

Tamar Crossings Newsletter

No. 3 January 2020



Welcome to the third edition of Tamar Crossings

The last few weeks have been very busy as work continues on bridge maintenance and upgrading the toll system. You can read updates on these key projects in this month's edition of the newsletter.

We are also focusing on our ferries, with an article outlining the history of chain ferries, and a second piece providing an explanation of how the ferries are loaded and unloaded. We have also been looking at the wildlife which lives in the Tamar estuaries.

We are very lucky to have some fantastic volunteers supporting our Visitor and Learning Centre. This month we talk to Volunteer Bridge Ambassadors Elspeth Wiltshire and Sarah Young who explain why they decided to become volunteers and what they love about their role.

David List, General Manager

Joint Committee member: Geoff Brown



As well as being a member of the Tamar Bridge and Torpoint Ferry Joint Committee, Liberal Democrat councillor Geoff Brown is Cornwall's Council's Cabinet Member for Transport. This role covers a wide brief, including pedestrian, road, rail, air and sea links and now the spaceport.

A proud Cornishman who has lived most of his life in his home town of Newquay, Geoff has spent his life helping others. A former fisherman, and still a licensed charter boat skipper, Geoff spent 30 years working in primary education, latterly as headteacher of a village primary school.

He served with the lifeboat crew in Newquay for nearly three decades and was in charge of the Coastguard cliff rescue team for 25 years during which time he was twice awarded the Chief Coastguard Commendation for rescuing people in trouble at sea. Along with wife Christine, he developed a teaching programme to deliver sea safety and alcohol awareness education to secondary students which took the pair into schools across England, work which was recognised by the Home Office.

Geoff is very proud to have the transport portfolio for Cornwall and is committed to improving transport links both to and from Cornwall and inside the Duchy.

"The two crossings provide a vital service for people living, working and visiting Cornwall and Devon" he said. "Members of the Joint Committee work closely with Tamar Crossings staff and partner authorities to provide all users with safe, reliable and efficient crossings of the River Tamar. The Government's decision to approve the new tolls – the first increase for nine years- will enable us to continue to do this."

Geoff's motto is "Putting People First" and he is committed to doing his very best for all the people of Cornwall.

Inside...

All about our chain ferries

Loading / unloading ferries

Tamar Estuary Environment

Bridge maintenance

Tamar Crossings emergency exercise / parapet review decision

Learning Centre: Peta / stem work / ferry bell

Spotlight on Learning Centre staff - Volunteer Bridge Ambassadors

We are keen to hear what you would like to see in future editions so please let us know at trisha.hewitt@tamarcrossings.org.uk

All about our chain ferries

The first Torpoint ferry service began operating in 1791 using oars and sails to cross the river. 229 years later the crossing is the busiest estuarial vehicular ferry crossing in the country, with the largest chain ferries in the world.

Tamar II, Lynher II and Plym II complete 1,324 crossings a week in the summer and 1,292 a week in the winter months. Together the three vessels provide a service 24 hours a day, 365 days a year, with a 10 minute frequency at peak times, carrying nearly two and a half million vehicles and approximately 750,000 foot passengers each year.

So how has the service changed over this period?

The first chain ferry system across the River Tamar was introduced by renowned engineer James Meadows Rendel. The service began operating between Torpoint and Devonport in 1834, with vessels powered by steam. Several generations of ferry later, and with the addition of a third ferry in 1969, vehicle and pedestrian chain ferries continue to service the route. While the ferries themselves are much larger than the ones used in the 1830's and are powered by diesel generators and electric motors rather than by steam, Rendel's solution of a self propelled vessel using vertical chain wheels to pull on fixed chains connecting the two river banks remains the same.

Why chain ferries?

Chain ferries are cheaper and less intrusive on the environment than a fixed crossing such as a bridge or a tunnel. Other advantages of chain ferries over 'free floating' vessels are that they can continue in service in extreme weather conditions, they are quicker to load and unload, and they are economical, using only about one eighth of the power of an equivalent sized free floating vessel.

