ENERGY AND SUSTAINABILITY CONSULTANCY

HTA DESIGN LLP

2019

HTA Design LLP

HTA Design LLP are an award-winning design practice working locally with communities to create thriving places that people can live in, work in, and visit.

With a 50 year history of delivering successful projects, our collaborative approach to residential development and regeneration brings together Architecture, Landscape Design, Urban Design, Planning Consultancy, Sustainability, Interior Design, Community Engagement and Communications.

We are renowned for our sustained dedication and history of working with housing providers and local communities to deliver great places.

Our focus continues to be towards housing-led regeneration projects, making us the UK's largest housing only design specialist. This unique focus brings with it an in-depth understanding and knowledge of the sector that is discernible in all our projects.

We always pride ourselves on being a great place to work, with 200 staff across our London, Edinburgh, Manchester and Bristol offices. This was supported by becoming winners of the AJ100 Employer of the Year Award in 2018, and Clients' Choice Award 2019, as well as being selected as one of Building Magazine's top 50 Good Employers for the fourth year running.

The practice was originally established in 1969 and in April 2013 HTA Architects Ltd. transferred to HTA Design LLP when a new partnership was formed.

AJ100 **Winner** Clients' Choice Award **2019**

Winner Employer of the Year **2018**

Staff trip to Paris with partners and children

Contents

Introduction 4

Energy & sustainability consultancy 5

Services 6

Awards 42

LONDON MANCHESTER BRISTOL & EDINBURGH

AJ100 PRACTICE

200+ STAFF

Est. 1969

Creative Collaboration

Introduction

The HTA Sustainable Futures team was set up in 2007 to provide specialised advice to our clients and our internal teams on sustainable low energy architecture.

This was a natural extension of our desire to deliver integrated and future proofed design that provides places that are enjoyable to live in, economical to build and have the lowest possible impact on environment.

Energy and Sustainability Consultancy

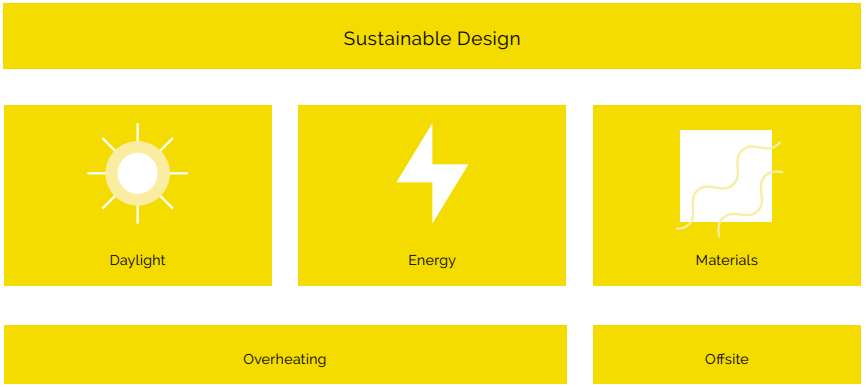
By integrating the main strands of sustainable design, daylight, energy and materials we are able to provide design advice to avoid overheating, meet daylight standards and minimise use of resources.

Our sustainability team works closely with internal teams and clients, developers and engineers to improve the environmental performance of our projects and maximise benefits for both the client and the building occupants.

We operate across the whole spectrum of the RIBA Plan of Work, from the early stages of options appraisals and feasibility studies to the final stages of building operation in use and post occupancy evaluation.

With the rest of HTA we use BIM modelling as we believe in an integrated approach to developing projects.

Our team members, all coming from an engineering or architectural background with Master degrees in Sustainable Design and Engineering are qualified in specific disciplines such as LCEA, BREEAM, HQM, CEEQUAL and SAP. They all have a broad range of experience and are capable of leading and delivering sustainable and cost-effective design and solutions.



