

## Welcome to the 9th edition of Tamar Crossings



This last edition of 2022 comes at the end of a very challenging year for all of us. In the last edition of the newsletter we covered the celebrations around the Queen's Platinum Jubilee, but so sadly this was soon followed by her passing in September. In the summer the Joint Committee very reluctantly had to make

the decision to increase Bridge and Ferry tolls largely as a result of reduced traffic levels during and after the pandemic. At the same time we have been hit by serious inflation on a lot of our costs particularly energy and fuel, so 2023 is set to be another challenging year.

Against this backdrop it is refreshing to use this edition to introduce a couple of key staff members who play significant roles in keeping the two crossings running

safely and efficiently. We also cover some aspects of Ferry operations and the Ferry maintenance programme, with the three vessels about to start the cycle of refits commencing in April next year.

It is also great to see how busy our Learning Centre has been particularly with visits from local schools.

This edition also gives some insight into our ongoing staff safety training.

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## Spotlight on Cornwall Councillor Connor Donnithorne



Following his recent appointment as Cornwall Council's Cabinet Member for Transport, Councillor Connor Donnithorne was delighted to have the opportunity to visit the Tamar Bridge and Torpoint Ferry earlier this month to learn more about these key transport links.

Business owner Connor, Cornwall Councillor for Redruth Central, Carharrack and St Day, was born and grew up in Cornwall and is very aware of the importance of good

transport links to enable people to get to work, connect with friends and family or to do business.

Before taking up his Cabinet role in October, Connor was Chairman of the Council's Economic Growth and Development Scrutiny Committee which helps to shape and scrutinise transport, housing and economic growth policies.

Carrying out his first official visit to South East Cornwall, Connor was met at Saltash station by local councillors and the Joint Chairs of the Tamar Bridge and Torpoint Ferry Joint Committee Cornwall Councillor Martin Worth and Plymouth City Councillor Jonathan Drear.

***"Together the Tamar Bridge and Torpoint Ferry provide vital economic and connectivity links for local residents and businesses and I was keen to have the opportunity to gain a better understanding of the opportunities and challenges facing Tamar Crossings" he said.***

***"We need to ensure that the crossings are on a sustainable footing going into the future and I am looking forward to working closely with the Joint Chairs and the Committee to develop ideas on how we can achieve this."***

# From Customer Services temp to Bridge Supervisor

Jacqui Eden explains why she loves working at Tamar Crossings

**From working as a temp in Customer Services to being appointed as a Bridge Supervisor in the Tamar Bridge Control Room earlier this year, Jacqui Eden is very clear about one thing: Tamar Crossings is a great place to work.**

The Tamar Bridge provides a vital transport link between Cornwall and Devon. With an average 45,000 vehicles crossing the bridge every day, managing the traffic flows to keep people moving 24 hours a day, seven days a week, 365 days a year is a complex and challenging job.

Jacqui joined Tamar Crossings in 2012 as a temp in the customer services team. Her role included both working on the reception desk and answering the phone in the main office.

“The job is very varied” she explained. “One minute you can be sorting out a TamarTag application online or helping someone to top up their Tag account in reception, the next you are dealing with a customer query over the phone. Everyone in the customer services team works closely together and it is a great place to work.”

Jacqui remained working in customer services, becoming a permanent member of the team in 2016. During this time, she was seconded to the Control Room as a Control Room Assistant (CRA) on a couple of occasions to provide cover for staff who were off sick.

The Control Room, sited in the main bridge office, acts as a nerve centre for managing the day-to-day operation of the crossing. The team of nine full-time and part time Control Room Supervisors and Control Room Assistants, headed by the Bridge Operations Manager Mike Houghton, are responsible for managing five lanes of traffic. These include the South Cantilever, used by pedestrians, cyclists and mobility vehicles, the North Cantilever which takes the local traffic from Saltash, and the three lanes on the main bridge deck. The team also manages the operation of traffic through the A38 Saltash Tunnel in partnership with National Highways.

Together the bridge and tunnel form a Tidal Flow Corridor which uses a sophisticated lane control system to change lane priorities to reflect changes in traffic demand. Staff in the Control Room are responsible for changing the lane priorities. Lane priorities can be changed up to 10 times a day during a typical weekday, with each change taking up to seven minutes to implement to ensure the lane is free of traffic before the direction is reversed, so this process requires very careful management.

The team monitors the CCTV cameras at both the bridge and tunnel and at the roundabouts at Carkeel and St Budeaux to check traffic flows as well as liaising with staff at the Toll Plaza and, where necessary, with National Highways and the police.

