Improving Road Safety With Rumble Strips

SaferRoads2017
5th International Conference

The New Zealand Roadmarkers Federation Inc

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Audio Tactile Profile Markings ATP's

There is Truck loads of information around about the performance of ATP

- Steve James (NZTA) also presented at the 2011 and 2015 NZRF Conferences and advised we are achieving up to 25% of all injury crash savings and 40% death and serious injury crashes.
- Benefit Cost Ratio (BCR) of 18.
- ATP's are simple to apply to existing roads with little inconvenience to the motoring public.
- KiwiRAP highlights ATP as a cost effective treatment to reduce serious injury and fatal road accidents.

Potential Reductions (%) in Various Injury Crash Types

TREATMENT		HEAD-ON CRASHES	RUN-OFF ROAD	INTERSECTION CRASHES	RELATIVE COST
Road signs and delineation		25-40	25-40	25-40	$
Rumble strips		10-25	10-25		$-$$
Central median hatching		10-25			$
Speed reduction (per 10km/h)		15-40	15-40	15-40	$
Dedicated lanes for turning traffic				25-40	$-$$
Removal of roadside objects			25-40		$$
Roadside barriers			25-40		$$

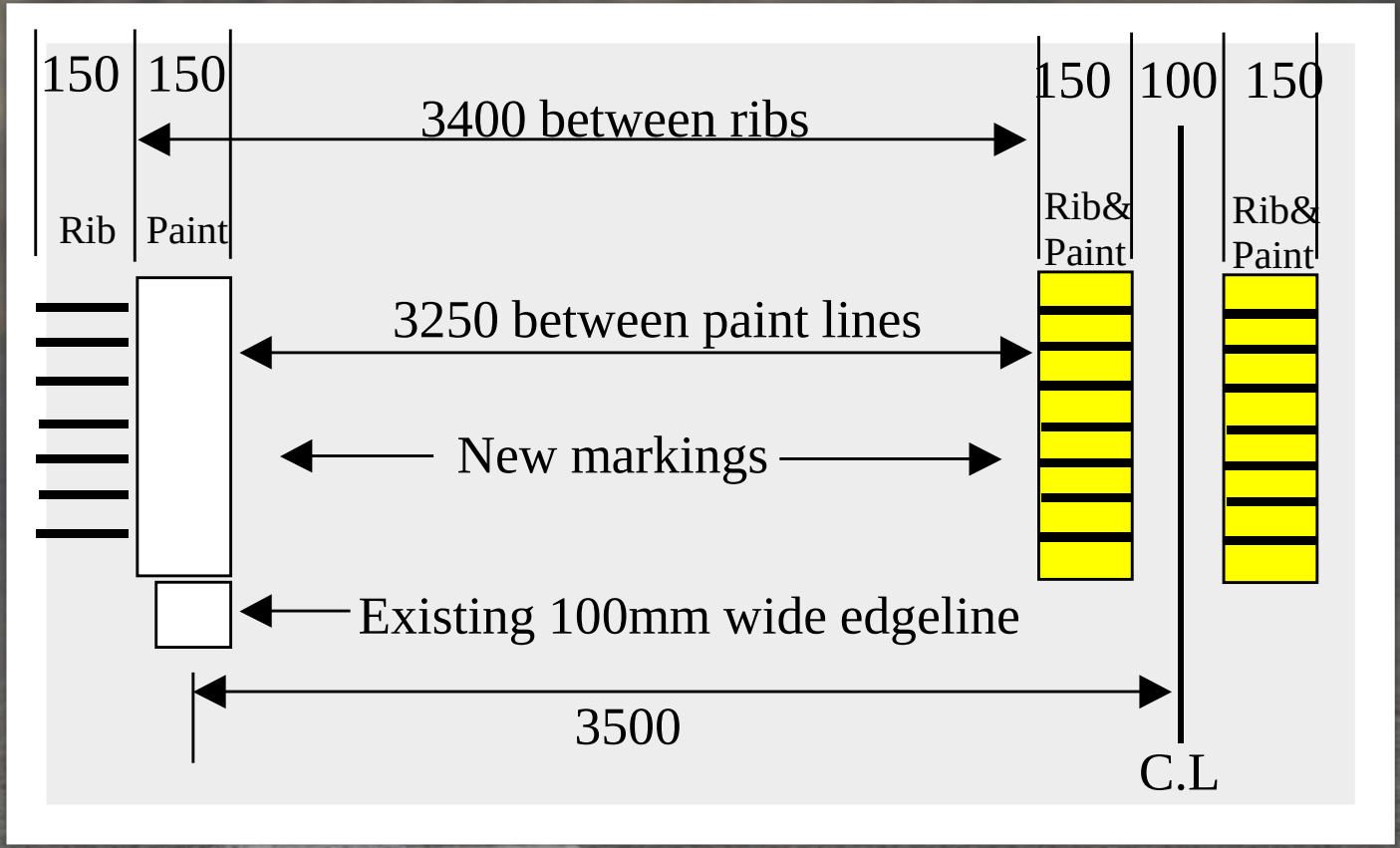
History of ATP's

- ATP's have been around since the Mid 1990's
- These were initially applied using Thermoplastic, long term some applications didn't stand up to New Zealand conditions
- International experience with rumble strips indicated significant reductions in single vehicle run off road accidents
- Prior to trialling ATP, the NZ Transport Agency (NZTA) contacted Transport Engineering Research NZ (TERNZ) to undertake research

History of ATP's

- 2004 review of lane delineation is a literature research report identifying 24 key research articles citing more than 500 documents.
- Average accident reductions of 27% were identified
- Following this research, Cold Applied Plastic (CAP) was introduced to New Zealand which has proven to be very successful and gives long term performance
