

# Tony Gee News

## Wokingham highways take shape

Tony Gee was commissioned by Balfour Beatty, in association with the SCAPE framework, to develop the detailed design for significant elements of the Wokingham Major Highways Programme for Wokingham Borough Council. The North and South Wokingham Distributor Roads projects support ambitious plans for 6500 new homes.

Tony Gee was awarded the preliminary and detailed design for four schemes, namely the West of Old Forest Road and Toutley Road (WOFTR) scheme - part of the North Wokingham Distributor Road; and all of the South Wokingham Distributor Road including the Western Gateway, Spine Road and Eastern Gateway schemes.

In total this includes 4.2km of new road with combined footways and cycleways; 10 hectares of new country park designated Suitable Alternative Natural Greenspace alongside four new timber footbridges and a timber boardwalk structure; two new road bridges crossing railway lines and one crossing the EmmBrook river; three further footbridges and several flood management culverts.

Construction began on Eastern Gateway in late 2019 at the north side of the railway line. As of June 2021 the main single span fully integral concrete bridge over the railway has had its precast beams installed with the central portion of the deck slab completed. Highways and other elements are also well advanced.

The WOFTR scheme successfully achieved a significant milestone when the 55.3m long single span fully integral steel-composite bridge over the railway had its last section of parapet installed, leaving only the road surfacing, kerbs and backfilling to complete. The majority of the WOF section is nearing completion with just online construction of the Toutley Road section to complete where existing utilities, businesses and residents have set some challenging constraints for the team to navigate.

Detailed design is also making good headway on the Spine Road and Western Gateway. Tony Gee delivered revised design solutions and the planning application has been approved. The design is scheduled for completion by the end of September 2021.



## Innovative methods evolved for Barmouth Viaduct heritage works

**Tony Gee is undertaking work on the replacement metallic spans of the Grade II-listed Barmouth Rail Viaduct (Pont Abermaw). Working for contractors Alun Griffiths, Tony Gee will complete the detailed design of the permanent and innovative temporary works for the project.**

Originally opened in 1867 and recently featured in a TV documentary, the existing structure consists of a disused swing span and three fixed spans of varying lengths from 12m to 36m. The new spans will re-use

the existing substructure and be of a similar form to the existing spans, to meet with heritage requirements.

During the tender process Tony Gee worked closely with Alun Griffiths to develop an innovative method for installing the new structural elements without the need for significant water-based construction plant.

The design of the permanent and temporary works is currently underway for completion this year, prior to the installation of the new structure in autumn 2022.

## Reconnecting

We are looking forward to engaging with the real world again, not just the virtual one as post lockdown we genuinely start to see light at the end of the tunnel.

We continue to recruit and grow our business, which will enable us to compete for larger, more complex schemes, as well as driving our development and skills-set to ensure we are always getting better at the core work we are renowned for too.

The next five years of our business will be shaped by the things we learn now. Things are changing, not just because of COVID but because of the continued challenges of being more efficient and greener.

I am confident Tony Gee will be able to help you with current and future challenges but I'd like to offer an open invitation to both new and old contacts to meet up and discuss just how you see those needs for the future.

I am always open to a conversation on how we can improve, or to better understand the core values you rate most in our services to you. I look forward to engaging with as many people as I can so please feel free to drop me (or any of our team) a line or even better give me a call and let me buy you lunch or a coffee to (re)connect now we can! *chris.young@tonygee.com*



**Chris Young**  
Executive  
Managing  
Director



## Werrington project debuts the UK's first curved, jacked box structure

Tony Gee's involvement in Network Rail's £1.2bn East Coast Upgrade this January saw a nine-day operation to push an 11,000 tonnes, 155m curved box structure into place under the East Coast Main Line (ECML).

This was part of the successful completion of one stage of the Werrington Grade Separation project. The UK's first curved 'box push' was completed on the afternoon of Friday 22nd January 2021 and the tracks and overhead lines were reinstated over the weekend ready for the first train service the following Monday morning. By removing conflicting at-grade freight train movements, the scheme will alleviate congestion.

Tony Gee designed the permanent portal and

tunnel approach structures as well as the temporary works for jacking of the portal, working alongside Mott MacDonald for Morgan Sindall Infrastructure.

