks to heart and cognitive health becoming ever clearer, ventilation is increasingly becoming a priority when building or renovating public facilities, especially healthcare establishments.

Last summer a study on the effects of NO_x particles on the heart by Queen Mary University of London made the headlines. The study of 4,000 people in the UK found that changes to the structure of the heart occurred even when exposure to NO_x was less than the UK legal limit. Other recent studies carried out in China and London have also suggested that air pollution can have a negative effect on cognitive intelligence, and that it can increase the risk of developing dementia in the over 50s.

While many healthcare sites across the country, as part of the Carbon Reduction and Sustainable Development Strategies, have implemented green measures which will reduce air pollution levels in the vicinity, there remains the problem of indoor air quality.

Far from providing respite from the outdoor air, a study by the US Environmental Protection Agency has found that indoor air pollution is often between two and five times greater than outdoors – and can reach up to 100 times greater – as pollutants entering from outside are added to the CO₂ and VOCs (Volatile Organic Compounds) indoors.

Poor indoor air quality can have numerous detrimental effects including worsening asthmatic symptoms, headaches and loss of productivity. Poor air quality in the workplace has even been found to be the cause behind 800,000 premature deaths per year, according to *The Lancet*. In order to provide a healthy indoor environment for staff, patients and visitors it is therefore important that planners make indoor air





Mechanical ventilation provides constant fresh air and, unlike natural ventilation methods such as the opening of windows, modern mechanical systems can filter out pollen, carbon, coarse and fine dust and NO_x particles

quality at least as great a priority as outdoor air pollution has been.

The benefits of mechanical ventilation units

The best way to address poor indoor air quality is to introduce a mechanical ventilation system into the building. Mechanical ventilation provides constant fresh air and, unlike natural ventilation methods such as the opening of windows, modern mechanical systems can filter out pollen, carbon, coarse and fine dust and NO_x particles. These systems are therefore a much better means of tackling indoor air pollution and minimising the associated health risks.

Up to now, natural ventilation has often been favoured in healthcare facilities due to the perceived energy and cost savings. However, decision makers should consider the lifetime costs of mechanical as opposed to natural ventilation. Modern ventilation units require very little energy to run, some using as little electricity as a TV on standby. They can also provide savings elsewhere. For example, the provision of fresh air in the colder months means that windows do not have to be opened and heat wasted.

Furthermore, the sustained provision of fresh air can help to prevent damage to the building structure and windows caused by damp and mould, thereby decreasing future

maintenance costs. There are also the aforementioned health co-benefits, as the provision of filtered air reduces the risks to patient, staff and visitor health, therefore lowering the future burden on the NHS. By protecting the health of both the buildings and inhabitants, ventilation systems can provide ongoing savings which offset the original outlay.

Mechanical ventilation need not be expensive or time-consuming to install. Planners are often put off by centralised systems, which require ducting throughout the building; however simple single unit versions are also available on the market and can be just as effective. These can take as little as 45 minutes to install, requiring only a core drill hole in the wall for the pipe and a couple of screw fixings for the unit. Maintenance also does not need to be a costly job. Some filters need only be cleaned or replaced once a year and units are available that will indicate this.

If the right system is chosen, mechanical ventilation should provide a net positive impact on the environment and on health, improving not only environmental but also economic sustainability with net savings across the lifetime of the system.

Patrick Calvey is sales manager at Siegenia



The art of protection

Kate Waterston of Construction Specialties explains how good interior design can speed up patient recovery times in hospitals, but needs to be balanced with maintenance and whole-life costs

The positive effects of a colourful, comfortable and welcoming environment on patient wellbeing have been known for some time. Studies have established a link between recovery times and the environment, with visual art playing an important role.

Art diverts attention away from pain and stress, may lower blood pressure and may even reduce the need for pain relief. Evidence suggests the sense of being outdoors also improves recovery times, while colourful murals help reduce the stress of being in an unfamiliar environment –

particularly the case among children.

‘DH Health Building Note 00-01: General design principles’, one of a suite of guidance documents published by the Department of Health in 2013, emphasises the importance of art and décor. Significantly, it suggests art should not be seen as an ‘add-on’ but something to be integrated fully in the design process.

