



Ruby Bay Bypass Project Newsletter

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A temporary bypass has been created at Trafalgar Road to move traffic off the existing road.



The road formation - base pavement material in place ready for sealing.

Project Progress

... *The past three months have been very productive for the project - with only moderate rainfall and good drying conditions allowing us to make excellent progress.*

Earthworks and roading

We are now at the stage where major earthworks in many areas along the near-11km project site are coming to an end as the final base-levels for the road formation are reached. This means that we are starting to tidy up the 'spoil' sites beside the road mainly by contouring it against the embankments as part of the landscaping work we are carrying out.

In areas where earthworks have finished we are continuing with the basecourse and sub-base road (pavement) aggregate layers - these are the compacted layers of gravel-like material that make up the foundation of the road - (see overleaf). We have completed more than 6km of the road formation through the forest corridor to near the new Harley Road intersection at the Tasman end of the project. The first 3.7km of this section is now sealed and we have started installing the wire rope barrier foundations at the side of the completed road.

One area of work most visible to the public at the moment is the temporary traffic bypass at Trafalgar Road culvert where we are diverting traffic off the old road to allow us to fill the area to the level required for the new road.

Drainage and services

As well as forming the road we have been working on other areas of infrastructure associated with the new bypass. This includes installing an LED street light at the SH60/Seaton Valley Road intersection and a screened Sodium lantern at the SH60/Higgs Road intersection as part of a lighting trial to determine the most effective lights for the bypass intersections. The relocation and removal of over-head power lines at Trafalgar Road, Tasman tie-in and Harley Road is now also complete, as is the installation of services and drainage infrastructure in the Old Coach Road water reservoirs area.

Pedestrian and cycleways

The Gardener Valley pedestrian underpass, along with the mountain bike track north to Old Coach Road, is complete as is the formation work for the connection from Harley Road to the new pedestrian underpass next to Tasman Domain where work will start shortly to construct a foot bridge connecting the underpass to Tasman Domain across Field Creek. The existing footpath below Chaytor Road has been formed so that it can be connected to the Dominion Road culvert/underpass at a later date and the path will be reconnected to the new Chaytor Road alignment as work progresses.

Pavements; It's the way you lay them!

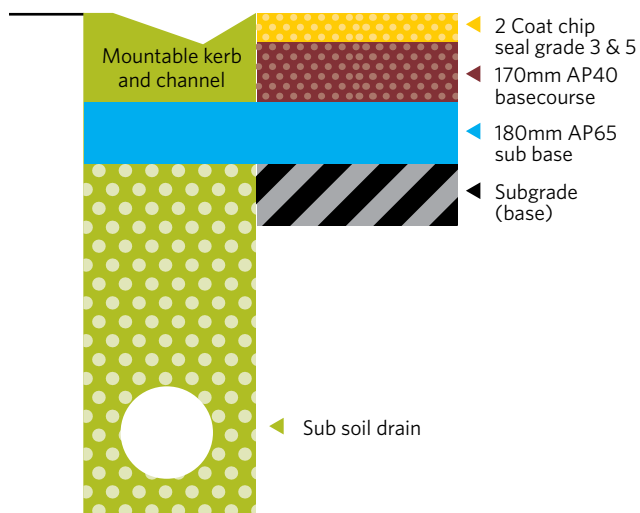
We construct two main types of road (technically called pavement) in New Zealand – most commonly we use a granular pavement but increasingly we build structural asphalt pavements in areas such as Auckland and Wellington because they are better suited to the higher traffic volumes on these roads. All roads are constructed in layers from the bottom up and the road pavement structure is carefully designed and optimised to transfer and distribute the high wheel loadings at the surface to the underlying foundation of the road.

The Ruby Bay Bypass has a granular pavement. It is made up of three layers - basecourse (top), subbase (middle) and an optional improvement layer (bottom) which is only applied if the foundation material (subgrade) is weaker than expected. – see diagram below.

The road needs a firm base (subgrade) to support the pavement on top of it, which needs to be at the correct level for the final finished surface of the road. The subgrade is the prepared upper surface of the ground at the end of the earthworks operation – either by excavation (producing cut material) or by building it up (by placing fill material) until it is the right level and shape. The level, shape and strength of the subgrade are critical to the success of the final pavement.

Above the subgrade are the subbase and basecourse which are made up of different size aggregates (crushed stones) to spread the load from the wheels between the surfacing and the subgrade. The subbase aggregate is crushed to a maximum size of 65mm and has been sourced from Motueka River and Bartlett's Road. The basecourse aggregate is crushed to a maximum size of 40mm and has been sourced by blending material from Marsden Road Quarry and Bartlett Road.

