ECS WORLD
COMPANY NEWSLETTER
Engineering Services
ISSUE 5

ECS wins NMCNomenca screw pump contract for Severn Trent Water

ECS Engineering Services has secured a contract for the manufacture, supply and installation of replacement screw pumps at Severn Trent Water's extensive Mansfield Sewage Treatment Works.

The project involves the replacement of three screw pumps each of which weighs circa 14 tonnes. Winning the contract endorses the quality of the Landustrie Archimedes units and the value of ECS's project engineering and management services, as well as its excellent site health and safety record.

The contract requires a complete service to be provided for screw pump removal, manufacture and replacement for Severn Trent Water, which is one of the largest operators of this type of equipment in the UK.

ECS has been recognised by NMCNomenca for its specialist expertise in this area, in particular the full support services available, having previously supplied water utility companies with new replacement screw pumps, refurbishment and maintenance services via other existing Tier 1 framework contractors.

The project involves the replacement of the three current screw pumps; each of which weighs approximately 14 tonnes. Each screw pump is 2.3 metres in diameter, 13.5 metres long and has a pumping capacity of 800 litres per second.

ECS will supply the new screw pumps through its relationship with Landustrie, a leading Dutch manufacturer of Archimedes screw pumps, who appointed ECS Engineering Services as the exclusive agent for its replacement screw pump products in the UK.

Landustrie is a leading innovator in this field and continues to develop the basic screw pump principle with new drive techniques and improved moulding techniques (exercised by ECS) for the concrete troughs as well as producing the most reliable lower bearing set available.

When combined with ECS's professional installation and maintenance team, the improvements in overall running efficiency and maintenance costs can be easily demonstrated. The capability to supply a complete service in relation to screw pump replacement, installation and operation was a key factor in enabling ECS to win the contract.

Jamie Wesley, Operations Manager at ECS, comments: "This is another solid contract opportunity for our company and demonstrates that our professionalism, engineering quality and excellent customer service are recognised and valued within the industry."

MD's comments

A big thanks,

To everyone who has been involved in pitching for, winning and delivering our latest contracts. ECS is growing in terms of the size and scope of the engineering, maintenance and fabrication work it is taking on. Everyone enjoys working with a 'good' supplier, and we are being trusted with larger projects due to our excellent service record.

Growth will lead to more investment and allow us all to move forwards with the business as it develops, let's keep-up the good work and stay focussed on continuing to deliver a great service.

Bob Nix

Bob Nix, Managing Director

PS. As always, if you have an item that you would like to see reported in these pages, don't hesitate to send it in.

ECS Engineering Services awarded EA framework Contract for South-East

ECS Engineering Services has been appointed by the Environment Agency as a framework contractor responsible for delivering large MEICA maintenance contracts in the South East region. The award is the result of an open bidding process which invited organisations to apply for framework contracts for up to 4 years in duration.

This latest framework contract is to deliver the Mechanical, Electrical, Instrumentation, Controls, and Automation (MEICA) services and turnkey project works to the Environment Agency's assets in this region.

ECS actively targeted this framework agreement, specifically the larger project work due to its large capacity for fabrication and site engineering. The company already maintains an active workforce in the area due to its Minor Works framework with the EA. The award of this framework allows ECS to further increase its site presence in support of one of its major clients.

Jamie Wesley, Commercial Manager for ECS comments: "We have been working for the Environment Agency for over 15 years, delivering mechanical and electrical maintenance projects for a whole range of water control and waterway structures. So we have a lot of experience and a great project track record. Our combined assets of expert designers, in-house fabrication facilities and experienced site engineers enable us to deliver larger refurbishment projects safely and on time."

The Environment Agency encourages small and medium enterprises (SMEs) to become involved in delivering these contracts, either directly or as a sub-contractor. By fulfilling this important role, companies such as ECS as a medium size business supports the government's target of achieving at least 25% of the framework spend with SMEs.

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ECS to upgrade major pumping station for Environment Agency

Following an extensive review of the flood risk management strategy for the Isle of Axholme, the Environment Agency has begun implementing the recommendations of the final report. One of the major pieces of infrastructure is the pumping station at Keadby, which will be renovated and updated by ECS Engineering Services

Originally built in 1939 and situated on the outfall of three man-made rivers in North Lincolnshire, Keadby pumping station is a strategic water control asset that delivers flood resilience to the Axholme catchment. Over the years some improvements have been made, but much of the equipment on site is now considered as being beyond its expected service life and has been identified for a major asset refurbishment.

