

INNOVATIVE MEP DESIGN

WITH MORE THAN 75 YEARS EXPERIENCE IN BUILDING SERVICES DESIGN

DSSR CONSULTING ENGINEERS SPECIALISES IN PROVIDING HIGH

QUALITY MEP DESIGNS FOR THE HEALTHCARE SECTOR.

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**DESIGN IS NOT JUST
WHAT IT LOOKS LIKE
AND FEELS LIKE;
DESIGN IS HOW IT
WORKS.**

Steve Jobs

DSSR IS A FORWARD-THINKING, AWARD-WINNING FIRM OF CONSULTING ENGINEERS

WE SPECIALISE IN ALL ASPECTS OF BUILDING SERVICES AND SUSTAINABILITY.

CORE SERVICES

- » Mechanical, Electrical & Public Health Engineering Services Design
- » Feasibility Studies
- » Dynamic Thermal Modelling
- » Part L Accredited Energy Assessments
- » Low & Zero Carbon Technology
- » Energy Strategies
- » Energy Audits
- » BREEAM Assessments
- » Code for Sustainable Homes Assessments
- » Vertical Transportation
- » BMS/Controls
- » Condition/Dilapidation Surveys
- » Acting as Expert Witnesses



Nationwide Coverage

DSSR is one of the largest independent Building Services Consultants in the UK, with offices in Glasgow, Harrogate, London and Manchester.

Over 75 years, DSSR has been involved in a very diverse range of projects throughout the country.

Operating throughout the UK, the organisation relies on experienced teams of engineers and designers from different specialities to offer a wealth of technical expertise & design innovation.

ADDITIONAL SERVICES

-  Thermal Modelling & Building Simulation
-  Energy Performance Certification
-  SBEM Section 6 & Part L Compliance Checks
-  Licensed BREEAM Assessors
-  Computational Thermal Dynamics Analyses & Energy & Summer Temperature Analyses
-  Low Carbon / Sustainable Design Studies

KING GEORGE HOSPITAL

INTENSIVE THERAPY UNIT



DSSR have a wealth of retained experience to draw upon to make these projects a success. We work closely and successfully with our clients to deliver projects ranging from new imaging facilities, and operating theatre upgrades up to and including the UK's largest PFI Hospital, The Royal London Hospital, which was delivered ahead of programme and defect-free.

Collaborative working is at the very core of DSSR's ethos; we strive to form integrated project teams, working closely with clients and other professionals to ensure the brief is met and projects are successfully delivered.

The high-profile £6m project at King George Hospital (KGH) typifies DSSR; our complete support in all aspects of the design, supervision and installation of mechanical and electrical services, tailoring our contribution to meet the client's specific needs:

King George Hospital, NE London, with circa 300 inpatient beds, a busy ED, diagnostics and outpatient services, is one of two acute hospital sites run by Barking, Havering and Redbridge University Hospitals NHS Trust (BHRUT), serving the boroughs of Barking and Dagenham, Havering and Redbridge.

Built in 1993, the hospital is approaching 30 years old. A much loved, but slightly old-fashioned hospital design requiring infrastructure upgrades and general reconfiguration to meet the current building standards and patient care requirements.

Critical care bed demand surged during the Covid-19 pandemic and with only eight critical care beds on site at KGH, other areas were taken over as satellite critical care units. Additional beds were squeezed into facilities to meet demands. This was challenging for staff to set up and run safely, with a particular risk of cross contamination between patients. In addition to these challenges, KGH required beds to be ringfenced for elective activity and needed additional capacity to meet local population growth.

These problems were resolved by undertaking a £6m Capital reconfiguration project, where design and construction was completed in just 10 months. This was only possible with tight project management and exemplary levels of collaboration between clinicians, estates colleagues, members of the design team and our construction partners. A spirit of ownership was developed whereby, through helping to arrive at a solution, method or design, shared responsibility and reward was generated.

The elective critical care unit was relocated to the theatres and surgical ward blocks of the hospital. A new emergency critical care unit was designed within the existing footprint with some additional space gained from relocating non-clinical services. In the new L-shaped space, 12 HBN and HTM compliant emergency critical care beds were created. Eight beds are located in paired bays with doors so they can be closed off for infection control purposes and four beds as full PPVL isolation rooms with individual lobbies. One of these four isolation rooms is designed to double up as a "procedure room". This room will therefore be available for use as emergency tracheostomy, line insertions and emergency endoscopy unless the hospital is operating in "surge" mode.