Art and colour can also help architects ensure people with mobility issues and visual impairment can access and move around healthcare facilities safely and easily. Both ‘Approved Document M –



It is clear that interior design in healthcare has to be balanced with material performance, to ensure that the environment is kept to as high a standard as possible, for as long as possible

Access to and use of buildings, provision for inclusive design' and 'BS 8300-2:2018, Design of an accessible and inclusive built environment' require the use of contrasting colours to differentiate between doors, walls, floors and ceilings, for example. Clear pictorial signage and the use of colour and art can also help non-English speakers identify particular routes and rooms, making access easier and reducing the number of signs needed.

Durable design

There is a need to strike a balance between design and durability, however. Damaged surfaces create an unwelcoming feel and can lead to increased long-term costs, if the building fabric needs to be continually repaired and replaced.

'DH HBN 00-10: Part B: Walls and ceilings' outlines performance requirements, with a focus on infection control, which is covered in even more detail by 'DH HBN 00-09: Infection control in the built environment'.

Surface finishes in healthcare facilities need to be hard-wearing, hygienic, easy to clean and maintain, particularly in high traffic spaces, such as receptions, corridors and lift lobbies. In sensitive areas, such as operating theatres, specified finishes must also have chemical resistance to cope with intensive cleaning.

In addition, wall linings must offer fire resistance that complies with 'Health Technical Memorandum 05-02: Firecode Guidance in support of functional provisions (Fire safety in the design of healthcare premises); Approved Document B (B2, Section 6)' of the Building Regulations and be tested to BS or BS EN Fire tests.

Tough, impact resistant and easy-to-clean wall coverings are readily available to offer complete design flexibility, while meeting inclusive design guidelines, hygiene standards and fire regulations. These protection systems can also be fitted to reception desks, columns, or door frames and leaves, to achieve homogenous design, while maintaining integrity and increasing working life.

Offered in a wide range of colours, protective sheets and panels can be cut into design shapes or used in different colour combinations to achieve visual contrast. It is worth considering specifying 'through-colour' materials, as they minimise and hide damage, and will not delaminate.

Some interior protection systems allow high quality images, logos or artwork to be embedded, creating bespoke floor-to-ceiling designs. Impact and scratch resistant, impervious and easy to clean, they remove the worry of damage to surfaces and the artwork itself, without compromising on performance.

For example, a calm and non-institutional environment for babies and parents was created in the Sub-Regional Neonatal Intensive Care Centre at Glan Clwyd Hospital using Construction Specialities' Acrovyn by Design wall protection, incorporating bespoke graphics of trees and butterflies. Additionally, two contrasting colours of durable Acrovyn Sheet were used on door frames and leaves to comply with inclusive design requirements, while prolonging lifespan and minimising maintenance.

Acrovyn Sheets, along with heavy duty crashrails and corner guards, were also used to create a welcoming, inclusive and fit-for-purpose environment in the refurbishment of the Royal Oldham Hospital's A&E department. Different colours were used to help with wayfinding and sheets were cut to form murals and signage, creating an 'urban park' look in waiting areas.

It is clear that interior design in healthcare has to be balanced with material performance, to ensure that the environment is kept to as high a standard as possible, for as long as possible. Fortunately, modern protection systems do offer complete design freedom in healthcare buildings, incorporating high impact graphics and bold colours, while delivering hygienic, impact resistant, low-maintenance solutions for walls and doors.

Kate Waterston is UK sales manager at Construction Specialities

Designing for dementia

Lisa Pilley of Dulux Trade discusses how colour is an intrinsic part of any health-focused design project, and can have a powerful impact on dementia patients in particular

Globally, the number of people living with dementia is predicted to increase from 50 million in 2018 to 152 million in 2050, a 204 per cent increase. The cost of dementia in the UK is expected to more than double in the next 25 years, from £26bn to £55bn in 2040.

However, the UK is taking steps to minimise the impact of this growing trend and progress is being made to help people to age well and live in their homes for longer, thereby reducing the pressure on public services.