- The first significant CAP ATP application in 2006 was on SH 2 Katikati to Bethlehem
- There was a new marking format for this installation to retain the 3.2 m carriage way

History of ATP's



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History of ATP's

- A joint agency approach to reduce road trauma in the Central North Island, came up with SWATT (South Waikato and Taupo Target 2010)
- Hamish Mackey of TERNZ conducted a study on vehicle placement within ATP edge and centre lines. Proving that vehicle's tracked within their lanes when ATP's are applied to edge lines and when edge and centre line ATP's are used.

History of ATP's

- ATP layout design has developed so they are visible to both cyclists and motor cyclists
- The layout allows for clear area's when approaching bridges, intersections, turn pockets and to allow adequate shoulder widths
- The NZRF website has a link to NZ Rumble Strip Resources

History of ATP's

- The original modelling for this project gave us a BCR of around 6.2 based on a project life of 4 years
- We now have documented testing from this application after 6 years that shows it is still performing
- Vince Dravitzki's paper Rumbling Through The Bay presented at the 2013 NZRF conference

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History of ATP's

- This then takes the BCR to 18
- There are some sections on SH2 that lasted for and were still performing after 10 years
- ATP's don't only offer the benefit of Audio and Tactile but also give excellent dry and wet night Retroreflectivity

Retroreflectivity

- We all know the Audio and Tactile effect and the benefits the ATP's
- With our aging driving population, Dry and WET night visibility is also critical

Age visibility reduction

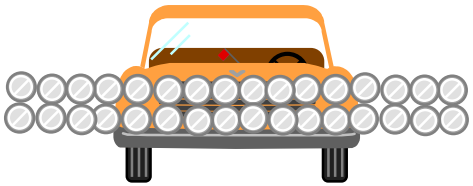
Compensation through
more headlamps

20 year old driver

33 year old driver

46 year old driver

59 year old driver

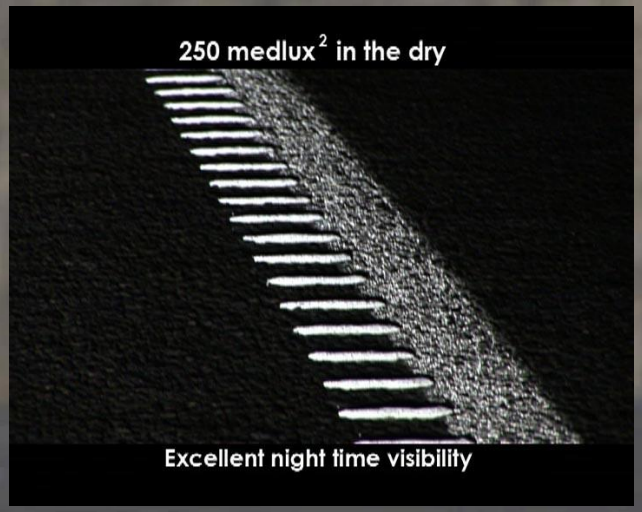


72 year old driver

Age visibility reduction

100 year old driver?

