

Forth Replacement Crossing

# project update

February 2012



FCBC Environmental Manager, Neil Abraham, tells pupils from Echline Primary School in South Queensferry about the geology of the seabed beneath the waters of the Forth estuary. See also 'Environment Matters' on Page 5

## Project Directors' update

This is no ordinary construction project – it's history in the making.

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## M9 Junction 1a and Fife ITS

Latest news from the works being carried out to improve direct road access to the new bridge for traffic both north and south of the Forth.

**Pages 5-6**

## Technical focus

Cable-stayed bridges offer certain advantages over traditional suspension bridges. Find out more about the FRC's innovative design.

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# ‘History in the making’

Welcome to the latest edition of our quarterly newsletter containing news about the Forth Replacement Crossing. Our aim is to keep readers up-to-speed with all the activity on this vital infrastructure project and to let you know what you can expect to see in the period ahead.

The two of us lead the project teams for Transport Scotland, the national transport agency charged with delivering the FRC project, and FCBC, the consortium of highly experienced international civil engineers contracted to build the new bridge and connecting roads.



Together, we are building one united team focused on delivering this project on time, on budget and with the minimum of disruption to local people.

2012 will be ‘Foundations Year’ during which construction of the bridge itself will truly get underway. Excavation work for the foundation of the central tower is currently being carried out on Beamer Rock in the middle of the Forth. There has also been significant progress on the M9 Junction 1a and Fife ITS contracts by Sisk RoadBridge and Grahams respectively to upgrade the trunk road network north and south of the Forth. Traffic management on the M90 and M9 spur was installed in the Autumn to allow these essential works to be taken forward, and we appreciate the ongoing patience of the public whilst these restrictions are in place.

Across the project, we are looking to minimise disruption to the public and local communities wherever possible. Keeping people informed and engaged is an important part of our work and a wide-ranging programme of initiatives has been put in place to provide updates on the works, address any concerns people may have and to

involve young people through school visits and presentations to colleges and universities.

We are also working with local businesses to ensure the project brings real benefits to the local economies in the area. Over £20 million in sub-contracts has already been awarded to Scottish firms and many of these are suppliers or contractors in the immediate vicinity of the scheme.

Together, it will take us five years to finish the job. During that time, we are determined to make a positive contribution to local life and to be good neighbours to the local community.

Every one of us is proud to be working on this major project. This is a once in a lifetime opportunity to be part of creating a 21<sup>st</sup> century structure to sit alongside the iconic 19<sup>th</sup> and 20<sup>th</sup> century bridges which already span the Forth in this setting of unique historic significance. This new bridge is the next chapter in that history.

We are looking forward to the work ahead. This is no ordinary construction project – it is history in the making.

**David Climie**  
Transport Scotland  
Project Director

**Carlo Germani**  
FCBC  
Project Director



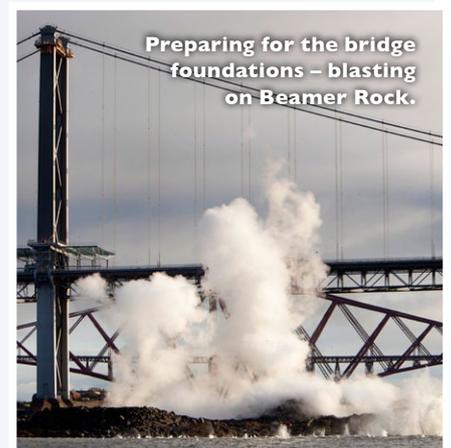
## FRC boost to Scottish construction sector

On 21st December, Cabinet Secretary for Infrastructure and Capital Investment, Alex Neil MSP, came on-site to view progress on the project and revealed it was already delivering a significant boost to the Scottish construction sector, with 118 sub-contracts, worth over £20 million in total, now awarded to Scottish firms.

And with 134 other further sub-contracts on the project currently being advertised, there is likely to be significant further benefit during the five year construction process.

Mr Neil said: “I am delighted to see that local Scottish firms are already benefitting from opportunities created by this major infrastructure project.

“Scotland’s economy is strengthening and continued progress on this project clearly demonstrates that the Scottish Government’s robust actions on capital investment and supporting jobs are delivering real results.”



## Christmas raffle

In the run-up to Christmas, a number of local businesses dropped off various festive items to the main project site office. These were put into a raffle for all FCBC staff which raised a total of £225. The proceeds were donated to Rachel House in Kinross, the first children's hospice in Scotland which opened in 1996. Grateful thanks to all the local firms which made this possible.

## New site offices



In mid January, the Forth Replacement Crossing construction team moved into new site offices at Ferrytoll, near Rosyth. The offices consist of 129 modular office units which have been re-cycled from the London 2012 Olympic Games construction site. Built on three floors, the offices will house over 250 staff from Transport Scotland's Employer's Delivery Team and FCBC for the remainder of the project.

