



# BUILDING SERVICES, ENERGY AND ENVIRONMENTAL



BAILY  
GARNER

# CREATE VISION, BUILD SUCCESS

Baily Garner's inter-disciplinary skilled team provides expertise across all sectors and is able to deliver bespoke and creative design solutions to meet the Client brief whilst ensuring energy efficiency and regulatory compliance.

## WHAT WE OFFER

Our Building Services, Energy and Environmental Engineers provide a collaborative approach to Mechanical, Electrical and Public Health Services design, integrated with expert Sustainability advice.

Together we deliver practical, innovative and energy efficient low carbon design solutions to suit the specific project requirements across all sectors from early concept/pre-planning stages right through to project completion and post occupancy monitoring and feedback.

Our service offer is always based upon sound Engineering principles and practical experience, tailored to suit the needs of the individual Client and the agreed procurement strategy.

We believe that through early engagement, we can add value to projects as it gives us the opportunity to identify and integrate the right design solution from the outset. This enables us to help Clients reduce construction costs whilst meeting stringent environmental targets as well as delivering the required technical reports and certification.

A team of Chartered Engineers oversees the quality of our service output and our wider team consists of highly qualified and experienced professionals, including accredited Low Carbon Consultants and BREEAM Assessors.

## RESIDENTIAL NEW BUILD DEVELOPMENT

New build residential projects, most commonly on confined and dense sites, benefit from Building Services, Energy and Environmental Services support. We use our considerable expertise in providing Energy Reports for Planning Applications (incorporating SAP Assessments), Overheating Analysis, Daylight & Sunlight Analysis, Code Assessments, Capacity studies and guidance in respect to Services Strategies (including plant space allowances, service routes and risers, etc).

### Bedford House, Croydon:

99 mixed tenure apartments with commercial use at street level.

**Services:** Energy Assessor, Building Services Engineering.



New build residential developments are often high density mixed-use schemes which require considerable input from the Energy Assessors and M&E Engineering Team. Early engagement and practical expertise is therefore key to delivering a workable solution that integrates into the Architecture whilst ensuring an energy efficient solution.

A key component is often the central plant with combined heat and power units, designed to match the base energy load of the development for maximum efficiency. Overheating analysis of the development by our Low Carbon Consultants ensures that the Architectural layout and Building Services are integrated to maximise the environmental conditions for the residents, whilst minimising energy consumption for the development as a whole.

**NW Cambridge M1, M2:** Baily Garner has been involved in Lots M1 and M2 of the NW Cambridge masterplan which will deliver 245 new homes. We carried out the Sustainable Design and Construction Statement, the SAP, thermal bridging modelling and Code for Sustainable Homes (Level 5) assessments.

**Services:** Thermal Modelling, Code and SAP Assessor.



Image courtesy of Cambridge University



**Blakes Hill, Evesham:** Heavily insulated, these Code 6 homes also feature renewable energy technologies, including south facing PVs collecting solar energy, a SUDS scheme, water butts collecting rainwater to flush toilets, plus recycling and composting facilities. **Services:** Code and SAP Assessor.



**Hounslow Town residential development:** this residential development of 284 new homes, consisting of nine separate blocks, is to be constructed on a former Car Park and School Playing Fields in the town centre. **Services:** Building Services Engineering, Daylight Studies.

## RESIDENTIAL ESTATE REGENERATION

Estate Regeneration is often a more cost effective way of improving existing residential accommodation and re-organising an estate to deliver new homes that enhance and improve the whole estate.

Baily Garner provide specialist engineering based guidance and support, acting as Energy and SAP Assessors, providing input into the Masterplan and options appraisal. This means that various improvements can be considered at an early stage to assist with strategic decision making.

This approach, backed up with surveys and pre-planning services strategy advice, supports the regeneration team in assessing the practicality of integrating solutions to deliver high quality improvements to the entire neighbourhood.