The three current ferries were commissioned by the Tamar Bridge and Torpoint Ferry Joint Committee in 2003 at a cost of £4.9m each as part of a wider £20m programme which also included the refurbishment of the slipways. As well as being able to carry up to 73 cars (a 50% increase on the previous ferries), the new vessels provide an increased crossing speed (routine crossings take about 6-7 minutes, but they can cross a couple of minutes quicker in an emergency). They also have wider vehicle lanes to improve loading and emergency evacuations, improved fire detection and reduced noise levels for passengers and staff. A fully loaded ferry weighs around 1,000 tonnes.

How does a chain ferry work?

Each ferry drives itself across the river on two chains. Each individual chain is over 650 metres long and weighs 23 tonnes. The total length and weight of chains in the river is around 4 kilometers (approximately 2.5 miles) weighing some 150 tonnes. The ends of each chain are connected to large weights housed in gantries on each side of the river which help to keep the chain tension at the correct level.

The ferries each have three diesel generators which produce electric power for the two drive motors which each turn one of the two chainwheels. While one generator can produce enough power for normal operation, the second generator is used to provide extra power for bad weather or fast emergency crossings.

The third generator is a spare to allow for planned maintenance and to enable the service to continue to run safely should one of the engines suffer a defect that puts it out of action.

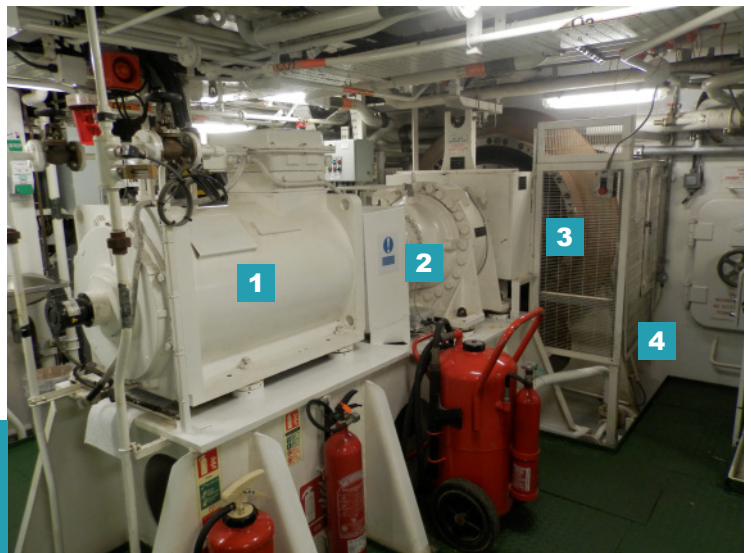
The chain wheels are nearly two metres in diameter and have pockets on their circumference which grip the chain links. This is the equivalent of the sprocket on a bicycle, but instead of the chain engaging on cog teeth, it engages in the pockets. The chains run through chutes within each side of the hull of the ferry.



These chutes are lined with special materials to handle wear and tear and keep noise under control. Each chainwheel drive has a hydraulic disc brake to stop the ferry. There are over 1,000 sensors per ferry and staff carry out constant visual checks to ensure that any problem is flagged up as early as possible.

Like any mechanical component the chains wear and on average are each replaced once every three years. This wear is caused by their interaction with the chain wheel, as well as the fact that they are abraded by the slipways as the ferries move up and down the river and the chains slide up and down the slipways as the gantry weights do their job. A main chain change is a major, and lengthy, job that cannot be done with the ferry in service and can only be completed when the wind and tides are within particular limits.

While the chains have been sourced from within the UK in the past, there are no longer any manufacturers in this country who produce the size and quality of chain required. As a result, replacement chains are now imported from a specialist manufacturer in China.



Key

- 1 Motor 2 Gearbox 3 Disc brake
- 4 Chain wheel on the other side of the door

Loading and unloading our ferries

We are often asked if there is a special system for loading and unloading the ferries and why the first vehicle loaded is not the first one to leave the ferry. The answer to the first question is yes... we load the ferries to ensure that we get the maximum number of vehicles on and in the appropriate positions for their size and weight.

