Epilogue

Shear failures (which cause shoving), depressions (or rutting), cracking and potholes will inevitably form as a result of pavement ageing and loss of waterproofing. Pavements are always getting older, and weaker or softer because water is leaking into the underlying layers or is not draining away. Pavements deform, seals crack, letting in more water which accelerates the damage. We will always be completing pre-seal repairs and laying new chipseals. Old chipseals will continue to be resealed, and layer instability will always be a problem to watch for and try to prevent. Old pavements will continue to be ripped up, replaced, recycled, or covered over with an overlay, resetting the pavement's life cycle.

Looking towards the future, one has to ask what do we really know about chipseals and how they perform or fail? Even after reading this book chipseals will still fail for you and you will never know why. Modern traffic is getting heavier which wears out chipseals faster. The economy is growing, leading to more tri-axle and quad-axle trucks on the roads, causing damage to chipseal, especially on corners. New Zealand's tortuous alignment of its roads means chipseals are not appropriate on many corners even in low trafficked areas.

We may be coming to the point where the chipseal is no longer viable on many of our state highways, and in many of our urban areas (but for different reasons). What really are the limits of chipseals? Have we just forgotten the skills once practised by the Ministry of Works crews, and enforced by the sealing supervisors, or are we really working under more adverse conditions for chipseals than ever before? Obviously, chipseals will always have their place in relatively straight sections with low traffic volumes and in rural areas.

Can chipseals be made to work anywhere as some would have us believe? Do we need to work more closely with our safety engineers and traffic designers to improve the alignment of New Zealand's roads so that chipseals can really be used anywhere in the rural environment? Are there other technologies to improve chipseals for the future that we haven't fully explored yet?

Remember that chipseal design is not an exact science. You may have taken everything into account and completed a robust chipseal design, but the surfacing or pavement may still fail on the road for no apparent reason. Don't be upset at such failures, but investigate and find the likely causes of failures, and learn from them.

Always remember, about 15 things can go wrong with a chipseal. Get five wrong and your chipseal may still be OK. But get six wrong and your chipseal will fail.

Always try to use emulsions, if you are in a position to be able to make a decision about it, as they are much kinder on the environment and on the sealing crew!

Use multi-sprayers where they are available, and utilise other techniques to ensure that the correct spray rates are used in the wheelpaths and on low-trafficked shoulders and centrelines.

Develop a positive relationship with your client, your contractor, and your consultant when things are going well. Then you will have a base to start from when you need to solve a problem together. Communicate with your colleagues, your client, your contractors and subcontractors. Many problems in the world could have been prevented if people just talked to each other about them.

To cope with the extreme climate experienced in the Mackenzie Basin, South Island, a two coat seal is used on State Highway 80 (with Aoraki/Mount Cook and the Southern Alps in the far distance). Each step of the process is visible: in the centre of the road is a narrow strip of the first layer of bitumen, to its right are the first layer of chips, and then the second layer of bitumen. The second layer of chips is in the process of being spread. Photo courtesy of Lindsay Roundhill, Opus