



PROJECT SUMMARY:



CLIENT:

U+I

PROJECT:

St Mark's Square

TIMESCALE:

January 2017 - March 2018

CONTRACT VALUE:

£4.4,m

THE BENEFITS:

- > Innovative use of space to adapt to plant and equipment restrictions
- > Coordinating with consultants to develop design
- > Implementing additional measures to prevent disruption to local community
- > Providing a solution that will keep energy costs low for residents and businesses
- > Careful planning and stakeholder liaison to ensure smooth project delivery

PROJECT OVERVIEW

The St Mark's Square project in Bromley aspires to be an attractive environment that will bring long term socioeconomic benefit for the community. The 100,000 sq ft site will transform part of Bromley town centre and is the starting point of further regeneration to the area. There will be 200 private and affordable apartments, a 9 screen cinema, 9 restaurant/retail units, a 130 bed hotel, a secure 386 space underground car park, and

53,000 sq ft of public space.

The developer wanted a low carbon energy solution to meet legislative obligations, therefore we were employed to supply, build and commission an onsite CHP energy centre, separate chilled water plant room, and district heating and cooling network for the complex.

VITAL'S SOLUTION

Our energy solution will supply heating and hot water for the residential apartments, and heating and cooling for the restaurant/retail units, cinema and hotel. It is a unique site due to the spatial limitations therefore the solution entails an energy centre and a separate two level chilled water plant room.

Coordinating with external consultants to create an efficient design layout

We worked with external engineering consultants, MZA, to develop a design that would suit the restrictive spatial requirements of the project. The design consisted of an energy centre with 3MW of boiler capacity and a 140kWe CHP engine,

and a separate two level chilled water plant room with 1.4MW of cooling capacity. They were designed separately to comply with the location and small amount of space available for the equipment. We have supplied Heat Interface Units (HIUs) to all apartments, and HIUs and Cooling Interface Units (CIUs) to the commercial units. Additionally, prefabricated Low Temperature Hot Water (LTHW) and Chilled Hot Water (CHW) substations will be installed into the hotel and cinema plant rooms.

We utilised 3D modelling of the proposed energy centre equipment and pipework to assist in the planning process of the project to help us to visualise the design, prior to pre-fabrication and construction.

Due to the nature of the site, we had to design a flue dilution system to process waste internally.



The site posed multiple challenges for the project regarding spatial and acoustic restrictions, as well as being in close proximity to busy main roads and train lines. By having close co-ordination with the client, consultants and stakeholders, we were able to devise a tailored design with a carefully planned construction schedule to maintain a smooth project delivery.

ROB CALLAGHAN, REGIONAL DIRECTOR FOR LONDON AND THE SOUTH, VITAL ENERGI

These models were beneficial to the build of the scheme as they assisted in coordinating the services with the onsite contractors to ensure a smooth project delivery.

Adapting design to accommodate for minimal site space

The nature of the site meant there was restricted area available to accommodate for the energy centre and plant room, with no space to expand or adapt. A subsequent challenge was the inability to install conventional flues for the energy centre, as the location reserved had no area for the flue to pass through to reach the external of the building. An alternative solution had to be sought, leading to the design of a large 1.3m flue dilution system to process waste product internally. We had to produce acoustic and air quality studies to ensure that this would not impact residents or have any major effects on environmental factors.

Although this dilution system would solve exporting issues, the equipment is rather large and took up a good portion of the available space within the energy centre. This required careful planning to implement the system and to arrange the other heating equipment around the unit within the strict spacing options.

Achieving deadlines through offsite prefabrication

As the development included new commercial units, we had to abide by strict timescales to ensure the work was completed in time to allow contractors onto site to fit out their units. These timescales were more so important due to the completion dates promised to the new residents, therefore it was essential for the project delivery to run smoothly to reach completion in time for handovers. We used a significant amount of off-site prefabricated energy centre equipment to assist in the speed of delivery as this removed the necessity to weld on-site, and resulted in completion within the set timeframes.

Consideration of sound levels to minimise disruption to local residents

Furthermore, the development had strict planning constraints due to residing within a residential area so we had to adapt our work tactics to minimise disruption and abide by low noise requirements. We were therefore only able to work within business hours to avoid any unnecessary disruption from loud equipment.

Likewise, we produced acoustic reports to ensure that the local residents would not be affected by any sound

emitted from the energy centre and plant room in the long term. Care was taken through the design process to only use low noise equipment due to being in close proximity to new and existing residents.

Careful planning to abide by external public space requirements

We had to be considerate of surrounding areas when moving equipment onto site due to the necessity to close a main public road outside the development. We planned the deliveries in a way that required us to only close the road for a single day at a time, with close liaison with stakeholders. These short time closures prevented major disruption, and were clearly communicated with the local communities and authorities to ensure the diversions were fully understood.

Similarly, the development is adjacent to Bromley's main train line, therefore work had to avoid major impacts on its operation. We had to seek approval from the train operators before any major equipment was used near the rail line, requiring concise coordination from both parties. We scheduled the use of large cranes around train timetables to allow for the train network to continue running.