Dear Mr Farrell

Infrastructure and Capital Investment Committee

Forth Replacement Crossing Update 15

I refer to the commitment given by Transport Scotland to provide regular updates in relation to the Forth Replacement Crossing (FRC) Project. Update 15 covers the following topics:

- Progress Update
- Stakeholder Engagement
- FRC Public Transport Strategy

Photographs illustrating progress can be found at Annex A.

Progress Update
The Project remains on time and within the reduced budget range of £1.35 - £1.4 billion.

Since the last update, significant progress has been made on the North and South approach roads and the Queensferry Crossing despite the unusually unsettled weather which has been experienced as widely reported in the media.

The project has reached a new peak of employment with an average of 1266 people currently working on the site. This dedicated workforce has worked through the cool, wet and particularly windy weather experienced in recent months to ensure that the project remains on schedule to have the Queensferry Crossing open to traffic by the end of 2016. The weather, and in particular wind, always has been and remains the greatest risk to completion of the project on time.
The Queensferry Crossing also became the tallest bridge in the UK, with the towers reaching in excess of 160m of their final 210m height.

Significant milestones achieved in the past few months include:

- New B800 bridge fully opened to traffic at the end of July. Demolition of old B800 bridge scheduled for late October 2015 to minimise impact on traffic by avoiding significant local events and school holidays. (Photograph 1)
- A904/B924 signalised junction operational.
- Commencement and progress of road pavement construction on south approach mainline. (Photographs 2 and 3)
- South Approach Viaduct (SAV) steel box launching completed in June and preparations underway for first deck concreting to commence shortly. (Photographs 4 and 5)
- Pier S2 – Placing reinforcement for first pier pour (out of 23).
- Pier S1 - Fifth pier pour (out of 23) complete.
- South Tower - 47 concrete pours (out of 54) complete. (Photograph 6)
- Centre Tower - 45 concrete pours (out of 54) complete. (Photograph 6)
- North Tower - 50 concrete pours (out of 54) complete. (Photograph 6)
- First four stay cables installed and tensioned on both North Tower (Photograph 7) and South Tower.
- Pier N1 - Seventeenth pour (out of 23) complete.
- North Approach Viaduct (NAV) - steel assembly work is complete. We anticipate that the NAV will be ready to be launched over the north piers in late Autumn. (Photograph 8)
- Precast deck sections - precast concrete decks have now been constructed on 24 of the deck units, in the Marine yard at Rosyth. (Photograph 9)
- 1st and 2nd precast deck sections lifted to final level on North Tower on 05 (Photograph 10) and 07 September.

Work at Ferrytoll viaduct has continued to progress well with 5 out of 9 deck pours completed. The new alignment of the northbound carriageway through Ferrytoll is well established with construction and surfacing works nearing completion and will be ready for traffic in the coming weeks.

The Castlandhill Road reinforced earth wall and associated A90 embankment was completed in early August.

The FRC Project works are taking place adjacent to live traffic and traffic management is necessary to allow this significant upgrade to the road network to take place alongside the construction of the Queensferry Crossing. Consequently, the speed limit on the A90 northbound has been reduced to 40 mph from south of the Forth Road Bridge to Admiralty Junction to ensure the safety of construction workers and road users. Average speed cameras have been installed on the A90 from Scotstoun to Admiralty junction to enforce this limit.
Stakeholder Engagement
Community relations continue to be excellent with the North Community Forum and South Community Forum meetings taking place in August, and Community Forum members attending site visits held on 5 and 7 September 2015 which were well attended and positively received.

The project continues to attract a great deal of interest from a variety of stakeholders, including the general public, schools, colleges, universities, industry, international visitors and the media.

Since the last update, the project has undertaken a variety of stakeholder engagement, maximising use of the dedicated FRC Contact and Education Centre, engaging with communities in a proactive, open and transparent manner.

Since the end of the 2014/15 academic year, we have again invited all Primary and Secondary schools to participate in the FRC Schools Programme. The hugely successful programme continues to prove popular and we are expecting our 10,000th school pupil visit to the project in the coming weeks.

The Project Exhibition, open each Saturday from March - October continues to draw visitors, with over 3500 people visiting this year since March and almost 12,000 people since April 2013. The Presentation Series, held on the last Friday of each month from March – October for members of the public, continues to attract over 100 people per day.

The project also hosted 20 specialist technical presentations and site visits that took place between April and August for up to 1000 professionals working within industry. These visits were fully subscribed in a short timescale and received excellent feedback. Since January 2013, almost 15,000 people have now attended a presentation to find out more about the project.

The overall Outreach and Education Programme has now attracted over 37,000 individuals across all activities.

The project’s social media channels also remain popular. To date, over 75,000 people have viewed videos on the Queensferry Crossing YouTube channel. The official Queensferry Crossing twitter account @FRC_Queensferry has over 1200 followers. The latest quarterly Project Update will be published in September 2015, a copy of which is attached for your information.