## Bluebells on the move

Minimising any unnecessary environmental impact during the Forth Replacement Crossing project is an absolute priority at all times. That's why it was decided to save over 70,000 bluebell bulbs lying in the path of the bridge by removing them and re-planting them in a new site at Castlandhill House where they will continue to bloom for many



years to come. FCBC were advised in the operation by the Fife Coast & Conservation Trust whose Chief Executive, Amanda McFarlane, was on site to receive a cheque for £2,000 from FCBC Project Director, Carlo Germani, by way of thanks.



Pupils at Donibristle Primary School in Dalgety Bay celebrate the completion of their bridge building project.

# Involving local schools

School visits are an established part of our community liaison activities. Since September, we have been to 23 schools, colleges and universities to talk about the design and construction of the new bridge.

The enthusiastic welcome we have received from pupils, students and staff alike has been marvellous, say Sally Chambers and Ewen Macdonell, FCBC's Community Liaison team.

To date, we have given several presentations at school assemblies - a great opportunity for everyone to get a feel for what is happening on-site and a chance for us to spread the word about the importance of health and safety. The talks always include a Q & A session and the pupils' sharp questioning certainly keeps us on our toes!

We have also accepted a number of invitations from schools to carry out bridge building exercises in class and have run construction awareness activities with primary classes ranging from P4 – P7.

Our diary for 2012 is already filling up with talks planned on rocks & minerals in the local area, including on the Forth seabed, careers in construction, more bridge building exercises and also site visits.

One of the schools we visited was St John's Primary, Rosyth, where pupils in Primary 6/7 were carrying out a project on bridges. We asked the pupils to send us their thoughts on the new bridge.

The quality of their comments was of an exceptionally high standard and a selection is shown right. (Special thanks to Mrs Mair and school staff for co-ordinating this.)

*A new replacement bridge is urgently needed over the River Forth. The current bridge carries more than 24 million vehicles a year and is in need of repair. It was never built to carry that much traffic. This is putting a lot of pressure on the cables.* **Lauren**

*The Forth Road Bridge was opened by Queen Elizabeth in 1964. It is a bridge made of steel and concrete and is right next to the Forth Rail Bridge. This bridge is special as it connects Fife with Edinburgh, although sadly the cables are getting rusty and it wasn't built to carry the traffic that is does now.* **Georgia**

*The future is that there will be not one, not two but three bridges across the River Forth. The builders are hoping that the new bridge will be completed in 2016. This is an exciting year for the people who live near the bridge and are looking forward to it being built.* **Katlyn**

*We really need a new bridge to subtract the amount of vehicles crossing the old bridge. The new bridge will be stronger and it will be open on windy days. Something must be done before we reach crisis point. That's why a new bridge is being built.* **Jamie & Ryan**

# Vital environmental monitoring stations

FCBC carries out all construction activity under a contractual requirement to monitor its environmental performance.

This has led to a search for local residents willing to act as hosts for the technical monitoring instruments involved.

To explain further: equipment to measure potential pollutants is required to be strategically placed so that FCBC can accurately measure, record and report on the levels of dust, noise and vibration throughout the construction period.

The request for people to host these instruments in or near their gardens, and to provide the power source to operate them, received a very positive response and all “monitor hosts” are sincerely thanked for agreeing to take part.



## ... and a big thank you

Saying thank you is one thing but it was felt that the wider community should benefit from the consideration shown. So, every year of the five year project, monitor hosts will each be asked to nominate a good cause to receive a £500 donation from FCBC. Over the lifetime of the project, this will amount to a significant amount of money going to good causes.

Here's what FCBC's Project Director, **Carlo Germani**, thinks of the scheme:

*We're here for five years and our work will have a big impact on the community. We want that impact to be as positive as possible at all times. This is a great way to say thank you to the whole community and reward the neighbourliness of those people who have been kind enough to accommodate our monitoring equipment on behalf of the community.*

**Through this initiative, the following organisations received cheques for £500 in early January**

- Queensferry Churches Care in the Community
- Marie Curie Cancer Care
- St Margaret's Primary School, South Queensferry
- RNLI
- North Queensferry Heritage Trust
- Scots Guards Colonel's Fund
- Hillfoot Swifts 1994
- Queensferry First Responders Endowment Fund
- Dalmeny Primary School

## Traffic update: key works ahead

Since September traffic management measures have been implemented on a number of routes including the M9, M9 spur and M90.

Traffic management is essential for the delivery of the FRC project whilst minimising its construction impact on journey times and public safety.

From the end of February through to the beginning of May additional temporary traffic management measures will be necessary. This is the most current information available at the date of publication and any changes to this schedule will be publicised and made available on the FRC website.

