

# project update

Issue 7

**Aberdeen**  
roads limited

## Message from Aberdeen Roads Limited



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Since our last issue, works have continued to progress. Much of the works have been taking place away from existing roads but continue to become more visible, which is all very exciting for us. New bridges are being formed along busy commuter routes, access roads and side roads are coming into use, and we are tying in some of the new roads to the existing road network in and around Aberdeen.

We continue to work with the local community, providing training and employment opportunities on the project, including the provision of apprentice, graduate, and training & education placements. We are also delighted to have been able to take on a number of former employees from the oil and gas industry. All of this demonstrates our commitment to making a positive impact on the North east of Scotland.

The safety of the public and our workforce is of paramount importance to all of us. With the summer holidays just around the corner, we respectfully ask you to reinforce the message to young people that a construction site is not a safe place to enter, and if they do they are putting themselves at risk. A guide is available on the project website which explains the dangers of a construction site, such as construction machinery and unstable land, and how they can stay safe.

We hope you find the following articles to be an interesting explanation of what we have been doing and intend to do in the coming months to advance and complete the AWPR/B-T project. As always, we thank you for your patience throughout the duration of these works.



Blackdog Junction

# BLACKDOG BEAMS INSTALLED

**Works to progress the main junction north of Aberdeen, which will connect the AWPR with the existing A90 Trunk Road, have taken a significant step forward with the installation of steel beams for two new bridges at Blackdog.**

The steel beams are the largest to be installed in the North Section of the AWPR/B-T project and form a key element of the new junction, which also links the Blackdog Industrial Estate, Blackdog, Potterton and Belhelvie with the A90 and the AWPR.

The bridges will form part of a grade separated roundabout over the A90 at the new Blackdog Junction, which is part of the AWPR/B-T, currently the longest road construction project underway in the UK at 58km.

The installation required full overnight closures of the A90 Aberdeen-Peterhead Trunk road over two weekends with traffic management and local diversions in place. Close co-ordination and planning was required between the contractor, local authorities, Transport Scotland and Police Scotland to ensure the beams could be put in place successfully while ensuring road users could reach their destinations safely.

This stretch of the A90 is a key commuter route for Aberdeen and is one of the busiest roads in the North-east of Scotland.

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**TRANSPORT SCOTLAND**  
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# Aberdeen Western Peripheral Route/Balmedie to Tipperty

continued from the front page

The delivery and installation of the beams was planned to minimise any disruption to road users and residents. The A90 was reopened in time for Monday morning peak hour traffic at the end of each weekend operation.

Preparations began in early January with abutment construction for both structures and associated earthworks being undertaken with good progress being made due to the unusually mild winter conditions.

The steel beams – three pairs at 46m long and three pairs at 43m long – were transported from Darlington and are thought to be the longest abnormal loads ever taken through Aberdeen. The beams, on three specialist extended load trailers, took three hours to cross the city under road traffic police escort to the Blackdog site. The patience of road users during this manoeuvre was greatly appreciated.

The 46m beams for the Blackdog Junction Underbridge (South), were delivered and installed at the end of April and the 43m beams for the Blackdog Junction Underbridge (North) a week later. Both 500T and 100T cranes were utilised during these major lifting operations.

Installation of the first bridge beams was undertaken in 40 hours including the placement of permanent deck and central precast parapets. Learning points from the first bridge operation meant installation of the second bridge was undertaken in 37 hours. Each pair of beams had a combined weight of around 87T during lifting.

The installation of the decking and the central precast parapets at the same time as the beams allowed concrete to be placed into the central sections of both bridge decks. The first concrete was poured on the south bridge four days after the beams were installed and three days after installation on the north bridge.

Around 50 operatives were involved during each weekend delivery and installation. Further overnight closures of the A90 were carried out over one more weekend to allow the delivery and installation of the remaining precast bridge parapets.

Works are now continuing to complete the concrete pours on both structures and then complete the roundabout along with culvert works and drainage works. New on-off slip roads, existing side roads and new access roads will also be tied-in to the works. The new junction is scheduled to open to traffic in Winter 2017/18.

## PROGRESS OVERVIEW



Goval East Roundabout

### North Section

The steel beams for the North and South Blackdog Junction Underbridges have been delivered and installed with works continuing to progress those structures.

