It’s business as usual!

We are pleased to announce that we continue to operate in line with government guidelines and remain Covid-compliant at all times. There has been no interruption to our services and it is business as usual here at KGAL.

Although our offices are open on a flexible basis and our main telephone lines are manned, most of our staff continue to work collaboratively from home and can be contacted by email or mobile phone.

Progress on current projects continues and new enquiries are being received for a number of exciting new projects.

Bridging The Gap

Our growing portfolio of bridge projects covers all manner of moving structures, both old and new, with a scope covering everything from bridge inspection and asset surveys to complete structural, mechanical, hydraulic and electrical design.

Starting north of the border in Scotland and working our way down through England via the Cotswolds and Norfolk to Canary Wharf and into Kent, here is an overview of some of our current and recent projects across the length and breadth of the UK, that have helped our clients to bridge the gap.

Clyde Crossing

KGAL continues to play a significant role acting for the client, Renfrewshire Council, via our client, SWECO. Having completed the exemplar design in 2019, we have been supporting the client through the tender stage, closely examining bids from two contracting consortia.

Bids were received in January, followed by a series of interviews. A process of value engineering followed, with both contractors exploring ways to reduce costs. The project is now entering a dummy tender phase and it is expected that an award will be made later in the year.

We will continue to be involved through the detail design stage and into construction, acting for the client.
Partick to Govan Bridge

We were appointed by Jacobs in late 2019 to detail the mechanical, hydraulic and electrical systems for the new Partick to Govan pedestrian and cycleway swing bridge, and work is now reaching the end of the detail design phase.

The main span is held with cable stays attached to an inclined A-frame pylon. Both the main span and north span comprise two inlined steel box girders, with transverse steel members and steel deck with longitudinal stiffeners between transverse beams. The south span comprises two inclined steel box girders with transverse steel members supporting an in-situ reinforced concrete deck, while the tail end bay and deck closest to the pylon are also fabricated from stiffened steel plate with longitudinal stiffeners spanning between transverse beams to facilitate access to the locking pins and pintle bearing.

The reinforced concrete in the shorter back span acts as ballast to balance the weight of the longer steel main span of the rotating footbridge.

The bridge will rotate using six hydraulic motors and will be supported on a 2.5m diameter slewing ring bearing. The structure will have a 120-year design working life, with replaceable mechanical parts, such as the drive system, having a design working life up to 30 years.

This bridge has many similarities to the Media City bridge in Salford, which we were involved with some 12 years ago.
Inverness West Link - Torvean Swing Bridge

The Inverness West Link comprises two swing bridges; Tomnahurich, an electrically slewed swing bridge built in the late 1930s and upgraded in late 2017/early 2018; and Torvean, a new hydraulically slewed bridge provided by R J McLeod for the Highland Council, with a planned completion in 2020/2021.

The control system for this new bridge is being provided by Fairfield Control Systems Ltd and they appointed us to carry out a CAT 3 check of the electrical control system design in accordance with the Design Manual for Roads and Bridges. This consisted of two phases; a CAT 3 check of the preliminary designed manufacturing specifications; and a CAT 3 check of the final design and manufacturing specifications.

Under a separate contract, we also carried out CAT 3 checks of the mechanical structure and hydraulic system designs.

Cotswold Canals Lifting Bridges

We have been commissioned by Stroud District Council to investigate the options for the replacement of three vehicle carrying lifting bridges; Bond’s Mill, Stonepitts and Whitminster. These bridges span the Cotswold Canals and need to be replaced as part of a much larger canal restoration scheme.

We are also examining the feasibility of designing two of the bridges to be manually operated.

All three bridges need to be designed sympathetically to integrate into an Area of Outstanding Natural Beauty and the Bond’s Mill bridge in particular must work in conjunction with a busy industrial estate and a listed building structure from WW2.

The designs of the new bridges are likely to be based upon the nearby unique Lodgemoor Bridge, which we designed in 2015. Five miles of the Cotswold Canals have already been restored thanks to Lottery funding and a bid for the next four-mile section has been submitted.

Carrow Road Bridge

Also last year we were appointed by WSP Ltd, acting on behalf of Norfolk County Council, to undertake the design of the new M&E equipment associated with the refurbishment of Carrow Road Bridge in Norwich. This is a single leaf rolling-lift bascule bridge carrying the A147 two-lane carriageway and two pedestrian lanes over the River Yare.

Constructed almost 100 years ago, it largely retains the original M&E equipment, which is close to the end of its design life. The plant room, located at the south west corner of the bridge, contains the hydraulic power unit (HPU) for the bridge operating system.

The bridge leaf is essentially balanced and runs on two sets of tread plates incorporating aligning teeth. Currently pulled back at its centre of rotation, it rotates under the action of two 10” bore hydraulic cylinders.

Our scope, following a detailed engineering study, was to design a new hydraulic system including new hydraulic cylinders, a new electrical control system with new operators desk, and a new span locking system.
South Dock Bridge

Last last year we were appointed by ARCADIS to join a team including Knights Architects to design a new bascule bridge over South Dock in Canary Wharf for the London Borough of Tower Hamlets.

