CLOSURE OF THE FORTH ROAD BRIDGE

We took the decision to close the bridge to remove the risk of further damage and a more lengthy repair.

On the afternoon of 1 December 2015, Amey Highways Ltd, who manage the bridge, identified a defect in a key steel component below the main deck truss. There is a failed welded connection to a joint between critical structural members on the underside of the deck truss which carries the southbound carriageway. Unless traffic loading was removed, this damage was likely to get worse, requiring a more extensive repair and a much longer closure period.

TRAVEL CONTINGENCY PLANS

Q - What is being done to help commuters make their journey?
A - Transport Scotland has launched a one-stop-shop where travellers can find full details of a Travel Plan. The plan which has been implemented since Monday December 7 includes a comprehensive set of contingency measures. As well as new and strengthened rail services between Fife and Edinburgh, the response includes more frequent park and ride services and road diversion routes – including priority bus routes and reduced bus fares.

Q - Will the plan solve the problem?
A - Despite everyone’s efforts to develop alternatives, 100,000 people travelling across the Forth cannot be fully accommodated, particularly in the peak periods when up to 25,000 people travel over the bridge. Delays and longer journeys are inevitable. So, to keep everyone moving it’s important that everyone plays their part where possible: changing normal working hours; working from home; adjusting business needs.

Q - How is this demand being met by the additional public transport services?
A: We can carry twice as many rail passengers as normally travel in the AM peak period. We are providing Public Transport capacity in the AM peak period for almost 12,000 people southbound. This is over half the total displaced demand of those who normally travel over the bridge in the AM peak period.

Q - Is travel demand the same as normal?
A: Clearly people are changing their travel patterns and are responding to the Travel Plan messages. We are continually monitoring data and are adjusting our plan according.

Q - Is the travel plan effective?
A: We know that public transport demand has increased, this shows that the enhancements made to the travel plan are being communicated and people are responding positively.

Q - What is being done to help people who want to travel into Fife?
A: Additional capacity is being provided in the northbound direction as buses and trains are making return trips from Edinburgh.
Q - Why are fares not being cut for rail passengers?
A - ScotRail are providing extra trains and strengthening existing trains to ensure that the service provided still offers the travelling public value for money. The Government is also providing support for £3 return tickets to Edinburgh by bus. This provides a cheap alternative to the car and will reduce congestion on the road and over-crowding on trains.

Q – Why are pedestrians and cyclists prohibited from using the bridge? Will they be allowed back on before the vehicles?
A – The bridge has been completely shut to ensure the safety of all of the travelling public including cyclists and pedestrians. The bridge is now a work site and it is not normal practice to allow cyclists or pedestrians access to areas where road works/repairs are carried out.

Q - What about the vehicle ferry service?
A - We looked at the possibility of a vehicle service in some detail but this is not a workable option given the lack of suitable infrastructure on the south side of the Forth.

Q - What about using ferries?
All options are actively being considered. We are in discussions with ferry operators and will consider this in the context of the operation of the Travel Plan, which we will continue to adjust as necessary.

Q - What about additional support on the diversion routes?
A - Additional Trunk Road Incident Support Service and winter maintenance support is being provided on the following alternative routes to provide additional support and to keep those routes clear.
Police Scotland are deploying resources at key points on the diversion route.
Local authorities are fully involved in developing the contingency plans and are working with their local partners to help minimise disruption.
Diversion routes will be monitored and traffic information will be made available to road users.

Q - What about the Emergency Services?
A - Scottish Ambulance Service vehicles on emergency blue light calls will be escorted over the FRB, as required.

Q – What about patient transfer services for urgent medical appointments?
A –. We are working with NHS partners to ensure that patients requiring planned critical treatment can be escorted across the bridge.

THE CURRENT SITUATION WITH THE FORTH ROAD BRIDGE

Q - Why did this happen now?
A - This defect was found during planned inspections of this section of the deck and the truss end links. Detailed inspections of this component are carried out annually the last being in May when no defects were identified. This section of the bridge is also subject to regular routine inspections from staff using the underdeck walkways.
several times a week. Prior to this incident, repair works were already on-going in the North Tower, and there is a daily staff presence in this location. It was due to this daily presence that the defect was identified. Bridge Inspection staff are tasked to be vigilant and report any potential issues as soon as spotted. The bridge has not suffered from this type of defect before and it may be related to long term fatigue (wind, traffic and thermal load effects), seizure of the joint or traffic loads.