Works are progressing to tie in the new Goval East Roundabout with new slip roads for the AVPR/B-T mainline and with a new section of the B977.

A new temporary stretch of the B9000 Newburgh to Pitmedden Road has opened at its junction with the A90 Aberdeen to Peterhead Trunk Road, following the completion of tie-ins between the existing road and the new section.

Works are continuing to lay Cement Bound Granular Material (CBGM) base layer and Continually Reinforced Concrete Pavement (CRCP) on the mainline route while progress is ongoing to completing new side roads and access tracks.



New link for Culter House Road

### Centre Section

Works on the new South Kingswells Junction have progressed with the A944 Westhill-Aberdeen Road now permanently diverted through the North and South Underbridges. The original route of the A944 has now been filled in to allow the AWPR mainline to be constructed over the top.

Final works are being completed to allow the roundabout at South Kingswells Junction to become fully operational and tie in with the new slip roads and side roads.

A realignment of Culter House Road has also been completed on to a new section of road adjacent to Kippie Lodge, west of the AWPR route, which joins the A93 North Deeside Road at Milltimber Brae. Local access has been maintained to properties on Culter House Road which are east of the AWPR route.

The Cantilever Forming Traveller (CFT) has been built onto the completed 'hammerheads' of the River Dee Crossing and works are underway to complete the deck sections which will link the two piers.



C12K Overbridge

### South Section

Traffic management measures are now in place on the A90 Trunk Road, which have allowed works to begin for the new B979 Netherley Road Overbridge.

Demolition of the first part of the existing bridge, on the southbound carriageway, is complete and preparations are underway for the delivery and installation of the bridge beams.

As part of those traffic management measures, a 50mph speed limit has been introduced and average speed cameras installed to support the temporary restrictions.

Bridge beams have also been delivered and installed for the new A956 Charleston Junction Overbridge on the A90 with culvert and drainage works continuing while traffic management measures are still in place.

The new structure on the C30K, the Hillside to Batchart Road Overbridge, is now complete and open to traffic as is the new structure on the C12K, the Bridge of Muchalls to Netherley Road Overbridge.

## A90 bridge demolition under way



**Works to demolish and reconstruct the bridge carrying the A90 Aberdeen-Dundee Trunk Road over the B979 Netherley Road at Stonehaven are now well underway.**

The existing bridge opened in November 1984, but due to the layout of the new Stonehaven Junction, which connects the A90 and the B979 to the AWPR Fastlink section, it has to be replaced. The new bridge will provide additional space for a widened section of the B979 Netherley Road, which will form part of the new junction, including new slip roads.

This is a complex and lengthy operation which requires a co-ordinated approach by our construction and traffic management teams to ensure the minimum of disruption to all road users and local residents.

Before any demolition could begin, sheet piling had to be driven into the ground to a depth of up to 12m to retain the earthworks behind the bridge abutments. Saw cutting was then carried out on the bridge deck to separate the southbound carriageway from the northbound carriageway.

The actual demolition of the southbound carriageway was carried out over one weekend with a full closure of the B979 and a protective cover layer placed over the road surface below the bridge during the operation.

Specialist demolition machinery was used to break down and remove the southbound half of the bridge, including five supporting beams, weighing 60T each. The redundant abutments were also demolished and removed and have since been replaced at new positions, ready to receive the first steel beams for the new bridge. A total of 394m<sup>3</sup> of concrete was removed during demolition of the southbound carriageway and it will all be recycled as construction material for other parts of the project.

