About Waterman

Waterman Group is a multidisciplinary consultancy providing sustainable solutions to meet the planning, engineering design and project delivery needs of the property, infrastructure, environment and energy markets.

Founded in 1952 and listed on the London Stock Exchange since 1988, Waterman has grown into a leading engineering and environmental consultancy with offices throughout the UK, Europe and Australia. Waterman works with government agencies, local authorities, government-regulated industries and private sector clients to provide innovative, sustainable and economic solutions across a wide spectrum of business activities. The firm has extensive experience in property and buildings, environmental consultancy, power and energy, roads, highways and rail infrastructure, urban and regional planning. Award winning teams provide professional services throughout the complete life cycle of the asset starting from initial surveys and concept planning, through to design, delivery, project management, supervision and on-going maintenance.

Sectors

Aviation
Commercial
Communication & Technology
Conservation / Historic
Education
Energy
Flood Management
Government & Defence
Healthcare
Highways
Hotels
Industrial
Marine
Rail
Residential
Retail
Sports & Leisure
Transportation
Urban Regeneration
Waste

Delivering Building Services

Our services have been developed from years of experience, utilising our knowledge from projects we have been involved in across the globe. We put our passion and energy into delivering great results for our clients and the environment, ensuring that we adapt our work for each project and the local circumstances. We also recognise the importance of providing timely, cost effective solutions to our clients’ challenges and appreciate the difference between cost and value.

As you would expect from a leading consultancy, we are constantly thinking about the issues that effect our clients, which is why they keep coming back to us again and again. Our clients see that finding a solution to their problems is what stimulates us most, and they can be confident that we will always present to them the best possible solutions as well as support throughout the project life cycle.

Areas of expertise

Sustainability
Mechanical Engineering
Electrical Engineering
Public Health
Fire Engineering
Vertical Transportation
Building Physics

“A good building services engineer achieves balance. The optimum balance between affordability, sustainability and function. We strive to achieve the right solutions for our clients by combining innovation with experience and undiluted commitment.”

Neil Lewis, Managing Director of Waterman Building Services
Sustainability

Sustainability in the built environment

Waterman has extensive experience in providing sustainability advice across a wide range of market sectors. This includes low energy and carbon management expertise, renewable energy studies, CHP, natural ventilation and state of the art power distribution strategies. We work extensively with emerging planning policies and support strategic master planning projects including constraints and opportunities analysis, options appraisals and preparation of concept designs to support clients and architects realise their goals and ambitions. We have developed tools to support the planning process through to detailed design and handover which set out and achieve sustainable vision of market leading and aspirational, future proofed, standards.

We have an international team of experienced licensed BREEAM, Code for Sustainable Homes, Green Star, Estidama and LEED assessors. Waterman can also provide post planning services from sustainability implementation plans to sustainable procurement of contracts.

The fusion of architecture and engineering

Operational energy accounts for 80–90% of emissions (and costs) from a building over its design life and effective mechanical and electrical services design is therefore crucial for sustainability success. Effective design includes the development of systems for heating, cooling, ventilation, lighting, power, communications and building energy management. In order to achieve sustainable, energy efficient designs the company’s approach is increasingly centred on the design of the whole building in partnership with architects, structural designers and environmental scientists to optimise the whole life performance.

Our approach to design includes the development of strategies for passive solar shading and maximising daylight, together with assessing the potential for free cooling to reduce or eliminate air-conditioning, using computer modelling to predict airflow and around buildings. Dynamic thermal modelling is used extensively by the Building Physics Group to assess natural ventilation and to carry out façade studies using daylight and artificial light analysis including shading and glare studies. Other tools used include BREEAM for offices, Eco Homes, ENVEST and Climate Surfaces allowing the company to predict important sustainability issues such as pedestrian and occupier comfort and ease of natural ventilation.

Loreto Sixth Form College. BRE awarded “Best of the Best” in the category of further education achieving an Excellent rating with a score of 86.

Waterman has considerable experience in contributing to BREEAM appraisals both as a key member of the design team and acting as certified assessors. We understand the importance of BREEAM being embraced holistically from the concept stages of a scheme, throughout the design and installation phases and beyond into post occupancy and seasonal appraisals. Many of our engineers are BREEAM qualified assessors bringing their experience to projects irrespective of whether we are appointed as the assessor or simply contributing to the process as part of the project team.

Loreto Sixth Form College, Manchester
The fusion of architecture and engineering

Renewable and low and zero carbon (L2C) technologies are now a key factor of all designs. At Waterman we never view them as a bolt on after thought, but always as an intrinsic part of design development.

We strive to harmoniously integrate them into the overall design strategy from the outset; designs which have already maximised architectural techniques, minimised the energy demand of the services and only then applied renewable energy and L2C technologies. This is the mark of a truly good design.

