ECS WORLD
COMPANY NEWSLETTER
Engineering Services
ISSUE 6

ECS Engineering Firms Up Archimedes Screw Pump Framework Support for Scottish Water

ECS Engineering Services has won a four-year framework contract with Scottish Water under which it will supply electrical and mechanical inspection, repair and maintenance services to Archimedes Screw Pumps across the whole of the Scottish Region.

Under the new contract ECS has agreed standard and emergency call out response times along with guaranteed lead times for maintenance, repair and replacement work.

To achieve these performance levels ECS has designated key contact managers who are always available for rapid response. These are supported by dedicated teams of engineers, technicians and fitters who work to agreed protocols so that schedules are maintained, and work completed on time.

ECS Engineering Services specialises in the design and construction of water, energy and environmental infrastructure. It has many years' experience in delivering high quality, reliable and cost-effective engineering solutions to water companies as well as to other utilities, government agencies, building and construction companies and for land drainage schemes.

Jamie Wesley, Contracts Manager for ECS says: "With this agreement now in place, ECS are delighted to have firmed up our support to this important client for delivering on site services throughout the region".

Scottish Water
Trusted to serve Scotland

ECS Engineering Services completes improved flood defences at Peakirk Pumping Station

ECS Engineering Services has delivered a full renovation of Peakirk pumping station on the River Welland on behalf of the Environment Agency, significantly boosting the effectiveness of flood defences in the area. Work carried out has included the refurbishment of the station's pointing doors; the installation of an adjustable stoplog and automated weed screen; a renovation of the pumping station plus an inspection and overhaul of existing pumps on-site.

ECS has been able to complete the entire project within a matter of months, enabled by experience gained as an appointed framework contractor to the agency. The centre piece of Peakirk's flood defences are its pointing doors, which have received a complete renovation from ECS. In addition, the existing weed screen cleaning system at Peakirk required attention. ECS duly replaced the weed screen to provide an appropriate fit with the automated grab, as well as incorporating new maintenance platforms, task lighting, level sensors and improved controls. The new controls were integrated into the existing framework by ECS, enabling a full electro-mechanical refurbishment that has greatly improved clearing efficiency and flood safety.

To complete the comprehensive overhaul of the facilities, ECS turned its attention to the pump house. Due to an Environment Agency policy, ECS was required to upgrade the overhead lifting equipment. The addition of electrical drives and hoist systems, coupled with plug-in or radio remote pendant controls, eliminated any required manual involvement to operate the crane. Lighting was also a concern, as the existing installation was mounted on the ceiling, which made maintenance difficult. To remove the need for specialist access equipment, ECS installed low level, energy efficient, LED lighting in the diesel pump room, greatly improving accessibility.

Jamie Wesley, Contracts Manager at ECS expanded: "The project at Peakirk demonstrates our full breadth of electro-mechanical services, as well as the integrated approach which has seen us tackle a number of high profile projects on behalf of the Environment Agency. Our state-of-the-art facilities at our headquarters, our extensive knowledge of conducting on-site operations and the versatility of our product offering means we were are to deliver within a short time frame even in the face of unforeseen challenges."

MD's comments

Changes for the better

Thank you for welcoming me to ECS. I have been working as Managing Director now for 8 weeks and have been delighted with the support and help I have received from the ECS team; and with the positive feedback from the customers I have met.

Since I joined, we have made a number of changes at Board level and elsewhere in our business. We have promoted Shelley Ward to Finance Director and Jamie Wesley to Operations Director. It reflects the strength of management in our business that we are able to make these appointments through internal promotion.

Our focus on giving excellent service to our customers forms the basis of our business and will continue to drive our success. This issue of ECS World demonstrates that commitment to service. We can only improve if we learn from what we have done well and, more importantly, where we have perhaps done less well. Please do let me have any feedback, of whatever sort.