**King Square, Islington:** A phased construction of seven mixed tenure blocks providing a total of 120 new homes as part of the reconstruction of Moreland Primary School. We developed designs for a mechanical heating strategy for the new dwellings utilising the district heating and heating from surrounding buildings. **Services:** Energy Assessor Pre-planning (BREEAM & SAP), Building Services Engineering.



**Rayners Lane (Phase G), Harrow:** The final phase of redevelopment provides 152 houses and flats for open market sale. All homes have been designed with stand alone boilers and PV to achieve CfSH Level 4. **Services:** M&E Pre-Planning design advice and preparation of Performance Specifications, Code Assessor and Energy Strategy.



**Spring at Stonebridge, Harlesden:** The latest phase to be completed on this award winning estate regeneration project provides 117 new homes and includes the opening up of an underground canal feeder to create a focus to the central shared garden at the heart of the development. **Services:** Energy, Code and SAP Assessor.

Our Mechanical and Electrical Engineers provide expert guidance and technical support to deliver the agreed scheme through to the planning and detailed design stages.

Input from our specialist Energy and Environmental Consultancy Team in collaboration with the Design Team, delivers all of the necessary environmental requirements for buildings from pre-planning stage through to occupancy. This extends from SAP & SBEM calculations to TM4 & Thermal comfort, bespoke “y” value calculations (with the aid of Psi Therm), daylight, sunlight & wind CFD modelling.



**Tollgate Gardens, Kilburn:** Construction of 195 new homes, the refurbishment of 56 homes, an underground car park, a gym facility and community centre. Heating is provided through a Communal Heating Plant that incorporates CHP. **Services:** Building Services Engineering, Code, SAP, BREEAM and Energy Assessor Services.

## RESIDENTIAL HIDDEN HOMES

**Hidden Homes play an important role in utilising your assets and adding to supply by delivering modern homes on disused sites within existing estates. These projects are challenging as they are often delivered on very difficult sites or integrated within existing structures.**

Practical advice and support from Energy Assessors and M&E Engineers are key to delivering these projects. Energy performance of the structure and the impact of the existing surrounding buildings on daylight require careful consideration at the inception stage. This then leads on to the integration of the required building services systems into the detailed design to make these tight spaces habitable and desirable.



**Bessborough St, Pimlico:** The conversion of a redundant housing office over three floors of a Grade II listed building in Pimlico to provide three new affordable homes for Peabody. The proposals involved remodelling of the interior of the basement, ground and first floors of the building without any physical changes to the street facades.

**Services:** Building Services Engineering.



**Vulcan Way, Westbourne Estate, Islington:** 60 disused undercroft garages were converted into 15 1-bedroom flats and two large family houses were built on infill sites. **Services:** Building Services Engineering (full M&E design).



**Hitchin Square Parkside, Bow:** This development of six family homes on a redundant garage site on the Parkside Estate is part of a borough wide initiative to alleviate overcrowding whilst reducing anti-social behaviour.

**Services:** Pre-planning, M&E advice and code and SAP Assessor.



**Kensington Street, Brighton:** Provision of twelve affordable units across three car park sites situated within the North Laines area of Central Brighton. **Services:** Energy & SAP Assessor.

## EDUCATION

## NEW BUILD SCHOOLS

**Modern schools are complex buildings that require innovative Building Services solutions to provide the right environmental conditions to support learning and to achieve BREEAM certification.**

Our specialist Building Services, Energy and Environmental Engineers utilise their wide experience and professional skill in delivering the environmental performance requirements through complex 3D modelling software packages, such as IES, to ensure buildings are designed with energy efficiency in the most cost effective way.

**Keir Hardie Primary school:**

A new two-form entry Primary School and nursery in Newham providing high quality teaching facilities for 480 children. Our role included a detailed CFD analysis to assist with the design and delivery of a natural ventilation strategy for the classrooms, resulting in ventilation stacks within the building connected to windcatchers on the roof. **Services:** Building Services Engineering, Energy and Environmental Consultants.