Our services

The HTA Sustainable Futures team are responsible for the following services:

1. BREEAM Communities
2. Daylight, Sunlight & Overshadowing – Environmental Impact Assessment (EIA)
3. Design for Manufacture & Assembly
4. Home Performance Labelling
5. BREEAM New Construction
6. Community Engagement & Third Party Consultation
7. Microclimate Analysis of Internal & External Spaces
8. Commercial Energy Assessments SBEM/ Dynamic Simulation Modelling
9. Domestic Energy Assessments SAP
10. Thermal Bridging & U-value Calculations
11. Code for Sustainable Homes (CSH)
12. Home Quality Mark (HQM)
13. CEEQUAL
14. Sustainability, Energy & Climate Change – Environmental Impact
15. Passivhaus (EIA)
16. Life Cycle Assessment (LCA)
17. Post Occupancy Evaluation (POE) & Building Performance Evaluation (BPE)
18. Life Cycle Costing (LCC)

Velux Carbonlight Houses, Kettering Rothwell

BREEAM Communities

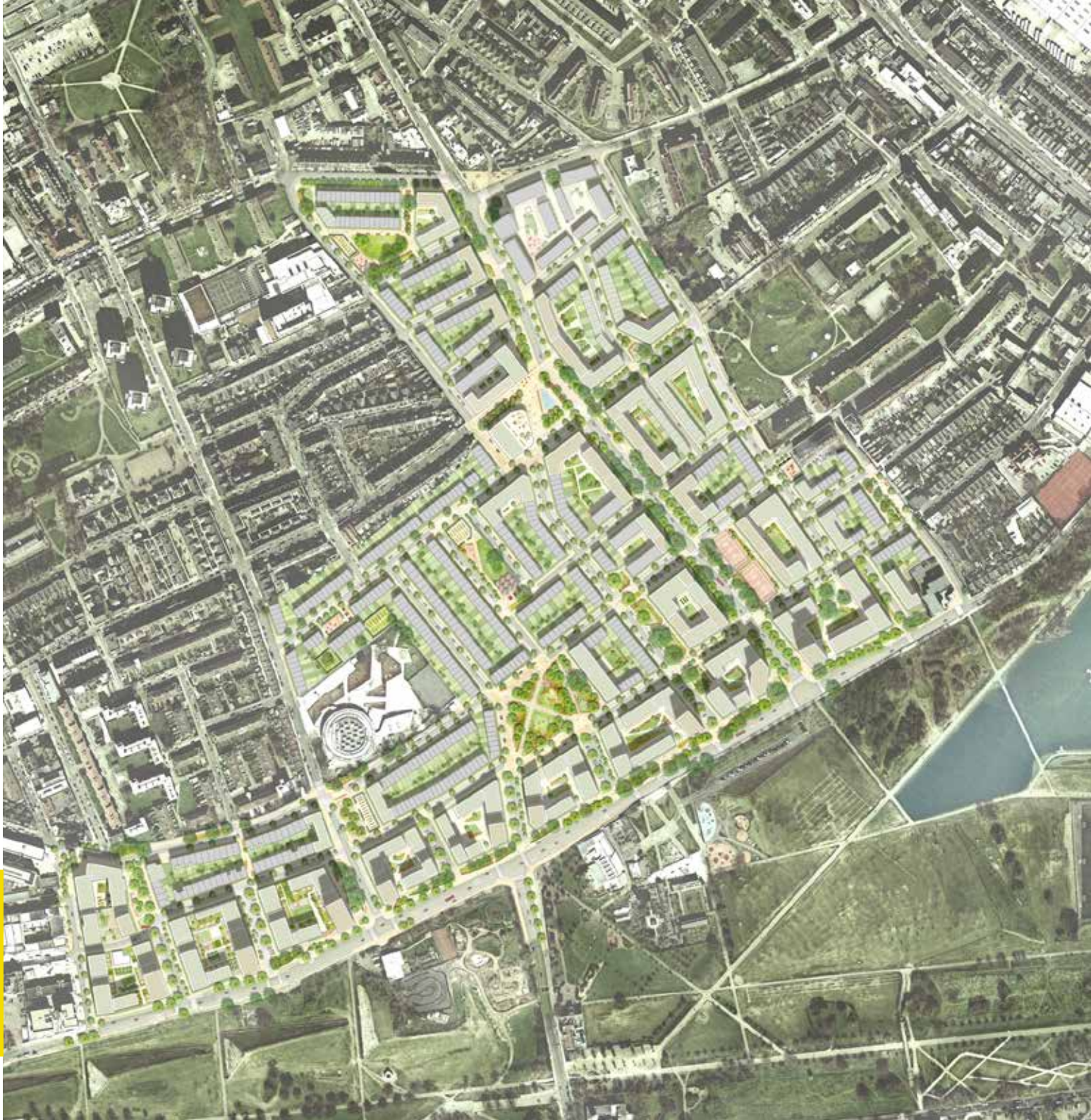
BREEAM Communities is a standard which aims to provide a framework within which developers, planners and designers can work collaboratively to produce socially, environmentally and economically sustainable communities.