Thank you

Gary Cormack

Managing Director

Bob Nix
Chairman

Clark Williamson
Contracts Director

John Cotterill
Production Director

Jamie Wesley
Operations Director

Shelley Ward
Finance Director

Sweet success at Candy Farm water treatment works

ECS Engineering Services is to replace the automated trash screen cleaner grab units at the Environment Agency's Candy Farm North and Candy Farm South pumping stations near Doncaster.

Contracts for the works were confirmed after site visits and ECS's advice that it would not be economic to refurbish the existing equipment. Instead ECS proposed replacement of the old trolleys and grabs with new units made by Landustrie in the Netherlands, for whom ECS is the appointed UK agent.

In detail ECS recommended the use of identical units on both sites, Landustrie's new R71-6 units. These will have grab widths of 1000-1200mm, a hoisting capacity of 700 kg and work to a depth of 8.3 metres. They will be fitted with special two-cable winches with built-in safety features, including cable management systems and a drive motor fitted with an integral brake.

With over a century of world-wide experience, Landustrie is a leading solutions provider in the field of water technology. It has a policy of constantly developing its screen cleaners and other technologies. An in-house fully equipped research and test facility allows it to accurately reproduce real life situations so that designs can be tested in realistic environments.

The company manufactures a number of different screen cleaners, the R71 series being designed so that they can be used in a wide variety of applications. They are typically used for cleaning screens at pumping stations, sewage treatment plants, wastewater pumping stations and also at drinking, process plants, cooling water intakes and barrages.

ECS has a long and successful association with Landustrie and together they deliver reliable and cost effective engineering solutions, often to bespoke designs, to the water supply, energy and environmental industries.

Commenting on the projects, ECS's contract manager Jamie Wesley says: "Candy Farm North and South can both look forward to many years of trouble free operation of their new equipment. The local rivers and wider environment will be protected and the treatment works will be able to run trouble free with minimal maintenance and servicing."

Inside this issue...

New website showcases ECS Engineering Services' expertise

Turnkey solutions provider to the engineering, water and energy sectors, ECS Engineering Services has announced the launch of it's new website. The portal offers visitors an intuitive experience, incorporating the latest company news, services, case studies and videos. As a leading supplier to water utilities, power companies, government agencies and drainage boards – the new website will provide a vital engineering reference.

ECS Engineering Services operates within four distinct areas of expertise: fabrication, water control, site services and environment. With over 20 years' experience providing optimum engineered solutions on short lead times, ECS has become a leader in the bespoke design and manufacture of metal fabrications, in conjunction with the turnkey supply of water, energy and environmental management installations. The new website builds on a trend of success that has seen ECS become a preferred contractor for domestic water utilities and the Environment Agency in recent years.

Notable projects serviced by ECS in recent years include the installation of the UK's first adjustable stop log at Peakirk pumping station; designing, manufacturing and installing the UK's first composite 60T capacity road bridge at Mapledurham on the River Thames; the fabrication of duct cradles for a domestic nuclear power plant and the supply of high quality steel fabrications to the British Antarctic Survey station.

The business is also certified to deliver steel fabrications to CE Execution Class 3, and has exemplary environment and safety records, with the company receiving RoSPA Gold Awards 8 years in a row.

Services offered by ECS include bespoke fabrications; water control infrastructure such as Archimedean screw pumps and lock gates; electro-mechanical installation and refurbishment plus an innovative range of composite bridges and water control equipment. This breadth of expertise is showcased in the aesthetically appealing website, allowing potential customers to explore solutions for specific applications.

Furthermore, informative case studies and videos offer visitors a unique perspective on the projects completed by ECS, backed by on-site interviews with highly qualified engineers. Visitors can also access the ECS newsletter archive and download the latest ECS brochures for ease of reference.

You can take a look at the new ECS website here.

River rescue procedures for maintenance project proven

ECS Engineering Services has been awarded a contract by the Environment Agency to repaint the metalwork of Colwick Sluice in Nottingham. In preparation for the work it has been necessary to construct complex scaffolding that will provide safe access to the water control structure.