We provide an holistic approach across all areas of design from concept to handover. Innovative design strategies, including specialist facade design allows us to make the building form work in our favour.

Our ability to fully integrate L2C technologies maximises efficiency in terms of carbon saved but also maximises return on investment. This is all achieved by our state of the art dynamic modelling using either TAS or IES software.

“Our goal is to provide our clients with the internal environment and comfort they desire in a manner that has the least overall environmental impact.”

Renewable timber and natural ventilators at Lancashire BSF School
The Commercial Sector

Areas of expertise:
Low energy air conditioning
Ground source heating and cooling
CHP
Domestic piped services
HVAC
Alternative energy design and appraisals
Lighting
Feature and external lighting
Power distribution
Natural Ventilation
Mixed mode systems
Fire protection and detection
Energy Audits
Carbon reduction appraisals
GLA applications
Planning support and applications

A key message is to ‘know the market’. Waterman has become very familiar with what does sell and what doesn’t. We believe it is important for engineers to meet with the letting agents and client at a high level to really understand what the buildings are to be aimed at including market, density of occupation and flexibility. We must avoid design statements that although may be innovative, prejudice the commercial success of the scheme.

Future proofing is becoming even more important than ever before. Although we play our significant part in reducing carbon emissions, there is no tangible evidence that global warming is decreasing. Accordingly, to provide a true life expectancy of a building for the next 50 years we must consider how a building can adapt and perform in the warmer years to come with a coherent strategy for change.

Engineering a building requires assessment of the clients and design teams ideas and from the evolving brief, developing a robust solution maximising value. By intelligent façade design and orientation, we prevent heat gains from entering a space and thus reduce loads and hence size of cooling plant. Our starting point for evaluation of any office will be utilising natural ventilation together with night time purging to provide a cool and well ventilated interior. We understand that in an urban environment this is not always possible due to noise and density of occupation and inevitably we must fall back to mechanical solutions. We are experts in the design of mixed mode solutions utilising technologies such as displacement ventilation and chilled beams which generally require less floor to floor heights than fan coils.
Data Centres and Critical Systems

Through an experienced proactive approach, we support the entire lifecycle of critical facilities from inception, through the design and commissioning phases and on to disposal, for the client to operate safely and efficiently within their building.

Our specialist in-house team, Waterman Critical Systems, provides a full range of services needed to reduce risk and maximise asset value of any property with critical IT and power applications. These facilities include data centres, disaster recovery facilities, back up facilities, air traffic control centres, operating theatres and 24/7 365 production operations that require business critical, life safety critical or environmentally critical management. The highly technical nature of these facilities mean a different approach and skill set is required to manage the development process: from the master planning stage through to understanding the constraints of the environmental, power and IT loads in the briefing process and in the operational life of the property portfolio.

Our understanding of this niche field has grown out of a wider experience in the development and management of the built environment.

We appreciate that there are 2 clear elements to the life of a critical facility, the design stage (pre occupation) and the operational stage and our organisational structure has specialists in each field. With the benefit of this expertise, we support our clients in many ways, but always with the overall aim of ensuring that our services are aligned to and support the clients business plan, drivers and objectives.

**Areas of expertise:**
- Site selection advice and risk analysis and management
- Market assessments
- Design of all Facilities
- Full due diligence audits for new build or data centre conversion
- Development of master planning physical site technical options
- Systems resilience and SPOF review
- Assessment of power requirements and application to power company
- Power and energy target setting and management
- Management of planning submission and approvals
- Review of access for datacoms service providers
- WLC and LCC analysis
- Transition and mobilisation support
- Operational procurement and management

Example of CFD modelling demonstrating airflow through data centre servers

American Express HQ, Brighton
Residential Capability

Waterman is committed to delivering residential spaces that offer exemplary sustainability credentials. From our developments designed to achieve Code for Sustainability Homes Level 4 to studies into Passiv Haus technologies, our multi-disciplinary sustainability team will help unlock the correct approach to deliver real environmental benefits over the building lifetime.

The commercial success of a development is dependent on a balance of cost and value. In pursuit of the best value we test the brief throughout the concept stages but also against regulatory and advisory standards (e.g. Code for Sustainable Homes) and to see that it is flexible and adaptable and likely to meet tenant and agent expectations.

In residential developments added value is generated by minimising the space occupied by services and structures. Simplicity also improves construction efficiency.

Integration and size of M&E services within the cores is greatly affected by the strategy and the assessment of options is all part of our consultative approach. The engineering strategy greatly affects who bares the cost of on-going maintenance.
Delivering Healthcare

Areas of expertise:
- HVAC systems
- Medical gases
- Domestic services
- Isolation solutions
- Theatre A.C. & ventilation
- Compressed air
- Site utilities
- Power
- Lighting
- UPS & generators
- Nurse call systems
- Energy audits
- Carbon reduction

Over the years Waterman has gained considerable experience in designing and planning healthcare environments and understand the specific and specialised needs of the sector.

