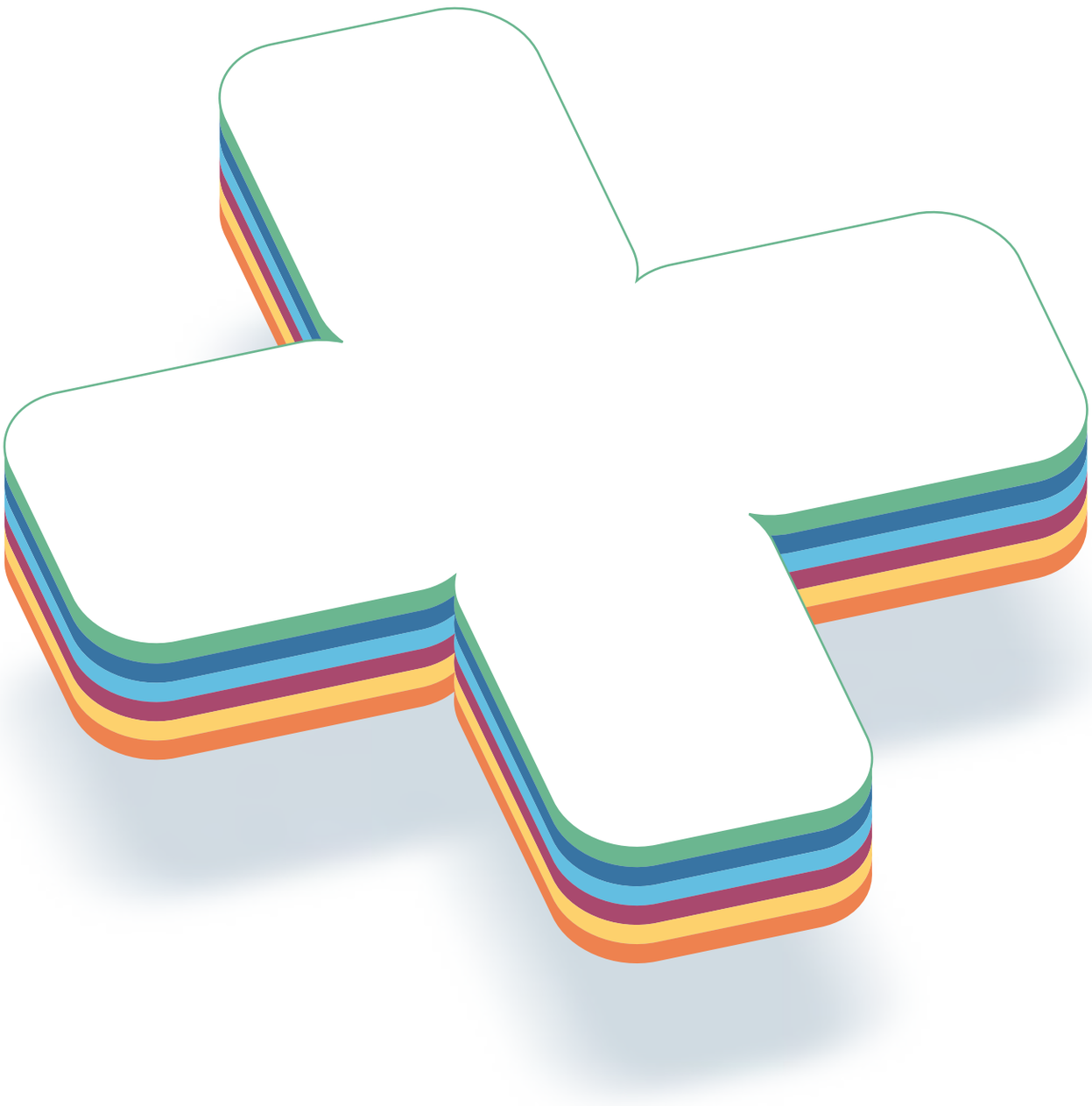
WILLMOTT DIXON
CONSTRUCTION

Primary Asset
A MedicX Group Company

Willmott Dixon Community Healthcare Campus

Creating a sustainable future
for primary healthcare



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INTRODUCTION

The Willmott Dixon Community Healthcare Campus was developed from the ongoing strategic partnership between Willmott Dixon and the Building Research Establishment (BRE), together with a new partnership between Primary Asset, part of the MedicX Group, and Willmott Dixon.

Primary Asset has acted as the clinical advisor to Willmott Dixon and in many ways has been regarded as the 'client' or 'clinical user' for design and construction issues.

The ongoing strengthening of these relationships is due to the way we have worked together to respond to the Department for Business, Enterprise and Regulatory Reform's Assisted Living Innovation Platform – ALIP – a project led by the Building Research Establishment with Willmott Dixon as one of its partners.

The BRE Innovation Park is a cluster of a number of experimental and exhibition building structures, which as a whole form the basis of a community. These include a number of different houses and flats, a shop and the Community Healthcare Campus all tied together with a 'streetscape'.

The Community Healthcare Campus demonstrates how we believe wellness and healthcare will be provided over the coming decade, by buildings that are located at the heart of the community with multiple users.

The buildings will accommodate staff who will be increasingly preventing ill health and when required, supervising the care and treatment of people in their own homes rather than in strange and faceless institutions. Advances in Information Technology and other scientific developments that are currently either in their early stages of development or not yet widely used will become standard, allowing the safe provision of specialist services previously only available in some hospitals.

The Community Healthcare Campus will also show how healthcare facilities can be sustainably constructed and operated. In particular we demonstrate a mechanically ventilated procedures room that is 'Zero Carbon'

The BREEAM

The building also demonstrates how key elements of the design and construction of a sustainable healthcare facility contribute to achieving certification under the BREEAM Healthcare assessment scheme.

These key elements are:

- Minimising Energy Consumption and CO_2 Emissions
- Health and Wellbeing for Staff and Patients
- Sustainable Materials
- Sustainable Construction Management

A focus on design, specification and management of the project in these key areas can make a major contribution to achieving a BREEAM Healthcare 'Excellent' rating for future primary healthcare facilities such as the Community Healthcare Campus.

THE VISION FOR HEALTHCARE

THE INTEGRATED APPROACH

Primary care describes all the healthcare that may be delivered to patients and communities outside of a hospital (known as secondary care). Since the foundation of the National Health Service in the UK in 1948 there has been an unintentional separation of both disciplines.

The opportunity for primary care builders is to bring these services closer to the patient with better care and access. The overall health budget in the UK is in excess of £121bn (2009) of which some 27% is spent in primary care.

The NHS Plan (2000) and the subsequent work by Lord Darzi have emphasised the importance of linking secondary and primary care as well as the imperative of integrating primary care into communities alongside education and community care. [1, 2]

It is anticipated that over 40% of outpatient activity will be moved to primary care settings over the next 3 years (approx £11bn of services).

This new fully integrated approach is supported by the NHS and will allow better patient choice and a greater range of effective services at a local level.

The core tenets of the NHS Plan reinforce the need for greater choice and local access together with a wider range of services within primary care buildings.

Not only will services be integrated but so will budgets. This allows for more effective healthcare spending and significant savings derived from faster access and more appropriate care pathways.

There are a variety of integration examples demonstrated within the Campus. Along with the ability to establish a virtual surgery, there is the capability of IT to allow patients access to their own surgery and clinician and for educational, dynamic patient care.

The pharmacy can now be reached at a distance, with a highly effective service provided in the home, within the pharmacy and with the pharmacist as the clinician.

The Kings Fund has explored and supports the concept of the virtual surgery and many aspects of the campus echo this. As travel and time become more challenged, and high quality staff less available, the virtual surgery may well become the main portal of entry for healthcare. [3]

Integrating services includes new opportunities for the support of patients at home. Telemetry and chronic disease management enable patients to stay in their own environment and here we have shown examples of truly enabled assisted living. [4]

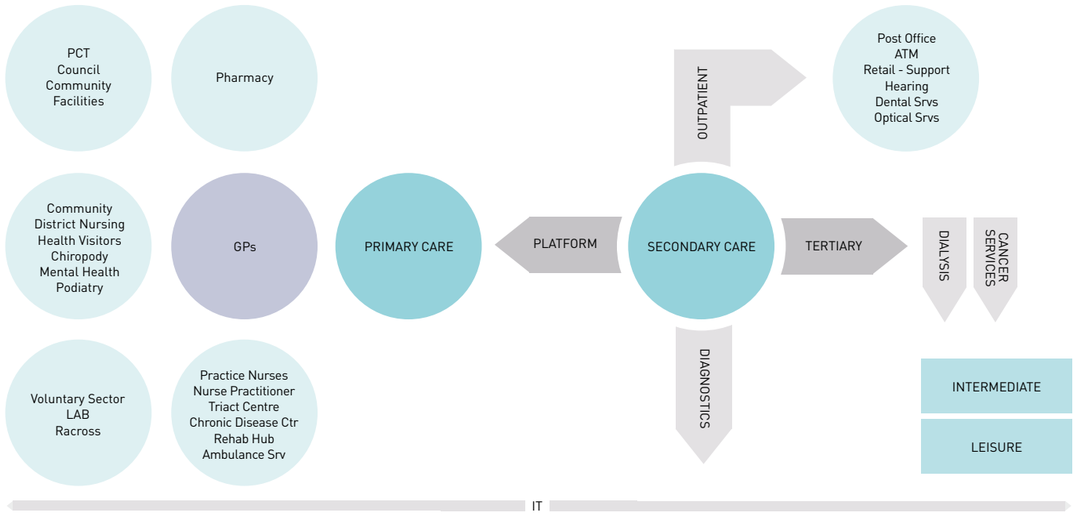
New challenges in health require new solutions. Dementia and falls are a major threat to the independent healthy living and so telemetry and on line facilities are transformational in raising immediate response and raising confidence. [5]

27%
of the UK health budget is spent on primary care

Integrating care involves all members of the healthcare team. Reception staff can be trained as a highly effective first point of contact, with nurses performing the majority of healthcare consultations. Paramedics are an invaluable part of the community healthcare team and can effectively handle all the emergency situations that can affect a patient.

Integration is all about using information effectively. Feedback from patients is key and the involvement of all members of the healthcare team is critical. IPTV (Internet Protocol Television) is demonstrating another highly effective way of disseminating information that provides truly integrated and holistic care.

Community Healthcare Hub - Component Parts



90%
of all patient - clinician interactions take place outside of hospitals

Self-diagnostic support is shown both in the waiting room and the pharmacy. The NHS of the past was fairly proscriptive and reactive but the NHS of today is far more proactive allowing the early detection and prevention of disease. For the first time, the patients are now truly empowered to support their own good health. [6]

The pharmacy is integrated into primary care with the pharmacy team acting seamlessly alongside the primary care team. Information and education are once again key, as are the additional clinical services delivered from within the pharmacy - planned in a whole system approach by the PCT. [7]

Integration also involves better utilisation of space to deliver care more effectively. The consulting room demonstrates the ability of a multiuse environment; in use by a GP in the morning, the room can then transform for the counsellor in the afternoon and the community in the evening.

The treatment room allows further core services to be delivered on one site either by the GP and their team or by hospital staff. Integrating pathways often means initial appointments and their follow ups can all be undertaken in one place and in much less time.

The specialist consultation room allows for the interface with hospital consultants to be really effective, either personally or by telemetry, meaning that patients can receive true care closer to home. [8] The Integrated Approach Specialised diagnostics can now easily be incorporated to support patient pathways and here various modalities, from ultrasound to Doppler, are shown to be relatively simple to install. They are engineered for safety and often used by staff working away from their core hospital, which brings knowledge and capacity to primary care.

This process extends into the community and increasingly budgets for health will be determined at a local level. Here we demonstrate how sport and leisure will form a very important part of whole community healthcare.

If healthcare is to be transformed, it needs buildings that support the process and will incorporate flexibility, durability and sustainability. Current environments support the process, but increasingly primary care will need new levels of engineering and the ability to model to new levels of utilisation that encourage multiuse, whilst underpinning effective infection control and disability compliance at the same time.

Integration also encourages a wide variety of clinicians to work together on one site to deliver care that shares information and experience to ensure patient excellence.

Integration is all about using information effectively. Feedback from patients is key and the involvement of all members of the healthcare team is critical

HEALTH PROMOTION AND ILLNESS PREVENTION

The NHS Plan has, for the first time, recognised the key importance of understanding the causes of ill health and the ways in which disease can be detected and treated at an early stage.

There are now a number of well established screening programmes in the UK that tackle the early detection of breast, cervical and bowel cancer disease with many more to follow.