Working above water always requires extra care, but when the walkways and barriers need to be removed in order to access the metalwork under maintenance, additional safety measures need to be installed. For this particular project the construction of the scaffold required a 3-man dive team and a rescue boat to be on the water at all times while the scaffolders were working.

Jamie Wesley, Contracts Manager at ECS, comments: "As part of the project planning, the risk assessment required an escape plan to be in place in the event of one of the scaffolders slipping and falling. Initially the harness would reduce the extent of the fall, but due to the nature of the scaffold construction, it may not be possible for the scaffolder to be recovered from this position."

In order to demonstrate the effectiveness of this rescue plan, ECS invited the Environment Agency to the site to witness the value of the safety drill. The scaffolders dropped a life-size dummy, provided by the dive rescue team, into the water before it was rescued by the dive team. Throughout the drill a film crew was on hand to document the procedure.

The demonstration proved the speed and efficiency of the rescue process, minimising the amount of time that the casualty would spend in the water. This was due in part to the use of a jason's cradle, which significantly reduces the time taken to recover the casualty into the rescue boat.

Watch the video

Modular weir gate design slashes time to complete refurbishment project at Cookham Weir

ECS Engineering Services experts were engaged by Jackson Civil Engineers, working for the Environment Agency, to replace 10 weir gates and install two fish passes at Cookham Weir, ensuring the continued reliable control of water levels for years to come.

Cookham Lock denotes where the River Thames meets Chiltern chalk at Cliveden Cliff, where the surrounding woods and picturesque landscape attract anglers, walkers, river travellers and bird watchers from across the country. Due to the sensitivity of the area, ECS Engineering Services was first choice due to its focus on completing projects quickly and in an environmentally sensitive manner, minimising disruption on-site.

ECS designed, manufactured and installed all the equipment for this project including a significant drives and controls upgrade. ECS carried out the work in-house at their dedicated fabrications centre, allowing the gates to be delivered in ready assembled, slashing installation times on-site.

Installation of the gates required a section of the weir complex to be drained before work could begin. Once the weir gate sections had been isolated, ECS was able to install the new gates with minimal fuss due to the exact fit of the gates within the existing structure. This minimised disturbance on the watercourse and to the surrounding environment, a key proviso for the Environment Agency.

Jamie Wesley, Contracts Manager at ECS expanded: "Our expertise and experience working with the Environment Agency means we take on these projects with the utmost confidence. Our comprehensive fabrications workshop ensures we not only protect the environment during the project, but also provide a reliable cutting-edge solution for the end user."

Watch the video

Refurbished mitre gates boost flood defences at Peakirk

Peakirk Pumping Station, situated on the juncture of the Rivers Welland and Folly, has benefitted from a comprehensive refurbishment of its mitre gates carried out by ECS Engineering Services. Appointed by the Environment Agency to complete the project, ECS was able to boost the flood defence capabilities of the station with uprated gates despite facing a number of challenges.

The main proviso of the project was to provide an improved barrier in a flooding event, as Peakirk protects a number of properties upstream from fluctuations in water level. The existing wooden mitre gates were showing signs of wear after many years of service, so to carry out refurbishment work, they needed to be removed and transported to ECS' fabrications centre in Nottinghamshire. However, accessing the gates was a considerable challenge, as the central sluice required dewatering and damming before work could begin in earnest.

Typically the existing stoplog at the station would have been sufficient to isolate the gates, but a dive inspection of the central sluice area discovered that the existing stoplog guides were in a poor state of repair. In order to continue the project, ECS installed a GEO dam via diving contractors capable of holding back a depth of water up to 3 metres - the largest of its type installed in the UK. Now dewatering could continue, which, once complete, would allow ECS access to the doors.

Another consideration was the control system that would actuate the new gates. Utilising its dedicated design studios, ECS blueprinted a weight stack counter balance system to provide control. Due to its large fabrications capacity, ECS was also able to manufacture the entire system in-house, offering a fully integrated approach to design and production.