With reference to the second question - if we were to run a 'first on, first off service' loading model we would not be able to achieve the 10 minute service that we do simply because of the length of time that it takes to load and unload 73 vehicles.

The middle two lanes are wider than the other lanes so bigger traffic is directed down those lanes, and we also make sure that high sided vehicles are positioned so they do not block the sightlines which are critical for the Controller to accurately position the ferry on the slipways. As the lanes are narrower on the prows than on the main deck we ensure that lorries and buses are not loaded on that part of the ferry. This is why you normally see the loaders putting about 4 cars in each of the lanes on the direction of travel prow end before filling the 'main deck' lanes.

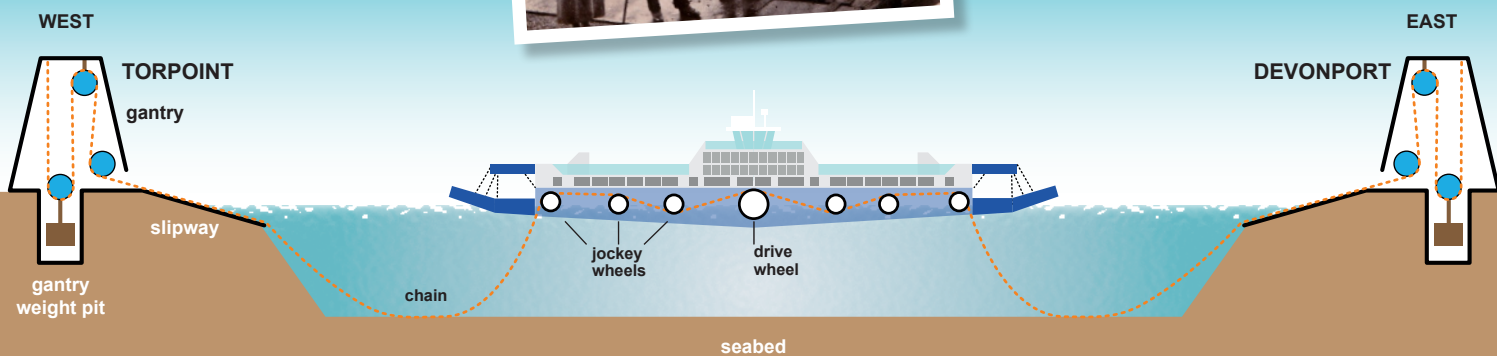
We always need to load assuming we are going to get a full load of the most awkward shaped vehicles possible as the loader can't see what is coming next other than the first few vehicles. Where sufficient staff are available we encourage cars to move up to the next vehicle to get as many vehicles as possible in the lane.

There are very strict restrictions on who can use the priority bus lanes. As well as buses, we usually only allow emergency blue light vehicles or other people dealing with critical medical

emergencies to use the lanes. We also allow taxis who have been approved by Cornwall Council to transport customers with particular specialist needs to use the priority lanes.

Funeral corteges and wedding cars can sometimes get access if they are booked in advance, and we may receive requests from extra-large vehicles wanting to use the priority lanes to 'loop around' rather than risking blocking roads trying to do a 3-point turn in order to leave Torpoint.

It takes up to seven minutes to load and unload around 70 vehicles and during busy rush hours it is important to keep a constant traffic flow to the ferries so we can keep on time. We recognise that the current system means that sometimes people appear to 'gain' and sometimes to 'lose' but overall our aim is to get people across in the quickest average time.



Did you know:

The Torpoint ferry service was originally commissioned by Sir Richard Pole Carew and Lord Mount Edgcumbe in 1791 and was operated via oars and sails. The first steam ferry to cross the Tamar was the *Jemima* in 1831. Unfortunately it had to be withdrawn from service because it could not cope with the tides and weather. The first chain ferry was a 70 feet long, 25 feet wide, steam driven ferry which could carry up to eight of today's vehicles. The first diesel electric ferry was introduced in 1960. Built in Southampton by Thornycroft, this was a 102 feet long, 569 ton vessel which could carry up to 26 vehicles. Today's ferries are much larger – powered by three diesel generators and electric motors and each is 240 feet (73 metre) long, weighs 750 tonnes (unloaded) and can carry up to 73 cars.

