

Acacia Hall

Dartford Borough Council

Acacia Hall was a project undertaken by Frankham on behalf of Dartford Borough Council. The proposed works included the design and rationalisation of an existing site to be used as a sports and leisure facility complex, car park for the adjacent Town Centre and area of high scenic value. Frankham were responsible for the design and management of the project and took on the role of Principal Designer. Part of these works included achieving planning permission from the Local Authority and Environment Agency.

The River Darent separates at to the South of the site and two parallel river channels run through the length of the site. Acacia Hall is a large site containing substantial amounts of greenery, which included numerous protected species of trees. The heavy presence of protected trees proved to be a significant design consideration and Frankham were able to complete a strategic design for routing of the new services, which prevented any risk to the protected foliage posed by the associated excavation works.

The key objectives of the project were for Frankham to produce a working design, meet the specific Client requirements, work within the agreed programme and budget constraints and to ensure design compliance with all relevant legislation, including DMRB, Building Regulations and Sporting England recommendations.

A total of three bridges over the River Darent were designed by Frankham as part of the scheme. Two highway bridges (Darent Bridge & Victorian Bridge) required replacement and a new footbridge (Darent Footbridge) to link Acacia Hall and the Town Centre were proposed. Frankham were able to make strategic use of the bridge replacements for the routing of new services. Service ducts were laid within the bridge structures and all pipework and cable connections were designed with sufficient tolerances for movement and deflection.

River Darent Bridge

The River Darent Bridge proposals included removing the entire deck, abutments and foundations. The abutments and foundations were to be removed and replaced to allow for widening of the riverbed below. The design had to overcome a significant change in level over the span (almost 2m) to tie in with the existing surface levels on either side of the river. This was achieved by using specialist bridge expansion seal joints that were designed for this purpose.

Victorian Bridge

The existing Victorian Bridge comprised a twin spanned brick arch construction supported by a central brick pier founded on the riverbed channel. The parapet walls had an existing interface with a Grade II listed building. The purpose of this bridge replacement

was to provide strengthening to increase the loading capacity and allow for refuse vehicle use. The additional strengthening was provided by replacing the existing brick parapets with brick lined reinforced concrete and tying into the existing concrete deck.

The Victorian Bridge located to the north of the site was difficult to access due to high training walls and an upstream weir. Frankham co-ordinated a UAV inspection of the soffits and abutments during the design stage.

Darent Footbridge

The purpose of the Darent Footbridge was to create a continuous line of sight from the car parking area onto the aesthetically pleasing Acacia Hall and then onto the Town Centre.

The Darent Footbridge comprised an aesthetically pleasing prefabricated steel railing frame with a grooved hardwood deck and again featured differing levels at either end of the span. The design accommodated fixings for a specialist lighting design to accentuate the high value scenic route during hours of darkness.

Challenges

Frankham were faced with numerous challenges throughout the project. The site at Acacia Hall had been continually developed and built upon over several decades, without record information having been updated or maintained. The buried services across the site were of varied age and condition, with the mains connection to each new building seemingly being taken on to the existing supply (or 'daisy-chained').

The lack of record information presented real challenges for the correct location and identification of the existing buried services. GPR surveys were undertaken, with validation inspections completed by Frankham; to gain a full understanding of the buried services and expected impacts across the site.

Frankham Mechanical and Electrical Engineering designers were involved on the project and co-ordination was required in order to ensure that deadlines could be met and conflicting designs were avoided. As the brief was fluid, deadlines and targets were often changed. Frankham held numerous design team meetings and worked with a project manager to set target dates for submissions and complete interdisciplinary design checks.



FRANKHAM

BRINGING IDEAS TO LIFE

Client:
Dartford Borough Council

Value:
£4 million

Services:
Civil Engineering
Structural Engineering
Building Surveying
Mechanical & Electrical Engineering
Project Management
Quantity Surveying
Planning
Principal Designer
Flood Risk Assessment
Ecology & Environmental