



TALK OF THE THAMES

Spring/Summer 2018



NTFLAG's first two projects
funded and underway

Using computer simulation
to assess river capacity

Women in
engineering

WELCOME

Talk of the Thames - Spring/Summer 2018



ANUSHA SHAH
Chair
Thames Estuary Partnership

Welcome to the Summer 2018 edition of *Talk of the Thames*, our magazine for everyone with an interest in sustainability along the tidal Thames.

A quick glance at this edition reveals TEP's wide-ranging activities on different facets of the river. From strengthening our coastal partnership role and providing space for discussion on smart infrastructure and latest technology, to highlighting the need for diverse skills, promoting the river's history and improving fish migration routes, TEP continues to be the 'go to charity' for everything related to the Thames.

Climate change and population growth are our key challenges; how well we adapt to these challenges will determine our resilience. There are no easy solutions, but with innovative thinking and stronger partnerships we can convert the challenges into opportunities and transform the Thames into a thriving and prosperous

river for all. TEP will continue to play a crucial role in driving these essential partnerships by providing an independent forum and ensuring that all parties remain focused on the river and its sustainability, in order to safeguard it as an asset for future generations.

I am delighted to announce TEP's second Honorary Fellowship, to Robin Mortimer, Chief Executive of the Port of London Authority, for his exceptional contribution to championing an improved environment for the Thames (see page 5).

Last but not the least, a big thank you to all our members, funders, major support organisations and University College London for enabling TEP to undertake the meaningful work of connecting people, ideas and organisations for a resilient and prosperous Thames.

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TEP AWARDED FUNDING FOR COASTAL PARTNERSHIPS OFFICER

A new post in the TEP team, funded by the John Ellerman Foundation, will play a key part in developing the UK's Coastal Partnerships Network.

The UK is unique in having more than 46 Coastal Partnerships that bring together local businesses, councils, charities and communities in a coastal area to address issues of concern, share best practice and resources, promote communication and collaborate in managing their coastlines. Other key aims include protecting the coastline's natural habitat using the 'ecosystem' approach and promoting the local economy. TEP is the Coastal Partnership for the Thames Estuary.

About the Network

The Coastal Partnerships Network was established in 2006 to help different coastal partnerships exchange information, to give them a national voice and to create links between them and with other coastal stakeholders at a regional and national level. The network is run by a small committee of voluntary coastal partnership officers, currently chaired by Amy Pryor, TEP's Programme Manager.

Introducing our new Coastal Partnerships Officer

In June 2018 Alice Watts joined TEP as our Coastal Partnerships Officer – a new, national-level, salaried role set up to support the Coastal Partnerships Network as a whole and coastal partnerships around the country. This exciting development is all thanks to the generosity of the John Ellerman Foundation, an independent grantmaking foundation that supports UK charities that work to make a practical difference to people, society and the natural world.

An important part of Alice's work will be to lay the foundations for the Coastal Partnership Network to become a more formal entity and to apply for Community Interest Company status. Alice will also be: developing the network's website to facilitate exchange of information, best practice and ideas; identifying ways of helping coastal partnerships build capacity; helping the committee to develop a set of professional standards for voluntary coastal partnership officers, highlighting the depth and breadth of their knowledge; and producing online resources including best practice guidelines and a national database of projects. ◀

Member biography

François Pogu

VINCI Construction
Grands Projets



VINCI Construction Grands Projets is part of CVB, a joint venture with Costain and sister company Bachy Soletanche working on the east section of the Thames Tideway Tunnel.

François Pogu is CVB's Project Director overseeing delivery of the Tideway East contract. During the last 25 years, François gained tunnelling and excavation experience on large international civil engineering projects in Switzerland, China, Hong Kong and Hungary. His first UK-based role began in 2010, working for Thames Water as Project Director for the Lee Tunnel. François led a large multidisciplinary team, promoting a strong safety culture throughout the workforce. He believes that respect, close relationships and collaboration are the key to effective project delivery and intends to achieve this once again on Tideway East.

The Tideway East project includes constructing a main 5.5km tunnel and a connecting 4.6km tunnel for rain and waste water; five shafts between 17m and 25m in diameter, and structures connecting with the existing wastewater collection system, plus electromechanical work and maritime work on the Thames.

"Tideway is a genuine environmental project, with a clear positive impact for inhabitants," said François. "At VINCI Construction Grands Projets, we are delighted to have joined the Thames Estuary Partnership. The company will play its part in developing local partnership and leave a positive footprint in the area of our work. The fact that we are working in close connection with professionals of the River Thames is a fantastic opportunity, and I am keen on learning more!" ◀

We receive core funding and support from:

JACOBS



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FULL STEAM AHEAD FOR NTFLAG!

North Thames Fisheries Local Action Group (NTFLAG) has released EU funding for MSC certification for estuary cockles and a study on ways of improving Leigh-on-Sea's port.

Launched in 2017, the NTFLAG is a community-led local development initiative, driven by local fishermen, managed by the Thames Estuary Partnership and funded by the European Maritime and Fisheries Fund (EMFF) through the Marine Management Organisation (MMO). Our aim is to create a thriving, sustainable fishing industry in the north Thames estuary and reinvigorate the coastal communities, by exploring and funding projects aimed at:

- Improving port infrastructure, including increasing vessel access at Leigh Port by reducing siltation, and reconfiguring the quayside space to improve fish storage, processing and sales facilities.
- Monitoring environmental changes in the estuary, including changes to fish patterns that have been noted in recent years.
- Helping Leigh-on-Sea's fishing industry to promote itself and to raise awareness of its value as a sustainable source of seafood for local markets, including less commonly eaten species caught on the estuary.
- Helping to halt decline in the number of young people entering the industry, by developing new training courses and educational activities.
- Celebrating the history and heritage of Leigh-on-Sea's fishing industry, so that it remains an important part of local culture and identity.



Fishing boats in Leigh Port
© Anne Hinton Van't Hof

Go-ahead for NTFLAG's first two projects

At the beginning of 2018 the NTFLAG was awarded £21,875 of EMFF funding to enable Leigh Port Partnership and the Thames Cackle Fishery to apply for Marine Stewardship Council certification. The 14 licence holders who make up the cockle fishery raised the same amount in matched funding. Certification will demonstrate that they have responded to customers' growing desire for reassurance that seafood comes from well-managed fisheries committed to long-term sustainability. This proof of sustainability will help the estuary's cockling industry to maintain existing markets and develop new ones

in the UK and Europe, securing jobs and benefiting the local coastal economy.