They require specialist resources at a primary care level, the acceptance of communities, good evidence and widespread health education.

Education within schools and families can be reinforced by effective primary care communication and information that is delivered and supported in an effective, constructive way. Evidence of improved outcome for patients is essential, with primary care playing a pivotal role.

The primary care building has to evolve as a campus for many disciplines and its main role is developing as much for education as for treatment. The building as a health hub is important, supporting not only the immediate but also the wider community, sharing resources amongst a broader population.

Some of these buildings will serve as hubs of a spoke network of smaller surgeries and so form the true community outreach of a distant hospital.

WELLNESS AND EXERCISE

All the evidence suggests that a healthy lifestyle combined with regular exercise promotes not only well-being but also a better health outcome.

Working alongside leisure and fitness providers can help encourage better fitness and help, for example, with the disabling effects of obesity. Many of the newer primary care centres co-locate with leisure facilities, and many Councils encourage prescriptions that can be used to obtain fitness services.

No longer needing to be formal, the garden outside the centre has some equipment that can be used in any location.

Increasingly, rehabilitation will be used for example to re-enable patients after strokes or to prevent hospital admission for major operations like hip replacement.

Good health also involves diet and the new planting programme introduced by the government echoes the Dig for Victory programme of the last war. Significantly the health of the UK population was never better than in the immediate post war years (1946-1950).

The roof garden suggests plants and vegetables for good health that are easy to grow and can be obtained at very low cost.

Health promotion is a key function of primary care and its buildings need to support and encourage the population sustainably.

The NHS is now changing rapidly to enable a healthier population through increased health awareness, better education, enabled self care and appreciation of individual accountability for one's own health.

Health promotion is a key function of primary care and its buildings need to support and encourage the population sustainably

COMMUNITY AND SOCIAL CARE

Community and Social Care has for many years been independent from healthcare. Recent changes within the UK are set to integrate the whole care pathway for the population of the country.

The budgets for health, social and community care are gradually being brought together to allow for better planning of health and social care resources. The boundaries set for Primary Care Trusts and Local Councils are now co-terminus, further advancing centralised and co-operative planning.

Communities are being encouraged to be actively involved in health and social care resources at a local level and to deliver far more specific and locally sensitive services.

Population well-being reflects the immediate effect of these services and allows every need of the population to be delivered as one 'care pathway' to greatly improve the service that the patient or client receives. There is still a long way to go as there is currently no central shared record system that would enable this joined up process to be complete.

The new generation of primary care buildings, however, is designed to optimise this process. The co-location of the primary care team (GPs, Nurses, Health Visitors and their support teams) with social workers and the voluntary sector greatly strengthens communication of effective care. Adding physiotherapists, chiropodists and community support staff further builds on effective communication and service delivery.

Community Healthcare Campus buildings form the anticipated hub for healthcare. They can have all the services listed above and can be further enhanced by the addition of hospital services, diagnostics and even libraries, retailing and district council services.

At the core of developing each of these centres has to be a local need and strong demographic planning. Working with communities, understanding their health and social needs, and delivering an appropriate range of services will deliver high quality care, not only for now but for the 30 plus years life of the building.

30 The projected life span of the Community Healthcare Campus is at least 30 years

ASSISTED LIVING

Assisted Living is the title that has been given to the concept of supporting people in their own home by means of technology.

Around the world there have been a large number of trials of the different components of telecare (and other elements of assisted living) and several thousand papers have been published in scientific journals. However, the picture remains one that is dominated by small schemes and proof of concept trials. Telecare services tend to be small scale, standardised ('one size fits all'), non-integrated (either as stand-alone systems or services, or with the whole health and social care system) and reactive (a response is only triggered after an alert or request for information is made).

Although there is a growing evidence base for the clinical and cost benefit advantages of telecare and assisted living technologies, existing systems only represent an incremental improvement to current care processes. A key aspiration for healthcare is to move as far as possible from an emphasis on curing to caring. This involves both preventing illness and predicting when an existing condition is worsening so that more timely pre-emptive action can be taken. The collection of more comprehensive and reliable data at a population level for public health purposes is also an important part of a preventative approach to healthcare. To achieve such a step change in performance, assisted living therefore needs to move towards a model that is large scale, personalised or 'mass customised', fully integrated with the care system and predictive (to allow observation of longer term trends and earlier intervention).

Led by the Digital Access Provision (DAP) Forum, this project based at the Building Research Establishment is one of nine collaborative Assisted Living projects being supported by the UK Technology Strategy Board. The project value is £4.4 million, and started in July 2007 and will complete by June 2011.

The project consortium will develop open-access technical solutions to establish health 'hubs' capable of accommodating plug and play style sensor devices. The focus will be on establishing a competitive environment in which innovative devices and products will emerge that can better support the service and other needs of those with chronic health conditions. The ambition is that cost-effective sensor technology will help enable new models of support for users that, together with the efforts of carers and medical professionals in both the primary and secondary sectors, will assist those with chronic conditions to carry on independent living in the comfort and security of their own homes.

The project is also seeking to stimulate market growth in the supply of plug and play sensor technologies. This is to support both competition and continuous improvement in market offerings as well as to support the development of a UK competence and capacity in assisted living that will help underpin the country's commercial interests in what is fast becoming an international market place.

A key aspiration for healthcare is to move as far as possible from an emphasis on curing to caring

Drawing on the large and inclusive DAP Project Partnership, the project will address major barriers to UK mainstreaming of assistive technologies in line with planned 2012 demonstrators.

Specifically the project will:

- Establish user and performance requirements for the 'hub'
- Develop, in a coordinated way, hub prototypes and associated technologies suitable for piloting in demonstration homes/communities
- Assess and address barriers to the integration of assisted living technologies into the built environment and to undertake knowledge transfer

More information on this DAP-led project is available from www.dapforum.org

MULTI AGENCY WORKING

As the NHS continues to provide the core service for patients that is free at the point of delivery, the service requirement for each and every person will develop.

The key drivers within the population are:

- → Ageing - with an 11% growth in the over 75s over the next 3 years
- → Research and innovation - driving new technologies and solutions for healthcare
- → Expectation - demands increase as the population becomes more aware and understanding heightens

The key controllers are:

- → Staff - the need to recruit and retain staff within health and community care [9]
- → Budgets - the ability of any government to continue to fund an uncontrolled population demand
- → Buildings - the ability of the government and developers to provide sufficient effective space both in and out of hospital to deliver these services. It is estimated that over 50% of primary care buildings are in need of replacement (22% are not DDA compliant)

If the NHS is to continue effectively, decisions will have to be made on what is a core service and what may need to be supplied by other providers - i.e. self pay or insured. Certain services are already no longer provided by the NHS, with varicose veins and aesthetic plastic surgery good examples.

Other countries have already realised that managing their budgets against strong evidence is key to ensuring the best value outcome for health. Locally devolved budgets and actively managing health will be critical to the ongoing success of the NHS. The government is already committed to reorganising budgets at a local level and the new Integrated Care Pilots have been launched to look at ways of making budgets work more effectively.[10]

Overarching this is the need to work towards having all components of care operating together within one budget. Multiagency working demonstrates that process, with Community Care Agencies working alongside Social Services and fully understanding the impact of each action on healthcare and secondary care budgets.

A major component of this interaction rests in the buildings that enable the delivery of care as well as the encouragement of multiagency working and sharing of skills. The facilities may well need to continue to develop and change, with flexibility always key to the design. Adding intermediate care to bring care closer to home and so avoid unnecessary hospital admission will in many areas be key to the local control of healthcare cost.[11]

Health promotion is a key function of primary care and its buildings need to support and encourage the population sustainably

WHAT IS THE FUTURE OF GENERAL PRACTICE?

There have been many changes to general practice in the last 60 years. New contracts (over 8 in the last 21 years) and recent additions have included an outcome framework that measures quality and patient satisfaction.

GPs used to be on a 24 hour, 365 day contract, but that changed in 2004 and now their duty hours are very much 8am to 6.30pm, 5 days a week. In fact the contract restricts minimum consulting to 24 hours a week. The cornerstone of primary care had always been a one-to-one relationship with an individual doctor but the personalised list has now disappeared to a whole practice.

Many GPs now employ salaried staff to carry out many of their duties, and nurses (and nurse practitioners) have an increasing role in care delivery.

Out of hours services are for the large part now carried out by independent providers employed by the Primary Care Trust.

GPs have formerly been self-employed sub-contractors to the NHS working in partnerships. This is beginning to change and the number of salaried GPs in the UK has risen to over 13,000. Practices are getting larger as smaller ones amalgamate and it is anticipated that the number of practices will fall from 9,300 in 2008 to 6,500 by 2012.

GPs will undoubtedly form the major part of care supervision for patients in the future but the contact with the practice will increasingly be with nurses and healthcare assistants together with salaried doctors. Increasingly, pharmacists and web interface will form the first point of contact as GPs move towards clinical specialities, so for example, each large partnership will have local experts in heart disease or chest problems.

General practice will increasingly be supported by secondary care expertise with the ability to use diagnostics and advanced IT to improve and speed the patient pathway. The buildings will need to support this progress along with the inevitable change and evolution of an increasingly cost-controlled and cost-sensitive NHS.

Buildings for primary care (9,300 in the UK) were in the past often conversions of houses built and owned by the GPs. Over the last few years they have become larger, more complex, increasingly developed and owned by specialist developers.

DIAGNOSTICS AND PROCEDURE IN PRIMARY CARE

The NHS has looked to provide increasing access and choice for patients at a local level.

In order to provide this, the facilities and competence of every centre has to be reviewed and improved against a strong evidence base – i.e. what services can be safely and effectively provided at a local level. It is not possible to add a service to a practice operating out of a converted house with ease and it will not always be cost-effective to bring complex services to a small community with a low population, but in many urban areas co-location and relocation of services can be extremely effective.

The campus shows some examples of how these can be provided and how the use of telemetry and telemedicine will widen the range and scope of these services. The key issues are competency for staff and quality control outside of a hospital environment. In other countries, new services have been designed around simpler more straightforward machinery and procedures that are safe, effective and do not require any anaesthesia.

Combining high quality environments with effective diagnostic and procedure facilities is important in all new primary care buildings. Each will be different and will be designed to work alongside other local provision in the effective transfer of services.

The building will need to adapt and be engineered to support a variety of different services during its lifetime. Infection control and patient safety are paramount and working with secondary care services imperative.

MOBILE TECHNOLOGY

Mobile facilities give an additional level of flexibility to the provision of invasive procedures and diagnostics. In theory they could be set up anywhere from a supermarket car park to an acute hospital site.

It will often be the case that a Primary Care Trust as a commissioner of services or an NHS Trust as provider of services requires additional operating capacity to help it shorten waiting times for day case and short stay patients. There have traditionally been a number of solutions to these 'Waiting List Initiatives' including undertaking elective work in NHS operating theatres at weekends, using spare capacity in private hospitals or using mobile facilities.

The mobile operating theatre gives considerable flexibility to the provision of patient care:

- → Procedures can take place on week days
- → Procedures can be undertaken or overseen by the existing staff
- → Arrangements can be in place for a length of time, or at regular intervals

Mobile technology also allows a healthcare provider to extend the range of services it offers locally. This may occur due to advances in technology that enables mobile equipment to be practical, or it may be that new staff are appointed who have the skill and expertise to undertake procedures locally rather than patients having to travel distances in to large acute hospitals.

A mobile unit will allow a new service to be developed and evaluated in a much shorter timescale than planning, designing and constructing a built solution.

A mobile unit visiting a local site will have a beneficial impact on the environment, particularly if the alternative clinical service is located at a considerable distance.

Hansard (20 Nov 2002) gives comparative data for an articulated lorry and for an average car passenger of 403kg CO_2 against 56kg CO_2. Assuming that a patient is driven by a carer (two passengers per trip to hospital), a mobile operating theatre becomes advantageous once the fourth patient is treated.

110,915

Procedures performed within Vanguard Healthcare mobile facilities (Last updated 14/05/2009)

THE VISION FOR THE BUILT ENVIRONMENT

ENERGY

The Community Healthcare Campus has high levels of wall, roof and floor insulation and high performance low-emissivity double glazing. It uses natural daylighting wherever possible and carefully controlled natural ventilation. The building is orientated to avoid excessive overheating and makes use of solar gain in a controlled way.