As part of this response, an increasing number of commercial and industry thought-leaders are collaborating to unify their research in order to deliver 'actionable' insights, informing ways in which to create more supportive environments for those living with dementia. It is hoped that just by fine-tuning some basic approaches to design, which may include incorporating solutions that are cost neutral to implement, designers can create life-enriching spaces. Perhaps even more crucial, these relatively small adjustments to design techniques are able to produce environments that minimise harm to the occupants, where perhaps sight or mobility is impaired. What these groups all agree on is the importance of prioritising the avoidance of sterile or clinical environments, instead advocating homely and personalised spaces that are interesting and can inject a sense of familiarity and security.

Educational institutions are developing new approaches to understand the impact of dementia on occupants within the built environment, and the industry is seeing collaborative work across multiple fields to try and distill the insight into guidelines for architects and designers.

Examples of design guidelines include allowing for clear lines of sight and the use of colour throughout a home to help guide people towards specific rooms and reduce the risk of slips and trips. Increased natural lighting has also been shown to help people stay alert during the day (and to sleep better at night). In addition, using materials that



help with noise reduction can support a decrease in stress and agitation.

When it comes to colour, the guidelines are slightly more fluid. Colour is a highly individual and subjective matter, but it does have impact beyond the aesthetic. While intense colours can work brilliantly in a big retail, leisure, healthcare or even domestic home environment, such colours need to be used sparingly in environments primarily supporting people living with dementia.

Inclusive design encourages the application of colour to enable occupants to more readily identify different areas of the entire living space – balancing their needs alongside the needs of their carers or family, and giving them greater confidence to move independently within their living spaces.



Highly contrasting colour combinations can work well. Careful considerations of colour combinations are central to a designer's accessibility palette. Colour has also been used within a design solution as a way of reinforcing positive personal connections and to provide stimulation within the space.

When designing for dementia, it is important to remember that we are all individuals and we all like different things, so this is why one scheme will work for one client but not for another. There is seldom a one size fits all approach.

We know that up to 75 per cent of people over 75 will have vision problems. Research from Kingston University suggests that as our eyes age they become more opaque, so colours become 'washed out', making it harder for people to differentiate between different substrates. Designers can then compensate by using stronger or brighter colours than they might normally choose. Two colours that appear contrasted to someone with normal vision may not be perceived well by those with sight deficiencies, colour deficits or dementia. While the effects of Alzheimer's on colour perception are not yet understood, recognition time is notably faster if colour is used as a cue.

There are some simple key design tips we consider when designing for dementia. These include using warmer hues to give

Two colours that appear contrasted to someone with normal vision may not be perceived well by those with sight deficiencies, colour deficits or dementia

the impression of warmth, maintaining contrast in colours between the furniture and the floor to help highlight chairs, handrails and anything that could be an obstruction; feature walls opposite key entrances to help with navigation, and avoiding gloss finishes which can be off-putting to people living with dementia for fear of slipping. Equally, careful thought to lighting will prevent unevenly lit spaces, creating shadows that can be alarming to those with impaired vision.

Within residential care homes, colour can have other benefits as well. Residents with dementia have for example, demonstrated more interest in food if it is served from coloured plates that have a large degree of contrast to the table surface.

Colour can likewise be used to de-emphasise areas that have restricted access, such as back of house locations like offices, sluices and cleaning cupboards. In these cases, doors to exits or other zones, which are for staff only, are usually painted to match the surrounding wall colour, minimising standout and thereby reducing unauthorised access.

Working with the BRE Trust, BRE, Loughborough University, Halsall Lloyd Partnerships and Liverpool John Moores University, Dulux Trade has supported the development of a demonstration home, Chris & Sally's House, to present evidence-based design, adaptation and support solutions that allow people to 'age well' at home.

A summary of inclusive design advice has been gathered within the evidence-based Dulux Trade Dementia Friendly Colour Palette, developed specifically for care homes and buildings in the health sector. It is a useful tool in designing spaces for dementia that deliver significant benefits – not just for those living with the condition, but also for those who are caring for them.

Lisa Pilley is colour consultant at Dulux Trade

Clean lines

Carole Armstrong of Delabie UK suggests that design, comfort, safety and hygiene should be seen as equal to compliance when specifying accessible washrooms

Inclusive design for accessible facilities should be a given. However, adapted washrooms in the care sector are subject to much higher levels of constraints compared to domestic settings. Typically, the emphasis is on compliance, over aesthetics. But this doesn't need to be the case. Design, comfort, safety and hygiene are all equally important and should be considered as well as compliance and regulations.