February brought more good news, with Southend-on-Sea Council securing £71,195 of NTFLAG's ringfenced EMFF funding for a study into improving the port infrastructure at Leigh-on-Sea, principally by tackling the siltation problem. Consultants Mott MacDonald are undertaking the study, working with project partners and local stakeholders to identify:

- Cost-effective, sustainable solutions to improve long-term access to Leigh port for all vessels.
- Opportunities for effective long-term management and operation of the port facilities.
- Solutions which are compatible with the natural environment.
- Solutions which support the aspirations for Leigh Port in the NTFLAG Local Development Strategy.

The study began with an eight-week consultation that ended in late April 2018. During the consultation, two events were held in Old Leigh so that local stakeholders had the opportunity to meet with Mott MacDonald and representatives of the NTFLAG.

NTFLAG Chairman Andrew Rattley said: "This is an important piece of work for the NTFLAG and the fishing and cockling industry in Leigh-on-Sea. It is critical that we identify long-term sustainable solutions for port access, and we are delighted that the Council has secured this funding through the NTFLAG. We hope that anyone with a view, knowledge or experience of Leigh Creek or the wider

area responded to the consultation so that Mott MacDonald have the very best chance of identifying clear options."

Funding equipment and facilities for local fishermen

As well as securing funding for major projects of benefit to local fishermen, the NTFLAG has helped them access £53,547 of core EMFF funding to help with their day-to-day activities. More than £35,000 has been allocated to help pay for facilities such as storage and improvements to land-based infrastructure. The remaining £18,547 has gone towards supporting aquaculture, processing and marketing projects and developments.

There's still some EMFF funding available for private fishing businesses in Leigh-on-Sea and the north Thames. They can apply to receive up to 50% funding for making health and safety improvements to their vessels; improving the added value or quality of fish caught; replacing fishing gear, or making shore-based improvements at fishing ports and landing sites. The cost of replacing vessel engines can also be funded, by up to 30%.

For more information and how to apply, email Anna Patel, TEP Fisheries Animator, at anna@culturalengine.org.uk ◀



NEW TEP HONORARY FELLOW

Introducing our new Honorary Fellow – Robin Mortimer, Chief Executive of the Port of London Authority.

The Fellowship of the Thames Estuary Partnership was set up in 2017 to recognise outstanding contributors to the River Thames and its wellbeing. In May 2018 we were delighted to welcome Robin Mortimer, Chief Executive of the Port of London Authority, as our second Honorary Fellow. Here are some of his thoughts about the importance of stakeholder working for a cleaner, busier Thames.

"I became part of 'the Thames family' in 2014, when I took over as Port of London Authority chief executive. I had, of course, been familiar with the river during my time working in central government, and also rowed on it and ran along the Thames Path. But it was only when I looked deeper that the river's many facets and its huge potential to be more embedded in the life of the city became apparent.

Working together to make the Vision a reality

"Today, we are closer to making the most of the Thames. The Thames Vision – the 20-year development framework for the river – is integrated into the Mayor's London Plan, transport and environment strategies. And we've come further as a national transport asset, regularly meeting with government



departments, infrastructure providers and port operators to keep the projected growth of the port and associated transport links in the spotlight.

"Every week people at the PLA are working alongside port operators, ship-owners, sports enthusiasts, archaeologists, artists and many others, to make the most of the river and hand it on to future generations in a better condition. The TEP Fellowship is testimony to this investment in stakeholder working."

Challenges and opportunities

"The Thames Vision embodies two goals to be delivered side by side: greater river use and an improving environment. While these might seem at odds at first, our discussions with the GLA and stakeholders around a cultural strategy for the Thames show that greater use is in fact the key to a cleaner river. Once people have a connection with ▶

the Thames, they start to treasure and care for it, helping in turn to improve the condition of the Thames for future generations. The Thames Tideway Tunnel will also play a vital role in delivering the Vision's aim of 'the cleanest river since the Industrial Revolution'. Last year we published our Air Quality Strategy – the first for any UK port. Although its proposals will not be easy to take forward, we are proud to be at the cutting edge in terms of research and technological development and their benefits for the Thames.

“Every week people at the PLA are working alongside port operators, ship-owners, sports enthusiasts, archaeologists, artists and many others, to make the most of the river and hand it on to future generations in a better condition. The TEP Fellowship is testimony to this investment in stakeholder working.”

“My interest in the Thames has grown deeper and more personal over the last four years. I love to get out on the river, either to show some of the latest developments to government ministers and journalists, or to take up an oar of a traditional Thames cutter to compete in races (whether we win or not!). This is a passion shared across the PLA.

“I'm delighted and honoured to be the second TEP Honorary Fellow. I plan to use my term to bolster stakeholder working on the Thames, which is so important to making the most of our great river in all its guises.”

COMPUTER SIMULATION – A KEY TOOL FOR INCREASING RIVER CAPACITY

Recent decades have seen a resurgence in navigational use of the tidal Thames and dramatic changes to its infrastructure. The river system has become increasingly complex, making effective assessment of navigational capacity and risk more important than ever before. Here are two examples of how computer simulation is helping crucial decision-making.

Preparing for a step change in EfW transport

Concerns about London's air quality, HGV movements, and sustainable energy supply crop up increasingly often in the capital's headlines. But the good news is that a historic Thames resident, Cory Riverside Energy (Cory) is embarking on an exciting new project to help tackle these issues – the expansion of Riverside Energy Park in Belvedere, east London. When completed, the development would use a combined 1.5m tonnes of London's non-recyclable waste each year to generate electricity – twice the amount that the existing plant uses.

Cory operates several hubs in central London, known as 'waste transfer stations', where the city's waste is collated and containerised from around 1.2 million London residents and commercial and industrial business customers. From these locations, the waste is transferred to barges and pulled downriver by tugs to

Belvedere, removing more than 100,000 HGV movements from the capital's congested roads. At Belvedere the waste is transferred to the 'energy from waste' (EfW) plant to generate electricity. The by-product, ash, is then transported by tugs and barges to the Port of Tilbury to be recycled into construction aggregate. Since the Riverside Energy Park opened in 2011, more than 1.3m tonnes of ash have been recycled into aggregate, avoiding carbon-intensive mining and use of virgin raw materials.

