

# Auckland Central Motorway Improvements Central Motorway Junction UPDATE

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A Project by **TRANSIT**  
NEW ZEALAND  
AARAU AOTEAROA

This newsletter outlines progress on the Central Motorway (Spaghetti) Junction project, which is one of Transit New Zealand's Central Motorway Improvement (CMI) projects in Auckland. The Central Motorway Junction Project (CMJ) aims to improve the efficiency and safety of the central city motorway.

## CMJ COMPLETED!

MINISTER FOR AUCKLAND ISSUES Hon. Judith Tizard, joined Auckland Mayor Dick Hubbard and Transit New Zealand in celebrating the completion of the second and final stage of the Central Motorway Junction (CMJ) upgrade in December.

The dignitaries cut a ribbon on the new Port to North link signifying the completion of four years of construction on the CMJ and the official opening of the new heart of Auckland City's motorway network.

CMJ Stage 2 is one of the biggest and most complex upgrade projects to have ever taken place on Auckland motorways. It accounts for \$153M of the total \$200M plus spent on the CMJ in the past four years, and delivers four links that weave over and under each other to complete the connections on New Zealand's busiest motorway.

Construction on Stage 2 of the multi-million dollar project started in January 2004, comprising the four new links between SH1 and SH16, two new off-ramps to Nelson Street from the Southern and Northwestern Motorways, and new lane layouts to make the motorway a more simple and intuitive place to drive.

In February 2005 the project was extended to include an extra lane on the Northwestern Motorway westbound between Newton Road and Western Springs, adding the necessary capacity to allow the new CMJ links to function at peak performance.

Stage two of the CMJ is also one of the first projects in New Zealand to include ATMS and ramp signalling; innovations in traveller information and travel demand management that will make driving on the central city motorways safer and more reliable.



*Celebrating the opening of CMJ Stage 2*

Transit Regional Manager Peter Spies stressed the importance of the CMJ in the everyday life of Aucklanders.

"The upgrade of the Central Motorway Junction will improve the driving experience of the 200,000 motorists that use the junction daily," says Peter. "They can now travel between any of the central city motorways without using local roads, their trip is safer and quicker, not to mention more aesthetically pleasing with urban design incorporated around the project."

Peter Spies congratulated the project team for their perseverance under tight constraints, with a site surrounded by residential and commercial buildings and all work restricted to within the existing motorway designation.

"The second stage of the CMJ project was particularly demanding in terms of environmental constraints and to have delivered such a major upgrade in such a short amount of time is truly commendable."

## Thanks from the team

Transit New Zealand and the Complete Joint Venture team would like to thank the community, stakeholders and all those involved in the delivery of the Central Motorway Junction Stage 2 project for their part in the project.

Since October 2003, the design and construction team have worked hard to make what was essentially a very difficult task seem easy. Having to work within the constraints of the existing motorway designation, sandwiched between residential and commercial areas and balancing night time

work with the need to minimise construction noise and the effect of work on the community was no easy task.

The project team would also like to thank local residents and businesses for their patience while work took place, especially those affected by night work.

***Thanks again and happy motoring!***



# Urban design sets CMJ apart

URBAN DESIGN ELEMENTS INTRODUCED to the newly opened Central Motorway Junction (CMJ) are giving Aucklanders a window to the rich cultural and historical background of their city.

Urban design is an important part of Transit's task to deliver a motorway which is not only functional, but aesthetically pleasing. Good design makes a big impact on the overall look and feel of the roads.



*Pohutukawa "Spiky Red Thing" sculpture*

Particular attention to the land's heritage and cultural values is reflected in Transit's use of designs inspired by native trees that once grew in much of central Auckland.

The kowhaiwhai pattern has been used on concrete barriers on the new north-bound bridge on the Southern Motorway. The embossed design references traditional Maori wood carving forms and patterns that represent communication of knowledge and power.

Motorists travelling

south from the Auckland Harbour Bridge will notice a stylised pohutukawa flower and leaf pattern adorning the wall to the north of the Beresford Street Viaduct in Freemans Bay. Extensive planting of pohutukawa trees has also taken place in the area as part of the project landscaping.

Wall panels on the Northwestern Motorway have a wave motif recalling the streams of eels that once flowed in the area, while the barriers on new bridges have a ta moko pattern on their outside face, alternating with karaka tree leaves and berries. This design reflects the significance to the iwi who lived in the area of a sacred grove of karaka trees which once stood at the heart of the CMJ area in

Newton Gully.

Possibly the most noticeable urban design addition to the CMJ, however, sits between the motorway ramps at Nelson St and Hobson St in the city.