Designing for shared use

In the care sector, adapted washrooms must cater for the masses, not just the individual. The obvious solution is to specify washrooms that are accessible to all, regardless of age, level of mobility or independence. This means designing a neutral environment, one which is discrete, non-stigmatising, aesthetically-pleasing and comfortable. Every user will then feel more at ease, whether they are able-bodied, ambulant disabled, wheelchair users or fully dependent on a carer.

The ultimate design objective is to create washroom facilities with access for all, without appearing to. Good aesthetic design will remove the medicalised aspect of institutional accessible washrooms. Designers are very conscious that product appearance is just as important as technical performance. Not only do the taps, showers, WCs and grab bars comply with current guidance, but do they also have sleek, stylish lines that are easy to keep clean and maintain? Offering products in a range of finishes provides specifiers with options that complement any decorative style and provide a good visual contrast with wall finishes.

Adaptability is also important for those facilities providing short-term accommodation for people with reduced mobility, such as rehabilitation or respite care centres. Removable shower seats provide a practical solution where the use changes according to the user's level of independence. The seat need be installed only when it is required.

When considering design in accessible washrooms, the accessories are easily overlooked. Simple touches such as matching the finish on the taps and sanitaryware to the

soap dispenser and toilet brush can improve the aesthetic. Ergonomics play a significant part too, so installing toilet brushes – with a long ergonomic handle that self-centres when replaced in the holder – can be a small detail that improves the user's experience. Similarly, tilting mirrors that can be adjusted by wheelchair users contribute to equality of experience in the washroom.

Specifying for intensive use

Specifying for accessibility in the domestic setting is comparatively simple, as the household is relatively small with regular, but light, usage. Accessible washrooms need to provide a safe space for vulnerable people, but they may also be subject to heavy-handed use, and even abuse.

The primary role of grab bars and shower seats is to support the static weight of any user, and assist their movement within the washroom. The elderly or people with reduced mobility can easily lose their balance and fall. If they reach for the nearest hand hold, whether this is a bar, a riser rail or even a shower mixer, it must support the additional force required to arrest their fall. The mixer body must be at an ambient temperature to prevent burns, and the type of fixings subsequently becomes very important. Recessed shower mechanisms and concealed fixings for grab bars provide the ideal solution. Not only can the fixings be totally hidden, they also prevent unwanted removal, and they are visually more pleasing.

In the event of a user falling, grab bar dimensions also take on a greater significance. If they slip, their arm may get trapped between the wall and the grab bar, resulting in a fracture. By limiting the gap between the bar and the wall, this can be avoided.

User comfort must not be sacrificed at the altar of design and function. For example, to provide full support the profile of the grab bar or support rail must allow a firm, natural hold. If the bar's profile is too angular, a hand cannot grasp the bar properly. Similarly, if the diameter is too small or too large, the forearm muscle is activated rather than the shoulder muscle, placing unnecessary strain





When considering design in accessible washrooms, the accessories are easily overlooked. Simple touches such as matching the finish on the taps and sanitaryware to the soap dispenser and toilet brush can improve the aesthetic

on the user. Similarly taps, showers and WCs should also be easy to operate (e.g. non-contact), electronic controls or ones with long levers which can be operated by a fist or elbow. Adapted washrooms should economise on user effort.

Hygiene considerations

Hygiene in adapted washrooms is of primary importance, especially for those in constant use. Some Bioclip mixers and taps ranges have been designed with removable bodies or spouts that can be removed if bacterial contamination is suspected. They also have smooth interiors and exteriors with fewer niches where bacteria can adhere and develop. Alternatively, electronic controls have an automatic duty flush that prevents water stagnation, a key factor in Legionella development. All models will also withstand thermal or chemical shocks for preventative or curative purposes.

The straight sections of grab bars should be extruded in one piece to avoid seams where the hands have most frequent contact. Smooth, uniform surfaces such as stainless steel or high-density nylon offer excellent hygienic properties. They will both withstand intensive use and regular cleaning so the

surface remains smooth and bright, maintaining the attractive appearance of the washroom.