FRC Public Transport Strategy
The FRC Public Transport Strategy Working Group continues to meet on a bi-annual basis and following the last meeting on 30 March 2015, arrangements are currently underway for a meeting in October or November 2015. Work is still ongoing with the A8/A89 Corridor Study which will identify potential improvements for public transport in the vicinity of Newbridge Junction. Modelling work is currently being undertaken and a draft report is in production, with final reporting expected this Autumn.
Yours sincerely

David Clime CEng FICE
FRC Project Director
Annex A – PHOTOGRAPHS

Photograph 1 – New B800 bridge

Photograph 2 – South approach

Photograph 3 – South approach
Photograph 4 – South Approach Viaduct

Photograph 5 – South Approach Viaduct

Photograph 6 – South, Centre and North Towers
Photograph 7 – North Tower cable stays

Photograph 8 – North Approach Viaduct steel assembly

Photograph 9 – Marine Yard, precast deck sections
Photograph 10 – 1st precast deck section lift
How to build a road deck

As the construction programme reaches the next critical stage where deck sections and stay cables are installed, we take a look at the technical operations involved.

Centre Spread

Connecting to the Queensferry Crossing

Latest news on the construction of the North & South Approach Viaducts and the network of connecting road works.

Centre Spread

Final push for the top

The Queensferry Crossing’s 3 towers are nearing their maximum height and are now officially the UK’s tallest bridge structures.

Back Page

We have lift-off! Out at the North Tower, the first of 110 deck sections is lifted up from sea-level to road deck height approximately 55 meters (180ft) above the waters of the Forth.
Historic Milestones Achieved

Welcome to the latest edition of the Queensferry Crossing “Project Update”. As ever, there is a lot of activity happening out on-site. Elsewhere, you can read about the progress being made across this fantastic, once-in-a-lifetime construction project. Out on the towers and on the emerging road deck, on the two approach viaducts and on the connecting roads north and south of the Forth, we continue to make good progress and remain on schedule to have traffic flowing across the new bridge by the end of 2016.

Recently, we have achieved a number of significant milestones of which the Project Team is proud. In August, the Queensferry Crossing’s three towers became the tallest bridge structures in the UK. We still have a little way to go before they ‘top out’ later this year at 210 metres in height (see back page) but already their height advantage over the towers of the neighbouring Forth Road Bridge is clear for all to see.

In July, we installed the first four stay cables on either side of the North Tower (see Centre Spread) and at the end of August their counterparts on the South Tower were also installed. These cables are very much the signature feature of the Queensferry Crossing, so it is very exciting to see them beginning to take their place in the bridge’s emerging architecture.

Then, at the beginning of September, the first of 110 deck segments was lifted into place at the North Tower (see Front Cover photo and Centre Spread) in a technically challenging operation which represents the leading edge of 21st century civil engineering technology.

Of course, as nobody can fail to have noticed, the weather this summer has been poor. Wind has been a particular feature out on the Forth and one that especially affects our ability to carry out operations at the tower tops and on the deck segments where working at such heights is subject to the most stringent health and safety considerations. Despite the weather, however, excellent progress has been made through careful logistical planning and timetabling, keeping any adverse effects to a minimum. It is a tribute to the skilled and dedicated workforce working across all areas of the Project that they have kept us on track in spite of the persistent winds. Our thanks to all of them.

This summer, we had the opportunity to climb to the top of the North cantilever of the Forth Bridge. It was only ten days after the famous old bridge had deservedly received UNESCO World Heritage Site status and it was an excellent chance to pay tribute to the magnificent structure where the history of bridges in this area all began. The scale and quality of our predecessors’ achievement and engineering prowess in the 19th century is breathtaking. As we in the 21st century add a new chapter to the history of bridges in this unique location, everybody working on the Queensferry Crossing remains fully aware of our responsibility to create a structure worthy of taking its place proudly alongside its illustrious neighbours.

Minister visits site

Keith Brown MSP, Cabinet Secretary for Infrastructure, Investment & Cities, recently welcomed news that the Project is now running with more than 1,200 workers on site, a new peak in direct employment levels.

Meeting members of the team during a site visit in August, Mr Brown said: “It’s great credit to the hard work and dedication of the men and women working on the Queensferry Crossing to see the progress made since my last visit. Everywhere you look, there are major operations underway or already complete.”

Visiting the Queensferry Crossing or live nearby?

Become a part of the Project’s legacy with a quick click of your camera or smartphone.

Take a photo of yourself, family and/or friends with the bridge works in the background and you can become part of “Frame the Bridge”! Upload your photograph to help build the fantastic online “People’s Bridge” mosaic. Your photos will also form a key part of the celebrations when the bridge opens. It couldn’t be easier.