It was imperative that compliant air handling was achieved in all areas. The significant space required for all of the air handling units was found by reinforcing a flat roof in an adjacent courtyard. The added benefit of resolving the critical care unit air handling was that the existing unit previously serving both intensive care and ward areas were offloaded and could be dedicated to providing ventilation to those ward areas alone.



Sheffield Hospital

Sheffield Hospital - Q Floor

This was the design of 4 new theatres, recovery and ancillary areas in a refurbished ward. The design was carried out at BIM level 2. The ceiling voids to 4 theatres, recovery and ancillary areas were very tight for the services and would have required re-design on site, had it not been designed in 3D utilising Revit.

The plantroom was also very congested and there was great difficulty incorporating new services into the area. We used an external Company to carry out a Cloud Scan Survey, which was then converted to Revit model. This had the advantage of saving survey and modelling time on site and made it possible to provide coordination. Without the use of BIM it would have been practically impossible to design and coordinate new plant in this existing plantroom without substitution modifications during installation.



Louisa Jordan COVID-19 Centre

Louisa Jordan COVID-19 Hospital, Glasgow

Having been appointed through the Health Facility Services 2 Framework, DSSR provided Building Services Site Supervision during the construction of the NHS Louisa Jordan Hospital. We had a team of engineers on-site, covering all the elements of the installation over its accelerated 3 week construction period.

Through its accelerated construction, our team collaborated with fellow design professional and multiple contractors on the site to install exceptional building services to their original designs. DSSR's role included witness testing, with much of the testing carried out overnight.

"This was a special, collaborative project; there was a real feel-good factor, with everyone pulling in the same direction to create a unique and vital safeguard for the NHS in a challenging time." - Gordon Smith, DSSR Director



Major Trauma Hospital, Manchester

Major Trauma Hospital, Manchester

The construction of the Greater Manchester Major Trauma Hospital at Salford Royal Hospital is due for completion Summer 2023, with DSSR responsible for the complete M&E design. We have subsequently been invited to work alongside BAM Construction on the multi-million-pound Greater Manchester Major Trauma Hospital (formally known as Salford ARC) for the Northern Care Alliance at Salford Royal. The new facility will provide a Major Trauma centre on the existing Acute site.

This project comprises accommodation over 6 floors, a diagnostics department, Resus department, six operating Theatres, a Recovery Area, and three wards. There is also a unique theatre for RTC's where two surgeries can be performed in the same room. This project is aiming - and is on target - for BRREAM excellent. One of the key project challenges was fitting into site constraints; the building is in the middle of the existing hospital site and also required connection into existing hospital services.