As well as actually changing lane priorities they also need to make sure the advance warning signs at the two roundabouts and the gantries at the entrance to the tunnel and either side of the bridge have been changed to let drivers know which lanes they can use.

Control Room staff are also responsible for managing and responding to incidents on both the bridge and in the tunnel. These include accidents, vehicle breakdowns and fires, and debris on the deck from vehicles shedding their loads. Specialist SCADA (supervisory control and data acquisition) equipment is used to monitor air quality, lighting and emergency evacuation equipment in the tunnel.

“I loved working as a Control Room Assistant” said Jacqui. “As well as assisting the supervisor whilst they monitor the traffic flow, CRAs also support the Toll Booth staff and



deal with any issues in the automated toll lanes. These can include issues with tags, which means the barrier does not automatically go up, or occasions when drivers actually drive into the barrier – thankfully these are extremely rare.”

CRAs work between 6.30am and 7.30pm Monday to Friday, doing either a morning or afternoon shift, with a 9am to 7pm shift on Saturdays, and a 10am to 7pm shift on Sundays.

***“Like the other parts of Tamar Crossings, the Control Room is a great place to work” she said. “While it can be stressful dealing with emergency situations, the role can vary from day to day and there is fantastic support and team spirit within the team. The supervisor predominantly manages the tidal flow whilst the CRA manages the collectors and the plaza but everyone pulls together to meet customers’ expectations.”***

In 2017 a permanent CRA position came up in the Control Room and Jacqui decided to apply. “While I was very happy in customer services, I also enjoyed previously working in the Control Room” she said. “One of my daughters had just had twins and working shifts rather than traditional office hours meant that I had more flexibility to support her.”

During the next two years Jacqui undertook some supervisor training. This meant that in October 2021, when one of the permanent Bridge Supervisors went off on long-term sick leave, she was able to step up to provide cover.

Bridge Supervisors work a five week rota involving a pattern of three eight hour shifts: 06.30 to 13.30, 13.30 to 21.30 and 21.30 to 06.30. As well as monitoring CCTV cameras and other systems to check on traffic flows and getting ready to change lane priorities as required, dealing with emergency situations and managing abnormal loads, they are also responsible for opening toll booths to cater for demand.

“While I had done extensive training and shadowed experienced supervisors, my first solo week as a Bridge Supervisor involved working a week of nights” said Jacqui. “This was the first time I had worked nights so it was a real baptism of fire.”



# Ahshawn becomes Technical Manager 20 years after travelling on the Torpoint Ferry for the first time

20 years ago Ahshawn Williams took his first trip on the Torpoint Ferry. Having never seen a chain ferry operating before, he was intensely curious about how they worked.

Recently appointed as the new Technical Manager for the ferries, Ahshawn is responsible for overseeing the complex maintenance programme which keeps the service operating, and managing the 11-strong on-site team which includes mechanics, electricians, fabricators and welders, and stores staff.

“My first encounter with the Torpoint Ferry came when I joined the Navy and was based at HMS Raleigh” said Ahshawn. “I had never seen a chain ferry operating and wanted to know how it worked. At the time I had no idea that, 20 years later, I would be playing my part in providing this vital transport link for people living in south-east Cornwall.”

The Torpoint Ferry is the world’s biggest and busiest estuarial vehicular crossing chain ferry service. It is the UK’s busiest inland waterway ferry crossing – providing crossings for two and a half million vehicles and approximately 750,000 foot passengers and cyclists each year.

The ferries operate 24 hours a day, 365 days in all weathers – with up to 8,000 vehicles, including emergency vehicles, and around 1,500 pedestrians using the crossing each day.

The service delivery target is achieving 99% of scheduled crossings and achieving this requires a significant planned maintenance programme. While some maintenance activities need to be carried out during refits in dry dock conditions, most of the maintenance takes place while the vessels are afloat during off peak periods while an individual vessel is not on scheduled service.

After completing his engineering training, which includes specialist marine engineering qualifications, Ahshawn worked in engineering roles across the country before applying for and securing his ‘dream job’ with Tamar Crossings in October this year.



## Operating the Ferries

The Torpoint Ferries run on pairs of chains spanning the river. These chains need to have a certain level of tension in them to enable the ferries to cross the river and dock safely and efficiently.

To achieve this tension, each chain is secured on each side of the river via steel cables to a system of pulleys and a large weight of about 12 tonnes hanging in a pit and supported by a steel framework – these are the gantries. The weights can travel up and down responding to the effects of varying tidal and wind conditions, but still maintain steady chain tension.