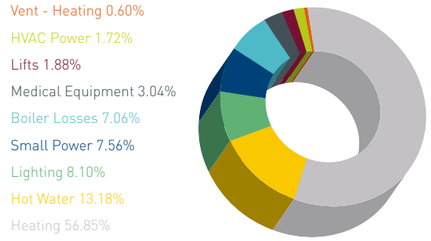
All of these measures improve the efficiency of regulating the internal environment. The problem associated with IT equipment being left on is eliminated by the provision of a wall-mounted key switch that is used to switch off all unnecessary power sockets in the various rooms. This is operated by the building users at the beginning and end of each day, ensuring nothing is drawing power at night or when the building or specific rooms are not in use.

Reducing energy consumption is the first step towards lowering a building's carbon footprint.

The demonstration project features a wind turbine, solar photovoltaic cells and solar wall panels. These help to directly reduce the carbon emissions of the building and raise awareness of energy production and use. The merits of alternative technology energy sources are very site-specific and would need to be assessed for each healthcare building.

Reducing energy consumption is the first step towards lowering a building's carbon footprint

Community Healthcare Campus Energy Consumption



CARBON

The carbon strategy has a carbon hierarchy at its core that starts with passive measures.

REDUCE ENERGY DEMAND	Passive features (insulation, daylight, solar gain/shading, thermal mass, etc.) Encourage energy conscious behaviours Implement energy efficiency measures
EFFICIENCY OF EQUIPMENT AND ENERGY SOURCES	Use energy efficient equipment Provide simple and effective controls Recover useful heat Use clean fossil fuel technology
DECARBONISE ENERGY SUPPLIES	On-site or near-site renewable energy sources, including community schemes
NEUTRALISE ENERGY SUPPLIES	Off-site renewable energy Procure other green electricity supplies Distribute surplus heat and energy through a neighbourhood network Consider responsible carbon offsetting schemes

MONITOR
- Learn from existing projects and practice
- Apply control measures
- Evaluate impacts
- Encourage energy conscious behaviours
- Implement energy efficiency measures

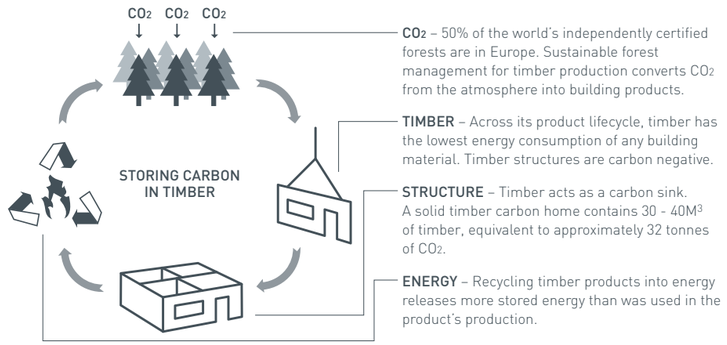
The Community Healthcare Campus is a low carbon solution and represents an important step on a journey towards a zero carbon solution in the future

Your Carbon Asset

Increasing the environmental return on your investment:

Carbon homes and carbon schools deliver a measurable environment return in stored CO_2 that can be offset against emissions associated with the construction of new buildings.

They enable a return on your investment that demonstrates a clear environmental contribution and a commitment to the UK's carbon reduction policies.



CO_2 – 50% of the world's independently certified forests are in Europe. Sustainable forest management for timber production converts CO_2 from the atmosphere into building products.

TIMBER – Across its product lifecycle, timber has the lowest energy consumption of any building material. Timber structures are carbon negative.

STRUCTURE – Timber acts as a carbon sink. A solid timber carbon home contains 30 - 40M^3 of timber, equivalent to approximately 32 tonnes of CO_2.

ENERGY – Recycling timber products into energy releases more stored energy than was used in the product's production.

WHOLE LIFE APPROACH

The Willmott Dixon approach to the overall design including the selection of materials and products used is that these must be assessed over their whole life, rather than just their up-front capital costs.

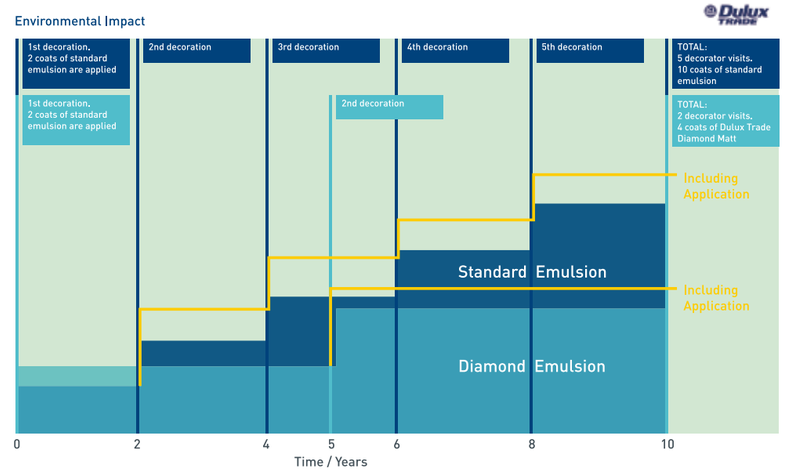
It is our experience that more often than not if a cheaper product is specified it will have a shorter life expectancy and require a greater level of maintenance. Whilst this gives rise to ongoing costs throughout the life of the building, this additional expenditure may or may not be economically efficient. A whole life model will determine this.

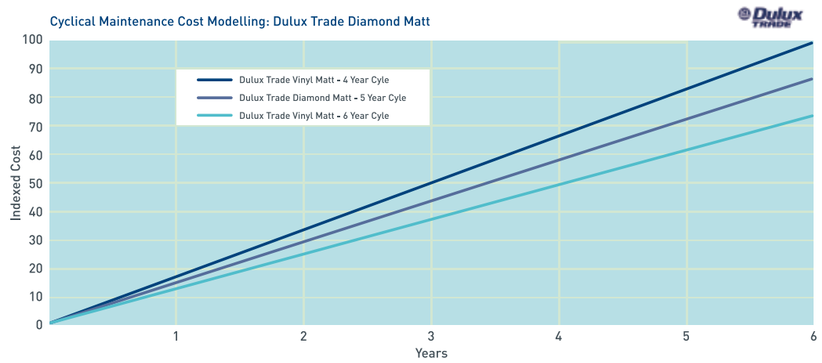
The National Health Service requires that a Whole Life Costing exercise is done for any business case and is included within the Generic Economic Model. This requires calculation of the anticipated expenditure on a year-by-year basis, including staffing costs, energy costs and other revenue expenditure as well as costs directly associated with the construction and maintenance of any building. As an economic modelling tool, there are inputs for 'opportunity costs' and discount factors to reflect interest and inflation rates.

WHOLE LIFE COSTING EXAMPLE DULUX TRADE DIAMOND RANGE

Long term benefits for budgets and the environment:
The extended maintenance cycles offered by the Diamond range not only result in long-term economies, but have the added benefit of dramatically reducing environmental impact.

Cyclical maintenance cost modelling:
Index cost based upon 500 flats with redecoration of communal walls with light substrate failure over a 30 year period. The graph compares standard Dulux Vinyl Matt on a 4 year cycle with upgraded Dulux Diamond Matt on a 5 and 6 year cycle, and clearly demonstrates the long term cost savings associated with specifying higher durability products.





DELIVERING THE SOLUTION

THE RE-THINKING SCHOOL AND RESULTANT PROJECTS

The Willmott Dixon Re-Thinking School of the Future was constructed in 2007, mainly from wood using the Eurban System laminated solid timber building components. Dimensionally accurate, precisely cut timber wall, floor and roof elements enable the construction of airtight building structures, allowing thermal performances to be tailored to an individual project.

Solid timber construction absorbs heat in summer, keeping the inside of the building cooler and reducing the need for mechanical cooling and ventilation.

Solid timber structures offer robust performances for acoustics in buildings. Simply detailed junctions of the monolithic panel elements allow for enhanced acoustic detailing.

By using timber sourced from well-managed forests, it is possible to significantly reduce the carbon footprint of new buildings by locking carbon away in the structure. In the case of the school building, 925kgCO_2/m^3 is embodied in the solid timber whilst 353kgCO_2/m^3 was emitted during production and transportation, giving a net saving of 572kgCO_2/m^3.

The wood fibre insulation was comprises of a compressed board made from 100% recycled materials lined with latex (a natural material) and gives insulation levels that exceed Building Regulations requirements. The sweet chestnut cladding to three sides of the building was all UK sourced, whilst the rear elevation shows a number of alternatives including recycled plastic, brickwork, re-used timber pallets and natural lime render.

Since INSITE 07 Willmott Dixon Construction has now used this construction system in three settings, including the £6.2 million new St Agnes School in Manchester. The timber structure was clad in brick and rendered blockwork to match the local surroundings at the request of the Planning Authority.

100%

The wood fibre insulation was comprises of a compressed board made from 100% recycled materials

DESIGN OF THE COMMUNITY HEALTHCARE CAMPUS

An initial concept brief was drawn up by Dr Mike Shillingford of Primary Asset, Professor Laurie McMahon, who advises both Willmott Dixon and Nuffield Healthcare, and Michael Clarke, the Health Sector Manager at Willmott Dixon.

Based on a vision where one of the definitions of 'sustainability' is the ability to provide for the health and wellbeing of a local population as close to their residence as possible, the scheme's target was to show how as many functions as possible could be provided from one building, or related group of buildings.

Our vision for a future Primary Healthcare Campus is one that includes the following functions:

- **Health promotion**
- Fitness and exercise
- Healthy eating including 'Grow it Yourself'
- Assisted Living
- On-line and automated appointments and check in
- Access to medical records and ability to self-correct some data
- Multi-disciplinary, multi-purpose examination and treatment facilities
- Telemedicine and telediagnostics with high-speed data links to acute centres
- Robotics, particularly in dispensing
- 'Docking station' for mobile healthcare facilities

The concept brief was developed into a concept design by West Hart Architects and signed off by all parties.

Detailed construction drawings and selection of materials was then made by Willmott Dixon design co-ordinators and a supporting design team consisting of architects White Design, who had designed the original building, and services engineers, Cundall.

Specialist input on low energy and research stage products came from Re-Thinking, the specialist in-house sustainability consultancy at Willmott Dixon.

> The scheme's target was to show how as many functions as possible could be provided from one building

CONSTRUCTION OF THE COMMUNITY HEALTHCARE CAMPUS

A change of use refurbishment is never an easy thing to accomplish, as the materials used originally might not be in keeping with the new environment. In this particular case though, one of the aims was to demonstrate the ease of converting an education building into a healthcare building.

The flexibility of the Eurban structure was the key to making the alterations a safe and pain free operation. The structure was not only able to cope with large structural modifications such as doors and windows, but also smaller alterations for services and aesthetic purposes.

The design process was slightly unorthodox as there is no end user/stakeholder, with the quality achieved through the experience of the team members and the sponsors involved with the project.

We encouraged the buy-in and expertise of our supply chain, throughout the process.

There were many challenges to taking the CHC from the concept design to construction and getting the project over the line but we are very pleased with the outcome.

Where parts of the works fell outside the scope of the design consultants, we used our initiative. We also endeavoured to use materials innovatively, for example using copper for a handrail to give a hygienic and infection-controlled environment.

From the outset, waste management was key to managing the construction process, and the aim was zero waste to landfill.

Learning from the BRE, we were able to recycle most welfare waste, from plastic bottles and aluminium cans to paper and cardboard waste.

We looked at reducing the waste produced at every stage of the construction process, with a policy to all sub-contractors that insisted, if you produce it, you remove it! If the contractor is paying for the waste, the waste reduces considerately.

We also applied a reuse policy on site, which substantially reduced the amount of timber that was sent for recycling. The timber reused was items such as architraves, window linings, backing / 1st fix timbers and site signage backing.

Many of the fixtures and fittings were given to the BRE, such as ceiling lights and tiles, carpet tiles and complete door sets.

Donations of the education equipment from the previous use of the building were made to schools – to the delight of the three schools involved – with one a neighbour of the BRE.