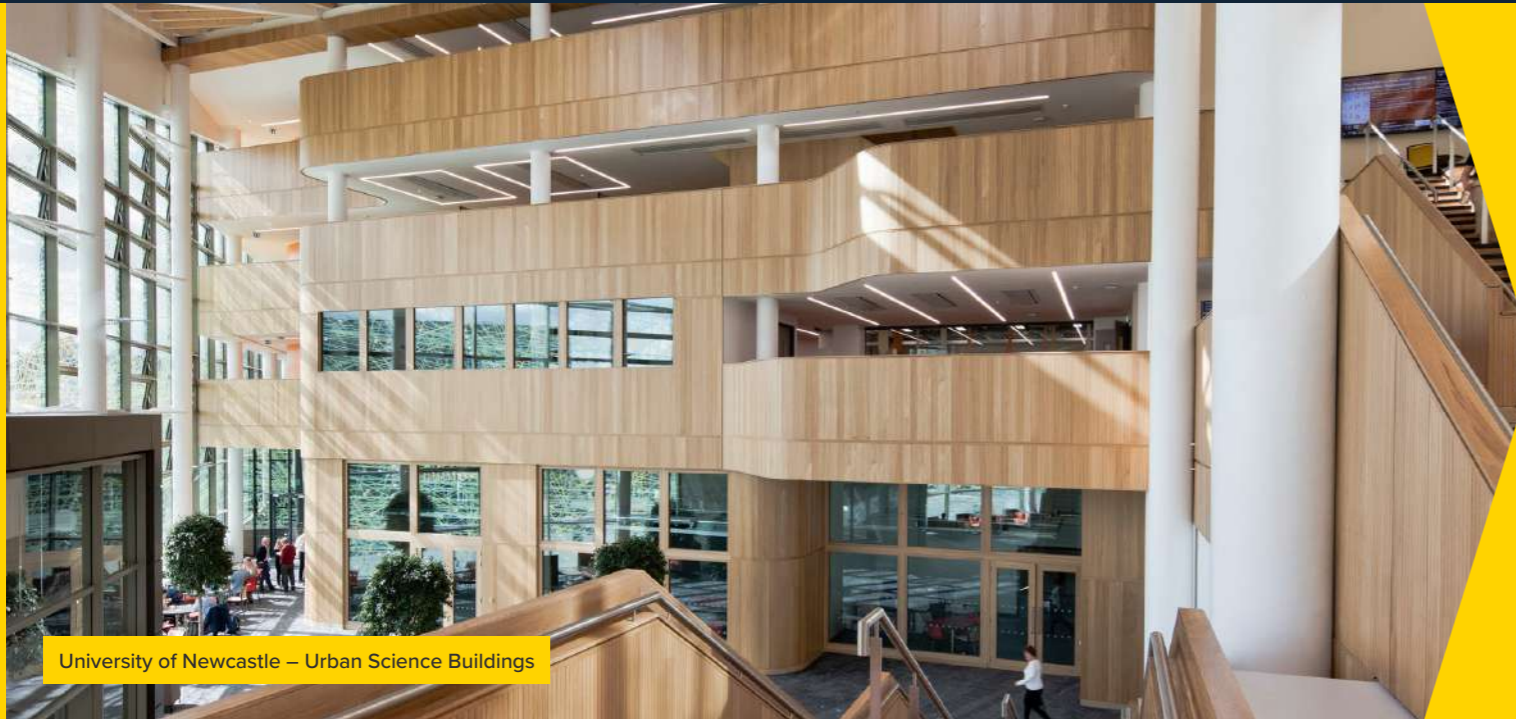
John Radcliffe Hospital, Oxford

John Radcliffe Hospital

DSSR is proud to have provided the full Mechanical, Electrical and Public Health (MEP) design for the building services of a new £29m critical care facility for John Radcliffe Hospital in Oxford, from the concept design stage to completion.

Working in close liaison with the NHS Trust and authorising engineers for the project, a key consideration of this project was how to tackle the spread of airborne pathogens such as COVID-19, SARS, and MERS. One of the ways DSSR addressed this was by creating 'negative pressure rooms', which comply with industry standards and COVID-19 guidance, as part of a tailored ventilation design.

To create a negative pressure room, the inside air pressure needs to be lower than the air pressure outside of the room. By creating this environment, contaminated air is prevented from exiting the room, while non-contaminated air is encouraged to flow into it. A controlled HVAC system then filters the contaminated air before it is released from the hospital. Negative pressure rooms are vital in healthcare facilities as they isolate airborne diseases, preventing them from spreading to patients, staff and guests.



University of Newcastle – Urban Science Buildings

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As part of the project delivery team for the new Urban Science Buildings, DSSR provided Sustainability Consultancy to the Principle Contractor to help deliver the bespoke Framework targets set by the University. As a centre for urban sustainability research, the building has been designed to be very energy efficient as well as being a testbed for research in the urban environment. The facility is electrically-led using decarbonised electricity, and contains thousands of digital sensors/meters to provide data that allows efficient operation. The BIM model is now being used to aid operation of the building and to show the conditions recorded by each of the sensors.

As the new home for the ‘Institute of Sustainability’, there was a particularly strong emphasis on innovation, sustainability and environmental performance. To the more common BREEAM principles, there was a bespoke Sustainability Framework in place to drive sustainability beyond BREEAM with an auditable approach that was designed to enhance targets during construction and operation.



Scania Decarbonised Buildings

Scania Decarbonised Buildings

DSSR are providing a full mechanical, electrical and energy design service for a new Scania Servicing Facility in Eurocentral, Central Scotland. This project is intended to be an exemplar for future Scania service facility roll-outs, a number of which are already commencing.

As well as low energy mixed-mode and VRV solutions in the office areas, Scania have opted for a future-facing, fully decarbonized environmental solution for the servicing facilities. The building also includes leading edge Electric Vehicle charging facilities in support of Scania’s aspiration to electrify their fleet (Scania launched the first commercially available, fully electric truck in September 2020).