Typical section



On the Ruby Bay Bypass project, the trimming of the subgrade and laying of the subsequent pavement layers is undertaken by graders that are fitted with a GPS Machine Control System. A receiver mast mounted on the side of the grader blade receives a radio signal from a base station plus Global Positioning information from satellites to adjust the position and height of the blade for the grader operator. The accuracy of this system is so good that the very fine tolerances required to construct the finished basecourse surface can readily be achieved. Ruby Bay Bypass is the first major project where this technology has been used on such a scale and should result in a very smooth finished surface.



Once basecourse construction is finished a chipseal surfacing is applied. This is a layer of hard stones embedded in a layer of bitumen. The bitumen layer provides a waterproof membrane to prevent water getting into the surface and the chips protect the membrane and provide a surface that tyres will grip in all weather conditions. As with most New Zealand roads the chipseal surfacing is applied as a 'First Coat Seal', with a subsequent 'Second Coat Seal' the next year. Once the 'Second Coat Seal' is applied a further resurfacing should not be required for some 8-10 years.



Drainage of the subgrade and pavement layers is very important and where water cannot drain away naturally a subsoil drain is installed. The subsoil drains are covered by a kerb and channel which is formed along the edge of the road using extruded concrete (which is laid from a machine like a great long sausage!). These channels discharge into grated sumps which are connected to stormwater systems under the road.



Blair Reid, Quality Control Engineer, Downer Edi Works.

Blair arrived on the Ruby Bay Bypass project by a circuitous route taking in a variety of jobs from drainlayer to rigger on film sets in locations as diverse as Germany and North Africa! However, having travelled extensively he and his German fiancé Kati decided that Nelson was the ideal location to settle down.

Blair originally majored in zoology at Canterbury University - luckily his degree included geology papers so it was not such a big jump to road engineering.

This is one of the largest projects that Blair has worked on to-date where he is responsible for quality control. He ensures that the specifications for the raw materials and the finished road meet those of the contract.

Weekly checks are made on bulk earthworks, excavations and fill to check the material is suitable, compaction is achieved and moisture content is acceptable as the road (pavement) is gradually formed layer by layer.

Blair says that one of the interesting factors of this project is the large number of different, bulk fill, targets that have had to be achieved. Often on smaller projects there may only be one or two targets, but because the Ruby Bay Bypass extends nearly 11km the ground it covers, and the depths it is being cut, varies considerably. As a consequence Blair and his team have had to adjust and set hundreds of differing targets and do thousands of field tests, to meet the appropriate specifications.



Ben Fraser Quality Control Technician Downer Edi Works

With all those moving targets, it is just as well that Blair has had Ben as his right-hand man.

The pair has a lot in common because Ben has a pretty diverse cv too - builder, crop farmer, dairy farm worker and bar manager to name a few.

Having been raised in Timaru Ben headed to Christchurch, where he studied at the Christchurch Polytech gaining a civil engineering diploma. At the end of his first year he was offered a cadetship with Downer Edi Works and started working part-time while continuing his studies. Ben has worked fulltime on the Ruby Bay Bypass project since the beginning of 2009.

Ben has now learnt all the ropes associated with quality control on the project and as well as being responsible for the earthworks component of the job, his challenge this past year has been to train someone else to help him in his role.

He says that this has proved to be great personal development for him and he is looking forward to taking his newly honed skills back to Christchurch at the end of the project, as he and his wife Rochelle plan to make the city their permanent home.



Matt Lord is the Senior Environmental Planner with Opus in Nelson.

Matt managed the statutory, environmental, landscaping, consultation and property acquisition aspects of the Ruby Bay Bypass project during the design phase, and provides ongoing assistance to the project team as required.

He says this project has been challenging as many factors have changed since it was first approved. These included surrounding land use, land zoning, legislation, design standards, stakeholder expectations and demand for pedestrian and cycling access and extensive consultation with a diverse range of stakeholders was required to address issues arising from these changes.

Matt moved to NZ from Australia in 2004 with Lynette, his Nelson born wife, and their boys Jim (15) and Sam (13). Matt and Lynette spent nearly 20 years working in remote areas in Australia, initially in the tourism industry, before Matt specialised in environmental management, ecosystem restoration, consultation and Aboriginal Training / Liaison in the mining industry. Diverse locations where they lived and worked included Thredbo Alpine Village, Ayres Rock, Dunk Island, the Pilbara and Kimberly regions of WA, Groote Eylandt in the Gulf of Carpentaria, and Mackay in Central Qld.

Matt and Lynette were regular visitors to Nelson to spend time with Lynette's family and enjoyed the region's attractions over many years before settling in Wakefield six years ago. The family loves the sporting and recreational opportunities available in Nelson and both boys are very enthusiastic participants in a range of sports including rugby, rowing, karate and sailing.

As the token Aussie in the office Matt spends winter months defending the performance of the Wallabies; however, he is expecting big things from the Brumbies in this year's Super 14 competition.

FYI

Information about the project is on display in the Tasman District Council Richmond office foyer.