Set on a two-metre high and six-metre diameter concrete base, the pohutukawa sculpture – or as it is affectionately named "Spiky Red Thing" – is fast becoming an Auckland icon. It has featured in numerous newspapers and magazines and even has its own website created by a local fan.

The sculpture comprises seven ceramic-covered pods on which 105, five metre tall red fibreglass pohutukawa stamen are fitted. The spring-loaded poles, capable of 500 millimetre movements, have yellow elliptical tops that are lit internally with LED lights.

When lit up at night, the pohutukawa is a truly impressive beacon at the gates to and from Auckland CBD.



*Pohutukawa panel*



*Wave panels on Northwestern Motorway*

## Facts

- CMJ Stage 2 – four major motorway to motorway links
- New fifth lane on the Northwestern Motorway (westbound) from Newton Road to Western Springs
- New Nelson Street off-ramps from the Southern and Northwestern Motorways
- Design began October 2003
- Construction started January 2004
- Physical work completed December 2006 – minor work will continue on gantries carrying electronic signs for motorists until May 2007
- Project cost \$153M

## Figures

- 4 new links and 1 new lane from Newton Rd to St Lukes built
- 200,000 vehicles per day moving through the construction area
- 750m of new viaducts and bridges built
- 80,000 tonnes of asphalt laid
- 2km of retaining walls constructed
- 13,000m<sup>3</sup> topsoil and 23,000m<sup>3</sup> mulch added to the site
- 143,000 plants on motorway banks
- 1,546 total road closures
- 405 Southern Motorway night closures
- 590 SH1 to SH16 link / SH16 to SH1 link night closures
- 551 day and night time closures to ramps within CMJ
- 300 total staff (excluding subcontractors)

# New links form heart of Auckland motorways

TRANSIT IS BRINGING AN EARLY Christmas present to Auckland motorists with the opening of four new motorway links on the CMJ.

The new links form what is known as the Northern Tie-In, which joins the Northwestern Motorway with the Northern Motorway, completing all motorway to motorway connections in the central city and heralding the completion of the entire CMJ project.

The Northern Tie-In comprises the following connections:

## **Northern to Northwestern (SH1 -SH16 heading west)**

Motorists can now drive direct from the North Shore, across the Harbour Bridge, to West Auckland on the Northwestern Motorway.

## **Northwestern to Northern (SH16 -SH1 heading north)**

Motorists can now drive direct from West Auckland on the Northwestern Motorway, across the Harbour Bridge to the North Shore.

## **Northern to Port (SH1 - SH16 heading east)**

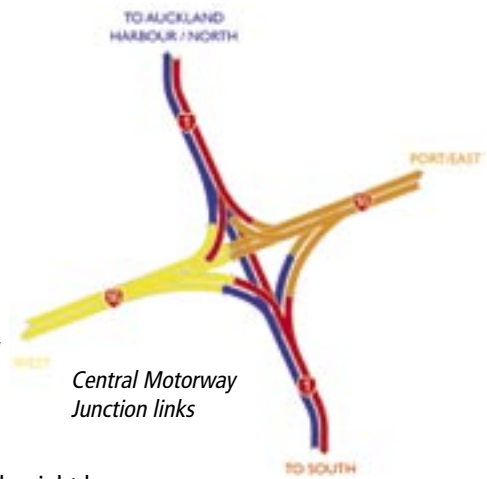
Motorists can now drive direct from the North Shore, across the Harbour Bridge to the Eastern suburbs - via Grafton Gully and the Ports of Auckland.

## **Port to Northern (SH16 -SH1 heading north)**

Motorists can now drive direct from the Eastern suburbs, across the Harbour Bridge to the North Shore - via Grafton Gully and the Ports of Auckland.

Due to the tight restrictions on space in the CMJ, various measures have been taken to fit all links in. These range

from lowering an entire section of the motorway by around 6.5 metres to build the North to Northwest bridge above, to the veritable musical chairs style of closures and lane shifts needed to move all traffic onto the right lanes.



Over the four years it has taken to complete the CMJ project, it has been described in all manner of ways. By the public it is referred to as Spaghetti Junction; by Transit project managers it has been summed up as a complex network of "overs and unders"; and by one journalist it has been described as looking like "the cat got in the knitting."



*The lowered SH1 lanes under the Northern Tie-In*

## Environmental excellence

VERY FEW ROADING PROJECTS on the Auckland motorway network have proven as complex as Stage 2 of the Central Motorway Junction upgrade. Having to work within the existing motorway designation on a site virtually surrounded by residential and commercial properties brought new and unique challenges to construction and site management.

The environmental challenges that arose on CMJ Stage 2 were managed by a dedicated environmental team who worked tirelessly to reduce and manage the impact of construction on the neighbouring environment. The same approach to environmental control was promoted to all staff.