At the end of February the M9 Spur will be closed overnight from around 10pm on three consecutive Saturday nights for the installation of 3 new overhead ITS gantries; signed diversion routes will be in place.

Late February will also see the start of short night time closures of the A90 at Ferrytoll Junction to allow rock blasting to take place. These closures are essential to ensure the safety of road users and will be undertaken over a period of 6 months for approximately 30 minutes for each blast outside peak periods.

In April, major traffic management will be implemented on the M90 between Junction 1 Admiralty and Junction 3 Halbeath that could cause significant delays. For approximately four weeks, one lane of southbound traffic will be running in contra-flow, with two lanes provided for both northbound and southbound traffic. Additionally, over three weekends in April/May there will be surfacing works taking place on the M90 southbound carriageway, reducing southbound traffic to one lane running in contra flow. Short term closures of various slip roads to and from the M90 will be required at different stages.

Transport Scotland will give detailed information of these planned traffic management measures well in advance with clear signage and diversion routes, along with advice on alternative modes of travel that could help minimise disruption, where possible.

We appreciate the continuing patience shown by road users while this traffic management is in place, which is absolutely necessary for the delivery of the FRC project.

For up to date information on FRC traffic management measures see: [www.trafficscotland.org](http://www.trafficscotland.org)

## Contact the Community Liaison Team

If you would like to speak to the Community Liaison team – perhaps you have an idea for a new community initiative or would like us to come and give a presentation on the latest developments – please see the contact details on the back page.

# Environment Matters



**Neil Abraham**, FCBC's Environmental Manager, is responsible for making sure the construction of the new bridge impacts as little as possible on the environment.

**Q How important are environmental factors in this project?**

**A** Absolutely critical. Care for the environment is imperative on a job like this and is enshrined in the Forth Crossing Act and FCBC's contract with the Scottish Government. Transport Scotland and FCBC are 100% committed to delivering the new bridge to the highest possible environmental standards. That's why we are liaising closely at every stage with agencies such as Scottish Natural Heritage, SEPA, Historic Scotland, Marine Scotland and the local authorities.

**Q What are the biggest challenges?**

**A** A key challenge is to minimise any noise and vibration the work may cause – both on land and in the water. Before commencing any activity, we are required to demonstrate to Transport Scotland and the local authorities that alternative methods have been considered and that the chosen route is the best one.

**Q What are your main considerations?**

**A** There are four key considerations. Firstly, people. We want to minimise the impact of all construction activities on the lives of people who live nearby. That is why we are setting up a network of state-of-the-art monitoring equipment to measure noise, vibration and air quality 24 hours a day for the duration of the project. (See *Community Liaison article on p4*).

Secondly, water environment which means preserving the marine environment out in the Forth estuary and protecting the quality of all fresh groundwater flowing into it from our sites on both shores.

Thirdly, animal life or ecology. In terms of marine ecology, that means protecting all species which live in the sea or rely on it for food sources: species such as seals, porpoises, seabirds and migrating fish. Then there is terrestrial ecology which covers the full range of mammals found in the area – species such as

badgers, otters and land birds.

Finally, there is plant life which covers all the trees, shrubs, flowers that may be impacted by what we are doing. Our aim is to actually *improve* the on-site flora where we can. For example, the Act stipulates the number of new trees to be planted in the lifetime of the project. Whilst some trees will inevitably have to be removed, overall significantly more trees will be planted over the next five years than will come down.

**Q What area of your work excites you most?**

**A** The underwater work we are doing is especially important and is ahead of anything else in the world. Our Passive Acoustic Monitoring equipment, for example, tracks all sea life in the estuary.

If mammals are detected within 1km of the site, then any scheduled blasting will be postponed. No exceptions. We are also employing a new mobile underwater sound system which, two hours before any noise-emitting activity such as blasting, sends out low frequency sound waves to deter fish from approaching the area.

**Q What about suppliers and sub-contractors?**

**A** All suppliers and sub-contractors on this project, whether UK based or international, are contractually obliged to adhere to strict environmental criteria designed to reduce the carbon footprint of all materials being transported onto the site.

**Q What is your goal with the Forth Replacement Crossing?**

**A** Our goal is to do everything in the most environmentally friendly way possible and to meet and – where possible – exceed the environmental requirements set out in the contract. We want the new Forth Bridge to be seen as a benchmark for world class environmental care in large scale construction projects.

# M9 Junction 1a on schedule

Work is well underway on the improvements to Junction 1a of the M9 which will provide improved connections between the motorway and the new bridge.

The works, being carried out by Sisk Roadbridge Engineering Ltd (SRB), began in September 2011 and are scheduled to complete by the end of 2012.

Over the last four months, a new site compound has been created outside Kirkliston, on the B9080, to accommodate staff and plant adjacent to the road works. Extensive earthworks and vegetation clearance have been completed so that work can start in earnest to create the new road links and widening of the M9.