Visibility of ATP's



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EXIT
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Excellent wet night visibility

Visibility of ATP's

SH 1
CAP ATP

SH 30
Standard
marking

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ATP Installation

- To ensure the maximum performance is achieved from CAP ATP's and the return on the investment for the road owner all Applicators are approved by the supplier
- All are NZTA pre qualified
- The application machinery is NZTA/NZRF T12 certified.
- These certifications are renewed every 12 months and a register of these is available on the NZRF website

NZRF Website: http://nzrf.co.nz/t12/

T12 Register

T 12 Initial Certificates
Please contact the NZRF Executive Director to arrange for initial certification.

T 12 Testing Officers

T 12 Testing Officer	Company
Bruce Belton	Fulton Hogan Ltd T/A Coastline Markers
Lucas Orsborn	Orsborn Roadmarkers Ltd
Paul Del Favero	Downer NZ Ltd
Ryan Gorman	Fulton Hogan Ltd
Tony McLellan	Fulton Hogan Ltd
Wayne Rouse	Roadmarkers New Zealand

Scope of Testing Officer Status here

T 12 Applicator Register

The T 12 register is updated on a continuous basis, and all currently registered applicators are listed.
T 12 Applicator Certificates must be read subject to the schedules which describe the markings & formats tested.

T 12 Inspection Checklist here | Testing Officer Observation Note

Organisation	Address	City	Registration Number	Expiry Date	Certificate Number	Material	Format
Downer NZ Ltd	645 Great South Road Penrose	Auckland	BQY303	15 Feb 2018	4452	Thermoplastic	Plain Flat Marking, Audio-Tactile, Agglomerate
Downer NZ Ltd	645 Great South Road Penrose	Auckland	UB5372	22 Jan 2018	4450	Thermoplastic	Plain Flat Marking
Fulton Hogan Ltd T/A Coastline Markers	PO Box 302-528	North Harbour	DGW904	11 Sep 2017	4444	Cold Applied Plastic	Plain Flat Marking, Audio-Tactile, Agglomerate

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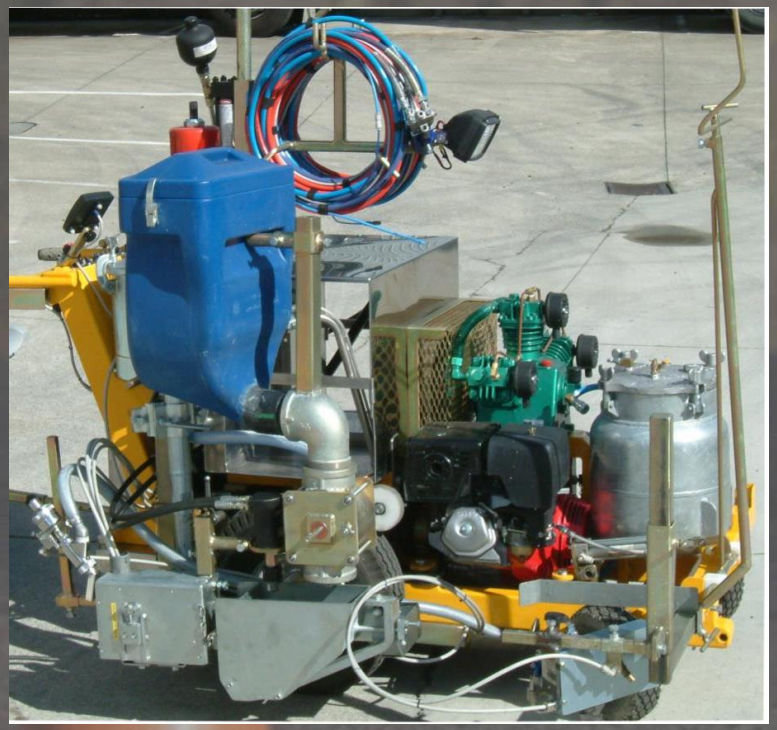
Visibility of ATP's