Weighing more than the Eiffel Tower, the jacked portal structure was constructed off-line and pushed into position along slide tracks which were constructed inside 3.21m diameter tunnels under the existing rail lines. The design included an hydraulically-linked lateral guidance system to move the portal around the plan curvature, while also resisting out-of-balance horizontal soil pressures during the push. This is the first time that a curved portal has been jacked in this configuration in the UK and ensured that long closures of the railway line were avoided.



£1.2bn East Coast Upgrade



11,000 tonne, 155m boxed structure



Innovative jacked portal installation



Long line closures avoided by using new designs

## SCAPE Consultancy role for Tony Gee

Tony Gee has been formally appointed by Perfect Circle as a Preferred Partner for Lots 1 and 2 of the SCAPE Consultancy Framework in England, Wales and Northern Ireland.

With this appointment Tony Gee becomes part of the expanded PrimeCore team delivering built environment and infrastructure services within the SCAPE

Consultancy framework, a direct award framework that drives collaboration, efficiency, time and cost savings.

Peter Reeves-Toy, Group Director, says: "We are delighted with this appointment. We have an established track record in the delivery of infrastructure projects and look forward to providing the right solutions that respond to the needs of clients and the local community, while integrating with other partners and local SMEs under the framework."



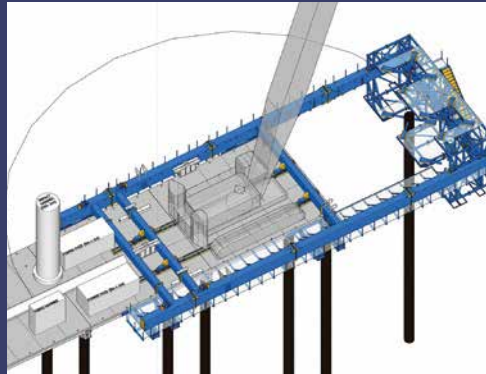
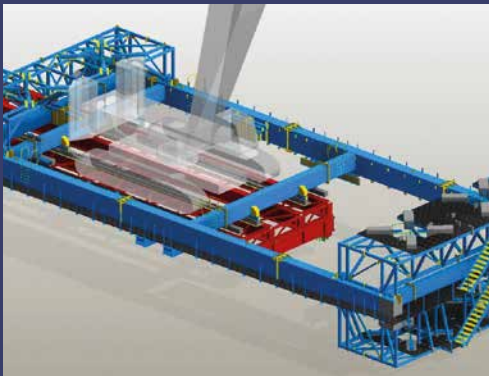
# Travelling jetty supports HS2 Colne Valley Viaduct works

Tony Gee has been developing the temporary works design for a travelling piling gate which forms an integral part of the 3.4 km long Colne Valley Viaduct on the HS2 project.

The viaduct alignment takes the structure over a series of lakes with pier structures to be constructed within, accessed by the temporary jetty.

Working in close collaboration with contractor VolkerStevin, principal contractor Align JV, and other stakeholders, Tony Gee had already undertaken the design of a temporary jetty within the lakes to facilitate the construction of the permanent viaduct.

To avoid the need for marine plant, Tony Gee



has developed a temporary travelling jetty for VolkerStevin to be constructed on a bay-by-bay basis using the previous bay as a construction platform for the next bay.

The resulting travelling piling gate structure design was developed to a lean programme and in collaboration with all stakeholders to ensure compatibility with loading constraints on the jetty structure. The design team worked closely with the contractor to ensure the operational requirements were fully understood and that a safe, efficient, and robust design solution was provided. The design was developed using digital solutions enabling efficient transfer of information and ideas between all key stakeholders throughout the process.



## Aussie office for Tony Gee

Tony Gee has registered a new company in Sydney, Australia, to support the increasing number and size of the projects the business is undertaking within the country.

Named Tony Gee and Partners Pty Ltd, this registration follows the completion of the company's work on Batemans Bay bridge in Sydney.

The company has an established presence in Australia and is represented by Nigel Pearson. It will be supported primarily by our Hong Kong and Malaysia offices with additional input from the UAE and the UK as required.

The team looks forward to working with existing and new clients on exciting projects in the region, bringing the Tony Gee brand of proactive, innovative, efficient engineering with it.

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## Locals step out over Batemans Bay Bridge

The new Batemans Bay Bridge on the south coast of New South Wales, Australia, celebrated its opening by welcoming the local community to take the first steps across the completed bridge over the Easter weekend.