This environmental focus assists with developing a fundamental design criteria for Education Projects where the opportunities to achieve naturally ventilated buildings are considered at the earliest stage possible. This means that healthy and comfortable environments are achieved with the minimum amount of

energy being used in respect to operational maintenance and running costs. We undertake dynamic thermal modelling and overheating analysis, often during the design development stage, identifying opportunities to integrate wind catchers and solar shading to achieve the optimum internal environmental conditions.



**Hounslow Town Primary School:** As this new five form entry primary school sits directly under the Heathrow flight path it could not be naturally ventilated. Following extensive analysis via the use of IES software, we produced a fully compliant design solution, taking into account over shading analysis and daylight assessments in calculating the heating and cooling loads. This means that cooling is only being provided where absolutely necessary. **Services:** Building Services Engineering (full M&E design), Energy Assessor.

**Moreland Primary School, Islington:** Two form entry primary school providing capacity for 420 pupils, plus a 52 place nursery and children's centre. The new purpose-built, sustainable school delivers fully adaptable facilities, with BB101 compliant natural ventilation achieved using exposed concrete soffits (thermal mass), windows and the use of wind catchers where required. **Services:** Building Services (Performance M&E design).



## EDUCATION EXTENSIONS/ REFURBISHMENT

Refurbishment and extensions to existing school buildings are just as challenging, as the desire to deliver a really good learning environment is a pre-requisite. Working within the confines of existing structures makes the use of 3D modelling for overheating and ventilation analysis even more important, as many of the usual “tricks” used in new build schemes are not practical to achieve the desired internal conditions.

**Creative Arts block, Coopers School, Chislehurst:** This new state-of-the-art building provides students with recording rooms, two large dance studios, classrooms, an art gallery and sixth form café. As part of our wider role at the campus we have overseen the upgrade of new incoming electrical services and sub station.

**Services:** Building Services Engineering, Energy and Environmental Consultants.



**Canteen and teaching block, Glyn School, Ewell:** Our Client required a BREEAM Very Good rating, better than Zero Carbon energy efficiency and a minimum 6% on site electricity generation. The BREEAM rating was achieved by applying good building thermal efficiency, efficient building services and renewables, with PV arrays on roofs for onsite electricity generation.

**Services:** Building Services Engineering, Energy and Environmental Consultants.



**Townley Grammar School, Bexleyheath:** This 2-storey extension provides modern dining facilities and improved kitchen at ground level, with ICT teaching and staff facilities to the upper floor. The quantity of IT equipment in classrooms proved challenging, but natural ventilation, coupled with an innovative low energy ventilation and cooling system in place of air conditioning, reduced capital and running costs. **Services:** Building Services Engineering (full M&E design).



**Waynflete, Brackley:** The completed project provides the school with a fully efficient heating system and a highly efficient single water heater and distribution system. In addition, the striking new curved entrance design, with integrated plant room, provided a much needed solution to the previously concealed school entrance.

**Services:** Building Services Engineering (full M&E design).

Delivering Building Services solutions that improve and complement the learning environment whilst achieving light, bright and adaptable spaces can have a significant impact upon the pupils and staff. The integration of modern technologies can also increase

learning opportunities for the pupils, enabling them to see the energy savings achieved by the addition of photo voltaic panels to generate electricity or by reducing heating bills through the provision of display outputs from BMS control systems.

**Bilton School sports centre, Rugby:** New facilities include a dance studio, weights room, fully equipped gymnasium and new changing facilities. The four court sports hall has underfloor heating linked to an air source heat pump and PVs installed on the roof to increase energy efficiency and reduce running costs. **Services:** Building Services Engineering (full M&E Design) and non-domestic energy assessor.

## CARE AND HEALTH HEALTHY AND FRIENDLY ENVIRONMENTS

The Care and Health Sectors have demanding services requirements that are based upon the care needs of the residents. Integration of these specialist elements into a healthy building requires a careful approach that delivers the services in such a way that often needs to reflect a more domestic feel to reduce any anxiety that patients may experience in otherwise more clinical environments.



**Balmoral Gardens, Gillingham:** The building houses three doctors' practices comprising nine consulting rooms, three treatment rooms and a minor operations suite as well as clinical treatment facilities for podiatry, speech therapy, family planning and physiotherapy. **Services:** Building Services (Performance M&E design).