Design also plays an important role in hygiene. Complex shower seat structures have multiple niches where dirt can build up, allowing bacteria to develop. Simple, clean lines reduce such niches and facilitate cleaning. The seat profile is equally important as water must be able to drain away to avoid pooling. Any standing water, especially soapy water, provides a slip hazard and encourages bacterial growth.

Designers of adapted washrooms in non-domestic care environments no longer need to compromise on aesthetics. It is possible to incorporate stylish designs that will withstand intensive use while upholding user safety and hygiene standards. In environments subject to intensive use, attractive products and well-maintained fixtures with clean, bright surfaces are more likely to elicit respect and care from users. There is no compromise on functionality or ergonomics, ensuring safety for all users of accessible washrooms in the care sector.

Carole Armstrong is marketing manager at Delabie UK

Medical access solved



Providing a clear and easy entry and exit system for the new extension at the Haden Vale Medical Practice was a priority and TORMAX was contracted by the Cameron Butcher Group to install two automatic sliding door systems to the main entrance. Powered by TORMAX 2201 compact operator, the doors deliver reliable and seamless access for the elderly, wheelchair users, people with pushchairs as well as all other visitors to the practice. Providing three additional, much needed consultation rooms, as well as a utility area, the new single storey extension dramatically improves the services that can be offered. The Cameron Butcher Group, which specialises in healthcare refurbishment, worked closely with TORMAX to deliver a comprehensive access solution that meets the varied requirements of the patients. The TORMAX 2201 door drives offer a user-friendly and cost-effective solution to door automation that can be adapted to almost any location. It is particularly quick and easy to install whilst straightforward, 2-key programming allows practice staff to adapt opening and closing speeds to reflect the volume of foot traffic and weather conditions.

sales@tormax.co.uk

Safe to touch heating



LST – low surface temperature – radiators are key where there is a need to meet NHS Guidance for ‘Safe Hot Water and surface temperature’ – in hospitals, care and nursing homes, as well as sheltered housing, schools and nurseries and in an increasing amount of general needs housing that may be used

by vulnerable people during that home's lifetime. Stelrad has recently released two new additions to its already extensive range by adding an LST Standard Deco and LST iPlus Deco design – to make the casings for the radiators more aesthetically pleasing.

0844 543 6200 www.stelrad.com

Wardray provides quality and reliability



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. Wardray 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; and Industrial shielding for non-destructive testing (NDT) facilities.

sales@wardray-premise.com

Wexham Park Hospital selects Advanced to protect new £49 million Emergency Assessment Centre

Industry-leading MxPro 5 fire panels from global systems leader, Advanced, have been installed at Wexham Park Hospital as part of a major upgrade to the hospital's fire system.

Wexham Park Hospital is a large acute NHS hospital situated near Slough in Berkshire. The 588-bed hospital is one of three managed by Frimley Health NHS Foundation trust, one of the top performing NHS trusts in the UK. As well as the main hospital building, the site has a large post graduate building, ambulance station, staff accommodation and a new £49 million, state-of-the-art, four-storey Emergency Assessment Centre.

Responsible for the design, supply, installation, testing and commissioning of

the system was Advanced's partner, Static Systems Group, who install Advanced under their brand name Evo2. Static Systems completed the site-wide upgrade with 20 networked, MxPro 5 panels, 18 MxPro 5 repeater panels and 2000 Apollo field devices throughout a number of hospital buildings and departments including Intensive Care, Sterile Services, Radiology and its new 9,300 sq-metre Emergency Assessment Centre.

Alex Southall, Proposals Manager at Static Systems, said: "We pride ourselves on our skills and expertise in working in challenging, live healthcare settings – it's where we excel. We specified Advanced on this project thanks to the MxPro's second-to-none networking capabilities, flexible multiprotocol platform and user-friendly interface. This enabled



Static Systems to deliver a seamless installation with minimal disruption to the everyday workings of the clinical teams."

MxPro 5 is the fire industry's leading multiprotocol fire system solution and was recently certified by FM Approvals to the EN 54 standard. It offers customers a choice of two panel ranges, four detector protocols and a completely open installer network, backed up by free training and support. MxPro panels can be used in single loop, single panel format or easily configured into high speed, multi-loop panels in 200 node networks covering huge areas. MxPro's legendary ease of installation and configuration and wide peripheral range make it customisable to almost any application.