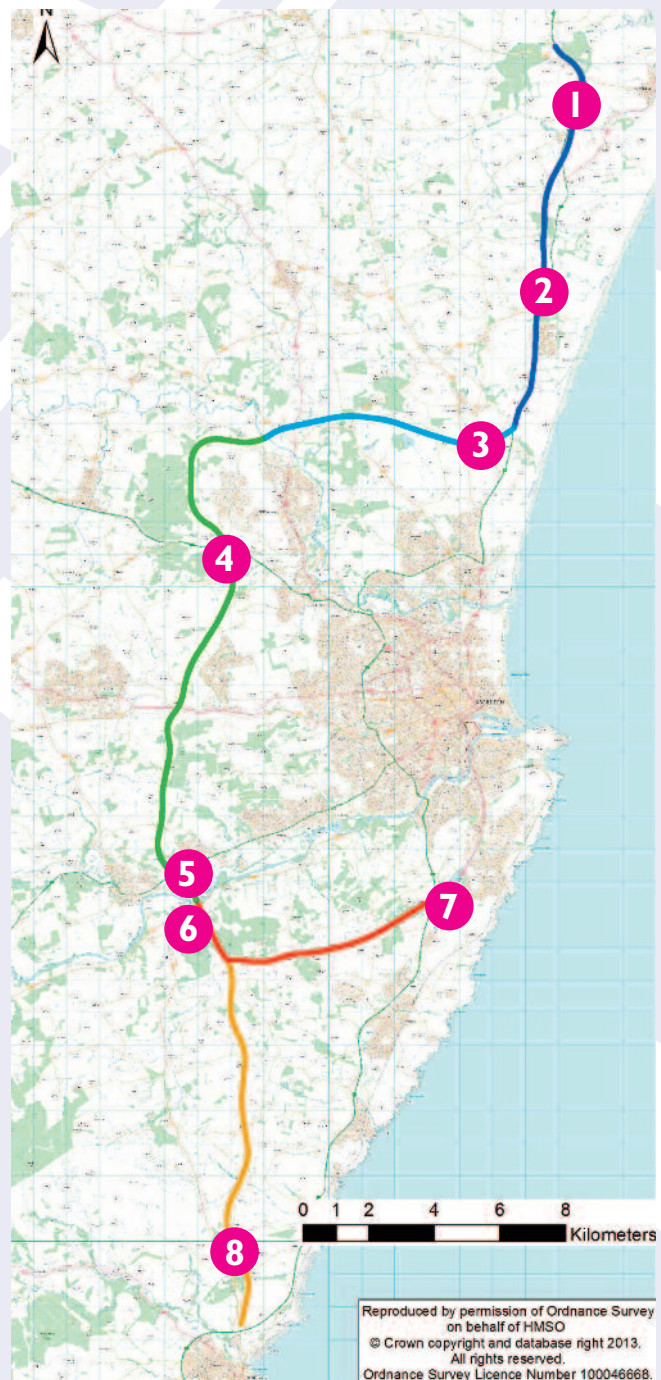
The new southbound merge slip road opened during the Easter weekend. This allows traffic from the B979 to access the A90 south without having to go through Stonehaven. There are some finishing works to be undertaken on this slip road and this will be done under traffic management. A number of traffic management measures have been in place during the works, including a day time contraflow on the A90 northbound carriageway with two lanes northbound and one lane southbound, to ensure the safety of road users and construction workers.

Once works are completed on the southbound section later this year, traffic will be switched over to the new section and works will begin to demolish and reconstruct the northbound section.

## Making progress

This series of photographs from along the AWPR/B-T route shows structures completed with traffic crossing over them; other structures nearing completion and paving being laid along the mainline. Co-ordinating these works over the 58km length of the project involves substantial planning and preparation by a wide range of staff utilising an extensive range of skills and experience to overcome the challenges this presents.

Over the coming weeks and months, the local community and road users will see further signs of the considerable progress being made, particularly as more bridges and new side roads are completed and come into operation.



# on the AWPR/B-T route

## Opportunities for ex-oil & gas employees



### 1 Tippetty Road Junction Bridge

This structure will carry a new section of the A90 across the B9000 Newburgh to Pitmedden Road. The beams have been laid, the decking poured and work is progressing towards completion.



### 2 Balmedie Junction Underpass

Work is progressing on the eastern half of the new underpass, which, when complete will enable all four lanes of the A90 to be diverted over it while the western half of the underpass is then constructed.



### 3 B999 Aberdeen to Tarves Road Bridge

This structure has been completed and is being used by traffic. The former route has been excavated and removed to allow the mainline AWPR/B-T to progress below.



### 4 A96 Aberdeen to Inverness Trunk Road Bridge

All the bridge beams have been installed and works traffic is using the structure to cross the A96. New slip roads are being constructed which will link the AWPR to the new Craibstone Roundabout, which opened in August 2016.