> The flexibility of the Eurban structure was the key to making the alterations a safe and pain free operation

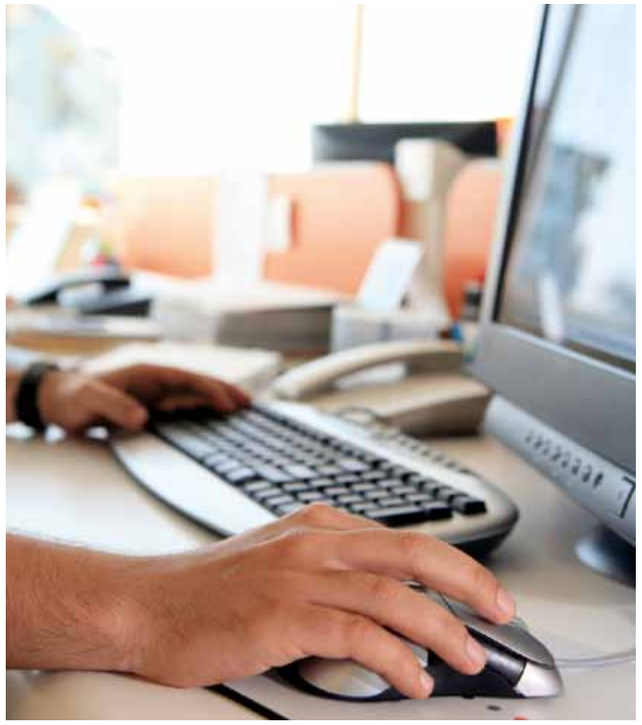
TECHNOLOGY IN THE COMMUNITY HEALTHCARE CAMPUS

The Willmott Dixon Community Healthcare Campus has been designed to maximise the modern information technology that surrounds us in this current age.

The vision of healthcare delivery in the future needs to remain grounded in the use of robust systems and building services that meet and exceed currently used solutions.

The Campus is fully ICT enabled with a combination of a structured cabling network concealed within the building fabric, wireless access points to enable the use of WiFi, netbooks and PDA technologies and a secure fibre optic link to a BT communication main frame that hosts key and sensitive data away from the building. The key design criteria taken on board by the ICT specialists Bailey Teswaine, were availability and access to networks, robustness of interfaces with ICT and security of personal data. Protected cabling, firewall and up to date anti-hacking systems are all in place to protect the networks.

Modern facilities such as the Campus are highly serviced, often with a high density of equipment and functional lighting and power. The brief for the mechanical and electrical services within the building was to match modern technologies to the specific load requirements of each functional space. Technologies were selected that were specifically low or zero carbon, with the ultimate sustainability aim of creating a carbon neutral building by installing and combining the correct systems.



A full description of the technical solution is given in the Specifications section on page 59

ASSISTED LIVING WITHIN THE INNOVATION PARK

The Building Research Establishment is currently leading a research project funded by the Technology Standards Board and the Department for Business, Enterprise and Regulatory Reform to demonstrate how Assisted Living solutions can be developed and then rolled out to full implementation within communities.

Partners within this project include Willmott Dixon, Kent County Council, Microsoft, Cisco Systems, Centrihealth and Tunstall.

A number of scenarios have been developed by a working group led by Kent County Council, including people with the following clinical conditions:

- → Chronic Diabetes
- → Chronic Obstructive Pulmonary Disease
- → Alzheimers

People generally have a pattern to their life – for example they will get up in the morning and go to the bathroom, the front door, the fridge in the kitchen, the dining room etc. By using sensors and if needed cameras, these routines can be tracked and any significant deviation from them can be immediately monitored and reported to a central control. Depending on the needs of the person, a message could then be relayed to a friend, a social worker, a nurse or even the emergency services and action taken.

In addition to this, a diabetic person could take regular blood tests using an automatic device that relays the information back to the primary care centre. Trends and peaks could be observed and if these move outside pre-defined norms an alarm would be sent to a nurse or doctor and action taken.

The Willmott Dixon Community Healthcare Campus, as part of the ALIP project, will be the centre for a growing number of signals from local, national and international projects. Initially this will consist of signals from the London Borough of Newham and the neighbouring house at the Innovation Park, but will in the fullness of time expand to include partners such as Kent County Council, the Welsh Assembly Government and other European states.

People generally have a pattern to their life

PARTNERS, SPONSORS AND SUPPLIERS

LIST OF PARTNERS SPONSORS & SUPPLIERS

Willmott Dixon
Primary Asset / MedicX Group

NG Bailey
Vanguard Healthcare Solutions
Cundall
Re-Thinking Communications
Xella
Ecophon
Deanestor
London Borough of Newham

ALIP
HaCIRIC
White Design
West Hart
Forbo Flooring Systems
Brandon Medical
The Great Outdoor Gym Company
MedicX Pharmacy

Eurban
Dulux Trade
Jayex
Life Channel

D&R Scaffolding
Mimram Services
T Lott
Avi Contracts
Firestone Building Products
Velfac
Britplas
Allgood
Skidmores
Hillingdon Fencing
Elliott Hire
Horizontal
CA Group
Lime Technology
Triflow Concepts
Keeler
ARX
Mitsubishi Electric
Whitecroft Lighting
Valley Blinds
Squibb Painting Contractors
Healthpoint
Positive Solutions
Rushcliff PPS
Huntleigh
Williams Medical Supplies
Fukuda

WILLMOTT DIXON
CONSTRUCTION

Willmott Dixon Construction is the main contracting arm of Willmott Dixon Group, one of the UK's largest privately owned construction, housing, property care and investment companies.

Sectors where the company delivers award-winning projects include health, education, custodial, leisure, commercial offices, hotels and retail.

As a top ten contractor in health, its Healthcare Campus at the BRE aims to show how patient care at primary level will evolve and develop in ten years. This builds on its strong track record in primary care facilities, including building Europe's largest healthcare facility, the Heart of Hounslow Centre for Health, and its involvement in several LIFT schemes and NHS Trust frameworks.

Willmott Dixon aims to be sustainable in everything it does, and has strict targets to ensure it is. By 2012, it intends to be a zero carbon company that also sends no construction waste to landfill. Its sustainable aspirations have been strengthened by Jonathon Porritt joining the Board in 2009 as non-executive director and by inclusion in this year's Sunday Times Best Green Companies list.

Willmott Dixon Construction
Spirella 2
Icknield Way
Letchworth Garden City
Hertfordshire
SG6 4GY

Tel: 01462 671852
www.wilmottdixon.co.uk

Willmott Dixon aims to be sustainable in everything it does, and has strict targets to ensure it is. By 2012, it intends to be a zero carbon company that also sends no construction waste to landfill

Willmott Dixon is also a partnering pioneer. It was the first to adopt the standard PPC 2000 partnering contract, and seeks to work on a partnering basis at all times. This ethos, and the collaborative, open-book approach to projects it promotes, is fundamental to the culture of Willmott Dixon.

Another factor is a strategy of employing people with detailed knowledge of each target sector. Often they have previously worked in these sectors and understand the pressures clients face and what is required from a construction process.

Underpinning all work is Willmott Dixon's belief that it doesn't have an inherent right to be chosen by a client to deliver its project. The opportunity must be earned by a skilled and motivated team whose focus is on delivering a service and an end product that justifies their selection.

Primary Asset
A MedicX Group Company

Primary Asset, part of the MedicX Group, is a leading provider of innovative premises solutions to the primary care market. Our approach is to work in close partnership with GPs, Primary Care Trusts and Health Professionals, to deliver the next generation of healthcare premises.

Primary care is changing rapidly, providing the opportunity to deliver a wider range of services and create a better experience for patients. We believe a new facility can be the catalyst for positive change and benefits can be maximised through partnership, teamwork and mutual trust.

Creating sustainable relationships that work, is the fundamental component at the heart of business. Our regional teams work to understand the individual healthcare requirements of each client to ensure we deliver a bespoke premises solution. Taking a project from an initial idea through to design, build and then on to the long term relationship sets Primary Asset apart.

Now in our eleventh year of delivering primary care premises and working with healthcare professionals throughout the United Kingdom, we have strived to change perceptions of premises by integrating services, combining innovative ideas and challenging the status quo. For us it's not about what has been done over the past decade but more so how modern healthcare is going to be delivered in the future.

We think about the bigger picture, helping our clients to come up with ideas that maximise the potential of their new premises to ensure it's future-proofed and meets the need of the patients and local community.

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Central Office: 0808 2025465
Edinburgh Office: 0808 2025464
Email:info@primaryasset.com
primaryasset.com

To us it's much more than just a medical centre, our focus is on exceeding expectations of GPs, healthcare professionals, the patients and the local community

CASE STUDY

Project: Lytham Primary Care Centre

Client: North Lancashire Teaching PCT
Holland House Medical Centre
Fernbank Surgery

Completion: May 2009

Lytham Primary Care Centre is located on the site of the former Lytham Hospital where there has been a healthcare presence since 1871. A sensitive demolition process was required to allow the adjoining mental health unit to be carefully separated from the former hospital buildings. Primary Asset and the design team have worked hard to ensure that the project stakeholders were involved at all stages of the design process ensuring that the Lytham Primary Care Centre will provide comprehensive health care service for the locality within a modern and innovative building.

Lytham Primary Care Centre will accommodate the towns two existing GP practices alongside other health services including an endoscopy suite, X-Ray facilities, minor surgery and treatment suite. The centre will significantly improve patient access to both primary and secondary care with outpatient services, physiotherapy, occupational therapy, health education and a health port for visiting mobile services. An integrated pharmacy and café facility further enhances the patient experience.

NG Bailey

NG Bailey designs, installs and maintains the services that manage and improve everyday life for patients and staff, such as lighting, ICT, security and air management systems.

NG Bailey's involvement in projects such as Willmott Dixon Community Healthcare Campus enables it to work with its partners to develop and implement new ideas in a laboratory style environment.

The company has used its expertise in the healthcare sector across mechanical, electrical and ICT services to design a building system for the project that provides a more energy-efficient healthcare building. It reduced energy consumption by designing and installing a PV system on the roof that powers the building service, with a touch screen building management system enabling users to manage energy consumption by monitoring energy usage and the performance of the PV system.

Throughout the building the company has employed innovative ideas to improve its performance for staff and patients. For example copper taps were used because this material has been proven to have minimal MRSA retention compared to stainless steel and brass taps.

Working under the Procure 21 framework, NG Bailey recently completed the new build Critical Care Unit at the Northern General Hospital in Sheffield – the largest ITU building in Europe.

The company was responsible for the design of all of the building services and infrastructure, and was particularly mindful of the client's needs, using external risers around the building to ensure that maintenance staff would not need to enter patient areas for access.

The project also made extensive use of its off-site capability, including construction of the largest plant room built off site in the UK with a floor area of 900m^2, which cut the construction time by three months.

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Vanguard healthcare

Working with the NHS and other healthcare providers Vanguard Healthcare offers a flexible solution for healthcare delivery through its unique fleet of mobile facilities, clinical personnel and state-of-the-art equipment.

Vanguard Healthcare Solutions Ltd supports the NHS and other healthcare providers with a unique fleet of sophisticated clinical mobile healthcare facilities. Its service comprises mobile facilities, clinical staff and state-of-the-art equipment, all provided on flexible terms from 1 day to 5 years. Working in partnership with the NHS the company creates mobile solutions to many modern healthcare challenges including:

- → Maintaining capacity during refurbishment
- → Providing capacity to meet changing patient demand
- → Responding to emergency needs
- → Taking care closer to the patient's home
- → Realising reconfiguration strategies
- → Facilitating new service development

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Brockworth
Gloucester
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Email: info@vanguardhealthcare.co.uk
vanguardhealthcare.co.uk

CUNDALL

Multi-disciplinary engineers delivering innovative and sustainable solutions for the built environment.

Cundall's UK offices are in London, Birmingham, Manchester, Newcastle and Edinburgh, and it has a growing international presence in Australia, China, Hong Kong, Spain, Romania, UAE, Cyprus and Libya.

Sustainability is integral to Cundall's design approach. The company provides its clients with practical advice and well-considered solutions, which encompass everything from transport and energy use to how people will ultimately use buildings.

To this end Cundall:

→ Reduces the environmental impact of buildings

→ Provides better spaces for the people who inhabit them

HEALTHCARE IS ABOUT PEOPLE: PATIENTS, STAFF AND VISITORS

Cundall is one of the UK's leading engineering practices involved in healthcare today and recognises that building design is just one element of a hospital. The design must look at wider issues beyond that of the actual building and ensure that it is flexible, adaptable and future-proofed.

The company has experience of working directly for NHS Trusts, private healthcare organisations and PFI procurement both as technical advisors and members of consortia. Internationally it is also leading sustainable design having worked on the site sustainability strategy for the Royal Children's Hospital, Melbourne, Australia.

To support the delivery of modern healthcare services Cundall works with the project team to design buildings that address key criteria including: Cost efficiency (capital and operational costs), thermal comfort and daylighting, indoor air quality and infection control, maintainability and durability, constructability, flexibility and sustainability (energy, water and materials).