Having operated as a main contractor for the Environment Agency for many years, ECS has recently won the contract to improve the reliability and efficiency of the pumping station and will be delivering Phase 1 of the project, which is expected to last five years.

The scope of the project includes replacement of two of the diesel engines that power the water pumps with new units that are more reliable, efficient and matched to the performance of the pumps. In addition the gearboxes, located between the engines and the water pumps, will be remanufactured with new gears to provide the correct performance ratios.

The single electric drive motor at Keadby will also be replaced with a new, more efficient model that will be controlled by a variable speed drive. This will help to reduce energy consumption and match pump performance to the prevailing conditions. The gearbox on this motor will also be replaced to ensure optimum reliability and performance as the pump that it drives is the primary water control asset used throughout the year.

Further improvements will be made to the weed clearance equipment, which will be replaced with a more reliable arrangement that has already been proven on another Environment Agency pumping station in the area. Upgrades to the electrical system, SCADA control and telemetry will also be included, providing the Environment Agency with a greatly improved flood control asset and all achieved without affecting the ability of the station to maintain local water levels.

Engineering & Technical teams grow in strength with new personnel

High profile new appointments have enhanced the team at ECS Engineering Services in Huthwaite, Notts, strengthening the company's ability to offer bespoke design and construction of water, energy and environmental processing and management projects.

Shanker Nair has just joined ECS as a Technical Manager. He is a chartered civil and structural engineer with a wealth of knowledge and has experience gained through multi-national projects in the power generation, oil, gas, nuclear, refinery and consulting sectors. Recently returned from a three year project in the Far East developing a liquid natural gas pipeline, he holds both Master and Bachelor degrees and is a member of the Institute of Structural Engineers.

David Searle has been appointed to the key position of South East Project Manager, a role for which he is eminently qualified. A civil engineer with 15 years' experience predominantly in the rivers, costal and hydrology sector, he has worked with numerous public and private sector clients. Accomplished at construction supervision and project management, he is also recognised for his abilities in engineering design of hydraulic structures for water level management, navigation, flood risk, nature conservation and protection.

Also new to the ECS team is structural engineer Milo Basic, who joined ECS in 2016, has achieved Chartered Engineer status. Amongst his expertise he has a deep knowledge of acoustics and noise control principles, having worked on noise attenuation of gas turbines and compressors/ generator trains in industries as diverse as marine, offshore and aerospace. He is also experienced with structural design and other aspects of engineering.

ECS Engineering Services has a comprehensive offering of products, services and capabilities including the design, installation and maintenance of a wide range of water control engineering products and projects, fabrication of structural steelwork and access systems and a complete range of site services. In fact, ECS can provide a full turnkey service for mechanical and electrical installations including managing civil contractors and builders.

ECS Engineering Services shortens lead times with increased machine capacity

ECS Engineering Services has recently boosted its already extensive fabrication capacity with the recent purchase of a Peddinghaus HSFBD plate processing machine, which will help reduce fabrication lead times for customers. The new machine constitutes part of an ongoing investment programme at ECS, allowing the business to take on fabrication contracts in the future with increased speed and competitiveness.

The new machine combines several previously separate processes into one unit, including high speed carbide drilling, plasma and oxyfuel cutting, milling, scribing, countersinking and tapping. The machine utilises an inbuilt 8-tool station, and features a cutting capacity of up to 70 mm thick x 2.5 m wide x 6 m long. Operation is governed by a state-of-the-art control system and custom software that can be managed from an industrial PC. The high versatility of the machine makes it a perfect addition to the fabrications workshop, which regularly manufactures products for the water control, power and infrastructure sectors to tight deadlines.

Robert Butts, Works Manager at ECS expanded: "This new machine will allow us to improve the efficiency of our fabrication business, especially for larger orders. The machine really takes ECS into the next generation of plate processing and we will be following this up with further reinvestment in machine capacity to increase our speed of manufacture. Investment such as this is vital for us to stay competitive in this ever-changing market."

ECS Engineering Services operates a 50,000 sq ft fabrication facility at its works, combining state-of-the-art equipment with an expert workforce. The business is accredited to CE Execution Class 3 for metal fabrications, allowing ECS to service almost any fabrication requirement. Laser cutting, plasma cutting, milling, drilling and welding are all catered for, combined with a flexible workforce which is able to service large fabrication projects. Coupled with a dedicated design studio and engineers to aid specification, customers can expect a solution that achieves their application requirement.