In 1923 a travelling menagerie was crossing the river on the ferry when an elephant broke loose, charged over the ferry prow and decided to swim ashore. Reports suggested "its male mate bellowed a welcome and the watching crowd scattered in terror."

In January 1973 the Royal Naval frigate *HMS Scylla* hit the 'centre' Torpoint ferry in reduced visibility, slicing the structure almost down to the waterline. Luckily no passengers were injured.

Why we are so proud of our bird and marine life

We know we are very lucky to live and work in one of the most beautiful parts of the country. But did you know that Tamar-Tavy Estuary is a Site of Special Scientific Interest, a European Special Area of Conservation, a Special Protection Area and a Marine Conservation Zone because of its international importance for wildlife.

Flanked by ancient woodland which provides a haven for birds and butterflies as well as rare lichen and orchids, the rivers Tamar, Tavy and Lynher are also part of a designated Area of Outstanding Natural Beauty, with their intertidal systems generating mudflats, saltmarshes and reedbeds.

Well known as a wintering site for wildfowl and waders, the site supports a nationally important population of avocets. Easily identified by their black and white plumage and distinctive, long up-turned bill, avocets were once extinct in the UK. The Tamar Estuary was the first wintering location for avocets after they returned to UK shores in 1947.

The estuaries are also home to the little egret, a small white heron, with black legs and bill, and yellow feet. There is a small population at the site all year round, although numbers swell in late autumn as they migrate into the area's feeding grounds, where they feast on small fish and crustaceans. Both the avocets and the little egret are on UK's Amber List for conservation concern.

Lucky visitors can also see the spectacular black-tailed godwits, which overwinter in the Tamar before flying back to Iceland in the spring to breed as well as whimbrels, greenshanks, spotted redshanks, green sandpipers and golden plovers. Rare birds such as the Dartford Warblers have also been found in the heathland up river.

The estuaries are also the only site in the region where smelt breed. Under threat from pollution and over-fishing, as well as habitat loss, mature adult smelt migrate up the Tamar Estuary in February and March to the upper tidal reaches at Gunnislake Weir to spawn in the freshwater areas of clean gravel there.

The rivers are also home to blue mussel beds which provide a nursery for many other fish species, including allis shad (a rare migratory fish that spends much of its adult life at sea), sea trout, sea bass, salmon and lampreys. Seals and dolphins can also sometimes be seen in the Tamar and surrounding coasts.



Add in the eels, crabs, lobsters and prawns which hide in the crevices between stone blocks, and the sea anemones, sponges and sea fans which attach themselves to bridge piers, marina pontoons and moored boats and you can see why we are so proud of the rich diversity of internationally important bird and marine life found in the Tamar Estuaries, many of which are rare or in decline.

As well as providing important ecosystem services, the rivers also support food production, provide flood protection and remove CO2 from the atmosphere as well as bringing recreational, health and wellbeing benefits.

You can do your bit to help protect the estuaries by preventing all forms of pollution, avoid disturbing the wildlife and find out a bit more about what makes it special.

Further information in what makes the area so special, how you can enjoy it and its management is available on <http://www.plymouth-mpa.uk/>



Update on our bridge maintenance scheme

A combination of the recent severe weather and issues with some elements of the maintenance works currently taking place on the Tamar Bridge has resulted in the completion date for the scheme moving back to July 2020.

The scheme to replace the deck waterproofing and steel bolts holding the 7,200 kerb units in place is essential to prevent the steel bridge deck from corroding and to ensure the continued safety of those crossing the bridge.