**Aerial view showing the route of the new road links.**

We have had to introduce temporary traffic management on the M9 and M9 Spur with a speed limit of 40mph in the interests of safety for drivers and site workers. Commuters have responded well to this necessary measure and their understanding at peak hours, when some delays are unavoidable, is much appreciated.

New temporary ramps have been created off the B9080 which provides for access to the M9 Spur and as a result does not affect the traffic on the Spur. In the period ahead, work will commence in widening bridges over the local roads (for example, Overton Road). This will be complete by early autumn. Work on installing ITS gantries over the M9 Spur is also now underway. These will provide information for both north and south-bound traffic. The gantries are scheduled to be installed and commissioned in April 2012.

Liaison is also underway between SRB and local community groups in order to assist in local environmental and community projects while the site works are ongoing. More details on this in the next edition of the project newsletter.



**Piling works underway beside M90.**

## Fife ITS progress

The contract to construct an Intelligent Transport System (ITS) between the Admiralty and Halbeath junctions of the M90 in Fife was awarded in June 2011 to GRAHAM Construction. The 18 overhead signal gantries will regulate traffic flow on approach to the new bridge and provide improved safety levels through lane control and variable speed limits

Site-works got underway in September and monitoring is ongoing to ensure the contract is delivered in strict accordance with legislative guidelines and controls.

GRAHAM are liaising closely with local residents, Community Councils and key stakeholders to ensure that all activity is carried out with the minimum of disruption.

Mine consolidation works, piling, drainage and ducting works are well advanced. The decision to use quieter continuous flight auger piles as opposed to percussive/driven piling methods has helped keep noise and vibration levels down to a minimum. This has minimised disruption and has been appreciated by residents living nearby.

Ground works will continue through February and March to allow construction of the gantries. The project is scheduled for completion later this summer.

# What is a cable-stayed bridge?

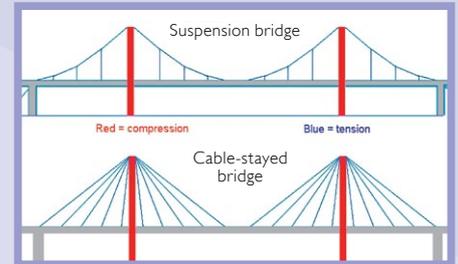
The Forth Replacement Crossing will be a cable-stayed bridge. **Carson Carney** (FCBC Bridge Superstructure Manager) explains the advantages of this modern bridge design.

The existing Road Bridge over the Forth is an excellent example of a traditional suspension bridge. The elegant curve of the main cables, the arc of the road deck and the vertical lines of the suspension cables are all familiar images. So how does a cable-stayed bridge differ from a suspension bridge?

The critical elements which make a traditional suspension bridge function properly are the main cables which stretch from the land on either side before rising up and over the main towers. From these cables, a series of vertical suspender cables hang down. These take the weight of the road deck which is suspended above the water. The main cables are the principal tensile element of the bridge and are secured in position by means of massive anchors buried deep into the land on either side. Notably, there is no direct link between the main tensile element and the road deck itself.

A cable-stayed bridge differs from a traditional suspension bridge in that the principal tensile elements this time – the “stay cables” - are directly linked to the road deck. Instead of giant anchors on-land, the cables are actually anchored into the deck itself and bind the deck and towers together. Although the deck must be heavier than a suspension deck in order to make it capable of resisting the tensile loads, the elimination of the anchors is a major benefit of the cable-stayed design.

Other advantages of the cable-stayed concept are ease of maintenance. Individual cables can be replaced as necessary as they reach the end of their viable life without requiring the closure of the bridge – something that is not possible with traditional suspension bridges. A planned forward programme of maintenance can, therefore, be put in place and the proper long term performance of the bridge guaranteed.



These days, cable-stayed bridges represent the cutting edge solution for many major new bridges worldwide, such as the Stonecutters Bridge in Hong Kong, the Millau Viaduct in France and the Rion Antirion bridge in Greece. But the new Forth bridge goes one better – it has an added feature which takes the technology of cable-stayed bridges to a new level. At the centre of each span, there is a length of deck where the stay cables descending from one tower cross with the cabling from the neighbouring tower. This represents a unique solution to the need to stabilise the central tower in multi-span, cable-stayed bridges – and you will see it first on the Forth.



## 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](mailto:enquiries@forthreplacementcrossing.info)

Log on to the project website at

[www.forthreplacementcrossing.info](http://www.forthreplacementcrossing.info)

Or drop into the **Contact & Education Centre**  
c/o Forth Bridge Administration Office,  
South Queensferry, West Lothian, EH30 9SF

### Opening times

Mon–Fri: 0900–1730, Sat: 1000–1600