Aberdeen International Business Park (AIBP)

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DSSR were the designers of the mechanical, electrical and public health engineering services for the entire AIBP development and detailed design is significantly complete for Phase 1 was successfully completed in February 2015 and Aker Solutions are now in full occupation.

Aberdeen International Business Park (AIBP) is a large scale multi-phase mixed use development located in close proximity to Aberdeen airport. Phase 1 comprises approximately 350,000 sq.ft of bespoke office accommodation split across three, 4 storey offices. Each office also incorporates central data facilities, café, kitchen, servery and restaurant spaces in addition to auditoria and a large scale sports hub.

The offices were designed to BREEAM 2011 Excellent and to realise a 25% reduction in CO2 beyond current regulations.



The Events Campus Aberdeen (TECA)

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DSSR was proud to be part of the multi-disciplinary team which delivered the world-class exhibition, conference and hotel facility in Aberdeen.

Initially, our role was to develop the site masterplan with respect to Utilities Infrastructure and site-wide services. Dynamic Thermal Simulation of all buildings on the site was carried out to predict diversified energy loads, allowing the central Energy Centre footprint and plant sizes to be tailored to match anticipated loads.

Following this initial exercise, our remit was extended to cover Client-side monitoring of the design proposals, installation and commissioning of all mechanical, electrical and public health installations for the Exhibition Centre and Hotel 1, which is attached to it. The new event complex will form part of the wider development of the Rowett North Masterplan, just south of Aberdeen airport.