The maintenance works began in March 2019 and were originally scheduled to be completed by the end of March 2020. Unfortunately contractors Taziker have encountered some issues with the installation of some of the bolts on the south cantilever. This has led to a delay in moving the works onto the main deck of the bridge which has, in turn, had an impact on the final completion date.

“This is a very complex scheme and we have been working closely with Taziker to resolve the issues as quickly as possible” said Engineering Manager Richard Cole.

“Providing the weather improves they are now planning to move onto the main deck in mid February.”

We are very disappointed by this delay to the scheme but are continuing to work with Taziker to ensure that the next phase is completed as quickly as possible to minimise disruption to the public.”

This delay will mean that the resurfacing works on the main deck, originally scheduled to take place between Spring and Summer 2020 will now take place in 2021.



The south cantilever was closed to pedestrians, cyclists and mobility scooters at the end of September to undertake the first phase of the works. This will then enable the cantilever to be used by all other traffic when the works move onto the main deck of the bridge, maintaining the four traffic lanes that the bridge usually operates to reduce potential disruption and delays for the remainder of the scheme.

Following the closure of the cantilever we introduced a free shuttle bus service to transport all pedestrians, cyclists and those using mobility scooters between the Tamar Bridge car park and Fore Street in Saltash around the clock. Following feedback from users we added a third shuttle bus which has enabled us to provide a more demand responsive service which has significantly reduced waiting times, particularly at peak periods.

It is obviously impossible to replicate the facility of having a dedicated lane for walkers and cyclists, but we are doing our best to meet the needs of service users with the introduction of the shuttle bus service.



Thanks to everyone who is using our shuttle bus service to travel across the bridge whilst these essential engineering works are being carried out. We would particularly like to encourage cyclists to use the shuttle bus to avoid the unnecessary hazard of cycling through the heavy traffic on the Bridge during their morning and evening commutes.

We are continuing to review the service during the works and are happy to hear suggestions for any further adjustments to transport people across the Bridge safely and quickly. The shuttle bus service will remain in place until the completion of the works in July.

Upgrading the toll system

Work is continuing on upgrading the toll system to make the system easier and quicker for service users. Three toll lanes have been converted so far, including the tag only lane 3 and the supporting back office system is very close to completion. Testing and trialling of the new system will continue on the Toll Plaza over the coming weeks. Once further updates to the ferry application have been completed, onboard trials and testing of this system will be carried out on the ferries.

We expect the new system, which will include an option for people to use contactless payments on the Bridge, to be fully introduced by March.

Did you know:

All of the eels in the River Tamar have travelled over 4,000 miles from the Sargasso Sea where they hatched.

The 68lb world record conger eel caught from the shore by rod and line was landed at Devil's Point in 1991.

The maximum tidal range of the Tamar Estuary is 6.5m.

Sea anglers catch cod which migrate into the deepest parts of the estuary during the Winter.

After storms, look out for seagrass floating in the estuary. Seagrass is Britain's only flowering marine plant and is an oxygen producing, sediment binding, carbon storing, refuge providing super plant!

Testing our emergency plans

Last month we joined with Cornwall Fire and Rescue Service to carry out a joint emergency exercise on the Torpoint ferry.

It is important for us to review and test our Emergency Response Plans to ensure that they remain workable and deliver the resilience and performance needed to meet both our current and future organisation requirements.

Some of our ferry staff are also members of Torpoint's retained fire station crew. This relationship gives our organisation closer ties with local emergency services, making it easier to arrange exercises like these.