While the gates were being refurbished and re-painted at the workshop, ECS turned its attention to the mounting posts. The posts were also worn, so the decision was made to commence with a complete replacement. New posts were installed, and subsequently trimmed to length to suit the refurbished gates upon delivery. Finally, the doors were fitted and integrated with the counter balance control system, with the new gates now ready to offer protection during flooding.

"We wanted to provide the Environment Agency with a new, maintainable asset at the pumping station while simultaneously uprating the flood defences," Jamie Wesley, Contracts Manager at ECS explains. "This goal has been achieved within months of the initial contract win, a lead time that has been enabled by our integrated approach. By combining fabrications workshops, design studios and project coordination in-house – we are able to offer an increased speed of response and consistent quality."

ECS Engineering Services is an appointed framework contractor to the Environment Agency, due to a focus on providing high quality engineering solutions and an emphasis on conducting works in an environmentally friendly manner. The fabrications and water control specialists regularly work with government agencies, water boards and similar associations to boost water control infrastructure across the UK.

ECS steelwork to help improve York's flood defenses

Structural steelwork is being provided by ECS Engineering to create a new pump hall and control room above the existing facilities at the Foss Barrier flood defence scheme in the centre of York. The work is part of a larger £17m project designed to improve the city's flood defenses.

The barrier is located at the confluence of the Rivers Ouse and Foss in the heart of the ancient city, not far from York Castle, the Yorvick Museum and other important buildings. It was built in 1988 and is designed to prevent floodwater from the Foss from backing up when it meets surge water in the Ouse. With the barrier closed, giant pumps transfer water from the Foss into the Ouse where it can run freely down the normal course of the river.

The barrier weighs 16.5 tonnes and is operated as a turnover lift gate. It is normally parked horizontally above the river, so that boats can pass underneath it, also allowing maintenance to be easily performed. It can be lowered into position in four minutes by powerful electric motors and a bank of eight pumps switch on to transfer water into the River Ouse through a side culvert. The original pumps could handle up to 30 tonnes of water per second, but the new scheme will see this upgraded to 40 tonnes per second.

ECS is extending the building upwards so that important control systems can be positioned at a height well above water levels. The project to upgrade this flood defence structure will improve the pumping capacity of the system and also make it more resilient during a flooding event.

ECS's project manager for the job Andy Swindells comments: "Phase 1 of the works will see us erect 100 tonnes of steel above the existing building. The pumps will be installed and then, in September, Phase 2 will involve another 30 tonnes of steel work for the control room and other accommodation."

ECS Engineering Services utilises FRP to replace aging footbridge

ECS Engineering Services replaced an aging timber pedestrian footbridge in Nazeing Marsh, near Broxbourne, with a highly durable fibre reinforced polymer (FRP) alternative. ECS utilised innovative Infracore® Inside FRP technology from Fibercore Europe to design, fabricate and install the new prefabricated footbridge that offers the ultimate in service life and safety.

ECS engineers observed that the concrete supports were still viable, but the wooden bridge deck and hand rails were in need of urgent attention. ECS Engineering Services is a distributor of FRP products from Fibercore Europe, and proposed to use an FRP bridge deck coupled with a P4 type parapet hand railing.

FRP is sustainable and cost-effective, being manufactured from mostly recycled materials. It is suitable for outdoor applications, being exceptionally resistant to corrosion and UV radiation and more durable than steel or timber. Furthermore, FRP displays high anti-slip properties, which makes it ideal for bridge decking.

Lead times were also reduced, as FRP is easy to fabricate and low in weight. Therefore, a bridge structure can be transported to site as a complete unit or in modules, reducing time in transit and overall logistical.

Furthermore, manufacture off-site minimised work on-site, reducing the impact on the marsh's threatened ecosystem. ECS was able to install the bridge structure in a single day.