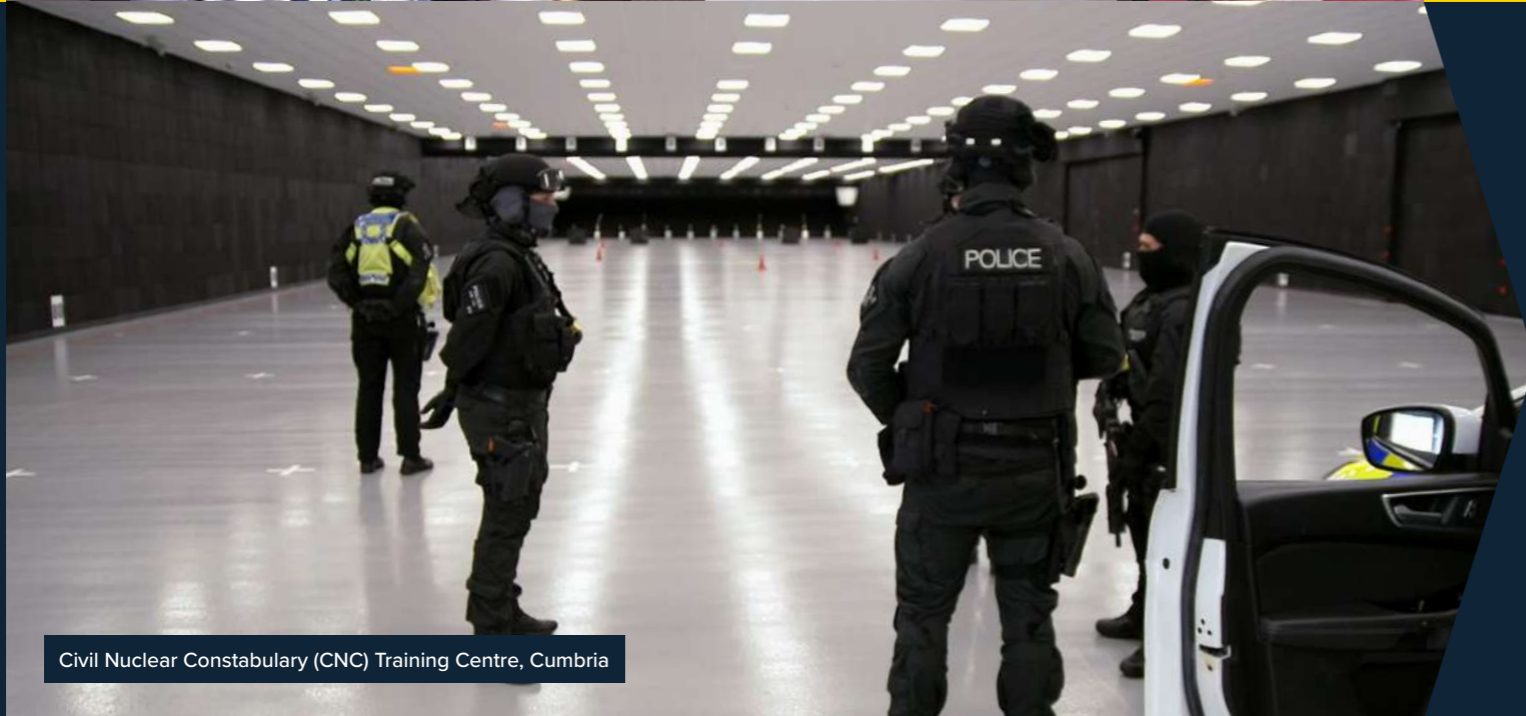


Radisson Hotel, Stansted Airport

Radisson Hotel, Stansted Airport

New 500-bedroom 4-star plus business hotel with associated conferencing, banqueting facilities, health club, restaurants and public house adjacent to the main passenger terminal at Stansted Airport. The development was built in two phases – phase 1 comprising 350 bedrooms and 150 car parking spaces and phase 2 increased the accommodation to 500 bedrooms and 215 car parking spaces.

DSSR was initially appointed to review the infrastructure of the site and was subsequently appointed by BAA Lynton to act as Client’s advisor to review the specifications, drawings and standards for the hotel development.



Civil Nuclear Constabulary (CNC) Training Centre, Cumbria

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This was a project for a newly constructed training facility to allow CNC Operational requirements to support / protect the Civil Nuclear Sites throughout the UK.

The facility meets the stringent regulatory standards set by the College of Policing and UK Government. The state-of-the-art facility comprises of a four storey Hub building connected to firearms training areas.

DSSR completed the initial Thermal Comfort Assessment by producing a 3D model using IES Software and used the model to produce energy and sustainability statement for the planning submission. Along with carrying out full M&E duties, DSSR was also employed as the BREEAM Assessor for the project.



Woodberry Down, London

DSSR has been appointed to multiple phases to provide full MEP design services, and contribute to the sustainability element, of Woodberry Down – one of the largest Estate Regeneration Schemes in Europe.

The extensive regeneration scheme, which began in 2009, will span 8 phases and take 25-30 years to complete. The current phase comprises 584 dwellings in 11 blocks, ranging from 8 storeys to 21 storeys. Within this phase, DSSR is involved in the planning of an Energy Centre which is intended to eventually support the whole development of approximately 7,000 dwellings.



Ravenscraig Development

DSSR was appointed to develop the utilities infrastructure sustainability for the proposed Ravenscraig New Town, including the development of energy and renewables strategies. The project utilises a very wide range of modern energy solutions such as ground source heat pumps, air source heat pumps, solar thermals, biomass, anaerobic digestion and adiabatic cooling. Conservative estimates suggest that this strategy will cut the total heating and cooling energy requirements for the site by at least 10%; with some thermal storage, it is anticipated that up to 30% savings could be made.

Ravenscraig was the first project in Scotland (and second in the world) to be awarded a BREEAM Communities Excellent award. It is the first project in the world to be awarded Excellent.

DSSR is an independent, award-winning practice of Consulting Engineers, specialising in the design of sustainable Mechanical, Electrical, and Public Health services. We are proud of our legacy in low-carbon building design, which includes landmark UK renewable energy projects.

Energy efficiency has always been a vital consideration within every design created by DSSR. Over the past 75 years, we have demonstrated that we are specialists in designing energy-efficient buildings across a wide range of professional sectors, utilising innovative MEP designs, and applying the latest design technologies. Our services include:

- Low Carbon Energy Assessor LCEA
- BREEAM Assessors & Advisory Professionals
- CIBSE Heat Network Consultants
- Thermal Modelling & Building Performance Simulation
- Computational Thermal Dynamics Analyses (CFD)
- SBEM Section 6 and Part L Compliance Checks
- Decarbonisation Studies
- Energy Performance Certification
- Energy and Thermal Comfort Analyses
- Low Carbon / Sustainable Design Studies

“DSSR recognises that meeting the needs of our society, without breaching the earth’s ecological boundaries, requires a paradigm shift in our behaviour. We are committed to working with our clients to commission, design, and maintain buildings as indivisible components of a larger, constantly regenerating, and self-sustaining system, in balance with the natural world.” - **Fiona Williamson - Sustainability Lead**

The Sustainability Lead for DSSR, Fiona is a Regional Director who has been with the company for over 23 years. She manages a multi-disciplinary team, with particular expertise in Sustainable Building Design, is a Chartered Engineer, and has been a Member of CIBSE for 16 years.