Q – Why was this not spotted before or predicted before it happened?
A – The Bridge has not had this type of defect before. Bridge inspections are planned and undertaken in accordance with the Forth Road Bridge Inspection Manual, originally developed by the bridge designers and further developed over the years to reflect best practice, studies and changes in technology. This gives detailed guidance on the operation, inspection, management and maintenance of the bridge. The process followed is kept under constant review to ensure it aligns with best practice and national standards. Future inspections will focus on the continuation of an inspection regime.

Q – What are the consequences of this defect and what happens if it fails?
A - Should failure occur then support will be lost to the end of the main span stiffening truss which will drop by between 150 and 400 mm depending on the loading at the time. In doing so the load will be redistributed across to the link on the NW tower increasing loads on other elements. The carriageways will also drop further damaging the structure. Damage to these elements, which is a likely outcome would require a bridge closure for the repair which could last several months.

Q – Why did you need to implement a full closure only 10 hours after the 7.5 tonne restriction was imposed? What changed and why?
A - A series of Special Investigations were implemented to inspect the welds and joints to the remaining truss end link posts, immediately after the initial defects were found. The first focus was to inspect the welds to the adjacent link post now carrying additional load from the failed member. The results of this inspection and testing, were completed mid-afternoon on 3 Dec 2015. The outcome showed that with continued traffic loading we were advised that the crack will likely get worse leading to the failure of the member. The extent and timescales for this are extremely difficult to accurately predict due to the factors involved, many of which cannot be quantified.

Q – Why did it take 3 days to come to a decision?
A – As soon as the results of the inspection and testing were complete, we notified the public. Ministers communicated the decision to close the bridge across all media channels within minutes of the decision being made.

Q - Why are pedestrians and cyclists prohibited from using the bridge? Will they be allowed back on before the vehicles?
A – The bridge has been completely shut to ensure the safety of all of the travelling public including cyclists and pedestrians. It is not normal practice to allow cyclists or pedestrians access to areas where road works/repairs are carried out

Q – When will the Bridge re-open?
A – Work is already under way to repair the FRB and this will be done as quickly as possible with a view that it will be fully reopened to traffic to allow it to be used for the return to work in the New Year.

Q – Will any restrictions be put in place or will it be fully reopened?
A – The bridge will be fully reopened without restriction.

Q - Will it definitely be reopened in early January?
A - The timescale for this depends on successful completion of the proposed repair. These activities are weather and wind dependent, which may cause some loss of time due to the time of year. High winds prevent access to the temporary works, if winds are above 35 mph. Based on the information that we have to date, and subject to weather conditions, we are planning that the bridge will reopen in time for road users to return to work in the New Year.

Q – How much will the repair cost?
A – The design work is still being finalised and costs will be difficult to estimate prior to its completion. However, based on experience with other structural issues, we estimate that costs may be in the region of £2m.

Q - What are you doing now & how long will it take?
A – Since the discovery of the defect, a series of Special Investigations, inspections and testing works have been progressing at the 8 similar link areas on the bridge. The design of the temporary access working platform is complete. If gusts exceed 35 mph work on the bridge must stop.
A large mobile elevated working platform machine is being positioned on site, with Queensferry Crossing contractors assisting with the provision of resources.
The design of the solution is progressing well. Steel plates are being fabricated.
There is an ongoing collaborative design process with Amey; Fairhust; Arup and Transport Scotland.
The works are planned to be complete for the return to work in the New Year, this is weather dependent but works are currently on programme. The bridge will be fully re-opened to all traffic with no restrictions as soon as the repair works are completed.

Q – Is the bridge fit for purpose?
A – Yes, it is not at risk of collapsing. This defect may cause a “local” failure in a section of the structure. However, the bridge is getting older, is now over 51 years old, and is carrying twice the weight and twice volume of traffic it was originally designed for. Fatigue and/or overstress failures in welds and welded joints and plates such as this are a product of time and load fluctuations as well as load intensity can occur in bridges of this type.

Q – What is the monitoring and Inspection regime?
A – Bridge inspections are planned and undertaken in accordance with the Forth Road Bridge Inspection Manual, originally developed by the bridge designers and further developed to over the years to reflect best practice, studies and changes in technology. This gives detailed guidance on the operation, inspection, management and maintenance of the bridge.
Q – Is the Inspection regime different from that used by Forth Estuary Transport Authority (FETA)?
A – No. The maintenance regime is a continuation of the regime that FETA had in place. There has been no change or gap in the maintenance regime.