Assessing improvement measures

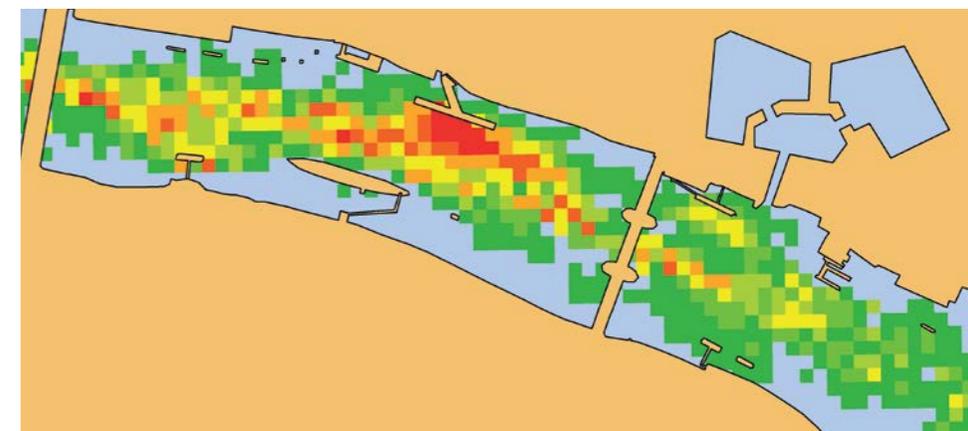
To prepare for the challenges of transporting increased volumes of waste by river, Cory commissioned Royal HaskoningDHV to build a logistics chain simulation model that would assess in detail every aspect of its existing operations and identify possible constraints. The simulation will enable Cory to make informed choices when assessing improvement measures to increase the amount of waste that its

fleet of tugs and barges can take to the Riverside Energy Park each day.

Royal HaskoningDHV used specialist software FlexSim to develop its model. This software creates an extremely powerful simulation when there are: multiple interactions of different, complex parameters, such as tidal restrictions and shift patterns; time-related inputs such as operational schedules, and various distribution-related inputs such as the time needed for a crane to lift a container of waste onto or off a barge. It has enabled Royal HaskoningDHV and Cory to identify a range of improvement measures, including modifications to shift patterns and tug availability. And work is ongoing to develop the optimum solution – one that will enable Cory to maximise its use of London's 'green highway' and thereby minimise HGV movements on the capital's roads. ◀

The Thames Traffic Model

In 2014 the Port of London Authority (PLA) and Transport for London (TfL) commissioned marine and navigation risk assessment experts Marico Marine to provide an evidence-based understanding of navigational safety on the Thames. The brief included taking a 20-year view of the river's future, identifying tolerable capacity thresholds and exploring opportunities to maximise its safe, efficient use. An important focus of the study was to identify capacity in central London using two key concepts – "Level of Service" and "Level of Safety". Level of Service describes the river system's capacity to support free-flowing traffic and avoid congestion including at piers and berths, while Level of Safety is a measure of navigational risk.



Computer image of significant areas of risk in the Upper Pool of London

High frequency simulation

In order to provide the highly detailed, evidence-based information needed, Marico Marine developed the Thames Traffic Model. This innovative computer-based simulation model uses historical Automatic Identification System (AIS) vessel track data and forecasts of new activities to develop a high frequency simulation of vessel traffic on the river. A domain is then developed around each vessel, representing an area the captain wishes to keep clear. This domain becomes larger or smaller depending on the vessel's size, manoeuvrability, speed and direction of travel. Encounters between vessels are simulated across vast quantities of data using advanced analytics.

The creation of the Thames Traffic Model has meant that variability in the river's capacity – for example, during different time periods and between different areas – is understood as never before. Equipped with this new knowledge, Marico Marine examined various opportunities for improving capacity, including adjusting scheduled

timetables, focussing deconfliction (collision avoidance) work on pinch point areas, reviewing speed limits, navigation practices and navigation management.

The model is continually being updated to account for latest vessel traffic numbers and other developments. Dr Ed Rogers, who leads its development, says that this has "...enabled regulators and developers to make specific and measurable decisions based on quantified influences on the level of safety and capacity on the river." Thames Tideway Tunnel, for example, has been able to identify and maximise use of the river in off-peak periods, thereby deconflicting tug and tow freight movements. Marico Marine has also been commissioned recently to undertake navigational risk assessments for Cory Riverside Energy (see opposite) and by TfL in relation to the proposed Rotherhithe to Canary Wharf crossing for pedestrians and cyclists.

To find out more about Marico Marine's capacity study for PLA and TfL, go to www.pla.co.uk/About-Us/The-Thames-Vision/Evidence-Base ◀

A CULTURAL SHOWCASE FIT FOR A PRINCE

Southend presses ahead with plans to build a spectacular new museum on its seafront cliffs.

In October 2017 Southend Council announced that architects Hawkins Brown had been appointed to design the borough's £40m Estuary Experience museum. The Council's aim is to create "a world-class visitor attraction offering immersion in the stories of 'the river that built the world'". The new museum is the largest of a number of schemes to regenerate Southend-on-Sea and its economy.

Treasures of the Prittlewell Prince

The discovery in 2003 of a Saxon prince's tomb at Prittlewell Priory near Southend is one of the UK's most exciting and significant archaeological finds this century. Undisturbed for more than 1,400 years, the virtually intact burial chamber contained more than 200 items in gold, bronze, iron and organic material – a wonderful opportunity for research into the early east Saxon kingdom at the dawn of English Christianity. The Museum of London archaeologists who excavated the site described it as "... the most important Anglo-Saxon burial found since Sutton Hoo". The new Estuary Experience Museum will have the space and technology needed to display these priceless finds in a compelling, interactive way and position Southend as an important cultural destination. The same applies to significant finds from



Gold and copper drinking horn buried with the prince

shipwrecks on the Thames estuary, such as that of the London in 1665, which will be housed in a new shipwrecks gallery.