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

These chutes at the entrance to the ferry are lined with protection plates which helps reduce wear and tear and keep noise to a minimum. Each chainwheel drive has a giant hydraulic disc brake to hold the ferry when not moving.

Moving a 1,000 tonne fully loaded ferry requires a lot of power. Each ferry has three powerful Volvo Penta 12 litre diesel engines coupled to generators which produce the power for the whole ferry and the two drive motors which each turn one of the two chainwheels.

One generator produces enough power for all normal operations, with the second and third as standby generators used to provide extra power for resilience in bad weather or fast emergency crossings. The third generator is a duty 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.

There are also a very large number of sensors on each ferry, covering various areas of the vessel, including individual items of equipment and machinery in the engine room and the control cabin, to the lighting on the deck and passenger areas, and the chain propulsion system. All of the sensors are linked back to various control junction boxes that go back to a main computer system called VTAS (Vosper Thornycroft Automation System) which provides a real-time monitoring system of every part of machinery on the ferries, providing an immediate alert in the case of a problem.





# Maintaining the Ferries

Regular checks are carried out on all parts of the Ferry

Depending on the system, these take place daily, weekly, monthly, bi-monthly, quarterly, six monthly and annually. Some of these are as simple as cleaning filters on the saltwater cooling system or monitoring cooling temperatures within the motor drive system. Others are more safety critical checks, such as for the “black out recovery” system which checks that the Volvo engines will start automatically and come online in the event of a generator failure. This is carried out by the electricians weekly.

Deck safety checks include the evacuation door mechanisms, PA System, emergency lighting, firefighting equipment, life rafts and the auto release mechanism which are checked monthly. Checks are also carried out on the upper deck lifebuoys outside the controller’s cabin and upper traffic deck. These include a bright strobe light and red smoke device for ease of location for emergency services in the event of a passenger falling into the water at night.

Staff on board the ferries also carry out frequent visual checks to ensure that any problem is flagged up as early as possible. The planned maintenance system uses a traffic light marker to keep track of routine maintenance tasks. Maintenance staff arriving at work for the start of their shifts log onto the programme which identifies any overdue maintenance tasks that are (coloured red), pending tasks (amber) and completed tasks (green).

***“Keeping the ferries operating 24 hours a day, seven days a week in all weathers is a real team effort” said Ahshawn. “The team only has 16 hours planned maintenance time available a week, with only one ferry available a day taken out of service for 4 hours, to conduct maintenance. From the maintenance team, to the ferry controllers and the deck crews, everyone works together to provide safe and efficient crossings of the river for passengers.”***

While the checks and monitoring mean that routine maintenance is always kept up to date, as with any other kind of vehicle, including a family car, regular servicing and maintenance does not always prevent faults from occurring. When these do happen, the team work very hard to ensure that they are resolved as quickly as possible so the ferry is returned to service as quickly as possible.

One of the most common problems that occur on the ferries is damage to the 16 pulleys – usually referred to as sheaves (eight on each side) which carry the chains to the main drive wheels. Although the bearings in the sheaves are regularly greased and are sealed to provide protection against the harsh environment they operate in, they are mostly



submerged in salt water and sustain significant load bearing forces as the chain moves through the ferry.

This means they need to be changed at various intervals during the winter months at various positions throughout the ferry. This involves heavy lifting equipment and moving the chain to one side of the chain space to lift the solid steel sheaves out and replaced.

Other vulnerable areas on the ferries include the cast rubbing plates and jockey plates at the entrance to the chain chutes on the ferries. These can become loose or damaged over time as a result of the constant rubbing of the chain against them in heavy tidal and windy conditions. The jockey wheel is the wheel you see at the top of the chain wheel entrance, this stops the chain from riding up at low tides keeping aligned with the first internal sheave.

The interaction between dragging in the chains and the chain wheel, combined with the abrasion caused by the slipways, means the steel ferry chains need to be replaced once every three years. This is a major and lengthy engineering job that cannot be done with the ferry in service, and is only achievable when the wind and tides are within set limits.

