



Civil Engineering: Focus on ambition

South Bank Quays Tie Rods

Project Improvement Case Study

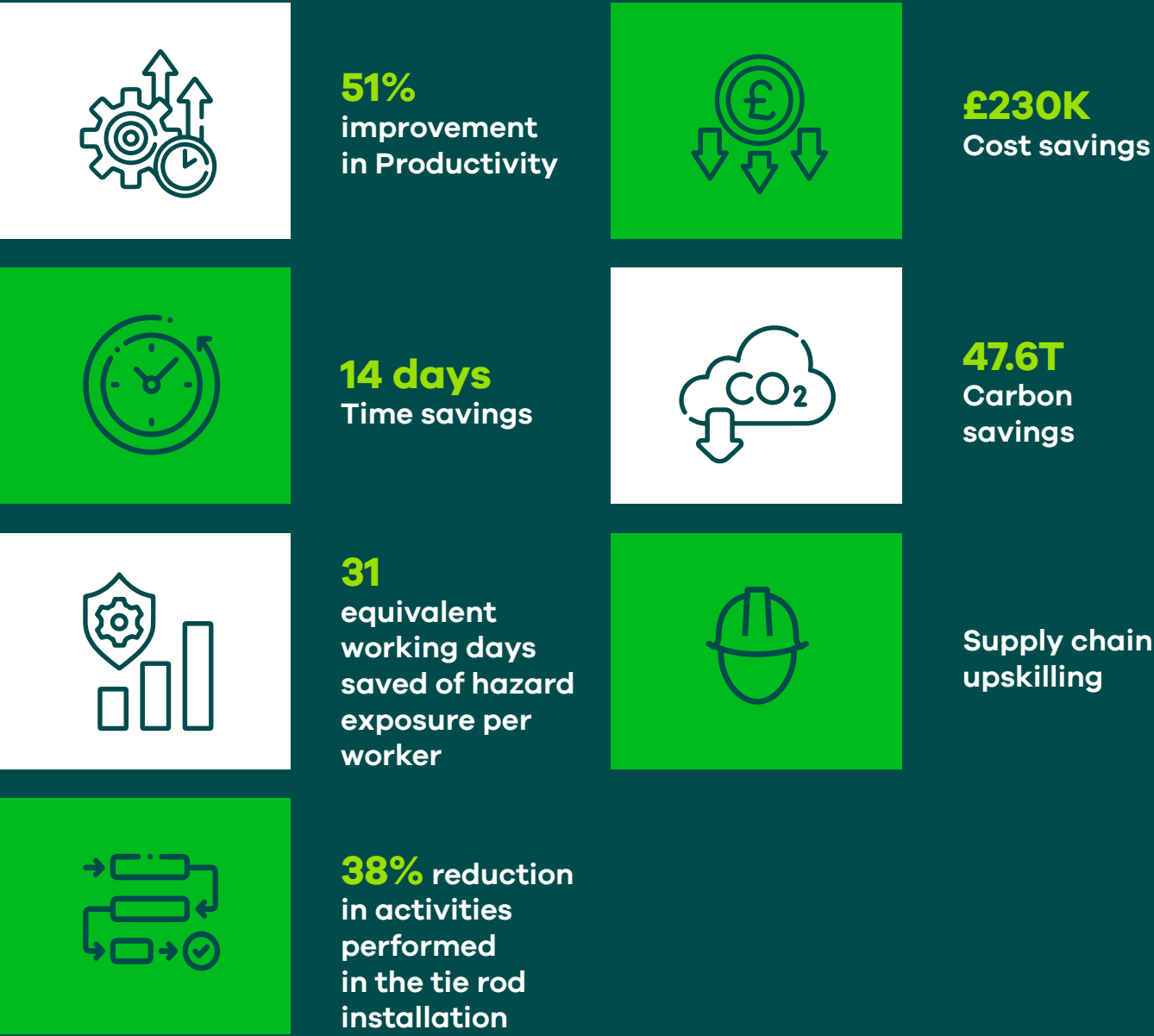
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Project Improvement Case study

Case study
Benefits

Tie-Rod innovation at Southbank Quay, Teeside.



Innovation at GRAHAM

The Challenge

In pursuit of fostering innovation and achieving lasting impact GRAHAM has undertaken several key initiatives, including embedding a structured Tiger Team process to drive innovation efficiently.

Furthermore a culture of innovation has been fostered that extends to the Supply Chain generating a broader pool of creative ideas. This culture has been cascaded across projects and the civil engineering division ensuring innovation is an integral part of our organisation.



“Finding innovative solutions to challenges as they arise is part and parcel of how we deliver our projects. With the introduction of our more intentional approach to innovation at GRAHAM, and specifically the implementation of the Tiger Team process, we now tackle some of those challenges that keep recurring despite our previous attempts to resolve.



It’s that old adage about ‘doing the same thing and expecting different results’. The Tiger Team approach is a new way of working – it’s focused, collaborative, inclusive and encourages thinking outside of the box! We are challenged to think and act differently within the confines of the Tiger Team.

Working in the marine sector over the last 32 years, I was well aware of the challenges with placing tie-rods. And yet because of the numbers used and the repetitive nature of the operation, I thought this might be an “easy” way of evidencing Productivity Improvement, and obviously capturing learning which could be implemented on future marine projects. I was not really expecting the level of success that we have achieved with our first Tie-Rod Tiger Team project. The outcome results are impressive, not only in terms of productivity savings but also in the reduction of health & safety risk, the better use of plant, the reduction in carbon, not to mention the feelgood factor that comes with successful collaboration across different stakeholders.