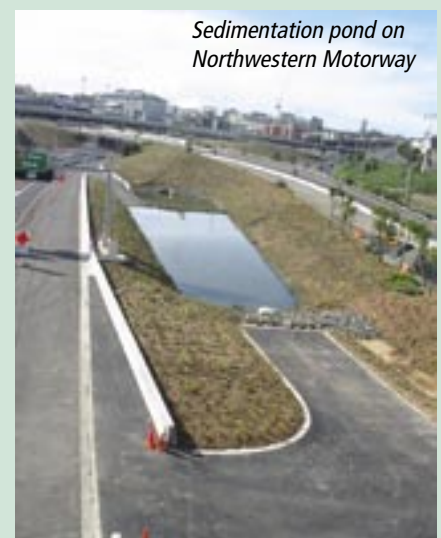
Through effective site management and weekly liaison with the Auckland Regional Council, the CMJ Stage 2 project was allowed to continue with earthworks through three consecutive winters, a key factor in the speedy completion of the entire project.

Dirt and mud were managed in several novel ways around the CMJ2 site. Wheel washes were installed in various locations, allowing trucks to park over a grate and wash any mud or dirt off the vehicle with a high pressure hose. Wheel washes were used wherever trucks needed to travel from mud or dirt to either motorways or local roads, as mud

carried on the wheels of trucks and construction vehicles can clog the road surface causing loss of grip for motorists. During the dry or windy months, large water tanker trucks sprayed down dirt areas to minimise the amount of dust coming off the site.

Controlling silt has been another major environmental feat achieved on the CMJ project. Miles of silt fences – made of fine black filter cloth – were set up along the base of earth slopes to catch any silt run off. Hay bales and sand bags were also used to drain silt for short term temporary silt control on particularly rainy days.

A sedimentation pond between the eastbound and westbound carriageways will store and treat most of the storm water collected. Lined with clay and rocks, native trees such as cabbage trees were planted alongside shrubs, grasses and flax.



# Ramp signals go live at Central Motorway Junction

Another unique feature of CMJ Stage 2 is it is one of the first projects in New Zealand to include ramp signals. Ramp signals - traffic lights at on-ramps that manage the rate at which vehicles move down the ramp and onto the motorway - will help improve traffic flows and safety on the motorway, while enabling more consistent speeds and travel times.

The ramp signalling system consists of traffic signals, sensors in the road and electronic signs to advise motorists when the signals are operating. The signals operate only when necessary, during morning and afternoon peaks and other busy times.

The signals have been switched on at the on-ramp to the Northern Motorway from the new Port and the Northwestern Motorway (SH16) links, as well as at the Curran St and Wellington St on-ramps heading north onto the Harbour Bridge. Ramp signals are being used at these locations to manage traffic flow on the new motorway-to-motorway links and help ease congestion of traffic heading to and from the CBD.

The signals operate in conjunction with a system called the Advanced Traffic Management System (ATMS). ATMS is made up of new overhead gantries and advisory signs, which have been installed on the motorway within the CMJ. These electronic signs (like those on the harbour bridge) show recommended



speed limits, arrows directing traffic into other lanes and crosses indicating lane closures. CCTV cameras, ducting and loops in the road have all been installed as part of this comprehensive traffic management system which will be monitored by the Traffic Management Centre in Northcote.

The second phase of ramp signals and remaining ATMS gantries and signs will follow progressively by May next year, at the following ramps:

- Hobson St (southbound)
- Symonds St (southbound)
- Grafton Rd (southbound)
- Khyber Pass Rd (southbound)
- St Marks Rd (southbound)



## Nightworks overcome closure challenges

Motorists who regularly drive through Auckland's Central Motorway Junction will have followed the progress of upgrade works over the last few years with some interest. The structures have quickly grown from earthworks and foundations to impressive bridges spanning the length of the project. One would be forgiven for thinking these structures have simply been growing by themselves, as very few people will have actually seen construction taking place.

However, almost every night since the project began, workmen have been on site placing bridge beams, pouring concrete, shifting barriers and fitting out the road in order to deliver a quality finished product. In fact, sections of the Southern and Northwestern Motorways and their ramps and

links have been closed literally hundreds of times over the past few years, all of these closures taking place either late at night or on Sundays when traffic numbers are low enough.

Efficient traffic management has played a crucial role in ensuring motorists have hardly noticed or been affected by the changes. Indeed, one of Transit's key requirements during the CMJ upgrade was minimal disruption to traffic flowing through the junction. In almost three years of construction the 200,000 vehicles which traverse the junction daily may have only noticed slight interruptions to their journey.

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For more information visit our web site: [www.transit.govt.nz/cmj](http://www.transit.govt.nz/cmj)