### 5 Milltimber Brae

The Milltimber Brae Bridge is being completed and will open shortly, giving drivers and non-motorised users' such as pedestrians and cyclists access over the mainline route to and from Station Road. Works are progressing to complete the nearby A93 North Deeside Road Bridge.



### 6 River Dee Crossing

The piers and abutments are complete and the CFT, which is used to form sections of the bridge deck, is in place. Work on forming the deck sections has begun.



### 7 A956 Charleston Junction Bridge

The steel beams for this bridge have been delivered and installed with works progressing to complete the structure. New slip roads are also being progressed.



### 8 Stonehaven Junction

The southern section of the old A90 bridge over the B979 has been demolished and works are underway to reconstruct a new bridge at this location. Once these works are complete, traffic will be transferred to the new bridge and the northern half of the old bridge will be demolished and replaced in a similar manner. The new southbound slip road allowing traffic from the B979 to join the A90 was opened for use in April 2017, and means that traffic can now join the A90 without travelling through Stonehaven.



The downturn in the North Sea oil and gas industry and the effects that has had on the employment market in the Aberdeen area have been well documented.

What is not so well known is how some of the employees who were unfortunate enough to lose their positions in that industry have since been able to find new work on the AWPR/B-T project.

On a project as large as this one there are always opportunities for employment in all disciplines, both on site and in office and support roles.

So far, a total of 55 job-starts, who previously worked in the oil and gas industry, have been employed on the project. Out of that total, 53 are from the Aberdeen and Aberdeenshire areas while two are from Angus.

All were employed through normal channels, either via the project's human resources team or through an agency. These job-starts are working in a variety of positions across the project.

We will continue to encourage applications from anyone who has been made redundant from the oil and gas workforce. In addition we will also continue to seek apprentice and intern opportunities.

## River Dee Crossing



**Construction has begun on building the concrete deck sections on the new River Dee Crossing, which will be one of the iconic structures on the AWPR/B-T route.**

When completed, the structure will consist of a three span bridge with a 120m middle span and two side spans of 75m each. The south span will cross over the B9077 South Deeside Road.

The deck sections are of a hollow box design and are cast one after the other by a pair of CFTs that work outwards from each side of the bridge piers. The CFT is a travelling support that carries the formwork, which is the mould into which the concrete is poured, and the steel bars which reinforce and strengthen the concrete.

This operation takes place in parallel on either side of the bridge pier. Each section will take around one week to complete and cure before the next section begins. The sections will range in depth from 3.5m to 6.5m, which will provide the curved shape to the underside of the bridge deck.

During these works pre-stressed cables will run through the deck sections to allow the structure to maintain its shape and carry the weight of the traffic using it. For these works, special safety netting will be in place and additional environmental measures will be used to protect the River Dee and its habitat.

After the deck sections are complete the next stage of works will begin, including the installation of transparent acoustic barriers along the structure and tying the structure into the mainline route.

The River Don Crossing is using a similar method of construction to the River Dee Crossing. The River Dee Crossing and the River Don Crossing are the first balanced cantilever bridges to be constructed in Scotland since the opening of the Skye Bridge in 1995.

## A944 in motion



**A critical section of the project has been the construction of the new roundabout at South Kingswells Junction, which is now approaching completion. Works have had to be carried out with the minimum of disruption to traffic on the A944 road, one of the key commuter routes for Aberdeen.**

The mainline of the AWPR route will cross over the A944 Aberdeen-Westhill Road. A cycle path and footway runs alongside the eastbound dual carriageway, which meant works had to be carried out in phases to minimise the effects on road users.

These began with the construction of a temporary haul bridge over the A944, which allowed construction plant to access the works site without any delays to road users. At the same time, two new structures were built on either side of the A944, the South Kingswells Junction Underbridge (North) and the South Kingswells Junction Underbridge (South).

The Kingsford to Gairnlea Road, south of the A944, was permanently realigned as was the C93C Borrowstone Road to the north. Traffic management measures, diversions and temporary road restrictions were in place during these works for the safety of site operatives and road users.

