

SH20 Manukau Extension Linking SH1 and SH20

Project Update
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SH20 Manukau Extension important link for Auckland Airport

With 20 percent of New Zealand's exports being despatched via Auckland Airport, the SH20 Manukau Extension project will provide a key transport link for New Zealand's busiest airport.

When the motorway extension is completed in 2010, it will provide improved access for motorists travelling to the airport from the south, or as a direct link to State Highway 1 (SH1) from the airport (via SH20).

Auckland International Airport Chief Executive Officer Don Huse, is impressed with the project's progress a year into construction.

"It was great to see a project that was dealing with the challenges it had in a positive and pro-active manner, the motivation to deliver the project is clearly very high," says Mr Huse.

Expansion plans for the airport include a second runway by 2011, with annual passenger numbers predicted to rise from



With over 70% of international visitors to New Zealand arriving at the airport, the SH20 Manukau Extension is going to be one of the first impressions travellers have of New Zealand.

12 million in 2007 to 24 million by 2025. The airport also supports both directly and indirectly an estimated 280,000 jobs in New Zealand.

the airport, the motorway will be one of their first experiences of Auckland's transport infrastructure, and for visitors travelling north to the airport, it could be one of their last impressions of New Zealand.

"As part of the completed project extensive use of native bush and trees as part of the landscaping will enhance the motorway corridor," says Transit Regional Manager Peter Spies.

A large numbers of visitors are expected to arrive for the 2011 Rugby World Cup, so the motorway's completion date is timely.

As well as providing additional capacity for airport routes the motorway will provide a significant link for businesses in and around the airport and Manukau.

The \$210M motorway project will form the southern end of the Western Ring Route - connecting SH20 at its existing end at the Puhinui interchange, to SH1 just south of Manukau City centre.

The motorway will be an important gateway for visitors to Auckland. For visitors travelling south from



Auckland International Airport is the second busiest international airport in Australasia.

Work on Manukau Extension moves on to the next phase

Work on the SH20 Manukau Extension project will become much more noticeable this spring with significant construction works around State Highway 1, Great South Road, Wiri Station Road and Lambie Drive.

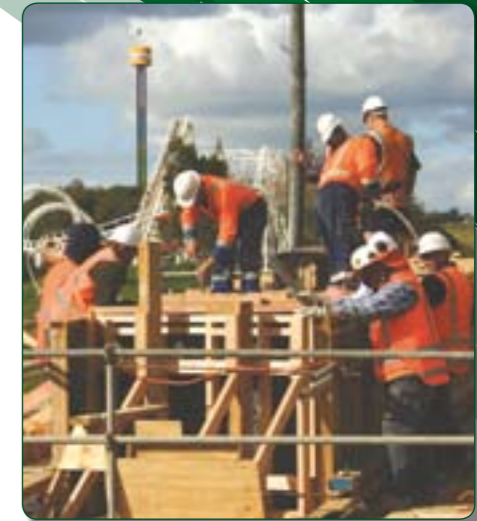
On Lambie Drive a deviation road will be opened to allow bridge construction to start, as well as continuing activity in the green space next to Hayman Park.

Construction on the Wiri Station Road and Great South Road bridges will continue, including the installation of bridge beams

which will require lane closures and an overnight closure of the SH1 northbound off-ramp to Manukau.

Earthworks and construction of the SH20 underpass and flyover across SH1 will commence - but there will be no changes to the current motorway layout or closures until next year when construction activity will move to the centre of the motorway.

Road closures and changes will be advertised in local newspapers and explained in news articles.



Bridge construction has progressed well.

Takanini pre-cast yard sets a high standard

There are 377 concrete T beams required for the project's 12 bridges and a site has been developed in Takanini to manufacture these beams.

Manufacture of T Beams

The bridge beams are made by pouring pre-mixed concrete around reinforcement that has been placed into a steel mould where it cures overnight. Curing is the chemical process that occurs as the concrete hardens.

Prior to pouring the concrete, steel cables located in the base of the beam mould are tensioned to give the beams the strength they need to carry the traffic across the bridge.

Once completed the beams weigh up to 56 tonnes and are up to 34 metres long so special gantry cranes have been erected to move them around the pre-cast yard and onto transporters.

Warming of the beam mould controls the concrete curing process, and the mould is kept warm by pumping hot water through tubes attached to the mould. By using foam insulation to assist in keeping the mould warm, noise has also been reduced and significant savings in the amount of fuel needed to warm the water in the boiler have been made, reducing the project's carbon footprint.

All waste materials from the beam manufacturing process such as reinforcement and concrete are also recycled.

The pre-cast yard is another important part of the SH20 Manukau Extension, with beam manufacture scheduled to continue until mid 2009.



Simple but effective innovations

Members of the project team working in the pre-cast yard have developed techniques that take into account sustainability in construction methods.

Gantry cranes (1) are used to lift beams (2) from the mould (3) and around the storage area (4) at the projects precast yard in Takanini.

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PROJECT CONSTRUCTION FEATURES

1 Puhinui Stream

The project falls within the catchment area of the Puhinui Stream. An extensive range of measures are in place to protect the stream's sensitive ecosystem.

The project has been commended in the Auckland Regional Council's Sustainable Environment Awards as a Sustainable Business for its efforts in this and other areas of environmental management.



2 Complex geology

The project team uses its experience and understanding of complex geotechnical issues to develop solutions that strengthen the ground to support the motorway and its structures.



3 Bridge construction

There are twelve bridges to be constructed along the length of the 4.5km project.

Currently Great South Road bridge and Wiri Station Road bridge are under construction.

Before the bridge beams can be placed, foundations are installed deep into the ground to support the abutments and the piers that will carry the bridges across the four lane motorway.



4 Working at night on SH1

Constructing the triple level interchange between SH1 and SH20 Manukau Extension is a substantial project in itself - made more challenging by the amount of work that needs to take place around the vital State Highway 1.

SH1 can only be closed for work at night and extra attention is paid to reduce noise, plan the works to minimise the disruptions, and effectively communicate the upcoming work to the community.