As Southend Council says: "We need a venue of this magnitude as a home for the internationally significant finds unearthed when the tomb of the Prittlewell Prince was uncovered here in Southend-on-Sea, as well as other nationally important finds such as those from the 17th-century shipwreck of the London, a ship every bit as important for its time as the Mary Rose." The new museum will also display important items from Southend's Central Museum and Beecroft Gallery, and host temporary exhibitions to encourage repeat visits.

All this, along with a planetarium, museum shop, café, restaurant and 200-space car park – not to mention the museum's spectacular cliffside location – promises to transform Southend for visitors and local businesses alike.

Take a dive down to the London

Those of us who can't wait for the new museum's shipwreck gallery to learn about the London can now take a virtual dive down to the wreck through an online 3-D tour.

The London was a 'ship of the line', the largest type of naval warship. It sank off Southend in March 1665, when the gunpowder store exploded as the ship prepared to join the second Anglo-Dutch War. More than 300 people, including family members of the crew, perished in the disaster. Samuel Pepys recorded it in his famous diary, saying that only 24 people survived.

Divers and archaeologists have been investigating the wreck site since 2010. In 2015 a rare wooden gun carriage was recovered together with more than 700 artefacts. But the London lies in difficult diving conditions, in poor visibility and next to a shipping channel, all of which has limited its exploration. This led to Historic England commissioning specialists to create a 3D virtual tour of the wreck site. Using multimedia images, video, audio commentary and panoramas, it tells the story of the ship's history, loss, rediscovery and archaeological investigation. We also learn about the London's construction and equipment, and recovered personal items.

So if you'd like to be immersed in the fascinating story of the London, take the tour at www.cloudtour.tv/london ◀



Gold buckle found in the burial chamber

SMARTER APPROACHES TO REGENERATION

As we look forward to the Thames Estuary 2050 Growth Commission's final report, Chris Fry, Director of Infrastructure & Regeneration at Ramboll, reflects on the role of technology in regeneration.

"The Thames estuary is home to nearly four million people and, as the gateway to London and continental Europe, has the potential to support significant economic growth. But the Growth Commission's new vision for the estuary marks the beginning rather than the end of the story. So could technology help to close the gap between the scale of its ambition and practical, affordable solutions that ensure tangible outcomes for communities, productivity and the environment?"

Revolution and evolution

"A fourth industrial revolution is in progress. Smart technology is opening up better ways to create, renew and manage our towns and cities. Modular and offsite construction are already revolutionising construction productivity for housing, industrial and commercial properties, with significant savings in time and materials, and improvements in safety. Digital survey and design, automated

pollution monitoring and control, autonomous vehicles, sensor networks and the 'Internet of Things' are just some examples of the technology now available.

"But progress is never achieved overnight. Although major changes and disruptive moments are possible, in many of our cities and towns ageing infrastructure and budgetary constraints mean that incremental innovation is more likely to succeed. For example, evolutionary ideas that use existing materials in new ways can also make a big difference in crowded towns and cities. The London Borough of Hackney leads the way in timber construction through its timber first policy and last year saw the completion of Dalston Works, the largest cross-laminated timber building in the world. Ramboll were the structural engineers for this 10-storey residential development built from materials that are significantly lighter than a traditional concrete frame. This approach calls for smaller foundations, making it the ideal choice for a site that has major rail routes passing underneath. The building's carbon footprint is also much lower than for a concrete equivalent; it is effectively 'carbon negative' for its first few years due to the 2,600 tonnes of CO2 locked away in the timber.

Blue-green thinking

"Reducing energy use and carbon in our towns and cities will take a concerted effort. However, it can be relatively cost-effective and proven technological solutions, such as district heating systems and solar panels, already exist. Less well understood is how we respond to other climate change issues, such as the need to make infrastructure and ▶



Dalston Works

© Daniel Shearing

cities resilient to warmer, wetter and stormier conditions. A starting point is to bring water management and green infrastructure together, through sustainable drainage systems and other, larger scale 'blue-green' infrastructure solutions. For example, in Arkadien Winnenden near Stuttgart in Germany, the 'river park' includes dual-function open spaces designed to be playgrounds in summer and protective flood areas during and after storms.

From the 'Internet of Things' to the 'Internet of Resilient Places'

"A constant focus on the future, guided by clarity of purpose, is the key to developing a mechanism for making cities more resilient. With all relevant sectors working together, ultimately it should be possible to develop an 'Internet of Resilient Places', in which urban energy, water and transport infrastructure as well as buildings use connected technology to automatically identify and physically adapt before floods and heatwaves do their worst damage." ◀



River park in Arkadien Winnenden
© Ramboll Studio Dreiseitl

WOMEN IN ENGINEERING

Shaunette Babb, Project Manager at Jacobs, talks about her work and how she's helping to inspire the next generation of civil engineers.

What's your current role?

I'm a project manager in one of the teams that looks after the tidal flood defences along the Thames estuary for our client the Environment Agency. These include the main Thames flood barrier near Woolwich – one of the largest in the world – eight smaller flood barriers, 350km of flood walls and embankments, smaller barriers, pumping stations and flood gates. They work together as a system to protect London from flooding when tidal surges come up the estuary from the North Sea, so it's crucial that they function properly and remain fit for purpose. This system protects 1.25 million people and £200bn worth of property.

What would be a typical week for you?

Normally my week involves a lot of meetings – formal and informal – with the Environment Agency to share information about the flood defence system and how we're managing the assets. Some weeks I also go out onto the estuary to appraise the condition of different assets or carry out detailed site investigations. A lot of my time is spent project-managing investigations.

When did you become interested in a career in engineering?

I liked exploring how things worked and knew I wanted to become an engineer from very early on – at about the age of seven. I'm from the Caribbean and loved spending time on the beach as a child. I became curious about how beaches would sometimes disappear, particularly during hurricane seasons, but they always came back eventually. This sparked my interest in coastal engineering, a subset of civil engineering, which I went on to study at university. Since then, I've always worked around water, whether rivers or coasts.

▶ ————— ◀
"You need to have a strong interest in how things work and in making them function as well as possible."
————— ◀

What do you enjoy most about your job?

An aspect I particularly enjoy is looking at complex systems and seeing how all the different components work together. I also enjoy developing, and working with, new investigation methods, such as drones with cameras and sensors that enable us to capture information in a non-intrusive way.

Anything that you're not so keen on?

It would be nice if the work of civil engineers was appreciated a little more by the general public! But I realise this is because people just aren't aware that the infrastructure all around them – which they use and benefit from every day – is designed and maintained by civil engineers.