Find out more at www.framethebridge.co.uk
FCBC helps Inverkeithing High achieve success

School teams from across Fife and Falkirk attended Fife College in May to compete in their regional Go4SET programme. Go4SET is a national initiative designed to promote STEM subjects (Science, Technology, Engineering and Maths) to 2nd year pupils. The Inverkeithing High School pupils were tasked with coming up with a creative idea for an ‘Eco Hotel’ and were awarded ‘Best Overall Project’ on the day. They improved their design and model for the final competition in Edinburgh and were commended for their team-working ability.

Chris Hunt, FCBC Apprentice Site Engineer, was asked to get involved to help the Inverkeithing team. According to Chris: “This was a fantastic opportunity to work with ambitious and enthusiastic youngsters and a chance to promote the civil engineering profession to 2nd year pupils about to make their course choices.”

Considerate Constructors – Gold Award No 3

FCBC and the Queensferry Crossing construction project won a Gold Award at this year’s Considerate Constructors Awards Scheme for the third year in a row – a fantastic achievement. The Considerate Constructors Scheme is designed to help constructors continually improve standards and the image of the construction industry.

Pictured is the FCBC team (Andy O’Kane, Ross Glendinning, Pedro Jadraque and Don Fraser) attending the Awards ceremony at the Balmoral Hotel in Edinburgh.

FRC CONTACT & EDUCATION CENTRE

EVENTS & ACTIVITIES

Over 20,000 people have visited the Forth Replacement Crossing Contact & Education Centre since it opened in April 2013 and it continues to host a range of events and activities:

PROJECT EXHIBITION
Open every Saturday 1000 – 1600 hours (March – October). Members of the public can explore exhibition panels about the FRC Project, view detailed bridge models, meet members of the Project team to learn more about the construction of the new Queensferry Crossing and enjoy spectacular views of the Forth.

PROJECT PRESENTATIONS
Presentations take place on the last Friday of every month at 1000 & 1300 hours (March – October). These include an in-depth look at the construction of the Queensferry Crossing and its connecting roads. The team also takes group bookings from universities, colleges, professional and community organisations interested in visiting for a presentation.

SCHOOLS PROGRAMME – FREE EDUCATIONAL VISITS
Our trained and knowledgeable staff lead a range of visits in the exhibition area which provides an excellent learning environment. Pupils participate in interactive and inspiring educational activities related to bridge construction, science, technology, engineering and maths.

To find out more about what’s on offer at the Contact & Education Centre, or to book a visit for your group, contact us via:
Email: frcenquiries@transportscotland.gsi.gov.uk Tel: 0800 078 6910

Flying the flag for the Queensferry Crossing

As part of FCBC’s mentoring programme with the University of Strathclyde, a group of international civil engineering students recently visited the Queensferry Crossing. The group included a number of post-graduate students from 18 countries: Brazil, Bulgaria, Czech-Republic, Finland, France, Hungary, India, Malaysia, Netherlands, Nigeria, Oman, Pakistan, Poland, Saudi Arabia, Spain, Sweden, Syria and Thailand.
Contacting the FRC team

There are a number of ways you can contact us to ask questions, provide comments, make a complaint or find out more about the Forth Replacement Crossing project:

Call the dedicated 24 hour Project Hotline 0800 078 6910
Email the team enquiries@forthreplacementcrossing.info
Look for us online:
- www.forthreplacementcrossing.info
- www.queensferrycrossing.co.uk
- @FRC_Queensferry
- Or go to the Queensferry Crossing YouTube channel
- Or drop into the Contact & Education Centre
Adjacent Forth Road Bridge Administration Office, South Queensferry, Edinburgh EH30 9SF

Opening times
Mon-Thu: 0900-1700, Fri: 0900-1600, Sat: 1000-1600

Towers: final push now on towards completion

Christian Niemietz, FCBC’s Senior Engineer North Tower, is delighted with the progress being made with the construction of the Queensferry Crossing’s three enormous reinforced concrete towers.

“I do not believe things could have gone any better,” says Niemietz. “Of course, we have had challenges to overcome – you don’t expect anything else on a project of this scale – but all the concrete pours completed so far have been carried out very successfully and we are on target to top out all three towers on schedule this autumn. We are very proud of what is being achieved.”

In the past three months, several further concrete pours (each 4 metres high) have been successfully completed and 32 steel cable anchor boxes have been inserted inside the towers. To date, 50 pours have been completed on the North Tower; 47 and 46 on the South and Centre Towers respectively involving over 22,000 cubic metres of concrete in the towers and an additional 15,000 cubic metres for the foundations. The initial four deck sections at the North and South Towers have been concreted successfully, allowing cabling works to progress. This performance is a tribute to teamwork, says Niemietz, citing the FCBC joiners, jump teams, steel fixers, crane crews, scaffolders, the concrete batching team, temporary works team, surveyors and laboratory technicians whose joint skills have been vital to the efficient way the works have been carried out.