Fiona is a Low Carbon Energy Assessor LCEA (Scotland), BREEAM Assessor (NC & RFO), BREEAM Accredited Professional (AP), CIBSE Heat Network Consultant.

DSSR specialises in demystifying the concepts behind Net Carbon Zero, planning the route to decarbonisation, and helping our clients to meet the necessary technical challenges in adapting to current environmental standards.

DSSR Sponsors Sustainability Charity, NHS Forest

DSSR now sponsors the Centre for Sustainable Healthcare (CSH), a registered charity which develops knowledge and resources to support the NHS and other health systems to reach net zero carbon and wider sustainability. We have committed to an annual donation of 500 trees for the NHS Forest.

As an organisation with a vast portfolio of completed healthcare projects, DSSR is always looking out for new ways to add value through our unique understanding of the sector. The NHS Forest project, with its focus on wellbeing and biophilia, is perfectly in-keeping with our human-centric design philosophy which considers an array of related factors such as thermal comfort, artificial and daylight levels, air quality, and ventilation performance.

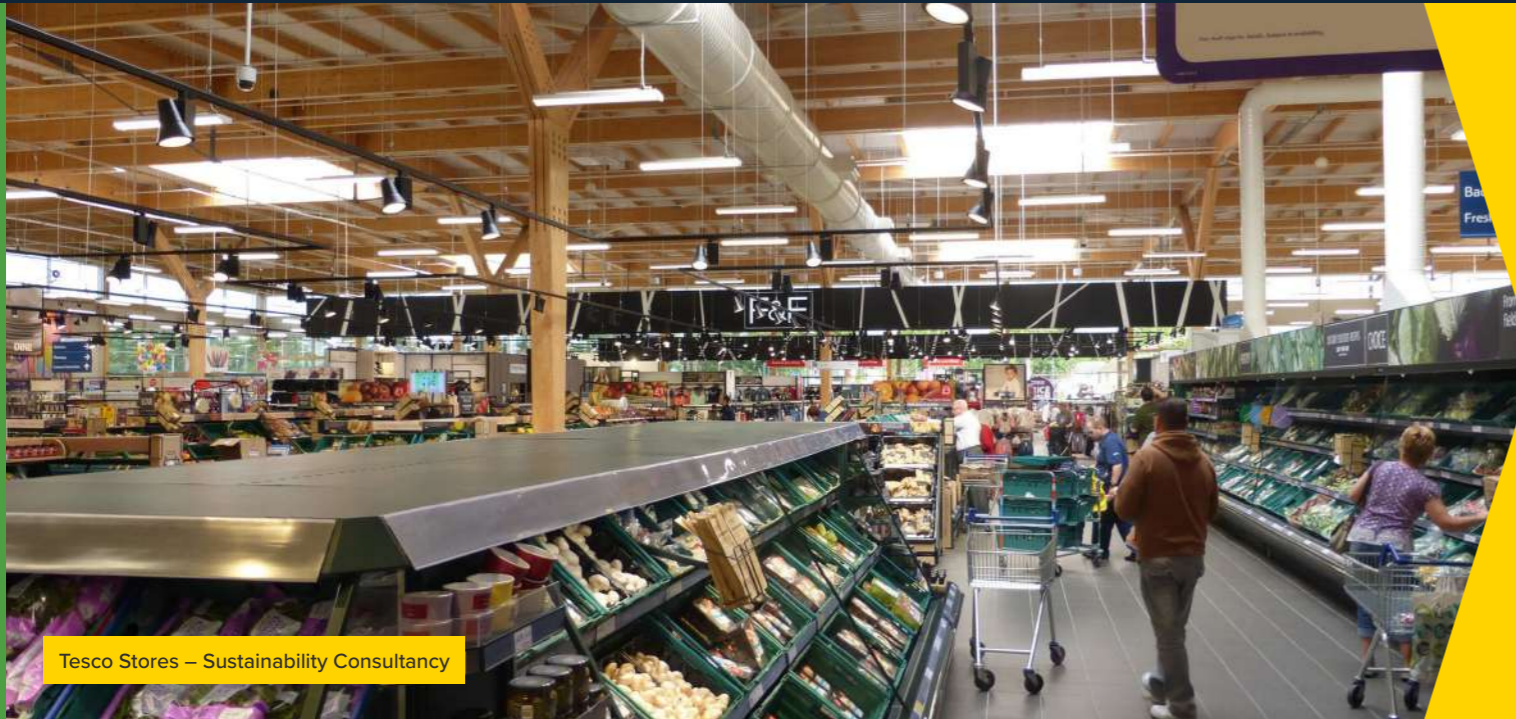


DSSR is excited to announce our new partnership with the Centre for Sustainable Healthcare’s NHS Forest project, a fantastic initiative that we are delighted to support. DSSR specialises in demystifying the concepts behind Net Carbon Zero, planning the route to decarbonisation, and helping our clients to meet the critical technical challenges in adapting to current environmental standards.

The Centre for Sustainable Healthcare (CSH) is a registered charity that develops knowledge and resources to support the NHS and other health systems to reach net zero carbon and wider sustainability.

The NHS Forest inspires and supports healthcare sites in transforming their green space for health, wellbeing and biodiversity. This can mean beautiful gardens for rest and recovery; woodland, orchards and meadows that lock up carbon and create habitats for wildlife; and growing space for fruit and vegetables.





Tesco Stores – Sustainability Consultancy

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Operating as Sustainability Consultants, DSSR contributed to the design of ‘a Tesco Store for the future’ as part of a steering group formed of other building professionals. The premise of the project was to ignore all preconceived ways of grocery shopping and consider how a Tesco Store could be designed to improve the shopping experience whilst improving sustainability. Measures investigated to improve sustainability included:

- Maximising on-site renewable generation
- Using materials with lower embodied impact (e.g. SIPS systems/structural timber)
