MECHANICAL & ELECTRICAL ENGINEERING

calfordseaden

ABOUT US

calfordseaden is an award-winning construction and property consultancy. Our comprehensive range of services cover chartered building and quantity surveying, project management, architecture, civil and structural engineering, mechanical and electrical engineering, sustainability and health and safety. Through our complementary and mutually supportive competencies, we provide our clients with a truly multi-disciplinary service through our six offices.

The calfordseaden Mechanical and Electrical Engineering team deliver energy-efficient design solutions that are tailored to our clients' specific requirements. We work across all sectors and our team of specialist engineers provide the full range of building services including advice, planning, design, building physics and building economics, construction, auditing, commissioning and beyond.

calfordseaden has extensive experience in traditional construction, but is also a leading authority in the design and use of modern methods of construction, sustainable design and construction and renewable technologies. calfordseaden was one of the first construction consultancies to sign-up to the 2012 construction commitments. Our experience and constantly evolving expertise means we anticipate the needs of our clients and provide them with the best and latest solutions and perspectives. We believe in providing value for money for our clients and pursue a flexible and innovative approach to the challenges we encounter on their behalf.

Architecture

BIM

Building Surveying

Civil & Structural Engineering

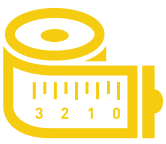
Clerk of Works

Employer's Agent

Health & Safety Risk Management

M&E Engineering

Project Management



Quantity Surveying

Rights of Light & Party Wall

Sustainability

Mixed Use & Regeneration

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£1B North West Cambridge Development

Client
University of Cambridge

Duration
2014-2017

Services
M&E Inspections
NEC Supervisor
BIM Advisor

Contract
NEC³

Sustainability
Code Level 5
BREEAM 'Excellent'

Main image
Courtesy of Mecanoo

calfordseaden's Mechanical and Electrical (M&E) Inspector team has been appointed to undertake site wide M&E inspections for this major development that will create a new district for Cambridge. The scheme involves the development of 150 hectares of former farmland to provide new homes, student accommodation, a primary school, supermarket, community facilities, as well as an energy centre and district heat network.

The M&E Inspector team is ensuring the contractor's designs and technical submissions are in accordance with the client's specifications and that the installations are being delivered to the highest quality standards, industry practices and to the technical standards expected by our professional inspectors.

Working across the different building sites enables the inspectors to keep project managers updated with the progress of installation works, which aids the coordination of site wide infrastructure, as well as identifying potential gaps and contradictions in the client's specifications. Providing services across the different sites also helps to ensure that all buildings are delivered to the same key common requirements across all sites.

Our M&E inspectors also provide an independent eye on testing and commissioning of systems so the client can be confident that the systems they are taking on are set to their building requirements and will provide effective operation during occupation.

The success and value of the inspector role at North West Cambridge has been demonstrated by the extension of our services to include direct technical guidance to the project managers and client.

calfordseaden is also providing NEC Supervisor and BIM Advisor services for this project.

Commercial

£2.5M The Scalpel, London

Client
Axis Capital

Value
£2.5M

Duration
2018 - 2019

Services
M&E Engineering

Contract
D&B

Funding
Private

Sustainability
BREEAM Excellent

The Scalpel is a commercial skyscraper located on Lime Street in the City of London's financial district, within a cluster of some of London's most iconic buildings. Its distinctive, angular form has given rise to its name and was designed to allow unobstructed views of nearby St. Paul's Cathedral. Upon completion, the structure will be 190m (620 ft) high, and comprise 38 storeys.

calfordseaden has been appointed to supply M&E design for the category B fit-out of levels one to three on behalf of our client, Axis, having rolled out similar services for both the 'Walkie Talkie' and Gherkin. The fit-out will encompass approximately 45,000 sq ft of office accommodation, spread over three levels.

Our provided services will involve a comprehensive and fully coordinated M&E design brief and full specification of ventilation, air conditioning, hot and cold water services and drainage. Additional electrical services supplied will include underfloor power, artificial LED lighting and controls, supplies to mechanical equipment and other systems, containment design and a door entry system.

All considerations for the building's sustainability and environmental impact have been taken into account and on completion, the structure is intended to achieve a BREEAM 'Excellent' rating, which is captured within the landlord's fit-out guide and design package.

calfordseaden is also collaborating closely with the contractor in developing the design according to the client's brief, and supplying contracted services in accordance with the landlord's fit-out guide.