What qualities do you think make for a good civil engineer?

You need to have a strong interest in how things work and in making them function as well as possible. Also to enjoy working as part of a team. In our extensive team everyone brings different skills and attributes, but the common thread is that we all view our individual work as being a part of a single system.

What's been your career highlight so far?

Becoming chartered two years ago. That's always a big milestone in any engineer's career. I had to demonstrate a range of different skills and attributes through projects I'd worked on, in addition to my academic foundation in engineering.

And your next career goal?

Managing projects effectively is a vital part of my role, so my next goal is to become qualified as a chartered project manager.

Only 15% of civil engineering graduates are female. Why do you think this is?

Partly a lack of awareness of what civil engineers actually do and the wide range of career opportunities. But also because

of an outdated belief that careers based on science subjects are for boys rather than girls, starting at school. Luckily I had no such influences – quite the reverse in fact. My secondary school had recently converted from an all-boys school to a co-ed, but kept the same curriculum. None of the teachers were surprised I liked science subjects and very few 'girly' subjects were taught. We even studied woodwork and metalwork along with the boys, which I enjoyed.

Are you involved in any schemes to promote engineering as a career?

I'm a STEM Ambassador, which means I give classroom presentations or go along on career days to help school children get a real sense of what it's like to be a civil engineer. The scheme is aimed at those who've already shown interest in studying science and technology. We can give the support they need to help them achieve their potential, including by being positive role models for STEM subjects and the exciting careers they can lead to.

I'm also involved in the Social Mobility Foundation, which receives funding from my employer. During the year, I mentor on a one-to-one basis, and I also take part in an annual week-long residential project for disadvantaged children with an interest in science and technology from all over the country. Last year we took them down to the Thames barrier, explained how it works and did some exercises with them to bring it all to life.

In addition to these external schemes, my team at Jacobs has recently launched its own scheme to help inspire the next generation of flood risk management professionals working on Thames-based projects. ◀

▶ ————— ◀
"I mentor on a one-to-one basis and also take part in an annual week-long residential project for disadvantaged children with an interest in science and technology from all over the country."
————— ◀



Shaunette Babb, Project Manager at Jacobs

SAIL FREIGHT RETURNS TO THE THAMES

The Thames Vision 2035 wants to double the amount of goods transported by the river. Here's a new enterprise that's right behind this aim.

Raybel Charters is a new community interest company set up by Rob Sargent, Matt Houston and Gareth Maer. They plan to start carrying goods into London along the estuary by Thames sailing barge, as was done for centuries until around 50 years ago. But their cargo will add a modern twist – craft ale, coffee and sea salt rather than bricks and hay.

The sail cargo renaissance

This exciting enterprise is part of a renaissance of sail cargo routes in Europe and across the Atlantic. For example, the German company *Timbercoast*, which recently completed a maiden run across the Atlantic to Montreal and back; *Fairtransport*, which travels from

the Netherlands to Newhaven carrying Portuguese olive oil; and the Cornish built *Grayhound*, whose home port is Douarnenez in Brittany. This network of boat owners, merchants and shippers is known as the Sail Cargo Alliance. Raybel Charters will be its first member to tap London's potential as a market for sail-freighted goods, with routes from France, Portugal, the Caribbean, Canada and the east coast of England.

The heart of the enterprise is *Raybel*, built in Milton Creek for shipping company G.F. Sully and launched in 1920. The barge is 86 feet from stem to stern-post and with a cargo capacity of more than 150 tons. Still in good structural condition, she needs some restoration work – primarily to the hull. The Heritage Lottery Fund will be funding this work, and also enabling Raybel Charters to provide accredited shipwright apprenticeships and a programme of community engagement.

"We'll be using *Raybel* for freight operations and as a unique resource for community development, training, education and health initiatives along the Thames estuary. For example, we can see great potential to work with new housing communities at Ebbsfleet, Thamesmead and around Surrey Docks.

We're currently looking for other investors, setting up demo runs of the cargo operation with other barge-owners, and promoting the freight opportunity to producers, food co-ops, markets and retailers who share our vision. We're also developing a prospectus for individual investors to become shareowners in our social enterprise."



A recent shot of *Raybel* on the Thames estuary

Environmental benefits

By 2050, ships must operate in a net zero-emission world if the Paris Agreement's 2°C target is to be met. When a recent Lloyd's List article asked shipping experts what would power shipping by 2050, most of them said that wind propulsion would be a key development. For Rob, Matt and Gareth, sail freight is also about making connections – linking buyers and sellers, producers and consumers, communities – and a supply chain that moves goods at a pace dictated by nature. Their 'slow cargo' approach could be a much-needed antidote to the 'always available' culture of modern consumerism and its negative environmental impact.

To find out more about Raybel Charters, go to www.raybelcharters.com or email info@raybelcharters.com

ONE MORE FOR ONELESS!

It was quite by chance that Ruth Calderwood, Air Quality Manager at the City of London Corporation, overheard a presentation about our OneLess campaign to tackle plastic litter. But what Ruth learned had such an impact she hasn't bought a bottle of water since.

Replacing one problem with another

Ruth started buying bottled water after moving to a part of Kent where the water is so heavily chlorinated that she just couldn't drink it, even after boiling. She looked at installing a filtration system, but there wasn't enough room under her sink.

"So I started buying bottled water – albeit slightly reluctantly at first – and did so for quite a long time. But my reluctance was to do with the environmental impact of transporting the bottles, rather than the plastic they were made from – reflecting my concerns as an air quality manager. I thought the bottles would all be recycled as long as I disposed of them properly – I never imagined that they could still end up into the water course and create such problems for wildlife and water quality. The fact that I may have inadvertently played a part in this made me really uncomfortable. I've never bought a bottle of water since. I only drink tap water – filtered by jug at home and unfiltered at work because London has good, clean-tasting water straight from the tap."

Like many of us, Ruth felt annoyed with herself for not being aware of what damage plastic bottles can do. "Particularly in view of my interest in wildlife and the environment – for example, I'm involved in the Kent Wildlife Trust and the RSPB. And it made me wonder how much of the plastic waste that I diligently sort out for recycling really does end up being recycled after collection."