Progress has been steady despite the poor summer weather. Wind is a particular challenge when working at such heights and prolonged windy conditions since early June have been a particular feature this year: “Frankly, if you can cope with a Scottish summer like this one, you can cope with a Scottish winter!” says Niemietz.

So, what remains to be done? Well, each tower will eventually consist of 54 pours, so the next few weeks will see the remaining pours completed. Then a 6m x 4m precast concrete slab, complete with entry hatch and parapet walls, will be fitted across the top of each hollow tower structure, thus marking the completion of the tower construction programme. Down at road deck level, the operation is now underway to insert tensioned steel strands inside the already poured reinforced concrete deck slabs in an operation (called post-tensioning) which increases the strength of the final road deck, making it fit to carry the traffic load in the decades ahead.

According to Christian Niemietz: “Finishing these fantastic towers will be an amazing achievement and we are looking forward to a wee celebration to mark the event!”
Over the past two to three years, looking out across the Forth, local residents and members of the public have been able to see key elements of the new Queensferry Crossing growing in front of their eyes, week-by-week, month-by-month. The three main towers, for example, reaching upwards to a height significantly higher than the towers of the neighbouring Forth Road Bridge. Or the approaching V-shaped legs which will later hold the entire 5,600 tonne structure is launched with the correct angle to meet the main structure so that it ties in seamlessly with the existing trunk roads network on either side of the Forth. That’s why the work of FCBC’s Network Connections Manager is activity progressing well on all fronts. Here’s a brief update.

Tuning to the south side of the newly constructed B99 road bridge over the Forth was fully switched on schedule in July this year. It is a time-consuming operation but a critical tool required to achieve the required connector “knot” to be placed on top of the structure. This is a very different operation from the main road surface.

Steps 2 & 3: Once the segment has been correctly positioned, it has to be fixed permanently in place. This is achieved by a huge amount of welding around the steel box structure and internal beams within. This welding takes place through the recently installed first stay cables which are constantly monitored by non-destructive testing to ensure perfect positioning is achieved after which permanent bolts complete the steel connections.

Steps 4: While the reinforced concrete core is being poured, the stay cables are constantly being monitored by non-destructive testing to ensure perfect positioning is achieved after which permanent bolts complete the steel connections.

Approach Viaducts and Piers: progress update

A lot has been happening out on the north and south Approach Viaducts since the last issue of the Project Update. We catch up with Juan Jose Consuegra Perez, FCBC Approach Viaducts Manager, for a summary of the current state of play.

June saw the completion of Pier 7 on the southside which then triggered the operation to launch the Approach Viaduct South into its final position. This was successfully completed in July, the culmination of an operation which started in 2013. At 543 metres in length and 20.5 metres in height, this operation was a major civil engineering project in its own right. Work is now underway on installing internal scaffolding, Ø500mm pipes through the land and over the west carriageway steel box girder. This will allow the FCBC team to start pouring the reinforced concrete deck which will carry the roadway, and eventually, the traffic to and from the road deck suspended from the three towers.

As previously reported in the Project Update (see November 2014 issue), the first four deck segments on each tower have already been installed. These are connected directly to the towers supported by temporary ‘falsework’ brackets. At the North Tower, the initial deck segments have recently been placed of the falsework and titled to give the required geometry to its graceful arch which is the final completed road deck will form. This taking - we call it “mission” - was achieved through the recently installed first stay cables which are the weight of the deck for the first time in late August, a significant milestone for the Project.

Steps 1: Each deck segment weighing 750 tonnes average, is transported out from the dockside fabrication yard on one of two huge barges. On arrival at the tower site, the barge is anchored to within a tight 200mm tolerance beneath the blue erection traveller cranes. The installation of connecting drainage pipes is completed and a temporary ‘falsework’ trestles beneath. At the North Tower: This entire 5,600 tonne structure is launched into place of the 18 steel beams to form of the deck segment is transferred from the erection traveller cranes to the stay cables.

Steps 2: The technology powered, 250 tonnes travel crane can now move forward (typically 1.6 metres) on rails to the leading edge of the newly installed deck segment ready to lift the next segment making its way out of the water and onto the South Tower. Once the second stay cables are then lifted into position using the enormous, yellow Tower Crane.

Steps 3: Once the segment has been correctly positioned, it has to be fixed permanently in place. This is achieved by a huge amount of welding around the steel box structure and internal beams within. This welding takes place through the recently installed first stay cables which are monitored by non-destructive testing to ensure perfect positioning is achieved after which permanent bolts complete the steel connections.

Steps 4: While the reinforced concrete core is being poured, the stay cables are constantly being monitored by non-destructive testing to ensure perfect positioning is achieved after which permanent bolts complete the steel connections.

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