ECS to refurbish East Anglian pumping station to reduce flood risk and improve drainage

ECS Engineering Services has won the contract to redevelop and refurbish the Environment Agency's Peakirk Pumping Station, near Peterborough, at the junction of the Rivers Welland and Folly. The aims of the project are to improve the whole drainage of the surrounding area and provide improved flood prevention capabilities.

The site includes three outdoor electrically powered pumps and three further diesel driven pumps in a pump building, all on a metal and concrete bridge straddling the River Welland. The adjacent control room contains the switch gear, power supplies and automatic level controls that keep this station running.

The flood defence system is based on a pair of wooden pointing doors designed to prevent flood waters reaching properties upstream of the pumping station, which ECS is to reengineer. The doors will be refurbished and their mounting posts replaced. In addition, ECS has proposed a simple mechanical counterbalance system that will be designed and manufactured in house for closing the doors in periods of high water levels.

Gaining access to the pointing doors is an extremely difficult process and has been taken on by ECS as part of this project. The downstream channel isolation has been created using a temporary GEO dam system that is capable of maintaining a water level of over 3m, installed with diving contractors this is the largest dam of its type installed in these conditions in the UK.

Future proofing the site, and leaving the client with a maintainable asset is essential on this type of contract and ECS, in conjunction with its supply chain have provided the client with a fully width adjustable stop log system designed to isolate 3m of water. This rack and pinion driven, coated steel system has been developed to be universal with an operating channel range of 6.8 m to 8.0m, thus enabling the EA to utilise it to maintain other assets in the region.

Similarly, ECS is to replace the existing double automated weed screen cleaner with up to date, modern Landustrie machines that will work in harmony with the rest of the site assets. The new arrangement will consist of a single monorail supporting two grabs for two separate inlets, all controlled by a modern Mitsubishi PLC (programmable logic controller). The system will run automatically to remove debris collecting in front of the screens; overrides will allow an operator to take control for maintenance and test purposes.

To reduce the need for manual handling, ECS is to upgrade the existing overhead manually operated travelling building cranes by installing electrical drives and hoist systems. It will also upgrade the power supply to the pump house and install accessible energy efficient LED lighting to overcome the difficulties of maintaining the current high level fittings.

ECS awarded Midlands and Anglian maintenance contract by Environment Agency

ECS Engineering Services has been awarded a mechanical and electrical maintenance framework service contract by the Environment Agency in the Midlands and Anglian regions. The new contract will see the company double its maintenance provision to the agency in these regions.

The four year framework contract covers Mechanical, Electrical, Instrumentation, Controls, and Automation (MEICA) services, including planned preventative maintenance, round-the-clock reactive services as well as individual project works. ECS will be providing the mechanical and electrical services throughout the two regions to maintain the water control assets of the Environment Agency.

Jamie Wesley, Commercial Manager for ECS comments: "The award of this latest framework contract demonstrates our commitment and expertise in delivering projects in the water control sector. Our continued investment in both personnel and facilities will enable us to devote more resources to the day-to-day maintenance tasks as well as the larger maintenance projects that are anticipated over the next four years."