We could not have achieved this success without the active participation of our supply chain partners. This has certainly given me the confidence to encourage the team to push on with the next Tiger Team Challenge in the Marine Sector!”

Paul Scott
Contracts Director, GRAHAM

The Tie Rod Challenge

GRAHAM was awarded the design and build contract to construct a new wind turbine blade manufacturing facility at Southbank Quay, Teeside under the CCS Construction Works and Associated Services Framework. The Quay spanning 1.2 km will provide access to the biggest wind farm in the world and help position the site as the U.K.'s premier offshore wind hub.



The works included the excavation of two million tonnes of earth, the installation of 300 X 6 foot wide X 30m long tubular piles and 166 tie rods.



The challenge of the innovation project was to identify and implement efficiencies in the design and installation procedure of the tie rods.

TESTIMONIAL: COLIN JACOBS

"As the tie rod supplier, it was very beneficial to be involved in the GRAHAM Tiger Team and the work we carried out will prove beneficial for future schemes. I was able to use the installation videos to educate our workforce on the specific challenges faced by the tie rod installers working in varied weather conditions, something they would never normally see for themselves."

Colin Jacobs - Anker Schroeder

ANKER
SCHROEDER



The Tiger Team Approach

Through working in collaboration with Expedition Engineering we not only leveraged our specialised knowledge but also fostered a collaborative environment where diverse ideas and perspectives could flourish.

This collaboration identified the Tiger Team approach. Renowned for its effectiveness in structured teamwork this approach has been adopted by GRAHAM'S Civil Engineering Division realising many benefits. The term Tiger Team gained fame through NASA's use during the Apollo 13 lunar landing mission in 1970, showcasing its ability to solve complex challenges under tight time constraints. Knowing collaborative qualities were within our employees and supply chain the Tiger Team approach was utilised to identify, investigate, solve and implement solutions to the tie rod challenge.

The tie rod Tiger Team was made up of representatives from GRAHAM from both director and site teams, our supply chain, suppliers and Expedition. Installation of marine tie rods is a standard operation, generally carried out on a large scale, making it an ideal starting point for this programme of work. The initial project phase focused on understanding and analysing the existing installation process. Time and motion studies and process mapping exercises were performed to identify the status quo and establish baseline productivity.

Through the analysis of the baseline data and collaboration within the Tiger Team, we identified ways to streamline the process, make it safer and use the site operating plant more efficiently.

At this stage the opportunities were categorised by readiness: those that could be implemented immediately, those that required adaptations to plant or products, and those that could only be achieved through changes to the design of the permanent structure.

The final stage of the project focused on developing implementation plans for the opportunities identified based on the agreed priorities and the impact they would have. The selected opportunities were implemented between July – August 2022 and a second round of time and motion studies were performed to measure the impact of the opportunities implemented



"GRAHAM's dedication to purpose driven productivity improvement is harnessing innovation and cultural change in the industry. The overall aim of the partnership was to pursue productivity improvement while delivering positive societal impact, and this journey is setting the foundations for long-term success"

Andi Troci
Principal Engineer,
Expedition Engineering

Objective	Achieved by	Output
Improve tie rod efficiency installation	Solutions were identified, investigated, tested & implemented	51% improvement in duration & 38% reduction in activities performed
Health & Safety Benefits	Testing of new installation of tie rod methodology.	31 equivalent working days saved of hazard exposure per worker
Carbon Savings	Revised use of plant	47.6T of carbon reduction
Financial savings	Efficiency savings realised through the more efficient installation methods	A £230K saving was realised
Training & Skills	Upskilling gained through new installation methods	The projects leaves a legacy of a upskilled supply chain. New skills in Tiger Teams approach were learnt.
Shared Learnings	Revised methodology was transferred to the next quay project.	Efficiencies realised on new project in Leith
Time Savings	The new installation methodology resulted in a time saving	14 days saved on the tie rod programme
Deliver enhanced value through innovation	Using the Tiger Team approach to tackle other challenges	Value realised throughout the project

The implementation of the Tiger Team approach facilitated greater collaboration between GRAHAM and the supply chain. After seeing the benefits from the Tiger Team approach, those involved gained the knowledge and skills necessary to be able to utilise the approach on future projects.

They are also able to share, fostering two-way mentoring and emphasising the importance of innovation. The inclusion of on-site emerging talent arms them with skills to address the demands that will arise throughout their career. Our supply chain gained the skills to install the tie rods more efficiently, utilising available equipment better, making them more competitive and a likely partner for GRAHAM in the future.



Legacy impact

- > It is important that lessons learnt from projects are captured and transferred to future projects. This is exactly what happened where the Port of Leith – outer berth project served as a test for the new tie rod installation methodology designed on the South Bank Quay project.
- > The Port of Leith project expanded on the South Bank Quay works and tested some of the new installation methods and equipment recommendations. Again all lessons were captured in preparation for future similar projects where the innovation will again be implemented and built upon. This is how innovation is being embedded within GRAHAM, delivering improvements to the installation of tie rods which benefits our clients, GRAHAM, the supply chain and the industry as a whole.



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For more information on how we are
delivering lasting impact:



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