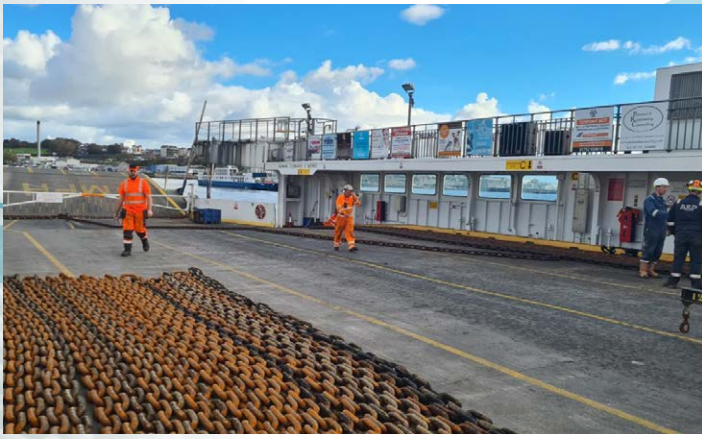
Each chain is over 650 metres long and weighs 23 tonnes - with the total length and weight of chains in the river around 4 kilometres (approximately 2.4 miles) weighing some 140 tonnes.

Replacing the chain involves the ferry itself being used to pick up the old chain and feed in the new chain. Part of the process is ‘pulling slack’ - getting the right amount of slack and tension into the chain so that it will match operational requirements. A chain change itself takes a day but the whole process takes two days including loading the chain onto the ferry.

This work is usually planned well in advance to keep disruption to a minimum. However there are rare occasions when a chain becomes damaged and a ferry has to be taken out of service immediately while repairs are carried out or the entire chain replaced.







## Learning about the history and importance of the Torpoint Ferry

Earlier this month we welcomed a group of Year 2 pupils and their adult leaders from Morice Town Primary School to the Torpoint Ferry.

During their visit the youngsters learnt about the geography and the workings of the ferries, tying in with the curriculum topics they had been studying in the classroom.

The children were all very excited as they learnt about the history of the ferries, with ferry staff sharing information about some past incidents to help inspire their imagination. They also went up to the ferry controller's cabin to see how the ferries are controlled and were even able to use the public address system to speak to their classmates.

It was great to have the opportunity to help the younger generation understand just how many people use the ferries on a daily basis and why this service is so vital and we look forward to building on our links with the local community in the future.



## Ferry refits

Some maintenance activities, inspections and surveys cannot be done while the ferry is afloat and need to be carried out in dry dock conditions. These could include:

- replacing obsolete equipment
- installing new power management and IT systems
- removing the prows to completely overhaul them, including repairs to the steel structure and work on the hydraulic prow systems
- cleaning the hull
- repainting the vessels both above and below the waterline.

Refits also give Lloyds Register and the Maritime and Coastguard Agency (MCA) the opportunity to carry out their five-yearly dry docked inspections which are aimed at ensuring that the ferries are in a good condition, and that they meet all compliance requirements that make them safe and reliable to operate.

Each of the Torpoint Ferries has a refit once every five years. The next scheduled ferry refit will be PLYM II which is currently due to take place in Spring 2023. This will mean that for a period of 6 to 8 weeks the service will reduce to two ferries, further increasing the maintenance pressure on the technical team.





# Keeping busy at the 'Bridging the Tamar' Learning Centre

This October half term saw the Learning Centre transform into a hive of transport activity in miniature – as families took over the space for a series of Lego workshops.

Led by Julian Surtees from Brick Ideas, a Lego learning specialist based in Devon, children and their parents and carers created trains and bridges inspired by Brunel.

The Autumn Term has also seen visits from a number of local schools. These included pupils from Pomphlett Primary School who visited the Learning Centre as part of a whole day workshop in partnership with the Box in Plymouth.

Pupils visited the bridges in the morning, and then went on to the Box in the afternoon to consolidate their learning and have a look around the new museum.

During the national Heritage Open Days week members of the public had a rare opportunity to see 'under the bridge' in a special tour with the learning and engineering teams, as well as a look inside the anchorage chamber.



## Visiting the Clifton Suspension Bridge

Earlier this year some of our volunteers visited colleagues at Clifton Suspension Bridge for a Vaults Tour and a look around their Visitor Centre.

Like the Railway Bridge across the Tamar, the Clifton Suspension Bridge was built by Brunel. The group had the opportunity to walk across the bridge and to look underneath the structure, as well as fitting in a quick visit to the shop.

It was a fascinating visit which the volunteers thoroughly enjoyed. We look forward to returning the favour and showing volunteers from Clifton around in the future.







# Wanted - more volunteers to join our Bridging the Tamar Ambassadors

We currently have a group of 30 volunteers supporting activities at the Learning Centre, but more are needed for 2023!