"I was horrified by what the presentation revealed about plastic bottles getting into the water course and the impact on the environment. So horrified, in fact, that I changed my behaviour straight away."

Using the power of the purse

Ruth is now very plastic conscious when food shopping, taking care to choose items that don't come in plastic wherever possible. "But whereas there are easy alternatives to bottled water, finding plastic-free food is more of a challenge, particularly for working people with long commutes who have less time to shop around or cook from scratch. Nevertheless, I'm a great believer in people using the power of the purse to influence retailers, and feeding back to them about their packaging. For example, I recently emailed my favourite supermarket to ask why their competitors can sell mixed vegetables without plastic packaging, but they can't."

Join the refill revolution

An important aspect of Ruth's job is to bring about behaviour change in drivers, by encouraging them to switch off their engines when waiting rather than increasing air pollution by idling. She says: "We're aiming for a snowball effect, in that once a certain number of drivers start switching off, other drivers are likely to follow suit until it becomes a social norm. Hopefully the same applies to plastic waste. I really believe that if everyone tries to do their bit – such as reusing water bottles, trying to avoid plastic-packaged foods and pushing retailers for alternatives, rather than just relying on recycling – together we can have a big impact."

To find out how you can help us make single-use, throwaway plastic bottles a thing of the past, visit www.onelessbottle.org

#OneLess

- In the UK we get through 13bn plastic water bottles each year.
- Globally 32% of plastic packaging escapes collection systems.
- More than 300 tonnes of litter, mostly plastic, is cleared from the Thames each year.
- The Thames is a major route for pollutants such as plastic to get into the sea.
- Up to 14.6m tonnes of plastic enter the world's oceans every year, causing patches of plastic waste that cover an area 166 times bigger than London.

RACING AHEAD ON THE THAMES

There will be thrills but hopefully no spills during a very special dragon boat race and SPU events this September.

The OSCAR Campaign Dragon Boat Race – 14 September

The OSCAR (Ocean and Shipping Community Advancing Children's Health and Research) campaign unites the international shipping community to raise funds for Great Ormond Street Hospital for Children (GOSH) and the UCL Great Ormond Street Institute of Child Health.

The campaign's dragon boat race in London's Docklands has been a highlight of the shipping industry's calendar for the last five years. Each September companies' teams are pitted against each other in 250m heats to raise money for GOSH. Last year's race raised £150,000 towards the £1.65m that the OSCAR campaign has raised to date. This year, each team will pledge to

raise £5,000. They can do this through company donations, sponsorship, fundraising – however they wish. There'll also be quayside entertainment, live music, and a huge barbecue and bar, so a fun atmosphere is guaranteed!

Raising money for pioneering medical research

The OSCAR campaign is the inspiration of Phil Parry, Chairman of Spinnaker Global, whose son Oscar received life-saving care at GOSH. Oscar had leukaemia twice and endured three transplants before being cured by pioneering research of the type for which the dragon boat racers raise money.

Phil said of last year's race: "When you fundraise for an event, you cross your fingers and hope that people will feel encouraged to donate – to put their hands in their pockets and give what they can. To listen to your story. Because that's what started this whole campaign for Great Ormond Street Hospital for Children. Oscar received life-saving care from the amazing people at GOSH from a very young age. The team there are continuing to conduct ground-breaking research at the bedside as I type; helping other children like my son, who is now 18 thanks to their work, to survive childhood leukaemias and other immune diseases."

Find out more at www.gosh.org/get-involved/philanthropy/how-you-can-support-us/oscar ◀



Stand up paddle-boarding (SUP) events – 23 September

Organised by Active 360 as part of Tideway's Foreshore Festival, the London Crossing Race and the Big Ben Challenge provide an unmissable opportunity for experienced SUP enthusiasts to paddle on the Thames in London. The 15.5km London Crossing Race will be the first-ever SUP race through central London. It will take 30 competitors along iconic stretches of the Thames from Putney to Shadwell Basin, dealing with the river's currents and traffic as they go. Open to 200+ paddlers, the Big Ben Challenge is now in its second year and involves a 20km, non-racing tour from Putney Embankment to Big Ben and back!

For more information visit www.active360.co.uk ◀



TILBURY EXPANSION UPDATE



If approved, Tilbury2 could bring major economic benefits for London and the south east. But are there problems ahead for Thames heritage and wildlife?

In December 2017 the Port of Tilbury submitted an application to the Planning Inspectorate for a development consent order to build Tilbury2 on a 152-acre site that was part of the former Tilbury Power Station. This proposed new terminal is central to the port's £1bn investment programme 2012-20, which also includes the UK's largest warehouse – Amazon UK's 70-acre London Distribution Park – that began operating in autumn 2017.

Already London's largest port, Tilbury has doubled the size of its business in the last ten years. And in the next 10 to 15 years, it is projected to double volume across the quay from 16m to 32m tonnes, and triple direct

employment from 3,500 to 12,000 jobs. Expansion is needed to cope with rising demand for construction materials and aggregates for the UK's building sector, imported and exported cars, and an increase in the ferry traffic that carries consumer goods, food and drink, and steel between Europe and the UK.

Due to start operating by late summer 2020, Tilbury2 will comprise:

- Roll on/roll off ferry terminal for importing and exporting containers and trailers.
- Facilities for importing, processing, manufacturing and distributing construction materials.
- Storage area for a variety of goods, including exported and imported cars.
- New national strategic rail and road connection into the site.

"As London and the south east grows, Tilbury grows," said Charles Hammond, Chief Executive of the Forth Ports Group, the Port of Tilbury's owner. "Tilbury2 will deliver much needed port capacity to support businesses importing and exporting to and from Europe and across the globe at a crucial time for the UK."

Thames heritage and wildlife under threat

But despite the benefits for UK business, Tilbury2 has not been greeted with enthusiasm by all sectors. English Heritage is concerned about the impact on Tilbury Fort, which has protected London's seaward approach from the 16th century right through to the Second World War. Henry VIII built Tilbury's first

fort, and Queen Elizabeth I famously rallied her army nearby to face the threat of the Armada. The present fort, built by Charles II in the 1670s, is one of England's best-preserved examples of 17th-century military engineering.