01670 707111 uk.advancedco.com

Managing Compliant Changing Places



As NHS Trusts prepare to implement new funding to provide specialist accessible toilets – aka Changing Places – one company is reminding them of the need to ensure the facility delivers on its promise. The Department of Health & Social Care has announced £2m to fund at least 100 Changing Places assisted accessible toilets in NHS hospitals throughout England. Closomat, a leading supplier & installer of such facilities, is also the only company that can offer complete project management of the installation. Uniquely, it is also the only company of its kind that is fully CDM (Construction Design & Management) compliant. Warns Claire Haymes, Closomat CDM Compliance & Project Co-Ordinator, "Disabled people make up more than a third of patients who access NHS services; they also access those services more than able people. Many of them need the extra space and equipment provided by a Changing Places, but not available in conventional wheelchair-accessible toilets. Yet only about 20 per cent of hospitals in England have Changing Places. Closomat has been involved with the Changing Places campaign almost from the outset.

0161 969 1199 www.closomat.co.uk

Healing Acoustics



According to healing design principles, superior acoustics in hospitals are recognised as one of the most important factors in their design. This is being proved in an innovative temporary patient room for a major new hospital being built in Copenhagen. Bispebjerg hospital is an ultramodern psychiatric project covering 22,500sqm which includes an emergency admission unit and provides 200 rooms for patients. The study focuses on creating a stress-free environment where patients feel secure and at peace. In this room, the lighting is a combination of natural daylight and dynamic LED lighting that is specially adapted to suit the circadian rhythm. Good acoustics are ensured by light coloured Trolldtekt ceiling panels in a fine finish, while the walls have been clad with acoustic oak slats which provide natural ventilation with more fresh air and reduced solar gain in the summer months. Specified throughout the UK and Europe, the benefits of 100 per cent Trolldtekt natural wood wool panels include high sound absorption, high durability, natural breathability, low cost life cycle performance and sustainability as documented by Cradle to Cradle certification at silver level.

www.trolldtekt.co.uk

Rockfon enhances acoustic wellbeing at new Hospital

Rockfon are immensely pleased to have contributed to a successful completion of the stunning, new, state-of-the-art Royal Papworth Hospital on its Cambridge Biomedical Campus site.

The hospital will carry on the world-renowned cardiothoracic specialist care undertaken at the original Papworth Everard village site where 24,000 inpatient and day cases and almost 73,600 outpatients were treated annually.

Senior Project Architect Stephen Herbert of global design, architecture, engineering and planning firm HOK commented: "The design brings together the clinical needs of the specialist hospital while making the working environment for staff and patients one that aids work and healing."

The new hospital has been designed to combine a highly efficient interior layout with a stunning exterior. Set in beautifully landscaped grounds, the gentle curves of the oval structure create

contemporary echoes to some of the architectural cues of its predecessor at the Papworth Everard village site.

Rockfon® Blanka® D edge tiles were installed in two sizes in the main entrance hall peripherally to the atrium and throughout arterial walkways. Durable Rockfon Blanka has a smooth, deep matt, non-directional super white surface with high light reflection (87 per cent) and light diffusion, which contributes to energy savings.

Elsewhere within the wards at Royal Papworth Hospital, Rockfon® MediCare® Standard has been installed using a mixture of ceiling tile sizes. The resilient, hygienic Rockfon MediCare range has been specifically developed for use in healthcare environments. The tiles have an easy to clean surface and are resistant to all ubiquitous bacteria including MRSA.

Rockfon® System MaxiSpan™ was used within the hospital's myriad of corridors. The system is perfect for heavily serviced ceiling



voids as the strong grid can be suspended wall to wall, up to 3m wide, allowing for the installation of long planks.

Stephen Herbert concluded: "We are very pleased with the finish and the flexibility of the ceiling system for the hospital. Ceilings are always the largest part of the visible building internally and the success of any ceiling is when it becomes the simple backdrop to the internal spaces."

0800 3890314 www.rockfon.co.uk

Safe Heating Transforms Children's Ward



Leighton Hospital in Crewe wanted to create a space that provided a safe heating solution while maintaining the jungle themed aesthetic they had created to make the wards feel more comfortable for patients and their families. The ward was completed

in two stages, allowing for minimal disruption to staff and patients throughout the project. Contour's DeepClean LST radiators covers in RAL Green 6019 were supplied, they also have drop-down front access doors. This gives faster, easier access to the radiators for cleaning to prevent the build-up of dust and bacteria.