Early engagement can contribute towards efficient design that addresses critical design issues at the right timescale and ensures all aspects of sustainable development have been considered and applied if appropriate.

Our team is among the few accredited organisations experienced in certifying large developments under this rating system.

We certified the first residential masterplan in Derby and the first London project to achieve the standard (Aylesbury Estate).

The standard is particularly aimed at larger scale developments which are likely to have a significant impact on existing communities, infrastructures or provision of local services.



Aylesbury Estate, Southwark

Client
Notting Hill Genesis

Accommodation
3,500 new homes and mix of uses

Status
Current

Daylight, Sunlight and Overshadowing

Environmental Impact Assessment (EIA)

A new development is likely to have an impact on the level of daylight and sunlight received by surrounding properties and external amenity spaces. A daylight, sunlight and overshadowing assessment will determine the extent of those effects.

Our team has expertise in daylight and sunlight matters who help develop the design of a new development from the earliest stages of the process. We have worked on a wide range of developments, providing preliminary and detailed studies to support planning applications and Environmental Impact Assessments (EIA).

The most common methodology used in the UK for assessing the daylight and sunlight availability of a new building is based on the BRE's Guidance 'Site Layout Planning for Daylight and Sunlight, A guide to Good Practice' and 'BS 8206 Part 2 2008 Code of Practice for Day Lighting'. Our specialist team have extensive experience in undertaking assessments relevant for achieving credits under the most recognised rating systems, such as BREEAM, HQM, LEED, etc.

We also provide bespoke assessments using climate-based daylight modelling and parametric design. Our services include:

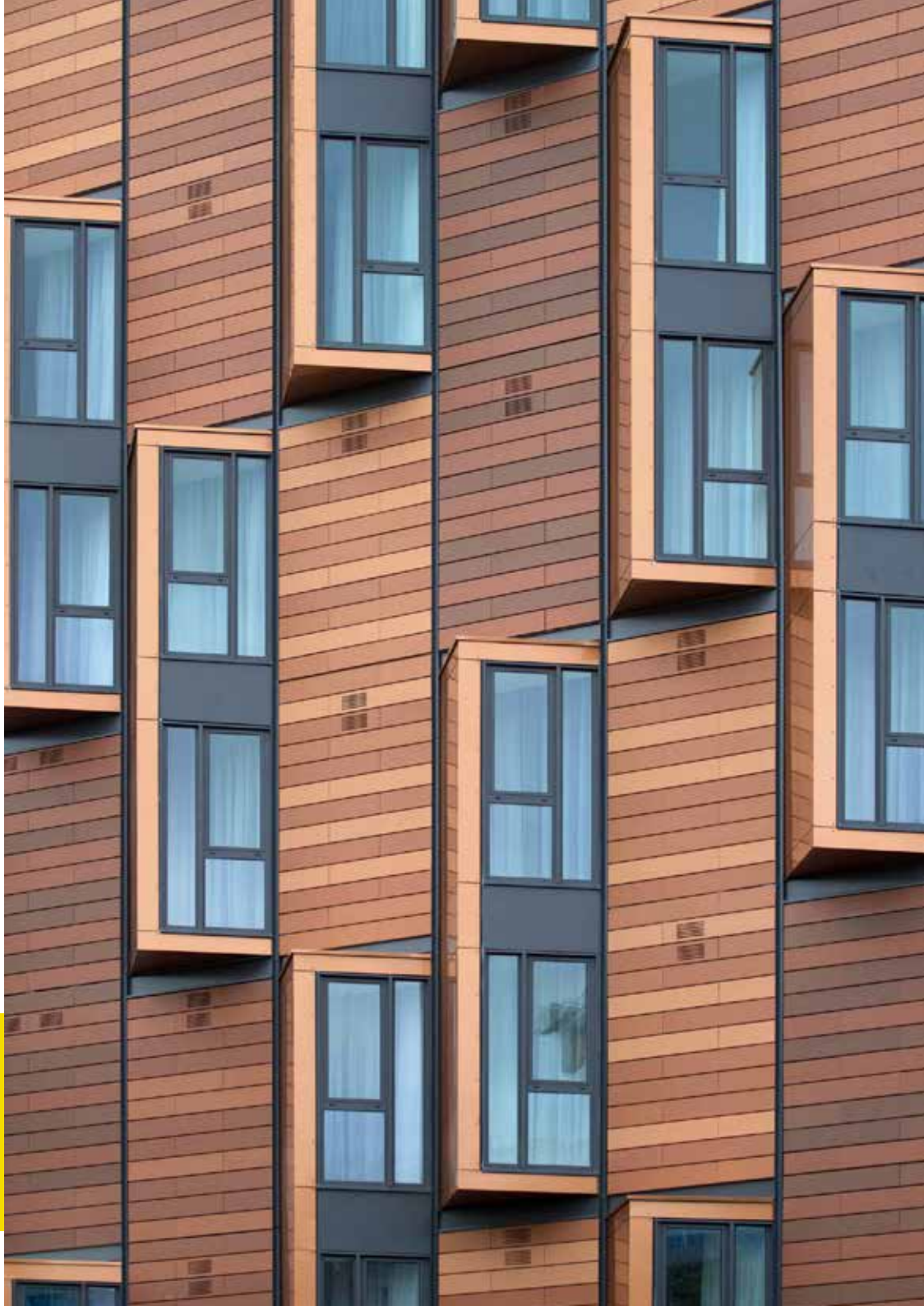
- Preliminary assessments of the massing of the buildings
- Internal daylight and sunlight assessments
- Daylight and sunlight assessment on the façade of the buildings
- Sunshine hours on the ground
- Transient overshadowing
- Internal solar glare studies
- Daylight and sunlight studies using genetic algorithms
- Environmental Statements
- Daylight assessment for rating systems such as BREEAM and HQM
- Impact assessments of trees on daylight

