The impacts of a sudden change in traffic loading
Pavement examples
Sudden change in traffic levels

Telemetry Site at Lewis Pass
Adaptation of communication

http://www.p2c.nz/
Understrength pavement

Traditionally carried low volumes of traffic

Level of maintenance was appropriate for the existing traffic levels

But left us behind when traffic levels changed

Strengthening was necessary – but where to apply that strengthening?

Traffic speed deflectometer was used to highlight the areas of weak pavement.

Where these corresponded to visual distress raised a red flag
Rapid assessment of pavement

Needed to quickly establish the subgrade strength

Traffic speed deflectometer data was available for some of the route

FWD was also used
Rapid design process

Design parameters
No room for premature failure
Better to overdesign than risk early failure
Limited time and opportunity for field investigations
FWD and TSD data used to estimate subgrade CBR
Conservative existing pavement thickness adopted
Rapid design process

Belt and braces

One network road classification as National nudging into National (High Volume) as heavies exceed 800 per day.

Initial design traffic three years of heavy loading then reducing to normal

Current designs assume two years

Initial design was 200 mm granular overlay with foamed bitumen stabilisation was adopted as a low risk treatment

Current designs not so risk adverse
Rapid deterioration

Shenandoah

Site visited in early December 2016

Revisited in late February 2017 and again in August.
Rapid deterioration

Shenandoah

Site visited in early December 2016

Revisited in late February 2017

During that time the rut had progressed from 20 mm to approximately 80 mm.

Other distress evident on site.
Drainage improvements
Rapid construction of widening
Narrow carriageway

Heavy vehicles driving on the shoulder
Conclusions

What have we learnt

Interesting
Challenging

Work crews have held the pavement well given the challenges

TSD has assisted in assessing pavement

This is not a normal situation – we’ve strengthened a weak road in addition to normal maintenance

Risk adverse approach moving towards risk tolerant