



# SH2 Dowse to Petone - D2P Update

OCTOBER 2008

## Project Update

The start of spring is promising for the Dowse to Petone Upgrade Project (D2P). After a period of bad weather there are high hopes that spring will give us a good run on construction.



Progress at Korokoro intersection - September 2008.

### Korokoro

There have been a number of changes at the Korokoro intersection during the past few months. However, the good news is that the current layout is expected to remain unchanged, excepting a few minor tweaks if required, until at least the end of the year.

The reason for all the minor changes so far has been to allow the piling crew to install soldier piles through the middle of the intersection. These piles will retain Pito-One Road once SH2 is lowered by six metres.

Once the piling was finished, southbound traffic was moved up on to the temporary ramp, next to the northbound traffic, to give the construction team space to start constructing the Korokoro bridge and lower SH2 to its final level. If you look north when going over the current Korokoro bridge you can see how much the road has already been lowered.

The construction team are very appreciative of the patience and understanding shown by regular road users who have taken these changes in their stride.

The mechanically stabilised earth (MSE) wall at Korokoro that retains the new ramp down to the Hutt Road is almost at its final height, and the new overbridge is taking shape now that the team has successfully lifted beams into place over the railway line. Also at Korokoro, the J-Block demolition is nearly finished. Once this is done, the second half of the MacKenzie Avenue bridge, which provides access to the Petone Station park and ride area, will be constructed.

### Dowse Interchange

There are three MSE walls to construct at the Dowse Interchange. The wall on the Maungaraki side of the highway is now more than 50% complete, and construction has started on the two walls on the rail side.

North and southbound SH2 traffic is running on the new permanent alignment underneath the Dowse Interchange and for road users who travel this road daily, the interchange is beginning to look more obviously like the computerised 3D images on the D2P website and information leaflets.

For those of you who travel through the project at night, you may have noticed the bright studs, rather like cat's eyes, that we are using to mark the lanes. These solar studs are being trialled on this project as an alternative to temporary overhead lighting and are proving very effective.

All the spans of the 'East' bridge over Hutt Road are in place, and the majority of the concrete for the decks has been poured. The final structural aspect to this bridge is a small staircase which allows pedestrians a quicker route to Hutt Road without having to walk all the way down the ramp. Once this is finished, the structures portion of the Interchange will be complete. The next step is to build the road, or pavement, which will happen after the road construction on Hutt Road is underway.

## NZ Transport Agency

The NZTA is a Crown entity established on 1 August 2008, bringing together the functions of Land Transport New Zealand and Transit New Zealand to provide an integrated approach to transport planning, funding and delivery.

How does this affect the project? Not at all - it will be business as usual for all on D2P. The contact phone numbers and physical address remain the same but please note there is a new email address - [d2p@nzta.govt.nz](mailto:d2p@nzta.govt.nz).



The old email address will be redirected for the next few months.

The new website address is [www.nzta.govt.nz/d2p](http://www.nzta.govt.nz/d2p).

Please look out for other notices and advertisements

in this new style as you will no longer see the Transit logo.

## Future works

Coming up in the next few months:

- o MSE wall construction at Korokoro overbridge continues
- o Hutt Road roundabout construction continues
- o Construction of second span of Mackenzie Avenue bridge begins
- o MSE walls construction at Dowse Interchange continues

## Did you know?

### We can't build roads when it's raining.

Each layer making up a pavement (road) has to be firm in order to be strong enough to take the loading from the traffic running on it.

If the material making up the different layers is too wet the right amount of compaction cannot be made meaning the required strength is not met. Several fine days in a row are required before paving layers can be laid.

Also, once constructed it is particularly important for granular pavements that good drainage is in place to ensure that the moisture content of the aggregate layers does not exceed the specified moisture content range necessary to retain their strength.

## On the job

It is just as well that FHJV Section Engineer Steve Maynard has a sense of humour. He tore both calf muscles late last year playing indoor hockey (he represented New Zealand at the sport in 2003) and had to spend eight months getting around site on crutches while putting up with many jokes at his expense! He laughs it off now, but at the time it was pretty painful.



Steve is responsible for all civil works on the D2P project, which include drainage, services, earthworks and everything to do with roading. Like many of the engineers on this project, Steve cites the fact that the team have to keep traffic moving at all times as the most difficult aspect of the job.

"We have laid almost as much temporary roading as we have permanent so far, and that adds to construction time and costs," he says. "However, this was always going

to be necessary to ensure smooth traffic flows."

Steve reports to FHJV Construction Manager John Bryant who brings nearly 30 years' experience to the project.

Although John has worked on many different projects throughout NZ, he and his wife have been able to bring up their two daughters in Palmerston North without them having to be up-rooted every few years when his job has changed.

One element of his work that John particular enjoys is the technical leadership role he has within the team. His experience means he is able to offer support with any technical issues the engineers may have.

As Construction Manager, John is responsible for overseeing the project's master programme which means he has to make sure that all key construction stages happen in the right order. This involves a lot of forward planning as there are many temporary traffic changes included in the D2P project.

"If the traffic shifts don't happen at the right time then construction is held up," he says. "The trick is to keep traffic and construction work flowing."

All the temporary changes so far on the project have gone to plan.

John says, "SH2 traffic is already running on its permanent new alignment in some areas such as under the Dowse Interchange and the project is still running to the programme."

## It's the way you lay them!

As well as the construction of a number of new structures over SH2, the D2P project includes the realignment and reconstruction of 2.7km of state highway.

We construct two main types of road (technically called pavement) in NZ – 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.

Hutt Road will have a granular pavement, but as SH2 is a key commuter route with a high traffic loading the new road has a structural asphalt pavement designed to last 25 years before requiring replacement.