Ruby Bay Bypass project – Public Open Day

You're all invited to the Public Open Day of the Ruby Bay Bypass project on Saturday 20 February 2010 between 12 noon and 6pm.

Volunteers from Mapua, Mahana and Tasman Christian schools are running this event, which is a once only chance to walk/ride over the partially constructed road before it is completed and opened to traffic at the end of the project.

Activities and attractions include:

- Fun Runs - for all ages organised by Nelson Triathlon Club
- Wheels Course - bring your trikes, bikes and skateboards
- Haycart Rides
- Food/Drink Stalls
- Ice-cream Carts
- Educational/Information Displays
- Classic Hits radio on-site

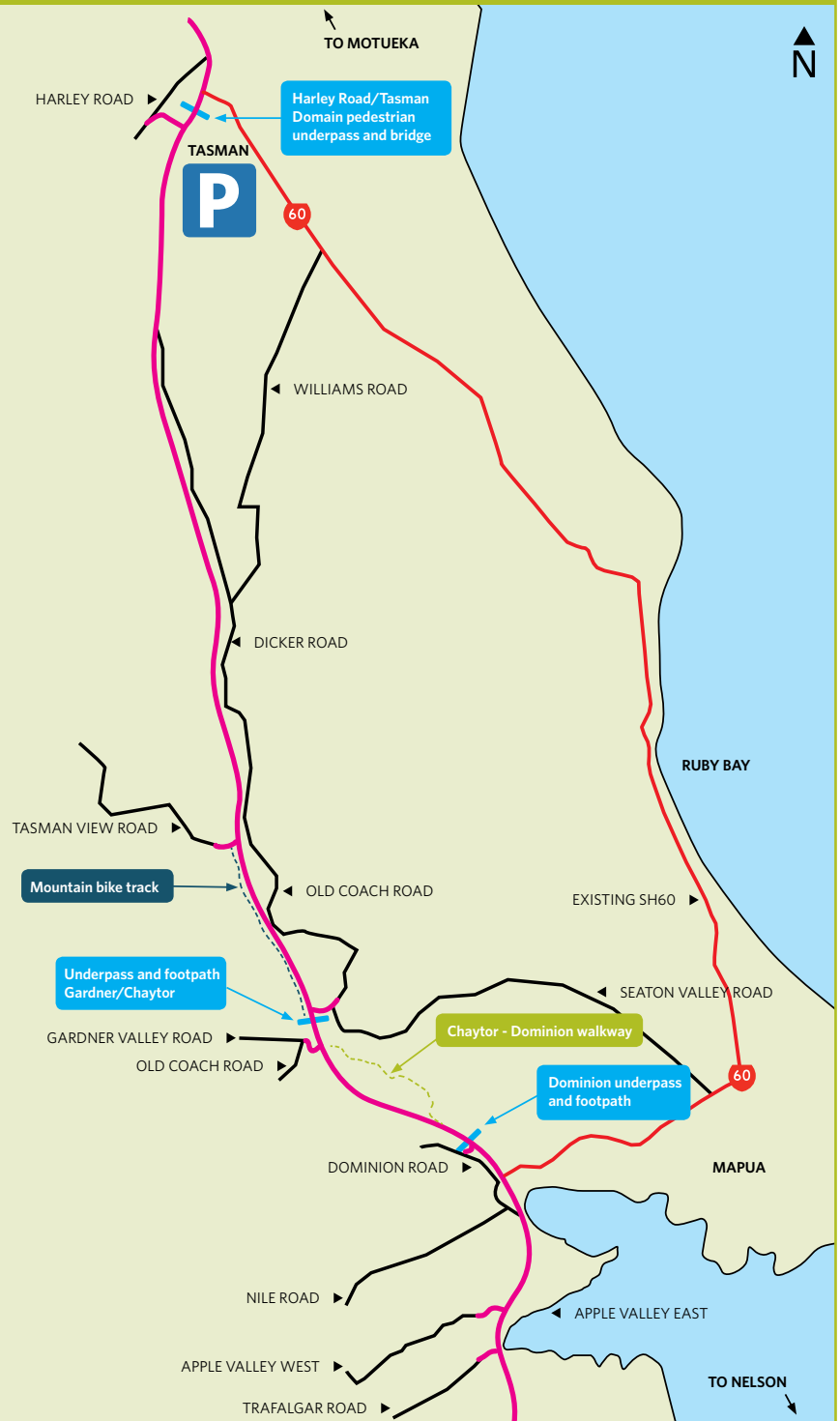
Grab your wheels and running shoes whatever the weather and come and join the fun!

Limited carparking will be available at the Tasman end of the project as well as at the middle of the new road where it intersects with Gardner Valley/Seaton Valley road - just follow the signs on the day.

This is an alcohol-free family event which will go ahead come rain or shine.

Entry by Gold Coin Donation with proceeds shared between the participating schools.

Event coordinator Lisa Dunn: 03 540 3466



Who to contact:

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New Zealand Government