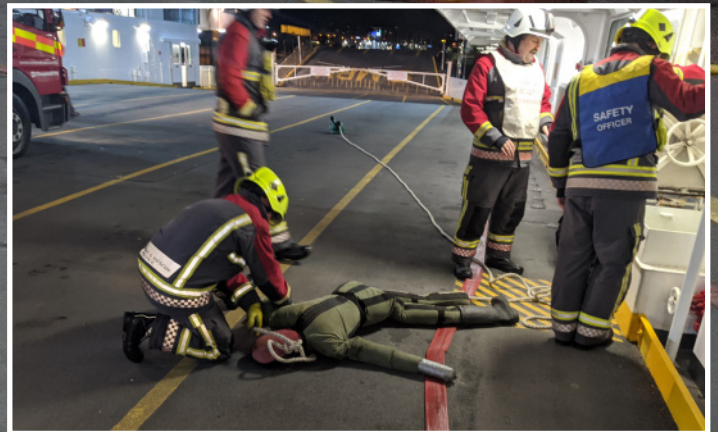
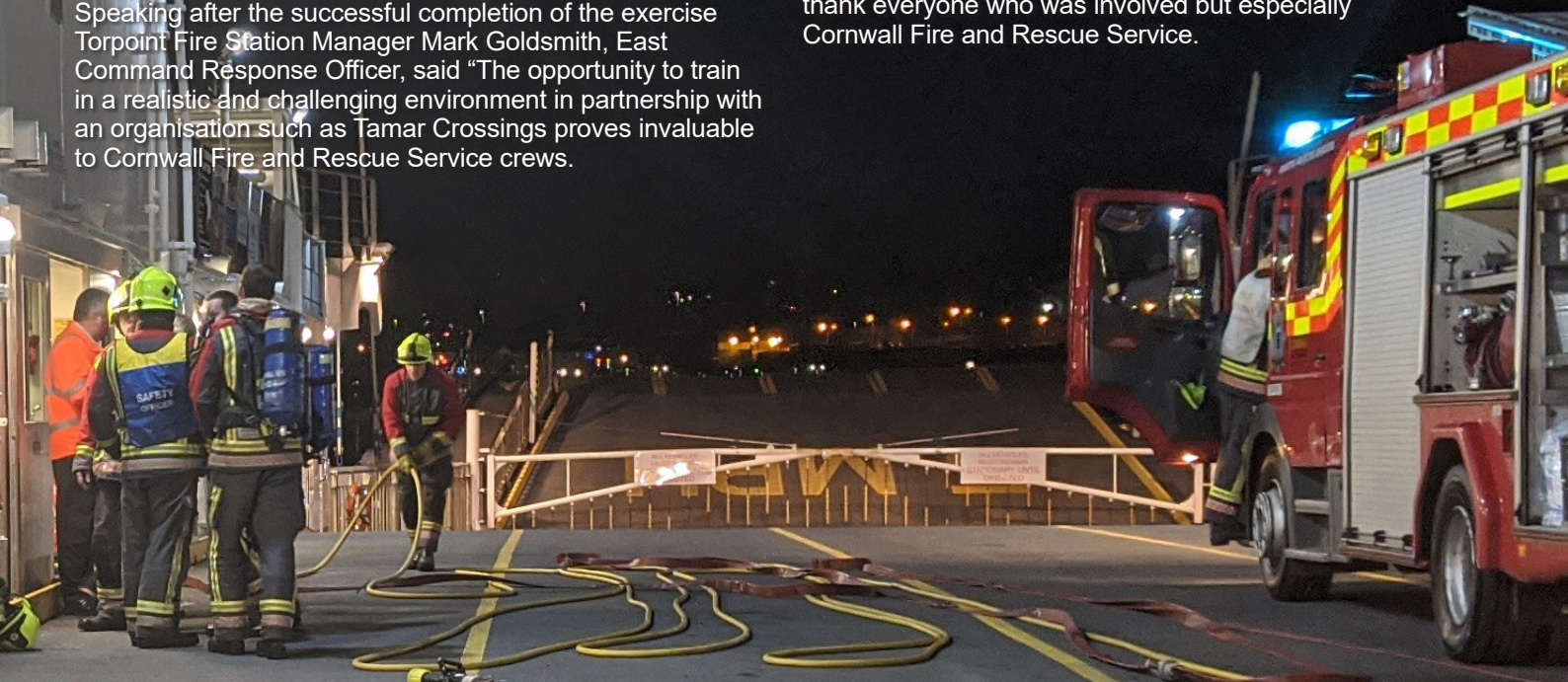
The actual exercise ran for over an hour and allowed us to test our fire and communication procedures as well as providing Cornwall Fire and Rescue teams with search and rescue training opportunities specific to the ferry.