Olympic Way, Wembley

Client
Donban Construction, Pinnacle

Accommodation
237 room hotel and 158 homes

Status
Completed 2013



Design for Manufacture & Assembly

Many drivers such as the housing crisis and the current regulations and initiatives of the government and the market trends are currently leading the construction industry into adopting prefabricated offsite solutions to cope with the increased demand for speed, low cost and high quality of construction.

We have followed a Design for Manufacture and Assembly (DfMA) approach in many of our projects and have won many awards for them. We also work closely with manufacturers to develop appropriate prefabricated products that can be rolled-out in the UK market.

We have been early adopters of offsite construction and have rapidly become experts in leading modular projects from beginning to end.

Amongst our delivered projects is the tallest pre-fabricated tower in Europe and amongst our designed projects is the tallest pre-fabricated tower in the world that has secured planning consent.

Services we offer are:

- DfMA strategy development for Masterplanning system
- Research and development for manufacturers

Design for Manufacture

Client
Barratt Homes

Project 1
Allerton Bywater, Leeds

Accommodation
151 New Homes

Project 2
Upton Site D2, Northampton

Accommodation
165 New Homes

Status
Both completed 2012

Allerton Bywater, Leeds

Home Performance Labelling

Working with BLP, the Housing Forum and Imperial College London, HTA have developed a new approach to the marketing of sustainable housing.

We propose a new methodology for communicating information to purchasers or renters about the characteristics of the home that matter to them.

Our work to date has been funded by a combination of Climate-KIC and industry contributions. More information can be seen at **homeperformancelabelling.co.uk**.

Home Performance Labelling

Client
End Users
Industry
Government

Status
Work in progress

HTA & Imperial College carry out focus group research

BREEAM

New Construction

BREEAM New Construction accreditation has been widely used over the last years by regulatory and funding bodies to encourage the sustainable design, construction and future proofing of a wide range of buildings.

It benefits property developers by offering a robust accreditation that ensures economic and social value by requiring precise evidence of the implementation of design and construction decisions.

Within our team we have fully licensed accredited BREEAM assessors that have efficient processes in place to project manage complex commercial buildings and support developers to deliver the BREEAM certification from design to handover in a cost-effective manner.

Karma House, Wembley

Client
Donban Construction

Accommodation
450 Student rooms

Status
Completed 2016

Community engagement and Third-party Consultation

Community engagement and third-party consultation are essential to the successful delivery of physical, economic and social regeneration.

Our experienced team works collaboratively with the full spectrum of stakeholders to provide sustainable and cohesive future developments that meet the current and future needs of communities.