Its dedicated specialist healthcare group ensures consistent high quality delivery of healthcare design throughout the UK and overseas.

- Building Services Engineering
- Structural Engineering
- Civil Engineering
- Sustainability
- Lighting
- Fire Engineering
- Vertical Transportation
- Critical Systems
- IT and Communications
- Geotechnical Engineering
- Environmental
- Transportation
- Planning

Cundall
Stephen Maddocks
Healthcare Partner

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Mobile: 07774 763 152
Email: s.maddocks@cundall.com
cundall.com

Re-Thinking

WD RE-THINKING LTD HAS TWO CORE BUSINESS STREAMS

Re-Thinking Services is a specialist sustainable development consultancy operating across the whole built environment providing clients with realistic and practical solutions to complex sustainability problems, which deliver outcomes that are sustainable, innovative and transformational.

We can offer a number of workshops, training, consultancy, design and assessment services including Sustainable Development, BREEAM, PassivHaus, Post Occupancy Evaluation, Environmental Management Systems, Life Cycle Assessment and Whole Life Costing, BRE Green Guide Awareness, EPC & DEC, Materials and Responsible Sourcing, Energy, Water and Waste Reduction.

Re-Thinking Communications delivers creative multimedia communication in a sustainable way. Re-Thinking Communications has comprehensive facilities for providing design, print, video, interactive multimedia, web design and development, audio visual and creative consultancy. It provides a valuable conduit through which Re-Thinking Services can communicate its knowledge base out into the commercial marketplace.

WD Re-Thinking Ltd also has a valuable role to play in supporting external companies and indeed Willmott Dixon companies with their sustainable development and communication requirements. An example of this was the development and delivery of a bespoke interactive training programme delivered to every member of staff through its own computer. The Sustainable Development Level One Training (SDL1) enabled Willmott Dixon Construction to:

1 Train 900 people to an awareness level of Sustainable Development in three weeks, rather than the predicted 18 months
2 Save 54,000 miles of car travel
3 Allow staff to complete training at their own pace and in their chosen environment
4 Realise economic savings of over £100,000
5 Save 8,910 tonnes of associated CO_2

This assisted Willmott Dixon Group in coming 3rd in the Sunday Times Green Companies List, published Sunday 24th May 2009, and also win the category for 'Best Bigger Company With High Environmental Impact' and be placed higher than any other contractor.

WD Re-Thinking Ltd can help you with all your sustainable development and communication training needs.

WD Re-Thinking Ltd
Spirella 2
Icknield Way
Letchworth Garden City
Hertfordshire, SG6 4GY

Heidi Hodgson - Re-Thinking Services
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Email: info@wdrt.co.uk

Gary Oaten - Re-Thinking Communications
Tel: 01462 835842
Email: gary.oaten@wdrt.co.uk

Fermacell is registered on the WRAP directory as 100% recycled content, and on London Remade website as 100% sustainable and 100% recycled.

Fermacell uses 100% recycled materials: 80% recycled gypsum and 20% recycled cellulose fibres derived from paper and recycled water. These elements are combined to form a homogenous mass, which is then formed into a dense sheet material. After drying, the large format boards are cut to size and all by-products are fed back into the system, ensuring no wastage is produced. Both the product and the manufacturing process have been awarded the Rosenheim Institute of Construction Biology and Ecology certificate.

Modern construction needs modern materials. Design innovation combined with increasing pressure from Building Regulations means that materials must save time and money on site and offer technically superior solutions. Fermacell is one such material. A high performance multi-purpose building board, combining acoustic, fire, moisture, impact and load-bearing functions reduces the need for multiple layers in many constructions. When installed, Fermacell combines the properties of solid blockwork with the speed and flexibility of conventional drywall techniques, which allows the designer to use radical solutions in internal space planning.

Features & benefits

Feature	Advantage	Benefit
100% Recycled Materials 20% Paper, 80% Gypsum and Water	No paper wrap and fully recyclable	Sustainability
Cellulose Fibre Reinforcement from Recycled Paper	Provides impact resistance for high traffic areas	Increased Strength
Severe Duty Rating (Single layer of 12.5mm)	High impact resistance	Increased Durability and Decreased Partition Thicknesses
Party Wall Construction from a Single Layer Construction	Easier to achieve acoustic ratings	Potential time & cost saving
Moisture Resistant	Can be installed before envelope complete	Potential cost saving
F60 from a Single Layer, Class 0 Certified	Less sheets required to achieve desired fire resistance	Potential cost saving
Holds 30kg on a Screw, 50Kg with Toggle Bolt	No service ply/patress or noggins required	Potential cost saving
Multi Purpose Board	Results in rationalisation of boards	Saving through quality control
Ecologically Certified	Important contribution to overall health & well being	Comfort
Easily applied Fine Surface Treatment (FST)	No need for plastering trades or water ingress into the building	Coordination Savings

Xella
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Email:fermacell-uk@xella.com
xella.co.uk

The Waldron Health Centre, Lewisham

The Centre, built by Willmott Dixon,was awarded Building Better Healthcare (CABE) Best Primary Care Design 2008 and was runner-up in the 2009 LIFT Awards. It achieved a NEAT 'Excellent' environmental rating.

Acoustic ceilings and wall panels systems from Saint-Gobain Ecophon - the story in healthcare premises.

Room acoustics is an extremely important issue in healthcare buildings. Most such facilities, particularly hospitals, are noisy places, and this has a significant negative effect on patients, visitors and staff.

Numerous research studies have shown a clear link between acoustic conditions and patient outcomes. Improved acoustics reduces sleep deprivation, reduces the need for pain medication, lowers re-admission rates, shortens hospital stays and improves patient satisfaction. Staff also benefit from lower stress levels (reducing depression, sick leave and burnout), reduced medical errors, reduced likelihood of hearing loss and improved job satisfaction.

Ecophon Acoustic products are ideal for providing these benefits. Compliant with HTMs 60 and 08-01, they are the highest class of sound absorber (Class A) and therefore have the maximum effect on lowering noise levels, reducing reverberation (vital to improving speech intelligibility), reducing noise transmission and improving conversational privacy and confidentiality.

They are made from high-density resin-bonded glass wool, making them strong, light, and easy to transport and install. It also means they are unaffected by moisture, which along with their washable painted surfaces enables easy cleaning.

Made from over 70% recycled glass, they are very environmentally friendly and fully recyclable, fulfil the demands of Nordic Eco-Labelling and are certified by the Indoor Climate Labelling (DIM), meeting its highest requirements.

Additional features include Akutex Surface Technology, which amongst other benefits gives high levels of light reflectance and diffusion, providing high light efficiency with reduced glare.

The product range includes unique systems, such as large format ceiling tiles, 3-D products and integrated lighting systems, as well as wall panels and wall and ceiling baffles. This enables Ecophon to provide attractive and practical acoustic solutions throughout healthcare facilities.

Saint-Gobain Ecophon
Anthony Thomas
Concept Developer - Healthcare
UK and Ireland

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ecophon.co.uk

deanestor

Manufacturing furniture for over 60 years, providing healthcare environments for life.

Deanestor Plc designs, manufactures and installs a full range of healthcare furniture including HTM63, HTM71, dental, laboratory and bespoke joinery. Its commitment to eliminating the impact of infection control issues and increasing service levels through every aspect of the business distinguishes it from its competitors.

As a self-managing subcontractor, Deanestor offers fully supported design development and project management. To enable the company to provide full FF&E packages it operates extensive audited supply chains for items such as sinks, taps, notice boards and coat hooks as well as experienced subcontract management for trades such as cubicle tracking and blinds.

Deanestor plc
Warren Way
Crown Farm Business Park
Mansfield NG19 0FL

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Email: enquiries@deanestor.com
deanestor.com

Deanestor is the only current FSC and PEFC accredited healthcare manufacturer, It is committed to minimising its environmental impact and operates a biomass burner, which has reduced our landfill by 90%

PEFC
PEFC/16-37-455

FSC
Mixed Sources

London Borough of Newham

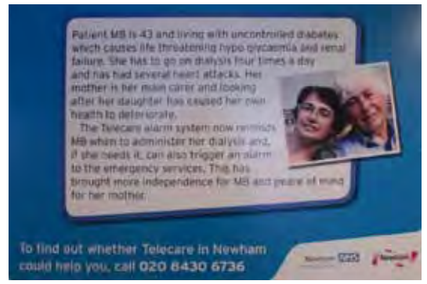
Caring for people with health and social care needs in their own homes.
"My family are pleased with Telecare. If I was to fall or needed help anytime they would be contacted straight away."

Using technology in the home, Newham is pioneering the use of Telecare and Telehealth to facilitate safe care and maintain independence for nearly 5000 borough residents.

Population growth, an increase in life expectancy and the prevalence of health and social care needs means that public expenditure on care is set to double in the next 15 years. Technology therefore needs to be used as an alternative way of caring for people with longer term care needs.

Newham uses Telecare to support residents, their carers and care professionals. Using combinations of devices, sensors and alarms, it can be responsive or used in an emergency, and is monitored 24/7, 365 days per annum by a control centre. Last year over 50,000 calls were made to/ from 2500 residents. Over 500 of these were emergency calls. Telehealth uses vital signs monitoring, surveys, questionnaires and video self-education to support patients with long-term health needs.

Vital signs are monitored remotely by health staff, and local nurses monitor patients daily, with risk assessments carried out by the Telehealth system. Over 1000 people have been targeted for the system from Newham GP practices and local hospitals.



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Picture of the planned Olympics 2012 accommodation

Newham needs to plan for the existing population's health and social care needs, as well as the 'new' residents arising from the Olympics. For further information on Newham's plans please email martin.scarfe@newham.gov.uk

ALIP

EPSRC

bre

NHS National Institute for Health Research

ESRC Economic and Social Research Council

The Economic and Social Research Council (ESRC), the Engineering and Physical Sciences Research Council (EPSRC), the Department of Health (DH) and the Technology Strategy Board (TSB) have agreed to fund a number of activities in the area of Assisted Living under the umbrella of the TSB Assisted Living Innovation Platform (ALIP).

The partners for this ALIP project, led by the Building Research Establishment are:

- Willmott Dixon Construction
- Microsoft
- Foundation for Assistive Technology
- Medilink
- RIBA
- Cisco Systems
- Sasie Ltd
- BT
- Tunstall
- Centrihealth
- Hereward College

The ongoing ALIP 2 project, which will use the Willmott Dixon Community Healthcare Campus as the demonstration site for local, national and international projects, is joined by:

- TeleMedic
- InovaTech (UK)
- Advanced Digital
- 3DReid
- London Borough of Newham

More information on this DAP led project
is available from www.dapforum.org
or Dr John Morlidge, BRE Project Director
Email: MorlidgeJ@bre.co.uk

HaCIRIC

Health and Care Infrastructure Research and Innovation Centre

Modernising the UK's health and social care system is a priority for government and for the country as a whole. To do this, wide ranging organisational and funding reforms are being put in place.

An unprecedented investment to renew the built and technical infrastructure for delivering care is also underway: new hospitals and primary care centres are being built, information and communication technology is being upgraded and new technologies for diagnosing and treating disease are being introduced. Planning and delivering infrastructure to meet future healthcare needs poses significant challenges.

The Health and Care Infrastructure Research and Innovation Centre is a collaboration between existing research centres at Imperial College London and the Universities of Loughborough, Reading and Salford. Additional partners from other universities, industry and the care system are involved in specific research projects. Together this represents a resource valued at more than £10m, of which £7.2m comprises EPSRC support and £2.9m is from the four existing research centres.

HaCIRIC's focus is on the underlying built and technical infrastructure for health and social care, and the interaction between this infrastructure and change and innovation in care services.

The centre's purpose is to deliver research findings that will be instrumental in ensuring this investment achieves its full potential by improving the way infrastructure is planned, delivered and managed.

The collaborative and multi-disciplinary nature of the research team is a critical success factor for generating new knowledge in a way that is marked by creativity, robust analysis and theoretical underpinning.

Prof James Barlow, Tanaka Business School
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whitedesign

White Design was formed in 1998 and now has a well-established track record in innovative sustainable design, construction and management.

The company's work is characterised by enthusiasm for beautiful sustainable and affordable design, and strong team working to deliver it.

At the centre of its architectural ethos is a robust environmental policy. This recognises that the construction, occupation and disposal of buildings is a significant cause of environmental damage.

White Design is committed to aiding and supporting clients in making a positive contribution to sustainability by jointly developing the design of low energy, low environmental impact buildings that create a healthy, productive and efficient environment for users and minimise the life cycle costs of ownership.