English Heritage maintains that Tilbury2 will have a negative impact on the views between the fort and the Thames – an important aspect of the fort's historic strategic design and a significant part of its setting. In addition, the landward-side development surrounding the fort would greatly reduce its visual connection to the landscape. In short, the proposed development would "... severely impair the ability to understand the very essence of the Monument and its original design and purpose" and "... negatively impact the historical significance, ecological value and commercial operation of Tilbury Fort." (Source: infrastructure.planninginspectorate.gov.uk)

The Invertebrate Conservation Trust is opposing Tilbury2 because of the impact on the nationally important populations of bees and other insects that live on the proposed site. The Trust says that 1,397 species have been recorded there in recent surveys, including 159 species of conservation concern and 31 species identified as rare or threatened. More than 75,000 people have signed its petition to the Planning Inspectorate. Natural England, the government's advisor for the natural environment, has also entered the debate, stating that: "In our opinion, the overall assemblage could be considered to be of sufficient quality to meet the designation requirements of a Site of Special Scientific Interest... The Lytag Local Wildlife Site in particular is regarded as almost unique in England and, whilst as a brownfield habitat it is man-made, would be very difficult to re-create with confidence on a compensation site should it be lost to development."

For more information, visit the Trust's website www.buglife.org.uk ◀

CINDERELLA RIVER, THE EVOLVING NARRATIVE OF THE RIVER LEE

By Simon Read

This beautifully produced book is the result of a three-year research project on Hydrocitizenship funded by the Arts and Humanities Research Council's Connected Communities programme. Its author, Simon Read, is a visual artist with an interest in coastal dynamics and Associate Professor of Fine Art at Middlesex University London.

The aim of the project was to explore and reflect upon "changing perceptions of water as amenity, asset and threat", in four case study areas in England. One of these was the River Lee – the 'Cinderella river' that arises near Luton in Bedfordshire and crosses metropolitan London to join the Thames at Leamouth near Greenwich.

Read describes the Lee as: "a complex and pervasive presence adopting in turn the guise of drinking water supply, natural habitat, drain, navigation, flood



Prescott Channel at Bow in East London

control and recreational facility on its labyrinthine journey through continuous wetland ..." The book explores all of these aspects through a series of walks, visits and meetings along 15 stretches of the river. Starting at its tidal reaches from Trinity Buoy Wharf to Three Mills, we are taken on a fascinating, information-packed journey to the Lee's official and alternative sources at Leagrove Common and Houghton Regis respectively.

Many of the locations studied fall within the 26-mile long Lee Valley Regional Park, created after an Act of Parliament in 1966 – a time when much of the riverbank was derelict, neglected and unloved following industrial decline. The aim was to create a people's park for the east end, Essex and Hertfordshire – a goal which the author believes has been "more than fulfilled". The area has been gradually transformed into a wetland landscape with such a high level of diversity that it is now a model for major metropolitan environments in the UK and western Europe.



River Beane joining the Lee near Hertford

Each section is illustrated with stunning photography and ends with reflections upon one or more of "the range of identities adopted by a very utilitarian watercourse". The author concludes with a summary of findings across four key themes: Water infrastructure; Public access; Wetland biodiversity; Art and the Lee Valley, and some insightful, forward-looking thoughts on the landscape, its ecology and the need for more community engagement.

Cinderella River is a book that can be enjoyed on many different levels. The author's first-person narration, with its wealth of topographical detail, flashes of wry humour and vivid imagery – verbal and photographic – makes for an absorbing, entertaining read for anyone with an interest in the River Lee and riverside environments. And for slightly more scholarly readers, it provides a thought-provoking introduction to the concept of Hydrocitizenship. ◀

Images © Simon Read

THE THAMES ESTUARY FISH MIGRATION ROAD MAP

TEP is working on an exciting new project that brings together – for the first time – all the data needed to improve fish migration routes and habitat in the greater Thames estuary. Our partners in this ground-breaking work are the Environment Agency, the Institute of Fisheries Management, the Zoological Society of London and Dutch consultancy Nature at Work.

The impact of river fragmentation

In the UK we've fundamentally changed the way our rivers work, straightening and deepening their channels to get water off the land as quickly as possible. This has effectively turned them into water chutes, which benefited our agricultural and industrial industries by providing drainage and water transport corridors. We've also built weirs and sluices to control the water flow.

But this fragmentation has led to some major problems. A river is meant to meander across the landscape and have

areas either side that can flood safely, called floodplains. The meandering slows the waterflow, stopping flash floods and creating pockets of habitat for wildlife and plants. Floodplains allow for natural drainage and create wetlands that combat pollution and create pockets of habitat that are very important for migratory fish. The lack of them has contributed to the decline of some species, as have sluices and other barriers to swimming upstream. Diadromous fish, such as the European eel, bass, sea lamprey and flounder, must be able to migrate between marine and freshwater habitats to reach their breeding, nursery and feeding grounds.

Various EU directives and national legislation require improvements to our rivers and, in turn, fish migration. Some great work has already been done to 're-meander' rivers, restore wetlands and reconnect floodplains in the UK. And technical solutions to man-made barriers – collectively known as "fish passes" – are helping to recreate fishes' natural migration routes. Although they vary in form and complexity, many enable fish to navigate barriers by swimming and leaping up a series of low steps leading into the water on the other side.

Bringing together all the relevant data

We started out working at three different scales: the tidal Thames; the Thames river basin, and the marine plan area. This involved collaborating with partners across many administrative boundaries, such as London boroughs and county council



areas. But of course, migrating fish don't heed human administrative boundaries. We soon realised that we needed to work at a more strategic level and analyse the barriers to migration across the entire estuary system, which has called for a collaborative approach across multiple river basin districts and their coastlines.

By bringing together and analysing all the relevant data on fish populations and migration barriers across the whole of the greater Thames estuary, we will be able to identify entire migratory routes and create a road map of the 'major highways', 'A-roads' and 'B-roads' that the fish would use if there were no barriers preventing them. As well as helping to prioritise where fish passes are needed, the completed road map will help to identify opportunities for restoring habitat during work on sea or flood defences, river restoration and land development.

To see the fish migration road map in development, visit <https://thamesestuarypartnership.github.io/barriers/barriers.html> ◀



UPDATING ESTUARY EDGES

Launched in 2008, our *Estuary Edges* guidance for riverside developers and coastal engineers has been followed throughout the UK and as far afield as the Philippines. It's now being reviewed and updated.