During consultation activities, we support efforts to teach the community about sustainability and to value the measures that will be incorporated into new buildings, such as recycling provision, energy monitors and water saving measures.

Ravensbury Estate, Merton

Client
Clarion

Accommodation
194 New homes

Status
Current

Community engagement at Ravensbury Estate.

Microclimate Analysis

Microclimate analysis is a rapidly growing area of expertise among design professionals. We aim to consider the proposed buildings' and natural features' shape of a new development which can have a significant effect on the climatic and comfort conditions of both external and internal spaces.

A microclimate analysis includes wind analysis to assess the safety and comfort at pedestrian level and amenity spaces, overshadowing analysis to assess the potential for renewable energy installation, solar radiation analysis to assess the sunlight provision of external spaces and building façades, and also the potential for natural ventilation of buildings and identifying the risk of overheating in internal spaces.

Meteorological data are used to determine prevailing wind directions and to produce frequency tables for wind speeds, divided into ranges of the Beaufort scale and direction.

Future climate scenarios are used to determine long-term risks to occupants' comfort. Our team uses three-dimensional computational fluid dynamics (CFD) analysis to predict the wind velocity and the air flow patterns.

Aylesbury Estate Outline Masterplan, Southwark London

Client
Notting Hill Genesis

Accommodation
3,500 new homes

Status
Estimated Completion 2032

The Aylesbury First Development Site (FDS) sets the benchmark for the regeneration of the wider Aylesbury Estate.

Commercial Energy Assessments SBEM

Dynamic Simulation Modelling

Energy assessments are carried out to inform and assist architects and clients in delivering Sustainable Development and to comply with local planning policies.

SBEM is used for Level 3 & 4 energy assessments to determine CO2 emission rates for new buildings in compliance with Part L2A of Building Regulations. It is also used to generate EPCs for non-domestic buildings on construction and at the point of sale or rent.

Dynamic Simulation Modelling (DSM) provides a significantly more accurate and complex assessment. In certain situations, SBEM may not be sophisticated enough to provide an accurate assessment of a building's energy efficiency.

In these cases, government approved proprietary dynamic simulation models (Level 5) are used. A Level 5 assessment is required mainly for buildings that feature ventilation with enhanced thermal coupling to structure, automatic blind control or atria.

The Building Regulations (BRUKL) output document can also be used as evidence in BREEAM UK New Construction assessment to award BREEAM Energy credits.

Our CIBSE Low Carbon Energy Assessors are accredited to provide commercial EPCs and run part L Compliance Calculations for non-domestic buildings at both design and post-construction stages.

Ebury Bridge, Pimlico London

Client
City West homes, London Borough of Westminster

The Brief
To investigate masterplan options that would bring improvements to the estate responding to the Council's Renewal Strategy principles.

Domestic Energy Assessments

(SAP)

Energy assessments and options appraisals are carried out to inform and assist architects and engineers in delivering sustainable development through appropriately tailored strategies that are technically robust.

We are experienced in meeting compliance with national and regional policies, such as London Plan's energy hierarchy. Standard Assessment Procedure (SAP) approved software is used by our team's accredited assessors to demonstrate compliance with PartL1A of the Building Regulations which is mandatory for the design and construction of a residential building, and produce Energy Performance Certificates (EPCs).

The project meets the Code for Sustainable Homes Level 3 and was constructed using a variety of appropriate construction techniques.

Millbay, Plymouth

Client
Muse Developments

Accommodation
102 new homes combined with a small commercial space of around 1000 ft.

Status
Completed 2016

Thermal Bridging & U-Value Calculations

Our trained team provides design guidance and detailed modelling in specialist software tools such as Psi-Therm and BuildDesk for the development of thermal bridging details and U-Value calculations to maximise thermal performance and reduce condensation risks.

A thermal bridge describes a situation in a building where there is an area of a building construction which has a significantly higher heat transfer than the surrounding materials and where one or more elements are more thermally conductive than the rest of the building envelope.

As a result, there will be a wasteful heat transfer across this element, its internal surface temperature will be different from other internal surfaces and there may be condensation which can result in mould growth. Simple calculations are not always sufficient to correctly determine the thermal performance and it is necessary to analyse the construction using numerical modelling.