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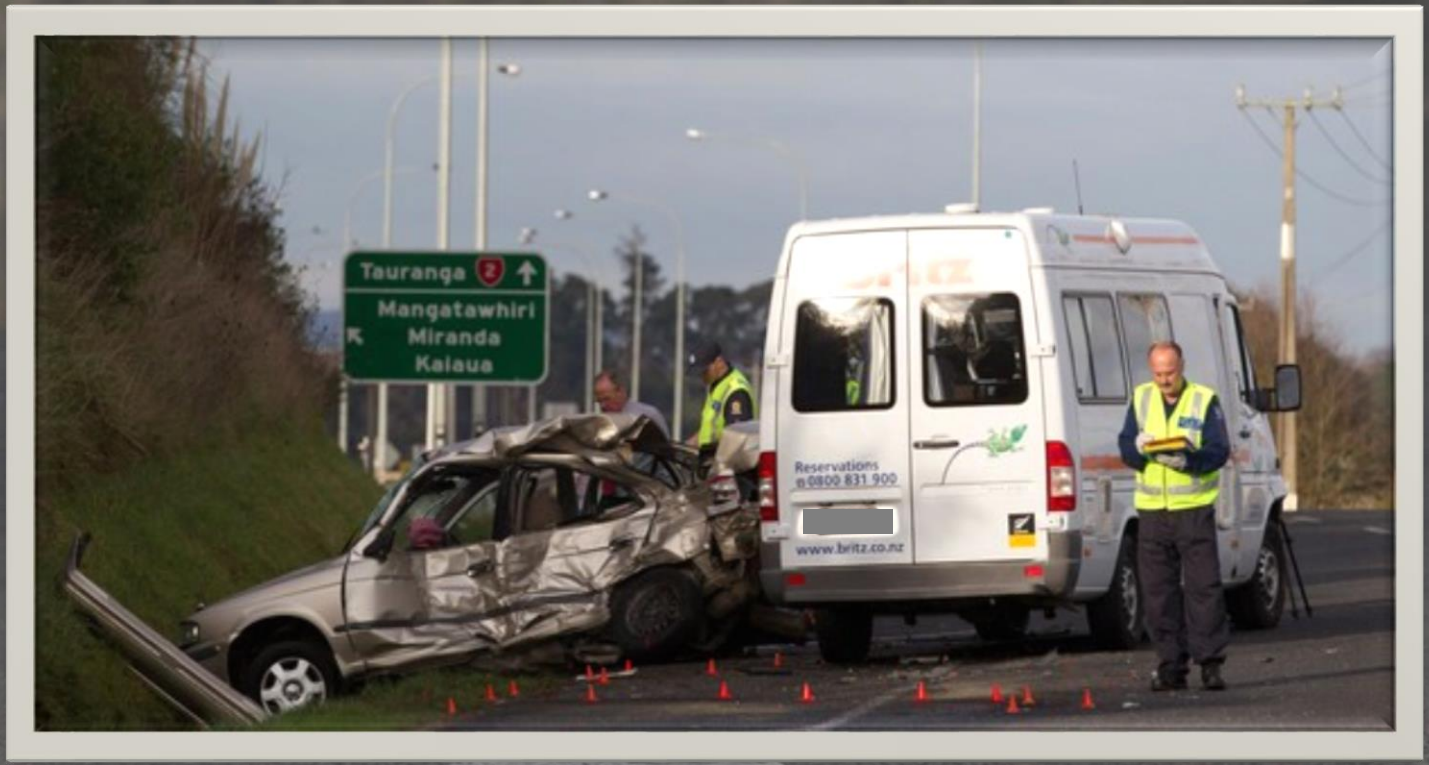
Industry Concerns on ATP Maintenance

- Reinstatement after reseals and other pavement treatments
- Replacement at the end of their effective life
- Research has been commissioned by NZTA and done by Opus to look at treatment options for ATP's during reseal operations. These are:
  - Sealing over the ATP
  - Sealing up to the ATP's
  - Removal prior to reseal and then reinstating after sealing
- NZRF carried out a survey assessment of a sample of the network and found that 25% of the ATP treatments had not been reinstated