David Searle, ECS Project Manager, commented: "FRP fitted the demands of this project as it offered the strength and versatility required. We have utilised this material in various installations for water control and pedestrian access, as its features make it perfectly suited for environmentally sensitive projects in challenging application environments."

Watch the video

New Lift Bridge extends Stroud water navigation

ECS Engineering Services has completed a complex, turnkey project to install a new lifting road bridge over the waterway that will increase the navigable length of the Stroud water navigation and improve heavy goods access to the local businesses. Stroud District Council awarded the entire project to ECS, with a tight deadline for the removal of the original bridge as well as fabrication, installation and commissioning of the new replacement bridge.

Replacing a road bridge over a water course is a complex task at the best of times, but in this case there were additional factors, such as a very restricted space in which to work and the narrow access routes that had to be used by the large equipment required for the project. In addition, this bridge does not cross the waterway at right angles, rather the road approaches at an angle that must be considered in the final design.

The original crossing was a swing bridge of wooden construction and this was replaced in the 1920s by a metal swing bridge. When the navigation was closed the bridge was fixed in the closed position and has remained limited to 8 tons capacity. The local council and the Cotswold Canal Trust have worked with a local engineer to design a new bridge that would provide improved access as well as better load capacity for the local businesses.

One of the major considerations in this project was the potential to pollute the local water course. Demolition of the existing structure and the construction of the new bridge required careful planning and special measures to ensure the waterway remained pristine throughout the project. In this case ECS protected it by ensuring that a special pontoon was constructed below the original bridge and lined with an impermeable membrane to capture all of the debris.

Once the original bridge had been removed it was necessary to install a series of reinforced concrete piles on both sides of the waterway to create the base for the new bridge. However, unexpected ground conditions and the discovery of a large amount of rotten timber, led to a change in design for the bridge foundations.

Andy Swindells, Project Manager for ECS, explains: "Normally we would have brought in a larger piling machine, but due to the limited space that wasn't possible. In this case, the design engineers reviewed the situation and recalculated the size and distribution of the piles before work restarted. In all, 10 piles were installed, each 450mm in diameter, which formed the base for the concrete abutments on which the new bridge would stand."

In the meantime the steel bridge deck, balance beam, support pylon and hand-rails were fabricated by ECS in its Huthwaite facility. The deck itself weighs 6 tonnes and is designed to have a safe working limit of 30 tonnes. The balance beam is designed so that the counterbalance can be fine-tuned on site by adding or removing weights. The entire construction is CE marked and classified as Execution class 3 under BS EN 1090-2.

The completed installation also incorporates road barriers, which are lowered to close off access for road vehicles while the bridge is raised, allowing the water-borne traffic to pass through.

Installation of the new bridge has removed another one of the obstacles that are gradually being cleared as part of the renovation of the waterways through Stroud. The additional benefit in this case is the increased weight capacity and improved access for local businesses.