Across the company, we have developed a key group of people dedicated to healthcare, researching improved solutions, studying healthcare trends and working closely with like-minded architects, clients and healthcare planners. Our specialization is not limited to environmental sciences and engineering, but extends to a full understanding of social needs, community use and societies expectations of ensuring flexible, affordable and inspiring healthcare facilities.

Waterman has an impressive track record having worked on a range of new build and refurbished hospitals for Pennine Trust NHS, Nuffield Hospital, Leeds University Hospital Leeds, Bishop Auckland General Hospital, to name but a few. Within each of our regional and international offices, we have a core of dedicated engineers including designers, energy auditors and BREEAM specialists.

Patient comfort is at the heart of our environmental design. The illustration opposite details a computational fluid dynamic study (CFD) of a 4-bed ward providing early information on air movement and temperature profiles.
Retail Solutions

We set high standards and need to measure how our buildings perform against benchmarks and statutory regulations. To ensure that our clients and architects are provided with the best data upon which to compare building performance and demonstrate compliance, we have developed a team of specialists that offer first class analysis and guidance.

Waterman is committed to providing sustainable solutions throughout the life cycle of our retail projects, both for new build and refurbishments. We believe not only in creating exemplary buildings to minimise the environmental impact, but also in producing high quality retail environments that will help to maximise footfall and enhance the consumer experience.

Waterman’s designers look at the overall holistic design of all retail projects rather than considering each engineering discipline in isolation. Sustainable solutions are introduced as part of the design process from the beginning rather than being an afterthought. Our engineers look at ways of introducing added value benefits as the design process moves forward. This enables the design team and contractor to drive the project forward in a positive way.
Waterman has an impressive track record in education having worked on a range of new build and refurbished schools on Building Schools for the Future (BSF), Learning Skills Council (LSC), primary capital programme, PFI, PPP’s and direct appointments. Within each of our regional and international offices, we have a core of dedicated engineers and environmental scientists led by our education sector director.

With over 60 projects completed or under construction, we have developed a team approach to enable our locally based design offices to benefit from global experience. With excellent service, attention to detail, speed of response and good communications, the teams can tailor our range of services to meet clients’ requirements. This has resulted in strong client relationships generating high volumes of repeat business.

“Loreto 6th Form college has comprehensively demonstrated its remarkable environmental credentials whilst also providing an excellent learning resource centre, ICT facilities and a library for the students and staff.”
Carol Atkinson, BRE
In order to be able to analyse the building form and systems, Waterman offers a state of the art modelling department. The department offers highly advanced services involving all aspects of environmental systems. With the increased demand to build low energy buildings together with regulatory requirements such as Part L to reduce carbon emissions, the use of technology is becoming an important factor when designing environmentally responsible and sustainable buildings. Dynamic Thermal Modelling enables us to accurately analyse the behaviour of a building and its responses under different conditions. Thermal studies help us to provide a detailed analysis of naturally and artificially ventilated spaces, assessment of comfort conditions, building load estimations, energy consumption predictions, solar shading, facade studies and condensation risk assessment. All offices are trained on TAS and IES software.

CFD model of classrooms showing temperature profiles at horizontal slices assessing the effectiveness of natural ventilation

Areas of expertise:
- Peak summertime temperatures
- External building and site wind flow predictions
- Pedestrian comfort
- Contaminant (flue discharge) risk assessment
- Ventilated facade performance
- Interior space comfort conditions
- Interior space air movement
- Prediction of smoke flow
Fire Engineering

Waterman provides a range of cost effective solutions to prevent fire and safeguard people, property and businesses.

By working closely with the architect and adopting a creative approach, Waterman’s fire engineers help clients to achieve their goals, whether protecting the aesthetic quality of the original design, minimising costs or maximising space.

Fire strategies are based on a thorough understanding of fire and smoke movement together with the use of advanced simulation technology. Computational Fluid Dynamics (CFD) allows the client to see evidence in support of the proposed fire strategy; a virtual model of the building tracks the movement of fire and smoke demonstrating how the strategy would work in practice.

**Areas of expertise:**
- Means of Escape
- Fire suppression
- Material selection
- Evacuation plans
- Structural integrity
- CFD modelling
- Smoke control
- Due diligence

Macquarie Bank EMEA HQ, London, United Kingdom

Other Sectors and Capabilities

Aviation

Data Centres

Waste

Government

Energy

Industrial

Hotels

Sports and Leisure

Urban Regeneration

Water
Our presence

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