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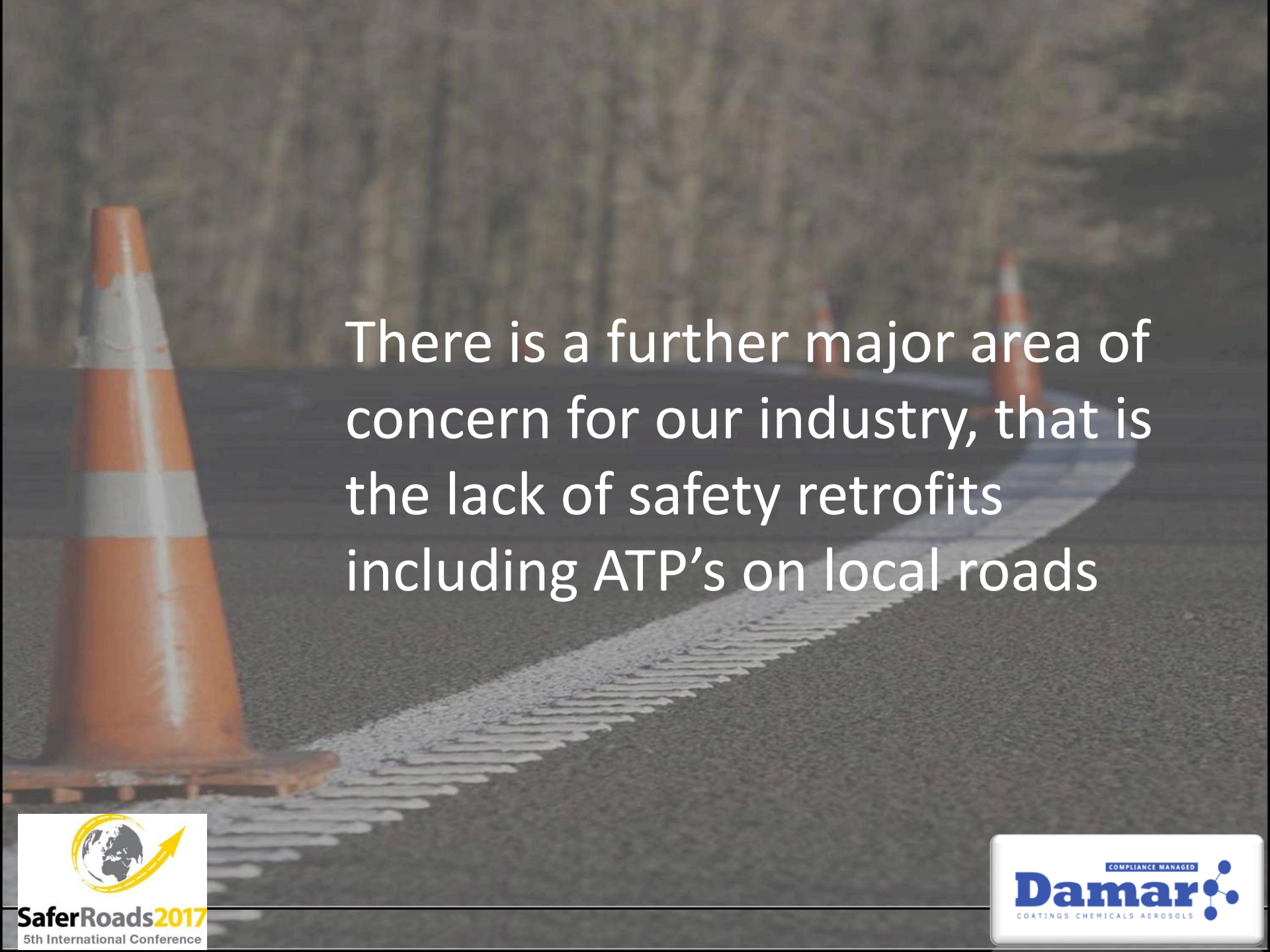

Summary

Our industry has the technology and capacity to apply these systems throughout NZTA's & the Local Authority networks

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