- Using Modern Methods of Construction (MMC)
- Adopting relevant smart building technology
- Efficient space utilisation and function adaptability
- Reducing the building area by reducing the amount of produce on display



NHS Wales: Specialist Services Mental Health Unit

NHS Wales: Specialist Services Mental Health Unit

DSSR was commissioned by the Aneurin Bevan Health Board (and their framework contractor, Keir Construction) as a Sustainability Consultant. In this capacity, DSSR provided decarbonisation advice and support to ensure that the NHS Wales Decarbonisation Strategic Delivery Plan 2020-2030 could be met by delivering Net Zero Carbon construction.

Having assisted the health board to set realistic targets for operational carbon reduction, DSSR then contributed to the early building design decisions, helping to reduce the carbon impact in the most economic and sustainable way possible.

Using design standards, such as Passivehaus and full dynamic simulation modelling of energy, DSSR helped the site achieve net zero operational carbon. DSSR demonstrated that the energy demand of the building could be met by renewable energy generated onsite.

DSSR is an award-winning international company of Consulting Engineers, who have been around for over 75 years specialising in mechanical and electrical services consultancy. We apply this expertise and knowledge to our designs to make the world a more sustainable place.

We have a rich engineering legacy since being founded in 1945 by Donald Smith, Tommy Seymour and George Rooley. With 5 Directors, 80+ experienced engineering specialists in offices in Glasgow, Manchester, Harrogate and London, DSSR continues to be one of the most innovative consultancies in the UK.

A forward-thinking company, sustainability is a central feature within every design project; DSSR is committed to reducing carbon emissions and energy consumption through each commission to which it contributes.

DSSR benefits from dedicated teams which specialise in specific market sectors, including retail, leisure, education, commercial, residential, healthcare and industrial; we can draw on these specialist teams to deliver robust, innovative and sustainable M&E design solutions to our clients.

Collaborative working is at the core of DSSR's ethos and we strive to form integrated project teams, working closely with clients and other professionals to ensure the brief is met and projects are successfully delivered.

In response to the wider range of procurement strategies in the construction industry, DSSR has for many years been appointed directly by main contractors and building services contractors to undertake the design. As a result, we have a diverse portfolio of projects which reflects our impressive range of capability and expertise.