Our team of specialists is able to carry out two- or three-dimensional calculations following the BRE 'Conventions for calculating linear thermal transmittance and temperature factors' and BS EN ISO 10211 and help architects and developers achieve the best performance of the buildings and improve their efficiency.

Hanham Hall, South Gloucestershire

Client
Barratt Homes

Accommodation
Commercial and community uses in the refurbished Hall comprising crèche, offices, café, retail and meeting hall for civic and community groups, with 185 homes and a new energy centre for site wide energy.

Status
Completed 2013

Codes for Sustainable Homes

(CSH)

Code for Sustainable Homes (CSH) certification has been widely used by developers and local authorities as a framework for the design and construction of new homes.

It has been a catalyst for positive change in house building by promoting low energy design and high sustainability standards that exceed the ones set by the building regulations.

Our team's accredited assessors provide design guidance on efficient and cost-effective ways of meeting the set targets. Our experience spans across the whole spectrum of CSH certifications with projects reaching levels 5 and 6.

Acton Gardens: Phase 5, Ealing

Client
Countryside & L&Q

Accommodation
271 New homes

Status
Current

Home Quality Mark

(HQM)

HQM is part of the BREEAM family of quality sustainability standards. The Home Quality Mark (HQM) is a new, voluntary, national quality mark that will give those buying or renting new homes the confidence that they are choosing a well built, cost-effective home that is designed and built to meet their expectations. It provides clear information from independent experts on a new home's quality.

This new standard gives householders information on the overall expected operating costs to them, how the home will benefit their health and wellbeing and the environmental footprint of living in the home.

HQM is based upon years of experience with standards of this type and can be regarded as the natural evolutionary step onwards from the now superseded Code for Sustainable Homes.

Our team is able to set the strategy, gather the evidence and provide advice on the most cost effective means of achieving compliance with the standard.

101 George Street, Croydon

Client
Tide Construction

Accommodation
546 new homes

Status
Onsite

CEEQUAL

CEEQUAL is the international evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public spaces.

It encourages and promotes the attainment of high economic, environmental and social performance through identifying and applying best practice and aims to assist clients, designers and contractors to deliver improved sustainability performance and strategy in a project or contract, during specification, design and construction.

Our team's accredited assessors provide design guidance and project management to lead complex projects through a CEEQUAL certification.

Bearbrook, Aylesbury

Client
Wates Group

Accommodation
75 new homes including terraced house, townhouses and apartments of varied sizes to meet the housing needs of the area.

Status
Completed

Sustainability, Energy & Climate Change Environmental Impact Assessment

(EIA)

The Sustainability, Energy and Climate Change Impact Assessment provides a holistic overview of the environmental, social and economic impacts of a project on an existing area.

This results from the design, construction and operation of the buildings and the public realm of the proposed development.

The EIA assesses the overall long-term effects of the development to gain an understanding of how the proposals are likely to impact the environment and communities in the local area and the wider region. Our team prepares Sustainability, Energy and Climate Change EIA reports to support the planning application for large development schemes.

Aylesbury Estate, Southwark

Client
Notting Hill Genesis

Accommodation
3,500 new homes and mix of uses

Status
Current

Passivhaus

Kingspan Passivhaus, Potton Self Build Show Centre, St Neots

Client
Kingspan Potton

Accommodation
1 bespoke show home

Status
Completed

Passivhaus is a comprehensive low energy standard intended to deliver high levels of energy efficiency in new buildings. Passive design is a design process that when integrated with architectural design has the ability to reduce the space heating demand and energy consumption.

Passivhaus can therefore be considered both as a robust energy performance specification and a holistic low energy design concept.

It prioritises a 'fabric first' approach through reducing thermal bridging and increasing airtightness. Appropriate ventilation is key to the design to ensure a healthy indoor environment.

Our team is experienced in the design of Passivhaus schemes and in consulting on design options to meet this standard.

Life Cycle Assessment

(LCA)

Modular LCA

Client
Herriott-Watt

Life Cycle Assessment (LCA) is the analysis of the environmental impact of a building's materials throughout their lifetime. An LCA can analyse different phases of the lifetime of a project spanning from materials extraction to end-of-life disposal and recycling.