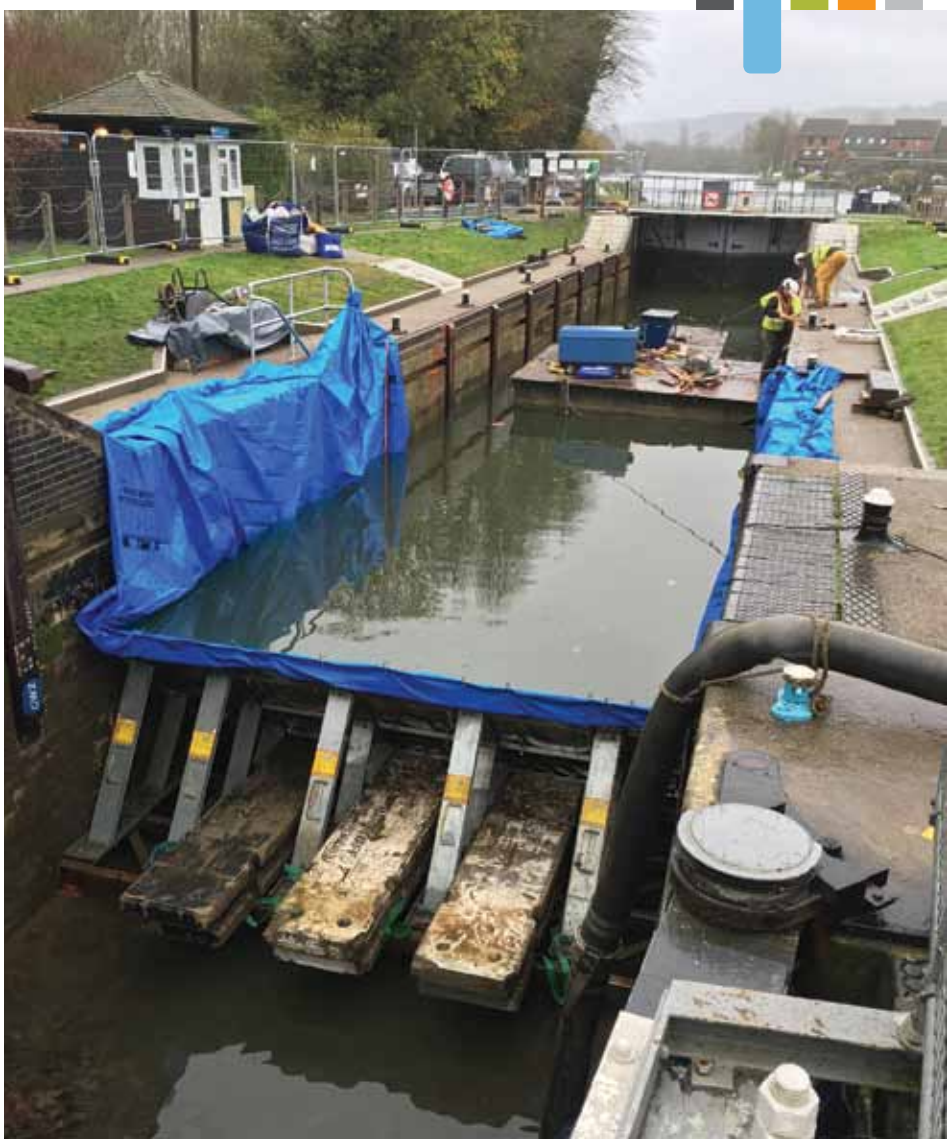
Over the last 15 years, ECS has delivered both routine maintenance and planned refurbishment projects for the EA. These have included the replacement of large sluice gates, the installation of an automated stoplog systems, lock gate replacement, bridges and the design and fabrication of tidal control structures. ECS combines its design expertise with in-house fabrication facilities, project management and site engineers to deliver a full turnkey service to the Environment Agency and other blue chip clients.

As a consequence of achieving the required standard for this Environment Agency framework contract, ECS are now fully certified to perform similar projects by the Department of the Environment, Food and Rural Affairs (Defra) on contracts throughout the region.

The Environment Agency recognises the important role that medium size enterprises such as ECS, play in delivering economic growth and prosperity in the UK. It encourages similar companies to become involved, either directly or as a sub-contractor, with the framework contracts, supporting the government's target to achieve at least 25% of framework spend with SMEs.

Temple Lock benefits from Environment Agency investment in Thames structures

As part of a £1.3 million investment by the Environment Agency, ECS Engineering Services has completed the refurbishment of Temple Lock on the River Thames. The project included replacement of the lock gate sluice valves, and timber fenders as well as installation of two new access ladders and refurbishment of the lock doors themselves.



In all, eight locks covering a 135 mile non-tidal stretch of the Thames have benefitted from the Environment Agency upgrade programme which took place during the winter of 2015/16. Temple lock, which measures 41 meters long, 5.5 meters wide and with a fall of 1.23 meters, was originally built in 1773 and is located in Buckinghamshire.

The refurbishment project was planned for the winter months so as to minimise any disruption to the boaters and was designed to renovate the existing structure and ensure it remains in good working order for years to come.

A major part of the work was to install two temporary frame dams to allow work to be carried out on the lock gates. This was achieved by a professional dive team that works in partnership with ECS on projects such as this.

Jamie Wesley, Commercial Manager for ECS, explains: "By installing the stoplogs on the river side of the lock gates and a temporary dam inside the lock, it was possible to drain down the section around the lock gate. This allowed ECS' engineers to refurbish the lock gate bearing system and to replace the sluice valves."