Whilst there is a sound ethical case for sustainability, the company believes that there is an even stronger business case.

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white-design.co.uk

west hart partnership Ltd

Concept architects for the INSITE 09 Community Healthcare Campus

West Hart Partnership, a well established chartered practice specialising in the health sector.

West Hart Partnership is passionate about inspiring with innovative design and working in a close partnership with its clients. Building trust and confidence comes first and is achieved by listening, understanding and intelligently interpreting clients' briefs.

The company understands how spaces work, with its main focus on legibility, ease of use and comfortable and healthy environments. From experience, it knows that calm and inspiring atmospheres allow people to feel relaxed and confident.

West Hart Partnership loves a challenge. Harmonizing conflicting interests, making money go further, retaining practice parity and identity, balancing openness and privacy and ensuring sustainability and value are difficult and complex issues that it is experienced in handling sensitively and intuitively.

Working almost exclusively within the health sector, the company is fully familiar with the relevant administrative and legal frameworks and can draw on 15 years experience to ensure delivery of successful solutions time after time.

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westhart.com

FLOORING SYSTEMS

Forbo Flooring Systems is a global producer of world class flooring solutions. The company constantly strives to produce sustainable flooring systems that create better environments for everyone.

Forbo Flooring Systems enhances the interior environment by offering innovative and beautifully designed flooring that delivers long life and consistent high quality.

At the same time it helps take care of the natural environment through its commitment to sustainable development, responsible raw material procurement and manufacturing processes.

The system solution selected for the Community Healthcare Campus interior combines sound-insulating sub-floor system Quickfit, MRSA resistant Marmoleum, Furniture Linoleum and Touch for use throughout both on and off the floor, and the UK's best performing entrance matting to reduce foot-borne soil resulting in the reduction of cleaning and maintenance.

Already creating better environments in many healthcare buildings up and down the UK, testing carried out by a leading institute has confirmed that harmful bacteria and other micro-organisms such the Norovirus and MRSA superbug cannot survive on Marmoleum® flooring. In addition, Marmoleum is independently recognised by a multitude of international eco labels ranging from the Nature Plus label in Germany to the Nordic Swan label in Scandinavia and offers the transparency of independent, peer-reviewed LCA.

When it comes to flooring Forbo offers a natural, sustainable and practical way to limit the spread of infection in healthcare environments.

For further information please contact our Customer Services department on tel: 01592 643777

Samples: 0800 731 2369 Email: info.flooring.uk@forbo.com
forbo-flooring.co.uk

Brandon Medical

BRILLIANT BY DESIGN

Brandon Medical is an award winning British medical technology company with over 40 years healthcare experience. Brandon Medical offers a wide range of products, including Medical Lighting, Medical Architectural Equipment, Control and Power Systems and Medical AV Systems.

Brandon Medical's latest innovation is its HD-LED medical lighting. The company is the first in the world to launch a range of medical lighting featuring the innovative HD-LED technology, with a range that includes examination lights, minor surgical lights and operating theatre lights.

HD-LED is a brand new breakthrough technology with substantially better performance than standard LED. It is unique because it is the first LED lighting system to have perfect colour rendering across the full visible spectrum. This means that the light reflects colours that are noticeably more vivid and clear in comparison to other lighting technologies.

HD-LED lights have the unique feature of red balance control, which allows clinicians to adjust the visible red colour rendition. This characteristic helps surgeons to accurately distinguish between similar coloured tissues during surgery. Doctors can also select the best level of red light during surgery in order to suit their own individual red vision.

HD-LED lights are incredibly efficient. They use less than a third of the energy used by conventional lighting and can reduce carbon dioxide emissions by up to 60%. Unlike other energy-saving lamps, HD-LED lights do not contain polluting substances such as Mercury, Cadmium and Lead and they don't use harmful substances such as Halogens, POPs, CFCs and VOCs.

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brandon-medical.com

THE GREAT OUTDOOR GYM COMPANY

Park Leisure Ltd 20th Anniversary

The Great Outdoor Gym Company Ltd is the pioneer of outdoor gym equipment in the UK, working in partnership with Park Leisure Ltd. The gym equipment is free to use, weatherproof and accessible to people of all ages and abilities.

The mission of the organisation is to create a free fitness chain for everyone in the UK. With physical inactivity levels at an average of 78.7% across the UK and obesity top of the agenda, outdoor gyms break down the main barriers to sports participation identified by Sport England – which are cost and accessibility.

The Great Outdoor Gym Company is the first and only outdoor gym company to achieve the European safety standards (EN1176 and EN957). Since the company was established in January 2007, 41 outdoor gym projects have been successfully delivered across the UK, including securing a £1M sponsorship deal with adidas to create outdoor gyms and fitness spaces, designed in the shape of the Olympic 2012 logo. 'adiZones' were piloted in the host Olympic boroughs in London and are now being rolled out across the UK. Dozens more projects are planned for 2009.

Park Leisure Ltd delivers the outdoor gym and fitness space installations for The Great Outdoor Gym Company. Park Leisure is now in its 20th year of providing high quality outdoor leisure areas and aims to provide as many open play and fitness areas as possible in line with its commitment to the government's Change 4 Life programme. Increasingly, Park Leisure is working with innovative Primary Care Trusts to provide leisure facilities that are free to the end user, which can help to combat obesity and physical inactivity for all ages.

The Great Outdoor Gym Co Ltd, The Hat Factory,
48 and a half, Peckham Rye,London SE15 4JR
Tel: 0207 450 4854 Email: info@tgogc.com
tgogc.com

Park Leisure Ltd, Unit 7, Fairview Industrial Park,
Ruckinge, Ashford, Kent TN26 2PL
Tel: 0800 019 7009 Email: enquiries@parkleisure.com
parkleisure.com

MedicX Pharmacy

A MedicX Group Company

MedicX Pharmacy, part of the MedicX Group, specialises in the provision of pharmacy services working with Primary Care Organisations and partners to push the boundaries in pharmacy service provision and provide joined-up, community focussed pharmacy services.

Our approach is to offer so more than dispensing prescriptions, though of course this is still a core element of our service. At MedicX Pharmacy, we focus on how we can help our patients be healthier, now and in the future. The layout and space planning of our pharmacies allow us to incorporate two dedicated consultation rooms allowing the teams to focus on the provision of professional healthcare services.

Each pharmacy team is encouraged to develop new services based on the particular health needs of their local community. Not only do we offer health screening services for diabetes, cholesterol, Chlamydia, high blood pressure, we also encourage all of our patients to participate in the MedicX Pharmacy Healthy Lifestyle Assessment. This unique assessment has been created to help signpost our patients to further sources of advice for improving their health, both now and in the future, as well as offering support to change elements of their lifestyle which could ultimately decrease the risk of developing long-term illness in the future.

If you require further information about MedicX Pharmacy and to partner with us to realise our vision of the future, please find our contact details below.

MedicX Pharmacy Ltd, Central Team Office
1st Floor 13-17 Peel Street, Chorley, Lancashire PR7 2EY

Tel: 0808 2025469 Email: info@medicxpharmacy.com
medicxpharmacy.com

We are a design-led contractor specialising in the supply and installation of solid timber building structures.

Eurban Construction works in close collaboration with manufacturers to ensure a cost-effective and seamless delivery of client project.

Timber is a high quality raw material that can be continuously and sustainably produced from well-managed forests.

Timber offers a number of effective strategies for reducing emissions of CO_2. Timber products require significantly less fossil fuel energy than comparable products made from steel or concrete and therefore cut emissions.

$1m^3$ of timber as a substitute for brick or block will save approximately 0.8 tonnes of CO_2 emissions.

Eurban Ltd
Unit 1
33 Waterson Street
London E2 8HT

Dulux Trade is part of ICI Paints AkzoNobel, the world's largest decorative paints company.

With Willmott Dixon promoting sustainable building practices it was important for the company to create a specification that was sustainable and suitable for use in a working healthcare building.

The Diamond Range from Dulux Trade offers category-leading performance based on revolutionary Diamond technology unique to Dulux Trade. It's 10 times tougher formulation brings opportunities for extending maintenance cycles whilst reducing expensive redecoration costs and in turn reducing environmental impact. Walls can be wiped clean without damaging the finish of the paint. The whole range is also water-based, meaning you can use and dispose of the products easily, with none of the downsides of using solvent based alternatives, including the impact to the environment.

Using colours from the Dulux Trade Light & Space range offers further environmental benefits.

ICI Paints,
Wexham Road,
Slough,
Berkshire,
SL2 5DS

0870 242 1100
icipaints.co.uk

Jayex Technology is the leading provider for patient call solutions in the Primary Care setting.

Jayex Technology is the leading provider of patient call solutions, dwell-time health awareness and touch screens for automatic check in systems and patient feedback.

Solutions are specifically designed to cut queues at reception, get the patient in front of the doctor more quickly and deliver fast and reliable information in waiting rooms.

Specialising in workflow optimisation for over 6000 healthcare and public sector clients, Jayex features its Enlighten Web application, the next generation multi-clinic arrivals and call system to optimise service delivery.

Enlighten has a multi-language patient interface and demographics confirmation with built in questionnaires, and is designed for GP practices, dental, community and hospital outpatients clinics, LIFT and polyclinic environments.

Also featured will be X-Media, delivering high impact messages to any pubic area, with split screen and multiple screen control and supporting a wide range of media formats including health channel and IPTV and the 'Qi' intuitive patient feedback and health awareness kiosk.

To discuss your specific project requirements
Tel: 020 8838 6222,
Fax: 020 8838 3222 or
Email: sales@jayex.com
jayex.co.uk

The Life Channel is a successful television network dedicated to celebrating life and health.

With high quality programming, regular BBC news updates and local surgery information, The Life Channel aims to inform and entertain, helping viewers help themselves by providing the latest health advice, entertainment and useful tips in an accessible and friendly manner.

The Life Channel has a valuable role to play in the community, drawing people together to care about their neighbourhood. We will now reach even more people within the community, due to our expansion into pharmacies, opticians, play centres, schools and colleges.

The Life Channel, community engagement through out-of-home television.

The Life Channel
Can Media House
Maritime Way
Ashton-on-Ribble
Preston
PR2 2HT

Tel: 01772 722510
thelifechannel.com

D&R Scaffolding Group Plc is one of the largest independently owned scaffolding companies in the South East and has been established since 1965.

With depots in Peckham, Basildon, Horsham, Maidstone and Hertfordshire, D&R is able to offer a fully comprehensive scaffold package backed up by in-house design engineers and safety advisors.

D&R has carried out many contracts for Willmott Dixon and is proud to be part of their supply chain.

D&R Scaffolding Group PLC
Jon Manning
Tel: 07747 447788
Email: jon.manning@drscaff.co.uk

Mimram Site Services has over twenty years experience in the construction industry.

Mimram Services provided the enabling infrastructure to allow the construction works to be undertaken. This included provision of services to the site offices and site compound, including electrical power, water and drainage. The company also installed a network of 110 volt supplies in the construction area.

Mimram Site Services Ltd
Gary O'Neill
Tel: 01582 519160
Email: info@mimramservices.com

T Lott has been a key supply chain member for Willmott Dixon over many years.

The company has contributed to the project in a number of areas including dry linings, floor screeds and the suspended ceilings.

T Lott Ltd
Amanda Corbett
Tel: 01727 846850
Email: admin@tlottltd.co.uk

Avi Contracts Limited is a family-run carpentry company that has grown through the determined pursuit of excellence and continuous client relationships to become a leading specialist in the carpentry and joinery sector across London.

The company has highly trained and experienced staff who make sure that all works are carried out to the highest standard.

Avi Contracts endeavours to ensure that all works are carried out in a sustainable manner, by obtaining materials from suppliers who source timbers from sustainable forests.

Avi Contracts Ltd
Avi Kara
Tel: 020 8236 9080
Email: info@avicontracts.co.uk

Firestone Building Products is a leading manufacturer of high performing roofing systems for commercial and residential roofing applications.

Since 1980, Firestone Roofing Systems has been successfully installed on hundreds of thousands of roofs worldwide.

Firestone Building Products
Martin Leighton
Email: martin.leighton@fbpl.co.uk

VELFAC recognises the need to limit its impact on the environment, and this philosophy lies at the heart of all that the company does. Reduced energy consumption: Our homes account for 27% of the total UK CO_2 emissions, and 52% of total UK energy consumption is directly attributable to buildings. Specifying windows with low U-values is the first part of your decision and VELFAC can reach U-values as low as 0.9W/m²K.