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£180M+ Royal Albert Wharf, London

Client
Notting Hill Housing

Value
£180m+

Duration
2011-2020

Services
M&E

Contract
D&B

Sustainability
Code 4

BREEAM Very Good

Phase 2 – BREEAM Very Good (commercial).

The scheme forms the first part of the major redevelopment of the Gallions Reach area, providing the first 800 dwellings of a proposed 2000 dwelling master plan.

Royal Albert Wharf (previous know as Great Eastern Quays) included residential and commercial use built over 2 phases. The development includes a community heating system fed from an energy centre constructed during phase 1 designed to supply heating and hot water for the entire master plan. The energy centre adopted by a ESCo (Energy Service Company). The development is designed to comply with Code for Sustainable Homes Level 4 (Phase 1 only) and BREEAM Very Good and the enhanced energy requirements of the London Plan.

We have worked closely with Notting Hill Housing during the entire development timeline starting with the feasibility stage. Including early liaison with statutory authorities including UKPN to ensure at critical onsite infrastructure can remain live during the build contract and ensure that suitable provision was included within the master plans to supply the development.

We assisted the procurement team in the procurement process of the ESCo and gave technical advice on the 'smart billing' systems on offer.
Following completion of Energy Strategies and successful planning applications we produced performance specifications / briefs with the client for tender purposes under a JCT Design and Build Contract.

Once on site calfordseaden was appointed to undertake regular onsite quality inspections was also undertakento ensure installation meets required quality standards. Witnessing and commissioning of the building services to ensure correct and efficient operational of the building plant.

Education / Residential

£12M GEM's Kingston Primary Academy

Client
LocatED

Duration
2016 - 2018

Services
M&E Engineering
Sustainability

Contract
D&B

Funding
EFA

Sustainability
BREEAM Excellent /
London Plan Compliance

The proposal consisted of the redevelopment of Kingston House, Kingston-upon-Thames. The scheme involves the demolition of the existing five storey office building and the construction of a new two form entry primary school (Class D1) and 25 new residential units (Class C3).

The scheme consisted of two new building forms / cores proposed which accommodate the primary school. The residential units will be located to the side of the school building but forming the same structure.

The site is located directly behind a active rail line, so the M&E installation had to contribute towards the noise mitigation strategy removing all louvres from that element of the façade.

The scheme had to respond to the neighbouring context, local character and heritage in order to meet the objectives of the scheme, M&E and Sustainability targets included:

- Heat network providing heat and hot water to the school.
- Separate heating and hot water installation for the residential with individual gas boilers, providing separate metering to each dwelling.
- Sprinkler System
- Mechanical ventilation to all areas of the school and residential to address external noise constraints, including the below ground school hall.
- Photovoltaic Array
- Overheating mitigation measures

A key driver for the client was the flexibility to split the M&E installation between the school and residential, as a result separate plant rooms with dedicated entrances had to be provided to enable the school to be run completely independently from the residential.

£15M Delta Point, Croydon

Client
Criterion Capital

Value
£15m

Duration
2013 - 2017

Services
M&E

Contract
D&B

Funding
Private

Delta Point was an existing BT office headquarters building with 13 floors above ground and 2 levels of basement. It was converted to residential use with the ground and above floors comprising of 404 studio, one and two bedroom flats for the PRS market.

Our involvement was from RIBA Stage 2 developing the design with the client and architect to achieve planning. The conversion of the office space into a residential development required close coordination with the design team and DNOs in order to modify existing electrical substation to meet the new requirement.

calfordseaden provided the following M&E duties:

- Development of client brief and production of specifications and design drawings to RIBA stage 4.
- Regular on-site quality inspections to ensure installation meets required quality standards.
- Witnessing and commissioning of the building services to ensure correct and efficient operation of the building plant.

Key target set by the client was to minimise operational costs from running the building in the future especially as all rent included utilities bills.

Delta Point was the largest commercial to residential conversion in the UK.

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£168m Trinity Walk - Phase 1, 2 & 3, Woolwich

Client
Lovell

Duration
2015-2020

Value
£80m

Services
Mechanical & Electrical Engineering
Public Health Services
Code for Sustainable Homes
SAP
BREEAM
Site Monitoring

Contract
Traditional

Funding
Part GLA

Trinity Walk is the first phase of the Trinity Woolwich regeneration scheme which, alongside Trinity Rise (phase 2) and Trinity Park (Phase 3), will see 1,500 new, high-quality, mix tenure homes build over the next 12 years.