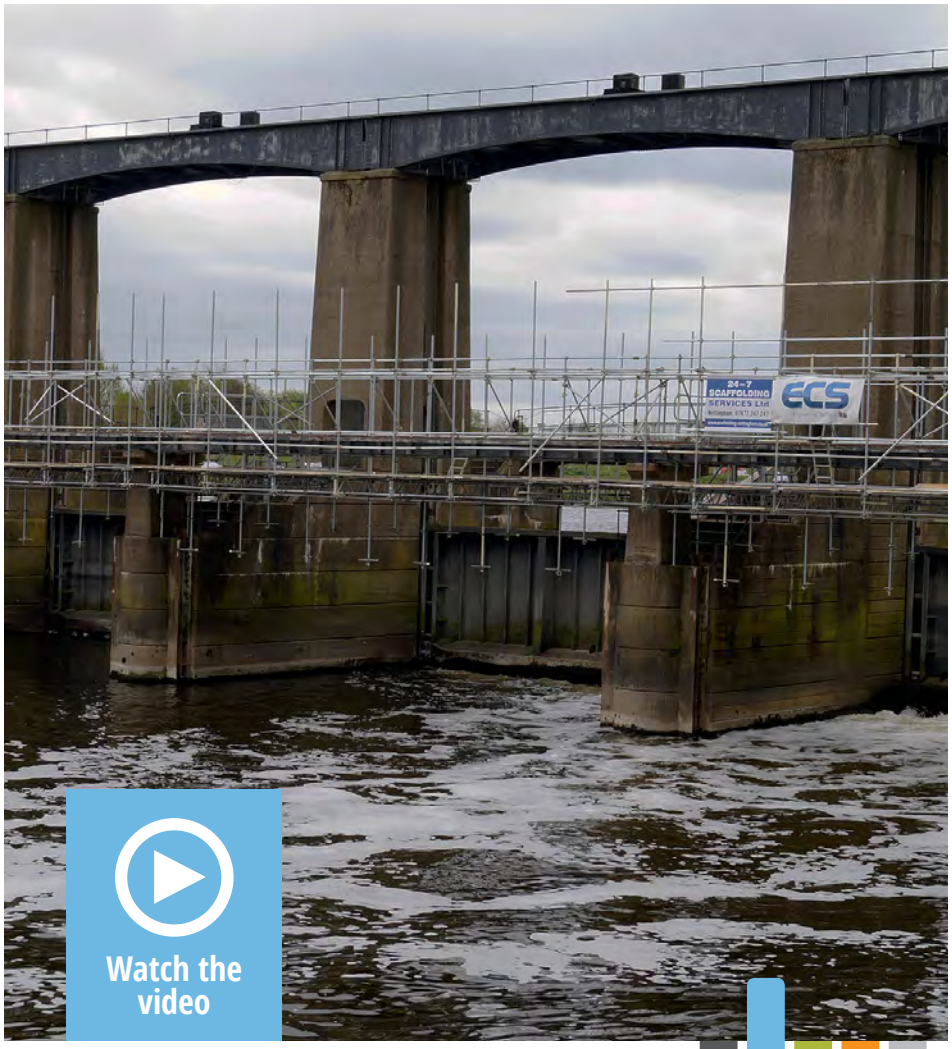
ECS Engineering Services wins ninth consecutive RoSPA Gold Award

Building on an exemplary reputation for safety, ECS Engineering Services has been awarded with the Royal Society for the Prevention of Accidents (RoSPA) Gold Award for Occupational Health and Safety for the ninth consecutive year. The Nottinghamshire based turnkey solution provider to the water, energy and environment sectors has gained this recognition due to its continued work with local water utilities, drainage boards and government agencies such as the Environment Agency.

The award highlights that ECS consistently operates to the very highest safety standards in all aspects of its work. This expertise has been an invaluable asset to the business, where many projects are undertaken in sensitive environments or in areas of potential risk. For nine years, this service level has been recognised by RoSPA, who are committed to reducing accidents in the workplace regardless of sector or industry.

ECS will receive the award at the Hilton Glasgow Hotel on the 14th September during the 61st RoSPA awards ceremony. The judges considered the safety management systems and practices, including leadership and workforce involvement, of each entrant, before deciding that ECS again fitted the criteria for recognition.

Jamie Wesley, Contracts Manager at ECS commented: "Receiving this award for a ninth consecutive year is fantastic – it illustrates the consistency of service that we strive to achieve in our business activities. The sectors in which we operate demand specialist expertise, of which health and safety procedure is a large part, so it is a key component of our business. Everyone in the business is safety conscious, which backed by our integrated in-house facilities and extensive on-site experience, means we can offer this consistency of approach to our customers."



Repainting of Colwick Sluice awarded to ECS Engineering Services

As part of the continued work on Colwick Sluice, ECS has been awarded a contract to repaint the structure on the River Trent to improve durability and reduce corrosion. The project forms part of a wider initiative conducted on behalf of the Environment Agency, with the aim of improving safety and operational efficiency at the installation.