Speaking after the successful completion of the exercise Torpoint Fire Station Manager Mark Goldsmith, East Command Response Officer, said "The opportunity to train in a realistic and challenging environment in partnership with an organisation such as Tamar Crossings proves invaluable to Cornwall Fire and Rescue Service crews.

"The successful outcome of a fire in such an environment comes from our crews pre-planning, carrying out familiarisation visits and taking part in realistic exercises. However a massive part in the successful outcome of a fire within a ferry is the staff at Torpoint Crossings following their procedures and passing on as much relevant information as possible to our Incident Commanders and working with them throughout the duration of an incident.

I would personally like to thank Tamar Crossings for going above and beyond to help set up this exercise and look forward to working in partnership with them in the future."

We also felt the exercise went very well and would like to thank everyone who was involved but especially Cornwall Fire and Rescue Service.



Tackling anti social behaviour

During the recent review of the height of the bridge parapets, members of the Joint Committee heard concerns from some local residents about the traumatic impact of the loss of life and incidents of anti social behaviour on the people living close to and under the Bridge.

We are continuing to carry out a detailed review of the impact these events have on the welfare of the residents living underneath the Bridge. We will be reporting back to the Joint Committee with some specific actions to help address this issue at their next meeting in March.

The Committee also agreed to continue to deliver and develop the current positive intervention programme in line with Public Health guidance on suicide prevention. Details of this programme were highlighted in the last edition of the newsletter.

Update on the Visitor and Learning Centre

We are delighted to welcome Peta Richards-Jones who has joined us as the interim Community Learning and Volunteer Officer for the “Bridging the Tamar” project.

Peta previously worked for the National Trust as the Visitor Experience Officer at Knighthayes in Tiverton where she had a special interest in making history and heritage come alive for children and young people.

She is looking forward to bringing this passion to the Bridging the Tamar' Visitor and Learning Centre and has already developed some exciting plans for events and activities for schools and the local community.

“I knew very little about the Tamar Bridge and the Royal Albert Bridge before I joined Tamar Crossings but have very much enjoyed finding out about their history and the incredible feats of engineering behind their construction” she said. “I am looking forward to finding new ways of telling these stories, as well as capturing the stories of local people over the next few months.”

One important aim for the Visitor and Learning Centre is to help inspire young people to engage with STEAM subjects (Science, Technology, Engineering, Art and Mathematics) through workshops and working with local organisations and schools. The Centre is also part of Plymouth Council's STEM group.

Plymouth City Council has identified that while 60% of jobs in the city are within the Science, Technology, Engineering and Mathematics sector only 25% of post-16 students are studying these subject locally. Engineering UK estimates that by the year 2024 the UK will need to train 186,000 engineers annually to keep up with industry demand.

Through the Bridging the Tamar project, we hope to motivate young people to engage with these subjects through hands-on workshops as part of a school programme. We also want to support teachers to learn more about career routes and ways to inspire learning in science and engineering. As part of this aim we are launching a brand new workshop which is all about Brunel and the Royal Albert Bridge, bringing together local history, design and engineering. Over the next few weeks we will be inviting local schools to visit the Centre to trial the workshop.



Saltash ferry bell donated to Bridging the Tamar' Visitor and Learning Centre

The Learning Centre has also been presented with a rather unusual artefact – a historic ferry bell which was discovered in the attic of a Saltash resident after being missing for more than 60 years.

The bell originally came from one of the steam powered chain ferries which were built in the 1930's to carry passengers and vehicles across the River Tamar between Saltash and Plymouth. The two ferries were retired in 1961 when the Tamar Bridge was opened and the location of one of the bells remained a mystery until Andrew Davy found it in the attic while he was clearing out his late father's things. Andrew is also a volunteer at the Centre and decided he would like to donate the bell to us so it can be displayed in the Centre. You can find out more about the bell on our website.