All roads are constructed in layers from the bottom up – see diagram below.



Firstly, 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. Earthworks are carried out to either excavate (remove) earth until it's the right level or to build it up (fill).

Next, for granular pavements, the subbase and basecourse layers are made up of different size aggregates (stones) to spread the load from the wheels between the surfacing and the subgrade.

However, for structural asphalt pavements, such as the state highway on D2P, the subbase is not required and the basecourse is made up of several layers of asphalt providing the additional strength for the higher traffic volumes. This is why it looks like there is a lot of 'black stuff' being laid on D2P.

Kerbs and channels are formed along the edge of the road using extruded concrete (which is laid from a machine like a great long sausage!), and drains and sumps are installed to control ground and surface water from the road.

Once construction is finished a final layer of either chipseal or a thin layer of asphalt is laid. This is called the wearing course and provides the skid resistance. The thin asphalt surfacing on D2P should last for 10-12 years before needing to be relaid.



## KidZone

Have you ever wondered why there are so many trucks around when a road is being built? It's because even though the road is flat, the materials that make it are quite deep and cover a large area.

Here on D2P we use on average five trucks and each truck does approximately six to eight round trips a day (roughly 250 to 300km per day). This is what is needed to achieve our daily production targets. Each truck is what is known as a '6 wheeler' and carts around 10 tonne per load.

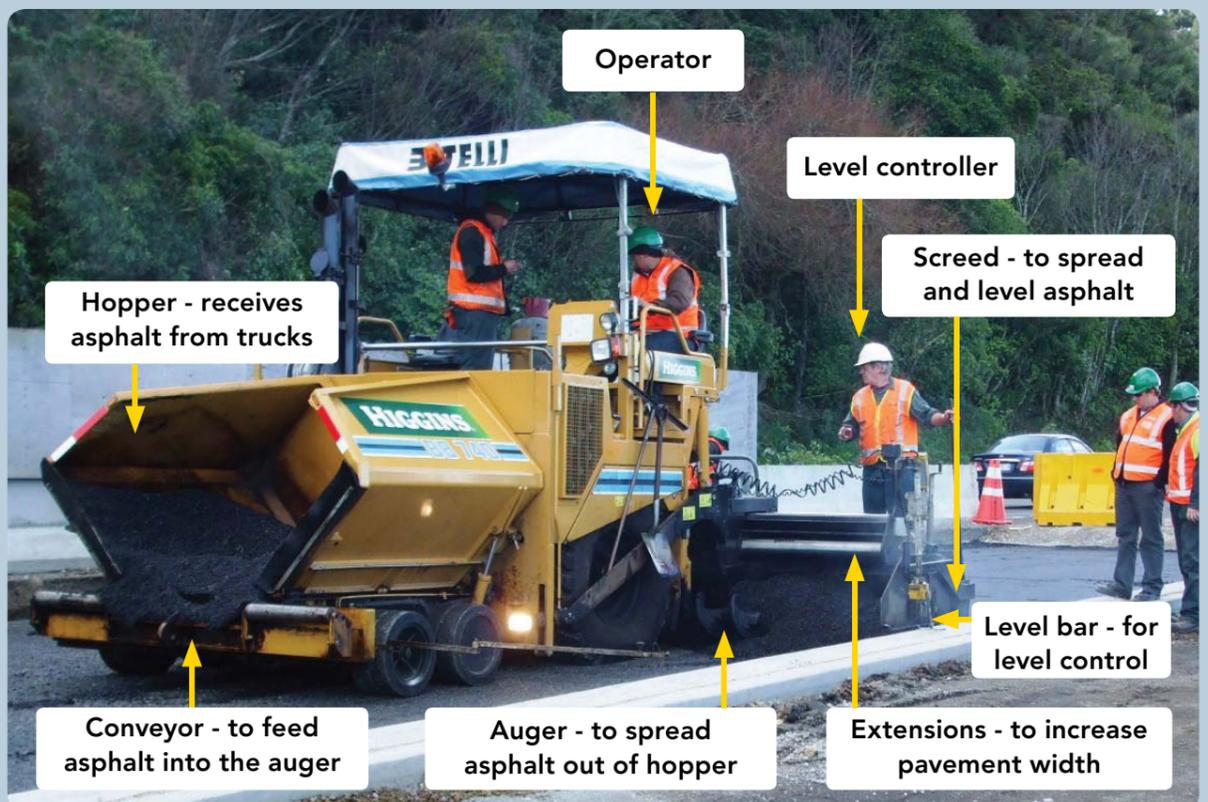
So far we have laid 6750 tonne of asphalt for temporary roading, the state highway structural asphalt and also for covering the service trenches.

We have covered nearly 6500 square metres of permanent SH2 as well as nearly 6000 square metres for the temporary roads. For comparison, the area of a rugby pitch is about 8500 square metres.

The asphalt, the 'black stuff', is delivered to site at 120 degrees Celsius which is really hot - water in a kettle boils at 100 degrees Celsius. Insulated covers are used on the trucks to keep the asphalt hot until it is laid. Once it is laid on the surface of the road you can see the heat escaping just like steam does from hot water. A big roller makes sure the surface is firm and nice and smooth ready for traffic to drive on.

**Bitumen** a product of crude oil. Once all the other products such as kerosene, oil and petrol have been distilled the bitumen is left.

**Asphalt** a mixture of aggregates and bitumen which harden like concrete when cooled, it is sometimes called asphaltic concrete.



### Contact details

For more information

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Hutt Infoline: 04 570 6660

[www.nzta.govt.nz/d2p](http://www.nzta.govt.nz/d2p)