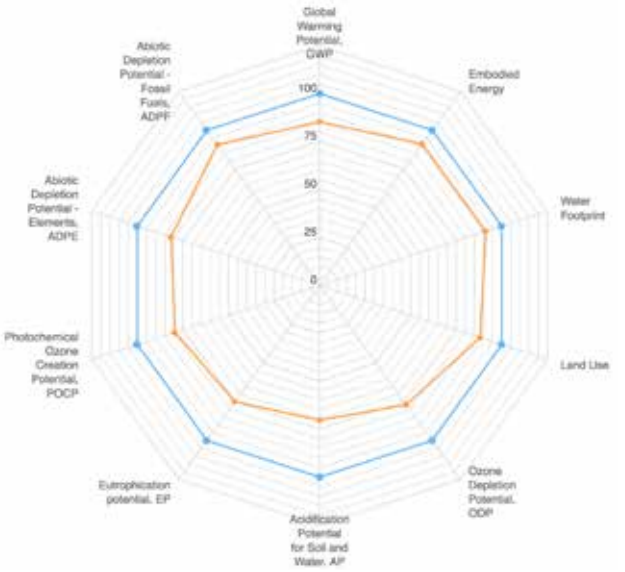
The most common assessments are Cradle-to-grave, Cradle-to-gate and Cradle-to-cradle where the end-of-life disposal step for the product is a recycling process. BREEAM requests the production of a LCA for the achievement of specific credits.

Our team has been supporting BREEAM certifications by producing LCAs not only as part of a BREEAM assessment that we assessed but also on an individual appointment by the client.

Sustainability summary radar chart

The comparison of the design choices, thus the comparison of modular and conventional construction, shows expected performance improvements for 10 out of 10 environmental indicators.

The percentage of the improvements of the environmental indicators varied in a range of 9% to 30%. The lowest improvement was observed in the embodied energy indicator and the highest in acidification potential of soil and water.



Post Occupancy Evaluation & Building Performance Evaluation

(POE) & (BPE)

Post Occupancy Evaluation (POE) is the process of obtaining feedback on a building's performance after it has been occupied. Building Performance Evaluation (BPE) is the process of collecting and analysing energy and utilities data and reports on a building's operation.

These two evaluations can take the form of monitoring, surveying or occupancy questionnaires. POE and BPE assessments can resolve issues related to the building services' operation and to the occupants' behaviour, resulting to a better performing thermally comfortable building.

Our team has been involved in POE and BPE of innovative projects and has utilised the collected information to feed it back into the design of the practice's projects with a view to enhance their quality.

In this project we designed and constructed two homes to the new sustainability standard 'ActiveHouse'. We then monitored the homes for eighteen months and regularly interviewed the residents. The lessons we learned from the project was twofold:

- That well specified technology can help to maintain an excellent indoor climate
- That very high levels of daylight provokes a strong positive and emotional response from residents

Velux Carbonlight Houses, Kettering

Client
Velux

Accommodation
2 private sale homes

Status
Completed 2011

Life Cycle Costing

(LCC)

Life Cycle Cost (LCC) analysis is an effective assessment method considering the overall costs in the life cycle of a building.

This assessment is useful not only to estimate costs beyond the initial investment (e.g. Current running costs), but it also enables to make plans for a strategic management of the building and supports the decision between different options of materials and technologies.

Unlike the current practice for cost assessments, the LCC methodology requires the designer to cover at least 60 years of the building life time.

When used in conjunction with a Life Cycle Assessment it can provide a vision of the most sustainable and economically advantageous options for the project.

BREEAM requests the production of a LCC for the achievement of specific credits. Our team has been supporting BREEAM certifications by producing LCC assessments not only as part of a BREEAM assessment that we assessed but also on an individual appointment by the client.

Apex House, Wembley –Drone picture of the last prefabricated module being craned into position

Awards

Offsite Professional of the Year
2016 and 20 17

Offsite Architect of the Year
2018

Innovative Practice Award
2014

Recycling Award
2016

AJ Award for Business Breakthrough
(Modular Work)

HTA Design LLP
78 Chamber Street
London
E1 8BL

020 7485 8555

HTA Edinburgh
99 McDonald Road
Edinburgh
EH7 4NS

0131 344 4742

HTA Manchester
Clayton House
59 Piccadilly
Manchester
M1 2AQ

0161 236 9185

HTA Bristol
Unit 63, Spike Island
133 Cumberland Road
Bristol
BS1 6UX

020 7482 8154

info@hta.co.uk
www.hta.co.uk
@HTADesignLLP