In addition, it was necessary to stabilise the lock gate main timber joints by injecting them with epoxy resin. This is a cost effective repair that enables the lock gates to remain water tight and prolongs their service life without the additional costs on manufacturing and installing new gates.

While the floor of the lock was exposed it was also possible to repair an area that had been damaged. The affected section was broken out and replaced with new concrete to ensure the continued integrity of the lock chamber.

One of the most obvious improvements was the removal and replacement of 41 timber fenders, with the new sections being made from Forest Stewardship Council (FSC) approved Azobe timber, also known as Ekki, which is extremely strong and durable wood that is widely used in marine applications.

ECS also fabricated and installed two access ladders, which had to be recessed into the lock wall, complete with handrailing and platform. In order to install the new ladders, ECS installed a limpet coffer dam, which essentially is a three-sided box that is positioned against the lock wall where the ladder will be installed. The water between the coffer dam and the lock wall is pumped out and the hydrostatic pressure of the water in the lock creates a seal, providing a safe, dry working environment in which to work.

Using this method to install the access ladders saved a considerable amount of time and expense compared to the alternative of installing stoplogs and pumping out all of the water from the lock. The installation of the new timbers and the ladders required a series of floating pontoons and a marine floating crane, all of which were supported by a rescue boat to ensure the safety of those on site.

All of the exposed brickwork in the lock was checked and repaired as necessary, including the replacement of any grout and the filling of any cavities. Meanwhile, the epoxy path surface was replaced and work was completed to repair the head end bull nose.

Jamie Wesley, concludes: "Lock facilities such as these at Temple Lock provide a vital service, enabling boats to travel along the Thames. We have worked with the Environment Agency on a number of projects like this to improve the durability of the structures and ensure they continue to operate efficiently for years to come.

"In order to deliver this project we have coordinated all of the design and fabrication work that was completed in-house with work completed by external partners, such as the galvanising, to ensure the field engineers on site have all the required materials and equipment when they need it. In this way we minimise any disruption to the general public and deliver the project on time."

Doubling down on qualifications

Two years of hard work and dedication have paid off for ECS Engineering Services employee Marc Woodhouse, who has achieved a Double Distinction in his BTEC Level 3 Diploma, Electrical and Electronic Engineering.

This award came barely a month after earning an NVQ level 3 in Electrical Engineering. His study efforts were based at West Nottinghamshire College in Mansfield, which he attended one day a week.

A recent £40m redevelopment of the college provided 30,000 students with state-of-the-art facilities and industry-standard equipment, allowing them to hone their skills for employment.

Subjects Marc studied included: principles of electrical and electronic engineering, mathematics, circuit wiring and testing, specifying and selecting technical equipment, using programmable logic controllers, maintenance procedures for electrical and mechanical equipment, fault finding, Health & Safety, communications, data and documentation.

ECS encourages all of its personnel to develop their skills and abilities, particularly the younger ones who are laying the foundations for a life-long career. Director and Company Secretary Karen Robinson says: "We are all delighted for Marc, and also for his many young colleagues who focus on education and training. Academic study coupled with the on-the-job training and work experience at ECS is a proven formula for success.

"Highly skilled people are the very heart of engineering companies like ECS and, ultimately the whole of society benefits from their expertise and capabilities."

ECS Engineering awarded Scottish Canals contract for Kytra Lock gate replacement

ECS Engineering Services has been awarded a contract by Scottish Canals, in order to replace four lock gates at Kytra Lock on the Caledonian Canal. One of most naturally appealing stops along this stretch of water, the work at Kytra constitutes part of a systematic replacement of infrastructure along waterways in Scotland.

Scottish Canals, part of The British Waterways Board, manage five major canals in Scotland, the Caledonian, Crinan, Monkland, Union and the Forth & Clyde. The organisation has recently completed an audit of all the facilities it operates on these waterways, originating a programme for the replacement of aging equipment over the next few years. The work at Kytra has been prioritised due to the age of its lock gates, with ECS being chosen to conduct the gate replacement in an efficient and cost-effective manner.

As a popular tourist spot steeped in heritage, preserving the environment and minimising disruption around Kytra was a major concern for Scottish Canals. ECS' experience conducting projects for the Environment Agency, Water Boards and other government institutions provided ample evidence of its ability to deliver projects in environmentally sensitive settings.