Trinity Walk is a striking new mixed-use development in Woolwich, Southeast London. The scheme delivers 332 one, two, three and four bedroom apartments and 25 houses in Phase 1. 352 one, two, three and four bedroom apartments and 14 houses will be delivered in phases 2 and 3. The development will be mixed tenure.

calfordseaden was appointed to provide mechanical & electrical design and public health Services along with Code for Sustainable Homes, SAP, BREEAM and site monitoring services for the scheme.

All new homes will be designed to ensure minimal maintenance, with as strong emphasis on energy efficiency, to protect both the environment and save on costs at the same time. They will all meet the equivalent of Level 4 of the Code for Sustainable Homes and built to the Lifetime Homes Standard, ensuring they can be adapted as residents' needs change.

Established on the former Woolwich Connaught Estate site. The 3 phased development will also include a new church, which will be built in the latter phase and sustainable landscape works which will include a linear park and create a 'green heart' at the centre.

The buildings have been carefully considered to create a strong visual impact, accentuated with sensitive design details to provide a sense of individuality and style.

Commercial

£2.3M 20 Fenchurch Street, London

Client
CNA Hardy Insurance

Duration
2014 (16 weeks)

Value
£2.3m

Services
M&E Traditional Design
BREEAM Assessor

Sustainability
BREEAM 'Excellent'

calfordseaden was appointed to provide M&E design and BREEAM assessor services for this project at 20 Fenchurch Street (the Walkie Talkie) which involved a fitting out approximately 39,000 m2 of office accommodation from the shell and core status.

The project included full coordinated M&E services providing ventilation, fan coil air conditioning, extension of water services and drainage and provisions of fresh air.

Electrical services involved providing underfloor power, new LED lighting and lighting controls for general office areas and a high quality bespoke architectural lighting scheme for the client areas. Also the electrical included a full design of a CAT L1 fire alarm integrating into the main building system. We were also involved in coordinating the audio visual/media installation along with security and sprinklers.

For the mechanical elements we were also involved in extending the critical chilled water system from the landlord's services to the client's data communications room. The mechanical and electrical services also involved calfordseaden in the design of a high quality tele presence room which had a high degree coordination and design for acoustics, lighting and A/C.

Our work involved a fully coordinated design brief and full specification with the building achieving an excellent rating for BREAAM. We were also heavily involved in design development of the clients brief and developing the services in line with the landlord.

calfordseaden provided a fully coordinated design brief and full specification with the building to achieve an excellent rating for BREAAM. We were also heavily involved in the development of the design development to ensure that the client's brief was adhered to and the services were in line with the landlord's requirements.

calfordseaden undertook the BREAAM assessment to ensure that the building maintained its excellent status.

Education

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£6M Prendergast School, Lewisham

Client
Lakehouse

Duration
2014-2015

Services
Architect
Structural Engineer
M&E Engineer
BREEAM Assessor

Contract
JCT D&B

Funding
Local Authority

Sustainability
BREEAM 'Very Good'

calfordseaden was appointed to provide a range of services utilising BIM for this Primary School project. This project was our first in-house full BIM coordinated school project. The scheme provides a two form of entry in the primary phase and is part of Lewisham's strategy to accommodate ever growing pupil numbers.

The initial planning approval had already been granted for an existing 2D design. We worked collaboratively with the Contractor and project Stakeholders to produce a 3D model that incorporated a number of improvements over the original design, whilst remaining within the restrictions imposed. The model was shown to Clients during meetings which they found extremely beneficial in providing a greater understanding of the buildings appearance and suitability. The Structural, M&E and Architectural models were used to enable the production of robust tender information.

The building heights had already been set by the planning approved drawings; the stepped building and these heights gave us very limited ceiling service zones, therefore BIM helped us fully understand the implications and allowed us to creatively overcome the problems before getting to site. BIM also helped our team and Client identify constraints, opportunities and solutions to be explored.

An internal 'heart space' forms the hub of the school with its split levels in order to address the sites topography; the full height nature of the atrium provides many challenges with regards to servicing. With the use of BIM however, we were able to address these issues by introducing service runs through the split levels, the atrium zone and the adjoining hall.

BIM also helped us to identify any clashes between the structure, the fabric and services of the new build which we were able to resolve before construction began. The school uses our data rich model as live O&M manuals.

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