“It was fantastic to be presented with this bell which has such a strong local history” said Peta. “It is also a great start to our new oral history project.

Part of our work at the Centre involves collecting the stories and memories of local people and their connection with the bridges and the Tamar. We will be launching a new project to record the photos and stories of local people in March and so would encourage anyone with a story or memory they want to share to contact us at the Centre.”



Spotlight on volunteer Ambassadors

Our new 'Bridging the Tamar' Visitor and Learning Centre contains a wealth of interactive exhibits and displays which are supported by a programme of workshops and bridge tours that have attracted thousands of visitors since it opened to the public at the end of May.



We are very lucky to have an amazing team of local Bridge Ambassadors who have been recruited and trained to welcome visitors, deliver the tours of the Centre and local area, and support schools visits. Two members of the team – Elspeth Wiltshire and Sarah Young explain why they decided to become volunteers and what they love about their role.

After originally training as a Maths teacher Sarah joined the Army, later moving to Canada with her husband who was also a member of the Armed Forces. When her husband retired the couple moved to Saltash to begin the next chapter of their lives.

Sarah was working as a part time employment consultant working on the cases of people who had suffered injuries that affected their employability when she

decided she wanted to do some “positive volunteering”.

“I was already involved with a number of charities and decided I wanted to do something different” she said. “We live close to the Tamar Bridge and I had been watching the new building being constructed when I discovered that it was going to include a Visitor Centre and immediately knew I wanted to be involved in some way.”

Having seen the advert for volunteers, Sarah submitted her application and was delighted to be accepted. After successfully completing her training, she now volunteers in the centre twice a week and is loving every minute of her time there.

“Although I can see the bridges from my home and had walked across the road bridge thousands of times, I had not really thought about how they were built” she said. “As a mathematician it has been great to learn about the engineering features of the bridges and then to be able to share this information with visitors.”

While many people make a special visit to the Centre, some discover it by chance when they have stopped to enjoy the stunning view from the car park or to use the toilets. “Having just wandered through the door of the

Centre they are amazed by the exhibits and usually have a hundred and one questions about the bridges.”

As well as welcoming a wide range of visitors to the Centre and sharing information about the history and heritage of the two bridges, Sarah also enjoys meeting other local residents and listening to their stories and memories.

“I have heard some fascinating stories about the construction of the Tamar Bridge as well as some humorous tales of how people got across the river before it was opened in 1961” she said.

Fellow volunteer Elspeth also enjoys listening to the memories of local people and is looking forward to supporting the new oral history project which is due to be launched in March.

“One man in his 80's who had helped to paint the bridge recently walked across it for the first time since it was opened” she said. “This was a very emotional moment for him as his friend was one of the seven men who died during the construction works.”

Another person told me how her grandmother had begun walking across the bridge on the day it opened, but then stopped half way as she thought she would have to pay if she went the whole way.”

A former Head of Languages at a girls' grammar school in Plymouth where she created links with schools from a number of other countries, including China, Chile, Nepal and South Africa, as well as within Europe, Elspeth retired from teaching two years ago.

“I had read about the opening of the Visitor Centre in the local paper and, as I knew I wanted to do something positive with my time and had always been interested in history, decided to look into becoming a volunteer.”

Like Sarah, Elspeth enjoys sharing information about the bridges with visitors to the Centre. With people now visiting from across world, this has sometimes given her the opportunity to use her French and German language skills. She also enjoys working with children from local schools who, she says, relish the opportunity to do some hands-on learning outside the classroom.

“During one school visit the group were designing and building their own models when the teacher told me that she was amazed to see two of the children who never usually opened their mouths in lessons asking lots of questions and really engaging with the project.”

Volunteering is flexible meaning volunteers are free to choose shifts which fit around any other commitments they may have and can do as many or as few as they like. For both Sarah and Elspeth this flexibility is a key factor in enabling them to carry out their role at the Centre and they would encourage anyone interested in becoming a Volunteer Bridge Ambassador to take the plunge and get in touch with the team.