**Marlborough House, St Leonards:** Sensitive reinstatement of this fire damaged six-storey block, containing 40 self-contained extra care flats, two medical practices and a pharmacy. **Services:** Building Services Engineering (full M&E design).

Our Engineers use their wide experience in delivering complex specialist systems whilst ensuring that the environmental performance of the buildings are achieved in terms of both energy efficiency and cost in use.

We utilise passive techniques wherever possible for ventilation, cooling and natural lighting. These are supported by appropriate and proven technologies to provide healthy, comfortable and friendly environments whilst minimising operational maintenance and running costs.

**Major Clarke House, Cranbrook:** Redevelopment of sub-standard elderly accommodation to provide 24 new sheltered accommodation flats for older people close to the centre of this market town. **Services:** Code and SAP Assessor and Energy Assessor for domestic and non-domestic elements.



**Wyllie Court, Sittingbourne:** To meet the Planner's desire to achieve the most energy efficient solution to this 51 apartment extra care scheme, we designed an energy strategy of central plant, feeding dual-plate heat interface units in each dwelling, backed up by PVs on the roof that fed into the Landlord's supply. **Services:** Building Services Engineering (full M&E design), Code and SAP Assessors, BREEAM Assessors and Energy Assessor for domestic and non-domestic elements.



**Oaks Court, Morden:** Each of the 51 apartments in this care home has under floor heating and a winter garden balcony, and the whole scheme benefits from PVs. **Services:** BREEAM Assessor.



## COMMERCIAL NEW BUILD

Commercial buildings are some of the most highly serviced in our industry and we bring our considerable experience to bear to these business critical systems.

Complex ventilation analysis using Computational Fluid Dynamics (CFD) to test how spaces will perform enables design solutions to be delivered to aid a productive work space environment, with the building services systems and in particular lighting systems fully integrated to minimise energy consumption.

We adopt a collaborative approach with Interior Design and Space Planners to ensure that the Building Services are co-ordinated to provide the correct environment around each workstation.

### RHP offices, 8 Waldegrave Rd, Teddington:

This office building has been designed to be energy efficient by concentrating on improvements to the fabric and incorporating energy efficient technology, utilising solar photovoltaic panels (PVs). We were instrumental in assisting RHP to secure BRE microgeneration funding to pay for 50% of the PV's. **Services:** Building Services Design Advisor/Client Monitoring.



**Green Man, Lewisham:** A complex new build project that includes a community café, training kitchen, credit union branch and office space for Phoenix Community Housing. The south-facing roof maximises exposure to the sun for powering the photovoltaic and solar thermal panels, to power and heat the building.

**Services:** Building Services Design Advisor/Client Monitoring.

**Operational Communications Centre, Hindlip Park:** This new facility at the West Mercia Police Headquarters will act as the communications hub for multi-agency work, as well as being the main centre for the 999 and 101 emergency services. **Services:** M&E Advisor and non-domestic Energy Assessor to planning, M&E performance role to tender stage.



# COMMERCIAL REFURBISHMENT

Refurbishment of commercial spaces requires a keen eye for detail to ensure that the necessary services can be provided within the existing structure whilst delivering the overriding Client requirement for an improved, functional and fully performing facility.

Our Non-Domestic Energy Assessors assist Clients across all parts of the sector, to calculate energy costs and provide guidance in respect to improvements. From a straight

forward EPC for a Landlord or Tenant space, through to energy audits and BREEAM assessments, we have the expertise to support Clients to maintain the value of their premises.

Building Services surveys to review and address performance issues with heating and cooling systems coupled with critical performance/assessment of single point of failure reviews help to ensure that business can continue in a crisis.

**Swarovski, Chelmsford:**  
Refurbishment and extension of an existing retail unit in line with the high-end brand and in keeping with the local conservation area.  
**Services:** Building Services Engineering (full M&E design).