The four-lane bridge will ease congestion in the coastal town and reduce delays for all users. Tony Gee was appointed bridge designer for this new bridge over the Clyde River by the design and build contractor John Holland. The team developed several bespoke software applications to deliver a digital twin of the new bridge, which enabled fast design iterations and a cost-effective solution.



## Mumbai bridges to reflect Indian culture and heritage



Tony Gee has been working in collaboration with Designfakt, based in Nagpur, India, to deliver the design of three 'iconic' bridges for the Mumbai Metro extension. The proposed bridges, currently at preliminary design stage and with two awarded for construction, cross the Mithi River in two places south of Mumbai International Airport and a congested road junction in the MBC area of Mumbai.

Each bridge brings a unique aesthetic to reflect Indian culture and heritage. The two cable stayed bridges, main spans of 80m and 65m respectively, share the same deck section while sporting very

different pylons, one representing crossing swords.

The third bridge comprises a curved balanced cantilever bridge with an architectural arch spanning 120m across the river. It is an ambitious and imposing structure with significant site constraints on both river banks and technical challenges that Tony Gee has been engaging with the client and the supply chain to resolve.

The Sword Bridge, in particular presents a significant challenge as the alignment is curved, the two spans are asymmetric. The pylon is offset and inclined in a counter intuitive fashion to meet with the site constraints.

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# Inspiring next-gen through design and play

**Tony Gee has been working with the charity Dream Networks to support their Love Play Programme.**

The programme supports the mental and physical development of children through outdoor play, and recognises the growing need for the playful and practical application of STEM in school education. It also aims to cultivate the next generation's passion for global sustainability issues.

Tony Gee sees this as an opportunity to inspire the next generation of engineers by showcasing the process and the fun that can be had with designing and building engineering solutions. The team is working on community tailored play areas designed alongside school children in disadvantaged areas which are then built sustainably.

Staff from the Birmingham office supported the project at St John's and St Peter's C of E Academy, Ladywood, in 2020. The children joined interactive workshops to design the play area they wanted and used clay to model their designs into real-world 3D form. A group of 'judges' (the children's peers and staff from Tony Gee) then received pitches in a Dragons' Den style process and a final design was chosen to be turned into a real-life playground. The project was completed in June 2021 with the help of Tony Gee volunteers and is now open for play.

## Supporting social values in Warrington

**Tony Gee, Stantec and Balfour Beatty are working to create a positive social legacy for Warrington Borough Council through the Warrington Western Link project.**

Tony Gee's Social Value Action Plan particularly impressed the council, comprising activities relevant to the local community including design competitions with Warrington University Technical College; STEM visits to local schools, colleges and universities; courses on temporary works for the local supply chain, and volunteering with local community groups.

Most recently the team adapted its STEM work to suit COVID-19 restrictions using a programme of webinars for local students. These covered topics to broaden the students' career aspirations including 'A day in the life of a graduate civil engineer', 'Geography to geotechnics', and 'A career overview'. The project leaders – Cyrus Toms, Akram Malik and James Rose – also ran masterclasses for students on the Civil Engineering course. These were well received and are set to become an annual support to the curriculum. To further develop the relationship with the college, Tony Gee is planning to set the students a real-life project to convert a 3D model into virtual reality.

## Alternative design for DASH Expressway

**Tony Gee has been working with main contractor Acre Works to produce an alternative design for a special span segmental box girder bridge - part of Package CB1 on the DASH Expressway in the suburbs of Kuala Lumpur.**

The structure is a four-span prestressed concrete twin box girder bridge with a

maximum span of 82.3m and maximum height of 32.8m above ground level needed to clear a grade separated interchange and the existing MRT viaduct.

The segmental structure was constructed in-situ by the balanced cantilever method using form travellers. The alternative proposal demonstrated a material saving of up to 30% and reduced the number of piles from 37 in the conforming design to 24. The cross-section of the viaduct was re-engineered, for ease of form traveller erection and reinforcement, by changing the original tapered web to vertical.

Construction engineering and temporary works design services and technical support were also provided. The team prepared the shop drawings for the cast in-situ segments, along with the casting coordinates for the segments, having computed the pre-cambers of the bridge deck so that the balanced cantilevers matched upon erection.