Jamie Wesley, Contracts Manager at ECS commented: "We are delighted to be awarded another contract from a highly respected authority; we hope that we can build on this award to further develop our relationship with Scottish Canals over the coming months. We were able to submit two solutions for this project, one based on traditional style steel lock gates and an alternative using gates made from fibre reinforced polymer (FRP). We always offer our clients a choice of designs that have a number of advantages, including a near zero maintenance option."

ECS will be required to fabricate the four leaf steel lock gates and install them on-site, incorporating project and subcontractor management. ECS will be joined by water control experts KGAL, who will conduct surveys of the site before work commences. The design of the gates will be in accordance with the Historic Environmental Scotland Ancient Monument consent, requiring the new installation to seamlessly integrate with its surroundings and closely resemble the previous installation.

Bridging the gap between infrastructure and wildlife

Conserving our natural environment around the ever expanding infrastructure in the UK has become an issue of increased importance. Particularly, roads and railways can present an insurmountable obstacle to wildlife, with thousands of animals becoming victims of road kill and presenting a sizeable hazard to transport users. With animal populations in decline, solutions such as Green Bridges have been pushed to the fore to protect the natural environment and wildlife in areas affected by infrastructure development.

Green Bridges are essentially a wildlife crossing over a highway, allowing animals to cross overhead without having to venture onto the road or track itself. These bridges are usually planted with vegetation to encourage animals to cross, with the structure itself then becoming part of the natural habitat. Infracore® composite bridges, designed by Fibercore Europe and supplied throughout the UK by ECS Engineering Services offer the perfect solution to creating these structures, offering a low maintenance and reduced cost solution.

In July 2015, Natural England, the government's conservation agency, released a report on the impact of green bridges entitled 'Green Bridges – A literature review'. The report summarised the positive benefits of green bridges across the world, from preventing the genetic isolation of brown bears in Canada to allowing rare amphibians such as newts to cross motorways in Holland. The report followed on from recommendations outlined in the 2010 government report 'Making space for nature' by Professor Sir John Lawton, which highlighted the need to include 'provisions of connections across the UK landscape to ensure wildlife can function'.

Green Bridges – A literature review states that Green Bridges aid 'pollination, trees and standing vegetation, water cycling, species diversity, recreation and tourism'. Furthermore, the structures were found to be utilised by 'all representatives of fauna, from insects to large carnivores'. In some areas Green Bridges had decreased the number of wildlife related accidents on the road by 70%.

Green Bridges, also known commonly as Ecoducts, have been a feature of highways in mainland Europe for a number of years, with Holland particularly championing the structures as part of any new infrastructure project. Fibercore Europe has long been involved with such structures in the Dutch civil market, utilising ground-breaking Infracore® fibre reinforced polymers (FRP) to achieve durable and low maintenance solutions. With interest in green bridges growing in the UK, Nottinghamshire engineering experts ECS Engineering Services is now offering innovative Infracore® bridges to the domestic market for use in such applications.

As framework contractors for the Environment Agency, ECS has a pedigree in environmental conservation, as Steve Crapper, Business Development Manager at ECS explains, 'we regularly conduct projects in environmentally sensitive habitats for marine and terrestrial organisms. The main objective is to complete work with minimal disturbance to the natural environment, ensuring that infrastructure work benefits animals as well as end users.

As green bridges are subjected to increased moisture and chemicals in soil, materials of construction must be incredibly corrosion resistant. FRP has excellent resistance to corrosion and moisture compared to steel, so can be specified as part of a green bridge regardless of the fauna, flora or natural features that may be specified in construction of the bridge. Infracore® technology also ensures that FRP bridge decks and bridges cannot delaminate, a traditional problem when utilising the material. Such properties ensure a maintenance free solution, minimising total costs and ensuring the application environment is disturbed as little as possible.

FRP is inherently low weight and high strength, making it ideal for construction processes. Furthermore, this simplifies transport and final erection compared to steel. Infracore FRP bridges are prefabricated away from site and then installed as one complete module. Such properties allow further flexibility of initial design, boosting aesthetics of the finished bridge.

With Fibercore Infracore® bridges such as the 24 metre ecoduct over the N225 in Holland already installed and proving a hit with the local wildlife and commuters – adoption of FRP green bridges is only set to increase. Now with access to modern materials that minimise the disturbance to environment while offering ultimate flexibility for design and construction, integration of these structures into the transport network has never been easier. Green Bridges allow infrastructure to attain that rare equilibrium of ultimate convenience and environmental sensitivity – a balance that will have to be struck across Britain's roads and railways to ensure an environmentally sustainable future.