## COMMERCIAL



**Sea Containers House:** Refurbishment and extensions to this mixed use building on the bank of the Thames.  
**Services:** BREEAM advisor and Auditor.

**Lewisham Homes reception, Catford:**  
Refurbishment and fit-out of three floors of an underused office block in Catford together with a full remodelling and refurbishment of the ground floor to form a new housing services reception, interview rooms and staff offices.  
**Services:** Building Services Engineering (full M&E design).



**Chartwell Business Centre, Bromley:**  
Refurbishment and fit-out to provide offices, workshops, staff facilities and garage areas for use by Bromley's Street Cleaning Contractor.  
**Services:** Building Services Engineering (full M&E design).



**Coroners Court, Croydon:**  
Refurbishment and fit-out of a vacant office suite to allow the relocation of Croydon's Coroners Court servicing four surrounding Boroughs.  
**Services:** Building Services Engineering (full M&E design).

## PUBLIC SERVICE BUILDINGS SUPPORTING THE COMMUNITY

Public Service Buildings cross a number of sectors and are often delivered as part of a mixed-use scheme. In the current climate, all projects have the same overriding requirement of being energy efficient and our integrated approach allows us to provide the necessary guidance.

### Robin Hood Crematorium, Solihull:

Refurbishment and extension to an existing crematorium facility including the provision of new cremators and a reagent based mercury adatement system. **Services:** Building Services Engineering.



### Ivy Hall, Holly Park Estate,

**Crouch Hill, Islington:** Our heating design for this 3-storey community centre includes radiant heating panels and natural ventilation louvre heater batteries in the main hall, together with underfloor heating in childrens' play spaces and general circulation areas. **Services:** Energy Assessor (BREEAM & SAP), Building Services Engineering.



**Bramber House, Islington:** New Build Library provided as part of a mixed use Residential Development. **Services:** Energy and BREEAM Assessor, M&E Pre-Planning design advice.



The adaptability of our Building Services, Energy and Environmental Team enables us to provide accurate advice and support to our Clients for all types of buildings due to the depth of knowledge amongst our Engineers.

Community and Public spaces require the same attention as any other part of a project. By considering flexibility, we enable the space to work for a variety of uses, making the design of the services challenging to meet these requirements within the sustainability and energy efficiency agenda. This is where our depth of experience really holds sway with our collaborative and integrated team.

**Soap Box, Old Street, Islington:** this youth centre, run by local charity the Dragon Hall Trust, gives young people the chance to harness their creativity and get hands-on with cutting-edge technology. It features a radio studio and music studio alongside a range of versatile spaces and facilities. **Services:** Building Services Engineering.



## SCHEDULE OF SERVICES

### Heating Systems

Hot & Cold Water Systems

Cooling Systems

Ventilation Systems

Above Ground Drainage Systems

Gas Pipework & Infrastructure

Incoming Cold Water Pipework & Infrastructure

District Heating Systems

Central Boilers & CHPs

Main Distribution Systems

Lighting & Emergency Lighting Systems

Small Power & Ancillary Services

Fire Alarm Systems

Security & Access Control Systems

Electrical Intakes and Infrastructure

Telecoms Infrastructure

IT and Telecoms Infrastructure

Lift Engineering Systems

### Sustainability and Energy Planning Reports

Energy Reports

Overheating Analysis

Daylight Factor Calculations and Sunlight Analysis

BREEAM Assessments

Non-domestic Compliance Calculations - Levels 3, 4 and 5

Code for Sustainable Homes Assessments

SAP Assessments

New Build Energy Performance Certificates (EPCs)

Low Carbon Asset Management Strategies

Existing Domestic Energy Performance (EPCs)

Dynamic Thermal Modelling Studies

Fabric Heat Transmission Modelling

Thermal Bridge Calculations (Accredited Psi-value)

Surface Condensation Risk Analysis

Thermographic Surveys

Full Building Services Design

Environmental, Energy, Carbon and Sustainable Design Consultancy

Planning Pre-application Meeting Support and Attendance

Early Stage Options Analysis

BREEAM Accredited Professional Involvement

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