**Our volunteers are on hand to welcome visitors, deliver tours of the Centre and local area, and to support school visits. They also support our events programme, as well as assisting with online events, and carrying out historical research.**

Volunteers lead guided talks on Tuesdays, Thursdays and Saturday mornings as well as delivering bridge tours to groups. One of our current Bridging the Tamar Ambassadors is Michael Rodd.



Having grown up in Plymouth, Michael worked for the civil service at HM Admiralty Headquarters in Bath for ten years before being seconded to the personnel department at Devonport for 12 months where he met his future wife Gail.

After a further two years back in Bath (punctuated by frequent trips to Plymouth to visit Gail and watch his beloved Plymouth Argyle in action) Michael resigned from the civil service and joined Devon and Cornwall police where he worked for the next 25 years.

It was while working for the police that Michael first became interested in volunteering – joining the team of volunteer National Trust stewards at Cotehele – a role he carried out for around three years.

After taking early retirement from the police to care for his wife, her death left Michael with time on his hands. "After looking around I decided to apply to become an Ambassador at the Visitor Centre," he said. "During the past six months I have thoroughly enjoyed learning about the history of the bridges and sharing the information with visitors to the centre, who regularly express their appreciation and comment on the excellence of the exhibits on display. I have received tremendous support from Mary and Mark and from the team of volunteers who have been welcoming and helpful and very happy to share their knowledge with the new recruit."

If you are interested in joining our fantastic team of volunteers please email [volunteer@tamarcrossings.org.uk](mailto:volunteer@tamarcrossings.org.uk). Full training and inductions are provided, and there is no requirement to have an engineering background – just an interest in sharing the heritage with people from all walks of life.

*"Becoming a Bridge Ambassador has been an interesting and rewarding experience. It shows that, even at the grand old age of 80, it is still possible to take up new challenges. Perhaps there might even be time for me to see Plymouth Argyle in the Premier League – although they are cutting it a bit fine."*

You can find out more at [www.bridgingthetamar.org.uk/volunteering](http://www.bridgingthetamar.org.uk/volunteering)



# Keeping safe in the water

We take the safety of all of our passengers and staff very seriously and last month arranged for four members of staff working on the ferries to attend a water safety course.



Specially designed for people who work near or in water, the aim of the course was to increase the number of people who are available to carry out critical ferry maintenance from the water, particularly around areas where the chains enter the ferry.

Working in the water carries a number of serious risks. While the prevention of drowning is always a key priority, there are also many other risks that we need to consider, including health hazards.

Led by our Health, Safety and Environmental Officer Leon Brimble, the course began with a day in the classroom planning for emergencies and ensuring appropriate rescue plans are in place for the work we need to carry out. The team then moved to the River Dart Country Park, which offers an excellent natural training environment.

After squeezing into dry-suits, and donning PPE (buoyancy aids and helmets), the team made their way to the river, over a half a mile away, carrying other equipment before getting in the water.

Having begun the training in good weather, the rain started just as the team entered the water for the first time, increasing the height and speed of the river. While this created some additional challenges for the instructors, it really emphasised the importance of carrying out this sort of training.

The course was designed to provide the opportunity to deal with a range of different obstacles. These included strainers (obstacles which allow water to pass through such as tree roots, branches, fences); syphons (these are created when the water is flowing under or through a natural or artificial obstruction such as a drainage pipe or culvert); gradients, which increase water speed; foot entrapments and stoppers (where water can hold a person and circulate them like a washing machine).

By the afternoon the water was still rising and becoming even faster, testing rescue techniques and the team's ability to deal with the different obstacles. Even crossing the river at lower parts became extremely difficult.

Following a very tiring seven hours in the water, the day ended with the four members of staff returning to the base to try and get out of their dry-suits (not easy after such a gruelling day!).

This type of training is very important for the ferry staff and it was great to read the positive comments below from those taking part.

***"Excellent training sessions held on the River Dart. Lots of new skills learn by all"*** Mark C

***"Great training course, with great life experiences if needed in the future"*** Luke D



## Supporting charity

We are passionate about supporting charities, both national and local, and earlier this year we took part in two coffee mornings to support Macmillan Cancer Support.

The events were held at both the Tamar Bridge office and the Torpoint Ferry office to allow all our teams to contribute.

Staff enjoyed a catch up with colleagues with tea, coffee and a selection of baked goods, raising £350 for the charity.



## Marking Remembrance Sunday

We suspended services at both the Ferry and the Bridge at 11am on 13 November to mark this year's Remembrance Sunday.