The tidal Thames is a 107km (67 mile) estuary running through the heart of London, out to the Essex and Kent marshes and the North Sea. To protect these areas from flooding and allow for berthing, much of the estuary's edges have been heavily modified with walls 'hard-engineered' from concrete, brick and metal. As a result, only about 2% of the tidal riverbank is natural. This absence of 'soft' natural edges, where wildlife is most abundant, has a negative effect on the estuary's ecology. Ideally, an estuary as heavily modified as the Thames will have regular, small sections of reedbed or saltmarsh connecting the marine area downstream and the freshwater areas upstream. This gives young fish places to feed and shelter from predators, and pockets of slack water where they can wait for the flooding tide and then 'surf' to the next pocket.

Promoting softer edges along the Thames

Since 2003 various measures have been taken to help mitigate the problem, including attaching timber structures to the flood defence walls which vegetation can cling to, and setting back defence walls a few metres then creating sloping planted terraces in front of them. Such designs have been used at Wandsworth Riverside Quarter, Deptford Creek, Greenwich Peninsula, Barking Creek, Dartford Creek, Royal Wharf and

Battersea Reach. Back in 2003, they were truly innovative and set the trend for 'softening' many heavily modified estuaries throughout the UK – for example, the 62km Humber estuary.

Estuary Edges, our 2008 guidance for waterside developers produced in partnership with the Environment Agency, featured many of these sites as case studies along with details of different designs that soften flood walls. The guidance proved very popular; it's been used extensively by the Environment Agency and coastal engineers across the UK and internationally as far afield as the Philippines.

10 year review and update

To remain fit for purpose for the next 10 years, the guidance now needs to be reviewed and updated. This includes establishing the habitat value and structural integrity of the environmental mitigations over time (in our 2008 edition we recommended that they be revisited at fixed periods for this purpose, but there are only two instances of this being done). The Environment Agency in particular needs the data, so that it can continue to promote the recommended mitigations to developers and engineers, achieve national and EU water quality and habitat targets, ensure that flood defences are managed as sustainably as possible, and to inform mitigation of the impact of riverside development.



Point Wharf, Greenwich Peninsula

Estuary Edges 2018

In 2017 The Environment Agency secured funding for a review of the 2008 mitigation guidance, to be managed by TEP. Our other partners in the project are: the Port of London Authority, the Institute of Fisheries Management, Tideway, Jacobs and the Zoological Society of London. During the review we surveyed 17 sites that had followed the 2008 guidance, including fish, invertebrate and flora sampling at 9 of them. The results are now being analysed.

We're planning to launch *Estuary Edges 2018* this autumn, in the form of a user-friendly, 'how to' guide with a range of case studies and a citizen science-based monitoring model that can be replicated in all estuaries. For more information nearer the time, keep an eye on our website www.thamesestuarypartnership.org.uk and our monthly email newsletter. ◀

TEP MUCH APPRECIATED

Our first free members-only event at the Watermen's Hall in the City of London on 15 March proved a resounding success. Before networking over wine and canapés, our loyal supporters heard updates from a TEP Board Trustee and the Chairs of the five TEP Fora – the Dredging Liaison Group, the Fisheries Forum, the Thames Litter Forum, the Thames Learning Group and Thames Path.

Enabling and facilitating

A recurring theme throughout the evening was how much our Fora appreciate the enabling and facilitating role that TEP plays. For example, when talking about the Litter Forum, Tanya Ferry, PLA's Environment Manager, said: "We couldn't have created it without TEP's support". But success has its problems – Tara said that since TEP started to co-ordinate the group, it's grown so big that the PLA's 22 meeting chairs can no longer meet demand! Steve Tabbitt, Trail Manager at Thames Path, said TEP's support enabled the group to advise Tideway on signage along the path and to raise funds for a condition survey that will make it easier for local authorities to stipulate path improvements in Section 106 agreements with developers. The Chair of our Fisheries Forum, Andrew Rattley of Kershaw's Seafoods, spoke about TEP's pivotal role in accessing funding from the European Fisheries Fund to improve the fishing industry in Leigh-on-Sea.

Ready-made communication channels

Katherine Harris, Chair of the Dredging Liaison Group and Marine Environmental Consultant at Harris Holden Ltd, concluded her very interesting talk by saying that the group is keen to reach a wider audience about dredging-related issues. So it is looking at ways of using our existing communication channels, such as holding events under the TEP banner, or perhaps incorporating a dredging session into a wider TEP event. Katherine also wants to find opportunities for the Dredging Liaison Group to work more closely with the other TEP Fora. Here at TEP, we're looking forward to helping the group achieve these aims in whatever way we can.

Find out more about the five TEP Fora and future TEP events at www.thamesestuarypartnership.org ◀

NEW MEMBERS

If you or your organisation would like to find out more about becoming a member of TEP, visit www.thamesestuarypartnership.org or email tep@thamesestuarypartnership.org

GET IN TOUCH

Amy Pryor
Programme Manager
a.pryor@ucl.ac.uk

Meghna Shah
Communications & Support Manager
meghna.shah@ucl.ac.uk

Wanda Bodnar
Fish Migration Roadmap Project Officer
w.bodnar@ucl.ac.uk

Alice Watts
Coastal Partnerships Officer
alice.watts.16@ucl.ac.uk

Thames Estuary Partnership
University College London
Office for the Vice-Provost (Research)
Room 117, 26 Bedford Way
London WC1H 0AP
T: 020 7679 8855
W: www.thamesestuarypartnership.org

YOUR FEEDBACK

We welcome readers' feedback on Talk of the Thames, including suggested topics for articles and content contributions. Please email your feedback to editor@thamesestuarypartnership.org

SAVE THE DATE!

TEP Annual Forum

When: 14 November 2018,
10am-5pm

Where: London (venue
and other details tbc)

Our keynote speaker will be Sir John Armitt, Chairman, National Infrastructure Commission and Thames 2050 Growth Commission.



Turning challenge into opportunity

Jacobs is a global engineering and project delivery company.

We are working with the Environment Agency to deliver the TEAM2100 programme. It is one of the UK government's top 40 national infrastructure projects and the first Flood and Coastal Risk Management (FCRM) programme.

Thames Estuary Asset Management 2100 programme

Working with the Environment Agency to manage tidal flood defences as part of the Thames Estuary 2100 Plan

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