FUNDING

Q - Has important maintenance work been missed because of Scottish Government funding restrictions?
A - FETA had full responsibility for all operation and maintenance aspects of the FRB including the prioritisation of its work programme. FETA’s governance was such that work programmes were approved by its Board.

Q – Have you cut the budget?
A - Funding this year is £10.7m, matching the programme of works developed by FETA and has not been subject to any reduction. In addition, we have never restricted funding for critical works.

CONTINGENCY PLANS FOR BRIDGE CLOSURES

Q – Is there a contingency plan for bridge closures?
A – A range of operational and incident plans are in place, and are adapted to circumstances. All contingency and incident arrangements, including the multi-agency response (MART) and government response teams (SGORR) were activated with partners once the decision to close the bridge was made by Ministers. FETA developed a Bridge Closure Plan which dealt with all bridge closures, due to high winds, extreme weather incidents and accidents and this is a tried and tested process and liaison led plan dealing with adjacent road authorities, Police Scotland, emergency services and other key stakeholders. Adjacent trunk road units also have Incident Response Plans (IRP) and Disruption Risk Management Plans (DRMPs) that are activated in the event of a Major (full trunk road closure) or Critical Incident or event. These plans and processes are designed to be flexible to accommodate incidents from collisions to full trunk road and bridge closures.

SUPPORT FOR BUSINESS

Q – What about support for businesses?
A – We are working closely with business organisations and providing them with as much information as we can. We recognise the impact this will have and are doing what we can to minimise this.
In addition a HGV and Bus prioritisation lane has been implemented on the A985 corridor to help with this. This is currently working well.

Q – What else have you done?
A – We requested a time limited relaxation in the enforcement of rules governing drivers’ hours for goods and passenger services disrupted by the closure of the Forth
Road Bridge from DFT. This was granted on Monday 7 December. This will help with efforts to deal with the exceptional circumstances caused by the unprecedented sudden closure of the Bridge, including longer journeys and increased congestion at certain points in the network.
It will also help limit the closure’s impacts on travellers and businesses by providing additional flexibility for bus and haulage businesses in how they organise their operations.
In granting the relaxation, DfT have stressed that road safety should not be compromised by drivers being expected to drive when tired.

Forth Road Bridge Management

Q - What is the structure of the management of the Forth Road Bridge?
A – The Forth Estuary Transport Authority was dissolved on 1 June 2015 under the Forth Bridge Act. Up until dissolution of FETA Scottish Ministers provided grant funding for the operation and maintenance of the bridge. FETA were responsible for decisions relating to the operation and maintenance of the bridge.
On 1 June, 2015, the operation, management and maintenance of the bridge transferred to a new service provider. Amey are highly experienced as trunk road operators with access to major bridge specialists as part of their multi-discipline approach. Transport Scotland oversee the contract.

Queensferry Crossing

Q - What was the justification for the new bridge?
A - Despite significant investment and maintenance since it opened in 1964, the Forth Road Bridge (FRB) has shown signs of significant deterioration in recent years. It is no longer deemed viable as the long-term main crossing of the Firth of Forth.
In 2006-7, Transport Scotland carried out the Forth Replacement Crossing Study - part of the wider Strategic Transport Projects Review - to examine a wide range of options for replacing the FRB.
Responding to the study in December 2007, Scottish Ministers announced their intention to build a new cable stayed bridge to the west of the current FRB by 2016. This challenging timescale was necessary due to the potential need for future restrictions to Heavy Goods Vehicles using the FRB.
Transport Scotland immediately began design, procurement and statutory work on the fast tracked scheme.

Q – What is the timeline of the decision around the new bridge?

Sept 2006 – Forth Replacement Crossing Study starts
Dec 2007 – Ministerial announcement to proceed with Project
Jan 2008 – Project design & development starts
Nov 2010 – Bill introduced to Parliament
Dec 2010 – Principal Contract Tender begins
Jan 2011 – Royal Assent – Forth Crossing Act
April 2011 – Principal Contract Award
Summer 2011 – Fife ITS & M9J1A Contract Awards
Summer 2011 – Site works commenced
Autumn 2011 – CEC Contract Award & Start Construct
Dec 2012 – Fife ITS Operational
Jan 2013 – CEC opens
Feb 2013 – M9 J1A Opens
Dec 2016 – Project completes

Further details can be found at  [http://www.transportscotland.gov.uk/project/forth-replacement-crossing](http://www.transportscotland.gov.uk/project/forth-replacement-crossing)

**Q – Will this mean the opening of the Queensferry Crossing will be delayed?**
**A -** The Queensferry Crossing remains on target to open in December 2016.