Responsibly sourced materials: It is essential to consider how your windows are made, and what they are made from. VELFAC is committed to the use of raw materials from sustainable sources, maximising the use of recycled materials, and minimising the use of energy from non-renewable sources.

VELFAC Ltd
Kevin J Bonnar Key Account Mgr
Tel: 01223 897 100
Email: kbo@VELFAC.co.uk

The Safevent window is a revolutionary leap forward in healthcare fenestration. It allows patients and staff to fully open a window in complete safety with no restrictions, allowing maximum natural ventilation. It not only has the potential to save lives with its anti-ligature properties, but also improves the lives of the patients and staff that use it.

It massively reduces a Hospitals carbon footprint by decreasing reliance on mechanical ventilation. £250,000.00 was saved on our very first project (Rathbone Hospital 2006) when the planned air conditioning was deemed unnecessary due to the inclusion of our Safevent windows. It is an extremely low maintenance window with no locks or hinges and has self-cleaning glass.

Britplas
Kevin Gorman Director
Tel: 07717 531 273
Email: kevin@britplas.com

Allgood is the leading architectural ironmonger in the supply of products to the construction industry in the UK. It is the only ironmonger to offer the healthcare sector BioCote® as part of its product range and as an integrated design solution. BioCote® has been proven to reduce bacteria levels by 95.8% on NHS trials at Heartlands Hospital.

BioCote® powder coating is incorporated onto Allgood's products via the 'heat-seal-oven-baked' process, permanently coating its ironmongery to provide continuous anti-microbial properties. Over 5 years of research and independent testing demonstrate anti-microbial effectiveness throughout the products lifetime.

Allgood plc
Alan Field Marketing Manager
Tel: 020 7255 9326
Email: alan.field@allgood.co.uk

Skidmores of Hertford is a well-established and versatile architectural landscaping construction company, based at Stonyhills near Ware, Hertfordshire.

Its management team and skilled workforce have extensive knowledge in construction of both hard and soft landscaping projects, operating in excess of a 50-mile radius of Hertford.

Comprehensive liaison ensures that the company provides an excellent, competitive and efficient service from initial concept through to contract completion.

Skidmores of Hertford Ltd
Tel: 01920 484700
Email: darren@skidmores.co.uk

Hillingdon Fencing supplies and erects a wide range of fencing products from high security to standard garden fencing.

The company carries out works for large construction organisations, local authorities, government bodies and domestic home owners.

90% of timber supplied is from F.S.C certified forests.

Hillingdon Fencing Ltd
Tel: 01895 444 828
www.hillingdonfencing.com

Elliott is the UK's leader in relocatable accommodation including portable cabins, modular buildings, secure storage, portable toilets, temporary kitchens, temporary fencing and fast track building solutions.

The company provides a fast, effective service from its strategically placed hire centres to ensure its customers receive the most modern, advanced range of facilities, dedicated to their specific requirements.

Elliott specialises in the provision of rental accommodation facilities but these are also available to buy.

Elliott Hire
Vicky Lester
Tel: 01733 298600
vicky.lester@elliott-algeco.com

Horizontal prides itself on providing the highest standard of customer care and satisfaction. Horizontal's floor fitters have a wealth of expertise, which allows the company to provide a complete range of fitting for all products including design work.

The management team works closely with clients to select products that are sustainable and environmentally friendly, in particular Forbo, Nairn and Interface.

Horizontal Ltd
Jonathan Bown
Tel: 01525 221909
horizontaloffice@btconnect.com

CA Group Ltd was formed in the UK in the mid-eighties and has grown to become one of the premier metal roofing and cladding systems manufacturers, contractors and suppliers for the industrial, commercial, public sector and refurbishment markets.

The SolarWall® perforated Transpired Solar Collector (pTSC) is a proven method for delivering low carbon renewable energy solutions.

CA Building Products
Tel: 01388 834 242
Email: help@cagroup.ltd.uk

Lime Technology develops and supplies building products for the modern construction market. Many building professionals still incorrectly consider Lime as a material only suited to heritage and conservation works, however modern formulated limes are highly appropriate for new builds and refurbishment as they are easy to use, breathable and have many other beneficial characteristics including low embodied energy.

Lime-based materials are highly sustainable as they benefit the whole construction. Lime mortars allow masonry to be re-used at a building's 'end of life', lime renders are waterproof but breathable but most significantly lime allows the use of bio-based materials such as industrial hemp to form high performance materials such as Hemcrete.

Lime Technology Ltd
Tel: 0845 603 1143
Email: info@limetechnology.co.uk

Copper is germicidal due to the oligodynamic effect - for example copper doorknobs disinfect themselves of bacteria. The antimicrobial properties of copper are effective against MRSA, Escherichia Coli and other pathogens, and covering touch surfaces with copper alloy can help reduce microbial contamination associated with hospital-acquired infections on these surfaces. Items made from copper have up to 100% fewer microorganisms on them compared with the same items made out of standard materials.

A copper clinical trial commenced at the end of July 2007 at Selly Oak Hospital, Birmingham, to assess copper's ability to reduce reservoirs of infection and therefore reducing the risk of infection when it is directly integrated in a hospital environment.

Triflow Concepts
Nick Pryke
Tel: 01708 528459
nick.pryke@triflowconcepts.com

Keeler has been manufacturing eye instruments since 1917 and continues to lead the market with its innovative instruments. This has been achieved through its continuous programme of customer involvement in the design process to ensure that its instruments meet the rigorous demands of daily practice.

The company offers a wide range of instruments including in conjunction with its high quality German partner Riester, with the partnership ensuring a high quality range of precision ergonomic and lightweight design materials.

Keeler Ltd
Laura Haverley
Tel: 01753 827160
Email: laurah@keeler.co.uk

ARX is the UK's leading provider of pharmacy automation. Established in 1995, we specialize in automated storage and retrieval systems for pharmacy packs. The demonstrated benefits of the systems include a reduction in errors, increased space efficiency, a dramatic increase in business efficiency and increased speed of delivery. The robots are able to interface with your pharmacy software and are the only systems available with automatic labelling, refrigerated units and flexible designs to fit in any space. ARX ensure that each automation solution is introduced smoothly and with the participation and endorsement of pharmacy staff.

ARX is a dynamic and innovative company that prides itself in its foresight and adaptability.

ARX
Tel: 01727 893360
arx-ltd.co.uk

Concerns for the environment are growing, along with the drive for cost savings, energy efficiency and corporate and social responsibility. The need to modify the way we go about our business has never been greater.

Mitsubishi Electric is leading the way in providing sustainable technology solutions for buildings with the establishment of the Green Gateway Initiative. This initiative is driving the company to reduce its own emissions and is also encouraging the specifiers, installers and users of its equipment to do the same. Mitsubishi Electric offers air conditioning, space and water heating and ventilation equipment with the addition of energy monitoring and control, PV panels for power generation and integration of these systems to provide total building solutions.

Mitsubishi Electric
Jon Leyland
Tel: 0870 3000 070
jonathan.leyland@meuk.mee.com

Whitecroft Lighting Ltd is an expert in the provision of total lighting solutions for the healthcare environment. Its market leading position in the healthcare sector has been achieved due to in-depth understanding of the challenges that face both patients and healthcare professionals.

The company can create vibrant healthcare environments that not only comply fully with the latest healthcare standards but can also contribute to the general well-being of staff and patients. It offers a range of products combining the newest technologies that deliver superior user comfort, with the added benefit of enhanced infection control and optimum energy efficiency.

Whitecroft Lighting
John Nunn
Tel: 020 8236 9080 / 07771 958197
john.nunn@whitecroftlight.com

Specialists in shading and privacy solutions for all medical and health environments from anti-bacterial blinds to infection control approved cubicle track systems.

Valley Blinds
Craig Markham
Tel: 01375 644644
Email:mail@valleyblinds.co.uk

Squibb Painting Contractors Ltd have been a key supply chain member for Willmott Dixon for many years.

Squibb specialise in painting and decorating which has been a key element of the refurbishment of the building.

Squibb Painters
Steve Griggs
Tel: 01375 644644
stevegriggs@squibbpainting.co.uk

The Healthpoint Touchscreen Health Information System has 3500 topics available to the user many illustrated with pictures and videos. It is a unique database that emphasises the role of the pharmacist in primary health care and helps empower patients to take control over their own health.

Installed in over 600 pharmacies the content has been approved by the NPA and the system also provides pharmacists with a tool that can deliver the customer survey, the practice leaflet, training and statistical information on what topics have been accessed. It is the ideal partner for delivering 21st century pharmacy.

Healthpoint is also proud to announce the arrival of digital Healthpoint TV for the UK and Irish markets.

Healthpoint Technologies Ltd
Jiogn White
Tel: 020 8906 6629
healthpoint-europe.com

Positive Solutions are the leaders in the supply of cutting edge IT solutions to the UK pharmacy market. We offer a one stop solution of powerful integrated EPoS and PMR systems which are constantly evolving to keep pace with the rapidly changing pharmacy environment.

Our Analyst systems have been designed with the pharmacy of the future firmly in mind. Clinical safety features and controls, plus intensive use of barcode technology, play an integral part of everything we do. The success of the company has been achieved due to a team that are committed to delivering an unrivalled customer care philosophy putting you right at the heart of the business.

Positive Solutions
Tel: 01257 275800
solutions@positive-solutions.co.uk
positive-solutions.co.uk

Private Practice Software brings you the very best software package at an affordable price - how refreshing! Already considered by many to be the best package available for practitioners and clinics, Private Practice Software looks after the running of your business while you look after your clients.

PPS is used by more than 1400 clinics in the UK alone. Please visit our web site to see for yourself why PPS is the UK's leading software for Patient and Practice Management.

Rushcliff PPS
John Upson
Tel: 0845 0680 777
Email: john@rushcliff.com

Huntleigh UK offer an extensive range of outcome focused healthcare solutions for all settings. Our innovative products are supported by tailored services including equipment maintenance, decontamination, clinical education and audit.

The Diagnostic Products Division of Huntleigh Healthcare is one of the worlds' leading UK specialist manufacturers of medical diagnostic equipment; covering patient monitoring, vascular assessment, fetal monitoring and maternity software systems.

Huntleigh
Avi Kara
Tel: 02920 485885
huntleigh-diagnostics.com

Williams Medical Supplies is the leading provider of medical supplies and services to the UK healthcare market. More than 9,000 GP surgeries and other healthcare providers trust WMS to supply their medical equipment, pharmaceuticals, everyday consumables and family planning products.

WMS provides a range of services including Health & Safety consultations and a Test & Calibration service that is the only one in the UK to be endorsed by all major medical equipment manufacturers.

Customers can place their orders over the phone, by fax or via our website. Our well-stocked warehouse means that all orders placed by 6pmare despatched the same day and than 95% are delivered within 24 hours.

Williams Medical Supplies Ltd
Tel: 01685 844739
Email: sales@wms.co.uk
wms.co.uk

Fukuda Denshi UK is a supplier of leading edge patient monitoring and clinical information systems. The company has made considerable growth in the critical care market with its acclaimed patient monitoring systems, over the past decade and more. This has been due to product technology and reliability, best in class customer service and support and the loyalty and friendliness of the FD UK team.

Now into our 11th year, Fukuda Denshi UK is proud to provide the latest technology available, with a service and support package that is the envy of our industry. Our philosophy is one of customer care, sensible pricing and a professional approach delivered from a team of ultra-dedicated individuals.

To speak with a Fukuda Denshi UK representative please call us Monday-Friday on 01483 728065.
fukuda.co.uk

EVIDENCE

BREEAM HEALTHCARE ON REFURBISHED BUILDING

NHS guidance stipulates that a 'New Build' construction must achieve an 'Excellent' rating under the BREEAM Healthcare assessment scheme, whilst a 'Refurbishment' must achieve a 'Very Good' rating.