Colwick Sluice is comprised of five vertical rising steel gates, forming a vital section of flood control infrastructure in the area. ECS has already carried out extensive work on the gates and associated control systems, but will now proceed with blasting and repainting sections of the sluice. The re-painting process requires increased environmental sensitivity, but as an appointed framework contractor to the Environment Agency, ECS was selected due to a proven track record in water control projects spanning over 25 years.

The project will require ECS to encapsulate areas of the sluice with scaffolding, which will ensure that any debris generated during work is collected and safely disposed of. To paint the steel beams present in the structure, a gantry and walkway will have to be removed, with ECS engineers relying on the scaffolding to ensure smooth and safe operations throughout.

The scaffold has been carefully designed to enable access to the structure for painting, as well as providing support for an encapsulation system that will collect all of the debris generated during the work. Having collected the debris, it will then be removed from site avoiding any contamination of the river. ECS combines a unique set of expertise in operating in environmentally sensitive areas, providing turnkey solutions that attain engineering requirements while causing minimal impact to the environment.

Phil Anderson, ECS Project Manager at Colwick Sluice commented: "As a full service provider with an ethos of preserving environmentally sensitive sites, ECS is uniquely positioned to take on work of this kind. Over the course of the project we will adhere to the environmental standards and safety practices required by the Environment Agency, so that we can further improve Colwick Sluice to offer increased flood control capabilities in the local area."

Keadby pumping station benefits from bespoke ECS electro-mechanical solution

As part of a total renovation of Keadby Pumping Station, ECS Engineering Services has replaced and uprated a large span automatic weed screen cleaner at the site to increase flood resilience for the Environment Agency. ECS installed a Landustrie system which, due to the size of the screen, was designed as a bespoke solution for the site. Furthermore, additional safety features have been added to the installation by ECS, improving the working conditions for site operators.

Weed screens serve to remove the build-up of debris collected from water flow by grates, which prevent large floating objects entering potentially sensitive areas or damaging pumping equipment. However, as the build-up increases, it is imperative to have a reliable cleaning system to remove debris and ensure smooth water flow. Operators at Keadby had been encountering control issues with the existing system, which in some cases resulted in the weed screen requiring operator intervention to avoid faults. In an effort to improve reliability, the Environment Agency enlisted the help of its framework contractor, ECS.

"The weed screen at Keadby covers three separate culverts which filter into a single bay and then on to the River Trent," Andy Nicholson, ECS Project Manager explains. "Two separate heads clean the screens, and then dispose of the waste into four dump sites for removal. Without a doubt, it is one of the largest weed screens we have installed for a customer, so it required some instrumentation modifications to ensure it could operate with complete reliability."

ECS selected a Landustrie system with corresponding control panel to begin with, but then added a second cleaning head to create a combined system. The standard controls therefore required adaption to allow the system to operate effectively. ECS conducted bespoke programming to manage the two separate heads, which were coupled with ECS modified PLCs. Both heads were required to act as redundancy to each other in the case of failure, ensuring that material build up cannot reach a point where water flow is affected. To complement the custom control system, LED lighting was also added to the control areas to aid operators.

"Due to the span of the weed screen, each head was mounted to a twin speed trolley. In operation, the heads accelerate along the length of the track, which allows for a speedier removal of waste to the dump sites. With this increased system efficiency, build-up of material is kept to an absolute minimum," Andy comments.

Another key concern for the project was to increase safety around the installation. To this end, ECS installed interlocks to ensure personnel cannot walk under the weed screen during operation. In addition, maintenance areas were fenced off and interlocked, providing improved protection.

"This installation required a tailor-made approach, which as a turnkey electro-mechanical solutions provider, we could deliver." Andy concludes. "Our integrated, in-house design, manufacturing and installation teams allow us to deliver these kinds of bespoke solutions, improving flood resilience to the requirements of individual installations. With the weed screen fully calibrated, the area can now benefit from this increase in water control security."