Once the temporary haul bridge was dismantled and removed and the two underbridges completed, works began to permanently divert the A944 through the two new structures with eastbound vehicles going through the North Underbridge and westbound traffic through the South Underbridge.

After the permanent diversions were complete, works began to plug the gap between the two structures, where the A944 originally ran. That involved using 21,000m<sup>3</sup> of earth to build up the space until it reached level with the top of the two structures, allowing works to construct the AWPR mainline over them.

Works have continued to permanently realign the cycle path and footway on the eastbound carriageway and landscape the centre of the roundabout with 1,000 trees to be planted. The roundabout will fully open following the completion of minor works.

Further works will continue during the summer on completing new slip roads and finishing works on the new structures, including the installation of permanent barriers.

## Testing role for project laboratories



The volume of materials testing that is required on a project of this scale means that it is necessary to have our own **United Kingdom Accreditation Service (UKAS) approved laboratory facilities on site.** The main laboratory established for the project is at our offices at **Rothnick** and we also have satellite facilities at **Kingsford** and **Goval**.

The laboratories work closely with the concrete batchers, asphalt batchers, suppliers and construction teams to provide confidence that the road and all of the associated structures are constructed as agreed prior to works starting.

The laboratories carry out 49 different UKAS accredited tests and some of the tasks they are responsible for include:

- **Concrete Tests** – The laboratories take samples from every concrete pour on every structure throughout the project. A variety of tests are undertaken on these samples, including “cubes”, which are stored in temperature controlled baths and crushed at intervals to record the strength gain in the concrete over time. Different structures require different types of concrete, each of which need to meet strict requirements. So far on the project, staff have taken nearly 6,000 samples with 4,440 coming from the structures alone.
- **Material Compaction Tests** – The road is constructed in a series of layers, each of which must be compacted so that the road will be stable and not deform over time. The laboratories use specialist equipment to test the level of compaction to confirm that the required levels are met.
- **Core Samples** – The laboratories also take core samples from finished roads to check that all of the constituent parts of the road are correctly installed. There have been 744 core samples taken to date on the project.
- **Aggregates Testing** – There are strict criteria for the aggregates that can be used for different purposes, such as concrete, bituminous pavement and road drainage materials. As large quantities of aggregates have been produced on site, these have been tested to confirm that they meet the requirements of the specification for the different purposes that they are being used.

This essential work is undertaken on a daily basis by the laboratory staff and technicians to ensure that the AWPR/B-T roads will meet the specifications and stand the test of time.

## Works coming soon

In the North Section, work will begin to lay both CBGM and CRCP on the main route from the new Newburgh Road Underpass near Rashiereive and southwards to the B977 junction at Balmedie.

Works are also on-going on the Foveran Overbridge and the Orrock Road Overbridge which should open for use in the coming months. Surfacing works will also begin from the new Tipperty Underpass north to the tie-in with the A90 Trunk Road at Bridgend.

In the Centre Section works have begun on constructing the cantilever deck sections on the new River Dee Crossing. Earthworks plugs will be removed between the A93 North Deeside Road and the Contlaw Road Overbridge, which will allow the mainline to progress through these areas. Finishing works will also be carried out on a number of other structures along this section.

Works will be completed on the A93 North Deeside Road Overbridge which will allow it to open and the temporary diversion alongside it to be excavated and removed. The Dykeside Roundabout / North Kingswells Junction link will be nearing completion as will the Kirkhill Wildlife Overbridge.

In the South Section, works will progress to complete and open the Lairhillock to Portlethen Road Overbridge at Rothnick, permanently divert the C13K road over it and remove the earthworks plug to allow through access for the mainline.

Works will also continue to progress the new B979 Netherley Road Overbridge on the A90 at Stonehaven with the delivery and installation of steel beams on the southbound carriageway and the demolition and reconstruction of the northbound carriageway.

## Contact Us

Should you wish to know more about the project please visit our project website at [www.transport.gov.scot/awpr-bt](http://www.transport.gov.scot/awpr-bt), where you can sign up for the Ezine, Route Ahead, as well as project-related alerts. Alternatively, call us on 0800 058 8350 or email [enquiries@aberdeenroads.com](mailto:enquiries@aberdeenroads.com).