The proposed structure is a pedestrian bridge connecting the South Quay to the Heron Quay with a 77.5m crossing over the South Dock. Consisting of two spans, the northern span comprises a single leaf moving bridge of the heel trunnion bascule type over the navigational channel of the South Dock, with a minimum fee span length of 30.1m. The approach span at the southern side of the bridge consists of two spans with a total length of 35.6m. The main span length of the approach is 30.4m.

The lifting span provides a permanent navigational channel of 15m width and a minimum height clearance of 3m over the water level (4.23m). When lifted, this span provides a minimum navigational channel of 25m width and unrestricted height.

The stage 3 design was completed in May 2020, with KGAL providing the M&E Approval in Principle along with supporting arrangement drawings of the M&E equipment. Stage 4 design (detailed design) will commence in September, with KGAL being responsible for the design of the mechanical, electrical and hydraulic aspects.

Faversham Swing Bridge

Kent County Council is in negotiations with KGAL via Project Centre in London to design the power and control system (M&E and hydraulics) to operate and swing a replacement bridge at Faversham, Kent.

Included within the package is the M&E for the lifting and swinging of the bridge, operation of barriers, and operation and control of a mitre gate beneath the bridge, including sluice gates. The package involves the production of all manufacturing specifications and drawings, and may potentially extend to hazard analysis and CE marking.

Faversham bridge and the mitre sluice gates have been in operation since the industrial revolution, so this is one more iteration in its continued evolution.

Sandwich Toll Bridge

We were also commissioned by Kent County Council to survey and report on the condition, projected lifespan and the options for renovation, repair and replacement of Sandwich Toll Bridge. The report highlighted the need for an operator’s risk assessment, which we also provided. The next phase of this project is for Kent County Council to engage contractors to action selected recommendations from our report.
Modernisation for the historical Haven Bridge

Officially opened by the then HRH Prince of Wales on 21 October 1930, the existing Haven Bridge in Great Yarmouth replaced an earlier bridge that was opened on the same date in 1854. Historical records show that there has been a bridge on the site since the early 1400s.

Given its age and duty, the current bridge is to undergo repairs and modernisation and KGAL is providing engineering design services to modernise the electrical drive and control systems, and to improve the latching and some key access details.

Our Bridges Team

Our Bridges team brings together a broad range of experience, skills and expertise, with each member contributing individual insights and complementary talents - all with shared common values. This feature includes work by and contributions from:

Angela Rowbotham, Associate Director

Andy McGhee, Associate Director

Darryl Rasdell, Engineer

Tim Doyle, Associate Director

Paul Jones, Associate Director

Yue He, Engineer
Flood Alleviation for Rotherham…….

KGAL has been contracted by Pell Frischmann to design a flood gate for a scheme in Rotherham, South Yorkshire, which will help to protect Rotherham Council offices, the Police offices and railway station as part of a wider scheme to promote the redevelopment of the town.

The flood gate will protect the entrance to Browns Cut, to the west of Forge Island in the town centre. Initial phases include an options study on the type of gate to inform a revised planning application, with the final design scheduled for submission in May 2021.

……and Calverley

KGAL is developing the design of two fish belly flap gates, along with the associated hydraulic/electrical control systems, for Phase 2 of the Leeds Flood Alleviation Scheme. KGAL is working as sub-consultants to the BAM/Mott MacDonlad joint venture with Leeds City Council.

The gates form part of the Calverley Flood Storage Embankment control structure on the River Aire. Each weighing 36 tonnes, they are nominally 11m span and 5.5m deep.

The gates spend most of the time fully open in a recess riverbed, but are raised during a rising flood alert to control the flow discharge downstream to a maximum of 320m3/sec.
Hardmead and Stanstead Sluices

KGAL were contracted by AECOM on behalf of the Environment Agency to produce a reference design for two new tilting gates to replace the existing single radial gate at two separate sites north of London at Hardmead Sluice and Stanstead Sluice.

The Client requested that the new tilting gates are a quadrant style design, whereby each gate is connected to outer quadrant cheeks (quarter circle sections) that have geared racks on the outer circumferential edges. The gates are driven remotely/automatically via electric actuators that drive top level mounted pinion gears about the outer quadrant racks, which subsequently rotates the gates. In the event of power failure, the gates can be driven manually at the actuator via winding tools or manual hand wheels. The quadrant gate offers precise control and minimal maintenance requirements so long as any debris build-up is sensibly managed.

The work also included improving or re-designing the existing stoplogs and stoplog installation gantry, that are currently at each site.

Jasper Taylor, our Senior Engineer, was the leading the M&E designer and Project Manager.

Keadby Pumping Station unhindered by the lockdown

Progress has continued apace at Keadby Pumping Station on the River Trent, despite Covid-19’s best attempts to frustrate the works.

During lockdown, we have been through virtual factory acceptance tests on key items of plant and completed the installation of the new incoming power supply. Initial energisation of the new electrical system is imminent in advance of the Stage 1 commissioning of the first new pump.
NEWS in brief.....

We've finished all the design work for the Manchester Ship Canal Mode Wheel Sluice 4. Manufacture and installation is to follow.

And finally.....

....a little light entertainment with some incredible footage from Lao. Here is a short film showing the Nam Kong 3 construction site in the relatively early stages, along with time-lapse images showing the creation of Whesoe’s workshop in Vientiane, Lao PDR, where the gates and penstocks that KGAL has designed for Nam Kong 3 are being manufactured.