It has not been possible and nor is it appropriate for a full BREEAM Healthcare assessment to be undertaken on the Community Healthcare Campus due to a number of reasons. These include:

→ The building solution for this year's exhibition is actually a 'fit out' and therefore outside of the BREEAM scope

→ Many of the functions that would normally take place within a Health Centre are not allowed for here, as it seeks to exhibit a small number of rooms

→ The setting, as a 'test rig' within an experimental park, does not fit in to the normal situation

where the NHS owns and is responsible for a whole site

→ Energy systems (including self generation) are for the exhibition purpose, rather being used in an operational setting

There are four key focus areas showing how the Willmott Dixon Community Healthcare Campus Building, and Willmott Dixon as a partner, can make a major contribution towards delivering a BREEAM 'Excellent' rating for client healthcare projects:

MINIMISING ENERGY CONSUMPTION AND CO_2 EMISSIONS

– Focus on passive design measures to reduce energy usage in the building – high insulation standards, high levels of air-tightness in envelope design and construction standards (reference to test values), use of natural ventilation wherever possible

– Building services with high levels of energy efficiency – automatically controlled and daylight-modulated lighting, high-efficiency heating services, low energy LED lighting, heat recovery in mechanically ventilated areas, optimally selected and energy saving lift design, A+ rated domestic appliances

– Project-specific feasibility study and selection of optimal strategy, in terms of lowest whole-life cost and impact, for low and zero carbon energy systems for the building – options include solar thermal hot water, solar thermal assisted mechanical ventilation, PV panels, high efficiency ground or air-source heat pumps, biomass heating, wind generation on building or near-site

– Energy metering and building management systems that help minimise energy consumption in use, by monitoring all major energy use areas and zones/tenancy areas within the building

– Best-practice, extended input and seasonal commissioning of building services to maximise energy efficiency in-use, together with enhanced training and user guides for building maintenance staff

→ BREEAM Healthcare 2008 credit score up to 17-25/29 available credits (59-86%) depending on proportion of low/ zero carbon energy used

→ A – rated Energy Performance Certificate where significant low/zero carbon energy used

There are four key focus areas showing how the Willmott Dixon Community Healthcare Campus Building, and Willmott Dixon as a partner, can make a major contribution towards delivering a BREEAM 'Excellent' rating for client healthcare projects.

HEALTH AND WELLBEING FOR STAFF AND PATIENTS

– Building and glazing design that ensures that high levels of natural daylight and a view out from work areas are achieved in all relevant staff, public and patient areas of the building. Daylight levels are also controllable via use of adjustable blinds to all relevant windows, rooflights and other glazing

– Artificial lighting design and specification that achieves lighting levels in accordance with all relevant CIBSE Lighting Codes, provides high quality flicker-free fluorescent lighting, and allows staff and patient control of lighting in appropriate zones

– Natural ventilation is used wherever possible to achieve good levels of ventilation and air quality throughout the occupied areas of the building. Specialist requirements of HTM 55 and HTM 03-01, for example in clinical areas, are also incorporated where relevant

– Heating and ventilation system design that is integrated with the building structure and design and ensures that high levels of thermal comfort are achieved both in summer (in accordance with HTM 03-01) and in winter in terms of appropriate zoning and local control of heating systems

– Compliance with the acoustic standards of HTM 08-01 Part A for indoor ambient noise levels and noise reverberation are achieved by both design and pre-completion acoustic testing

– Selection and specification of paint finishes, floor finishes and other materials to minimise the emissions of all VOC/solvent fumes and avoid the use of materials which contain formaldehyde and other regulated substances

– Provision of a high quality outdoor amenity space that is accessible for all users, and adoption of an arts strategy or policy that provides as pleasant an environment as possible for staff and patients

– Assisting the adoption of healthy travel practices via a high-standard of cycling storage and access on site with supporting showers, changing and storage facilities where possible maintenance staff

→ BREEAM Healthcare 2008 credit score up to 16-19/20 available credits (80-95%)

SUSTAINABLE MATERIALS

– Selection of sustainable structural options/constructions, landscaping materials and insulation products so that the embodied environmental impact of the construction materials and processes are minimised. Materials and construction build-ups with an A+ or A rating under the Green Guide Online 2008 are selected wherever possible

– Creative approaches to refurbishment projects to ensure retention of majority of existing façade and structure and minimise demolition and material wastage

– Use of a significant proportion of recycled aggregate materials in key building elements and use of crushed/ reclaimed demolition materials from site when practically achievable

– Purchasing and specification of materials with full Responsible Sourcing certification for all timber products purchased with FSC or PEFC certification with full Chain of Custody, and masonry, insulation and other non-timber products from suppliers with full ISO 14001 or equivalent manufacturing and extraction processes

– Materials selection and design features that achieve high levels of robustness in a healthcare environment, such as compliance with HTM 56 and HTM59 where appropriate

→ BREEAM Healthcare 2008 credit score up to 10-15/16 available credits (63-94%)

SUSTAINABLE CONSTRUCTION MANAGEMENT

– Exemplar construction site environmental practices and policies that maximise available BREEAM credits:

– *Environmental Key Performance Indicators (eKPI's) defined, measured and targeted for reduction of site energy and water usage*

– *Adoption of best practice policies for dust control and water pollution*

– *IS014001 Environmental Management System and Environmental Materials Policy covering all activities*

– *Site Waste Management Plan that achieves the highest possible levels of waste diverted from landfill and reused/recycled, and minimises the net volume of waste generated*

– *Registration of all projects with the Considerate Constructors Scheme and commitment to achieve the highest score levels*

– Site management policies that ensure protection of all features/aspects of ecological value and provision of best-practise approaches to protecting site biodiversity, such as programming of works to avoid disturbance to wildlife and training/ reporting on site biodiversity issues

– Support of the client's waste management strategy for the health building in-use via provision of appropriate recycling storage, baling/ compacting, and composting facilities where required

– Coordination, support and input to client policies for sustainable construction and project management such as evaluation/ minimisation of building maintenance costs, life-cycle/whole-life costing, engagement with security advisors/ Secured by Design processes, and relevant aspects of the NHS Good Corporate Citizen approach

→ BREEAM Healthcare 2008 credit score up to 13-21/21 available credits (62-100%)

ENERGY MODELLING

The Community Healthcare Campus is designed to be as energy efficient as possible. The benchmark energy consumption target for a new NHS facility is 45 – 55 GJ/m³/annum.

In order to assess this it was necessary to map the transition from the building's energy usage as a school through to its predicted energy use as a healthcare centre of the future. A number of assumptions have been made to generate a realistic prediction of energy use.

Cundalls has undertaken this piece of engineering research and come to the conclusion that the centre will achieve a figure of 31.88 GJ/m³/annum and, 31.07 GJ/m³/annum once the contribution from the PV cells and wind turbine are included.

A key factor in achieving a low energy performance is the controls strategy that optimises plant operation via close environmental control. This reduces waste through unnecessary usage of the systems. Another major contributing factor is the high visibility central energy display that records all metered system performance, highlighting quickly where energy could be saved. This awareness is of high importance to the behaviour modification that is required to achieve true energy savings.

Building Energy Analysis

Summary of KPIs

SYSTEM	GJ/ANN	GJ/AN/100m³
Heating	110	18.13
Hot Water	26	4.20
Vent - Heating	1	0.19
A/C (air heat & hum)	-	-
Vent - Comfort Heating	-	-
Sub Total HVAC	**137**	**22.52**
Distribution Losses	-	-
Boiler Losses	14	2.25
Total Heat	**151**	**24.77**
Lifts	4	0.60
DX Cooling	-	-
Lighting	16	2.58
Small Power	15	2.41
Medical Equipment	6	0.97
HVAC Power	3	0.55
Total for Electrical	**43**	**7.11**
Building Total	**194**	**31.88**
From Wind Turbine	-3	-0.46
From Photovoltaics	-2	-0.35
Net Energy Imported	**189**	**31.07**

Assumptions

1) Assumed to be an actual working Healthcare Campus, and energy consumption based upon typical occupancy, opening hours and usage.
2) Low temperature hot water heating throughout with central boiler plant.
3) Heat source – Biomass boiler plant efficiency 90%.
4) Natural ventilation to Consulting Room.
5) Mechanical ventilation (10 a/c per hour) to Procedures Rooms with heat recovery and solar wall to pre heat fresh air.
6) DX cooling only to the server room.
7) Table and chart are based upon energy consumption and not energy generation (i.e. the contribution from solar thermal, wind generation and photovoltaics are not accounted for in the above calculations). Solar thermal heat generation, wind generation and photovoltaics will reduce the Carbon Dioxide emissions and primary energy input into the building.
8) Based upon EnCO$_2$de (HTM 07-01), principles.

SPECIFICATIONS

HEATING SYSTEMS

The existing heating system within the building was based on air source heat pump technology. Already a high COP technology, the use of heat pumps is becoming more prevalent as gas prices rise and people look to reducing their carbon emissions. Government is currently considering a motion to re-classify air source heat pumps as renewable energy systems based on their high performance.
At the concept stage, investigations were carried out into the feasibility of improving the system efficiency further with the introduction of a ground bore for heat rejection. Many sites are suitable for Ground Source Heat pumps that offer even greater COPs and quicker capital paybacks. The BRE site was deemed suitable in theory but not in practice due to the proliferation of existing below ground services in the vicinity.

PASSIVE COOLING TECHNOLOGIES

With its dense wooden structure the building has a high thermal inertia. This means that the structure itself deals with a high proportion of the internal heat gains created by equipment, occupants and lighting. Where areas of the building have increased heat gains either due to a southerly position, increased glazing or high ICT or equipment loads, supplementary cooling is required. The ICT hub room and some of the clinical spaces have phase change panels that passively absorb heat during peak times and 'discharge' it during cooler periods such as overnight. Part of the heat load of the servers is dealt with by flow of air that is passively cooled by passing it through a 'labyrinth' of air passages below the buildings super-structure.

VENTILATION

To reduce energy consumption, the building has been designed to be predominantly naturally ventilated. The various ventilation openings - windows, skylights and clerestories - are automatically controlled to open when temperatures or CO_2 levels rise. The system will also respond to adverse weather by controlling the opening size back down to the minimum provision. As with every successful system, there is the facility to manually override the controls to provide user specific conditions.
One challenge faced by the M&E designers, Cundalls, was the requirement to meet HTM standards for air quality in the clinical spaces. In order to achieve the required air hygiene and air change rate for the clinical spaces, a mechanical ventilation system was introduced. The opportunity for innovation was not missed here. A heat recovery air-handling unit treats the incoming fresh air prior to introducing it to the space. First, the fresh air is pre-warmed by a 30m² solar wall cladding panel mounted on the south elevation of the building, then additional warmth is extracted from the exhaust air by a non-contact cross flow plate heat exchanger. This is passive heating at its most efficient. The fan that forces the air into the spaces is a low energy unit that is powered by the roof-mounted wind turbine. Once inside the clinical spaces, the air is diffused at low velocities via a hygienic fabric duct. Anti-microbial coatings can be applied to this duct to assist in infection control.

LIGHTING

The lighting for the Healthcare Campus has been selected for robustness, energy efficiency and to ensure that procedures can be safely and properly delivered. Extra low energy lamps and programmable lighting controls with scene setting technology have been used in conjunction with motion detectors to minimise energy consumption. LEDs are used for feature and display lighting as these are low energy and low heat output. Power is provided from the BRE's grid displaced electricity network. On a larger scale and with 24-hour operation, the building would have been suitable for a Combined Heat & Power unit. This would mean on-site generation and sustainable power in the event of mains failure.

RENEWABLE ENERGY TECHNOLOGIES AND LZCs

The vision to make the Healthcare Campus carbon neutral encouraged investigation and innovative thinking in terms of renewable energy. As previously mentioned, most sites could benefit from Ground Source Heat Pumps. Initial studies looked at on-site incineration of medical waste as an alternative to Biomass boilers and also the possibilities of gasification or anaerobic digestion of waste for heat energy (both on a small scale). At the Healthcare Campus, a Photovoltaic Cell Array and a wind turbine combine to reduce the buildings reliance on the grid.

PUBLIC HEALTH SYSTEMS

Rainwater is harvested for greywater applications such as irrigation and flushing. The use of copper as a material for the taps has allowed the retention of the GP-preferred elbow or wrist action lever taps. Clinical trials have shown that copper surfaces kill almost all MRSA pathogens on contact. Infrared sensor taps were explored as an alternative but these have an anecdotally high breakdown rate in practice.

BUILDING ENERGY MANAGEMENT SYSTEMS (BEMS)

All of the primary energy uses within the building are electronically measured and recorded via a central BEMS system. Mitsubishi Electric has provided the technology that allows not only a visual display of the energy performance of the various HVAC and renewable systems but also allows web access to the building's energy performance in real time from anywhere with an internet connection. Meters can also be read remotely via a radio frequency transmitting device and hand-held readers in the utility companies' vans.

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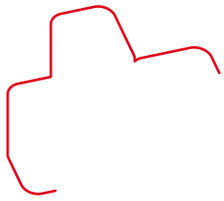
The focus of care will shift from diagnosis and treatment to prevention and well-being

NHS World Class Commissioning, Vision Summary



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