01952 290498 www.contourheating.co.uk

danfloor – committed to sustainable design



danfloor take pride in sourcing the most sustainable and forward-thinking suppliers, which is why their Evolution and Economix Collections are made from the Innovative ECONYL® regenerated nylon yarn. ECONYL® is made by recovering nylon waste such as old carpets and fishing nets from the oceans and turning it into virgin quality nylon. Its regenerated nylon offers endless possibilities and can be fully recycled. Creating carpet collections using the ECONYL® regenerated nylon yarn doesn't mean you have to compromise on performance as this fibre delivers exceptional performance, ideal for the health and social care sector.

0330 014 3132 www.danfloor.co.uk

Specialist furniture for new £212m hospital



More than 5,000 items of furniture were manufactured and installed by Deanestor, one of the UK's leading contract furniture specialists, in a £1.4m contract for the new Dumfries and Galloway Royal Infirmary.

Deanestor manufactured more than 300 bespoke bedheads which were finished in a natural oak laminate and had provision for medical gases, electrics, nurse call system and lighting. Over 40 variations were installed by Deanestor's own fitting team with removable panels for easy access to services. Laboratory furniture was also manufactured as part of Deanestor's contract.

enquiries@deanestor.com

Polyflor makes healthy addition to expansion



Polyflor's Expona Commercial and Polysafe Arena flooring ranges were selected for the expansion of InHealth's community endoscopy service in Oxfordshire with the opening of an additional state-of-the-art Community Health Clinic in Bicester. Expona Commercial in Blue Recycled Wood was used for the staffroom and kitchen area, with the shade Painted Cement across the reception and entrance. Arena PUR in the shade Linen was fitted in the corridors, toilets and laboratory areas and is a high specification, decorative safety flooring range combining the assurance of sustainable slip resistance with high durability for years of performance.

0161 767 1111 www.polyflor.com

Corridors Refreshed with Yeoman Shield Wall & Door Protection



Following in the footsteps of a string of successful installations at the Northern General Hospital, Sheffield, Yeoman Shield products were again chosen as part of the refurbishment of the hospital's Firth C & D floor corridors.

With the need to refresh the interior walls and doors, as well as future proof them from further damage and marking, a variety of products from Yeoman Shield's range were employed.

Corridor doors, which are on the frontline when it comes to impact damage, were fitted out with Yeoman Shield Door Edge Protectors and PVCu clad glazing beads, both in a graphite colour. Contrasting Mid Grey Door Protection Panels were installed to both sides of the doors with vulnerable architrave and framework also protected by Yeoman Shield products.

This comprehensive, fire rated, door protection system will extend the life cycle of expensive fire doors helping to keep them in good working order.

Yeoman Shield Guardian Handrails in the same colour scheme were fitted along the

hospital passageways. Bespoke metal brackets were manufactured by Yeoman Shield to implement the spanning of the rail over pillars through out a glazed corridor.

Beneath the handrail 2mm thick FalmouthEx Wall Protection Panels were fixed to offer low level protection. A cream colour was chosen for the panels accompanied by Mid Grey Corner Protection Angles to keep a light and airy feel to the scheme.

Pete Trenchard, who specified and project managed the scheme on behalf of Sheffield Teaching Hospitals added "When carrying out improvements and refurbishment of the corridors, in line with the STH standard colour scheme and standard fit out, I was keen to incorporate the Yeoman Shield range of products to achieve a long-term solution.

"The specification of Yeoman Shield products on corridor walls, vulnerable corners, doors, frames & architraves, protects the fabric of the corridors without detracting from the visible aesthetic appearance expected of a hospital environment.

"I worked closely with the Yeoman Shield team through the design and specification



phase, drawing on their expertise to find a cost-effective fit for purpose solution. The site survey and installation offered a start to finish package which has been contributory to the successful and well received outcome of the project".

For information on Yeoman Shield wall & door protection products suitable for refurbishment projects, please contact the company.

0113 279 5854 www.yeomanshield.com

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