

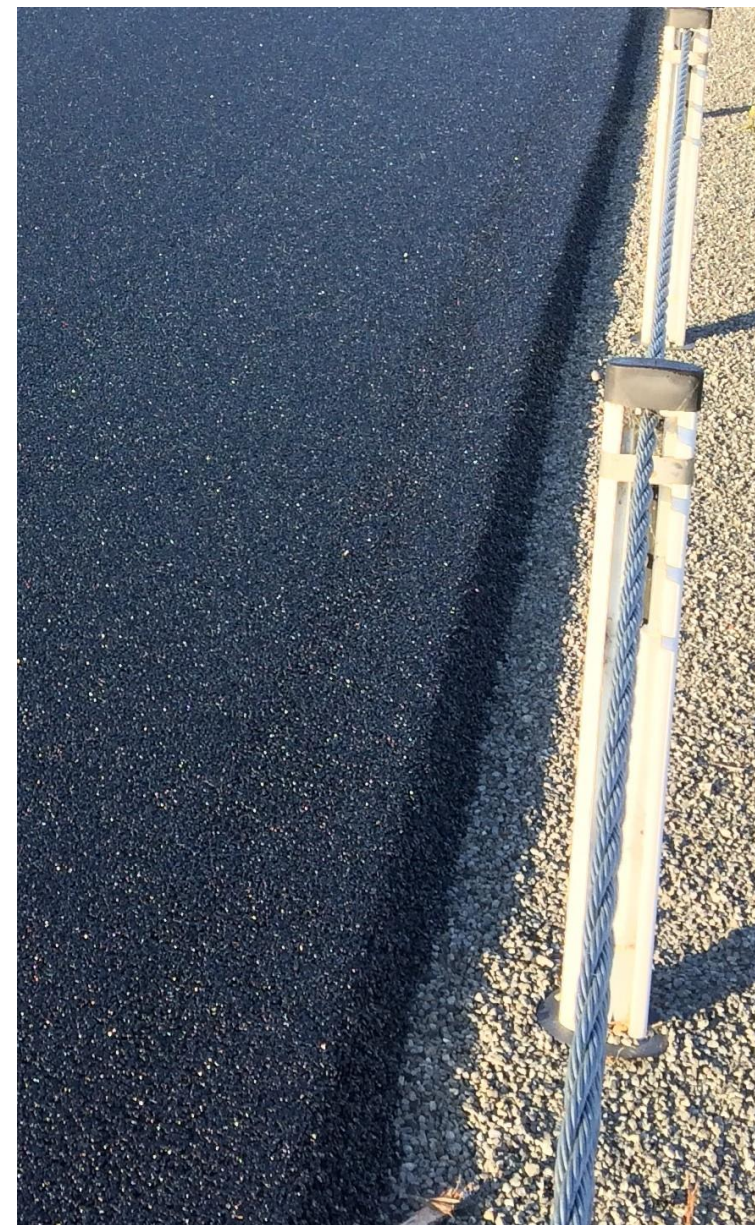
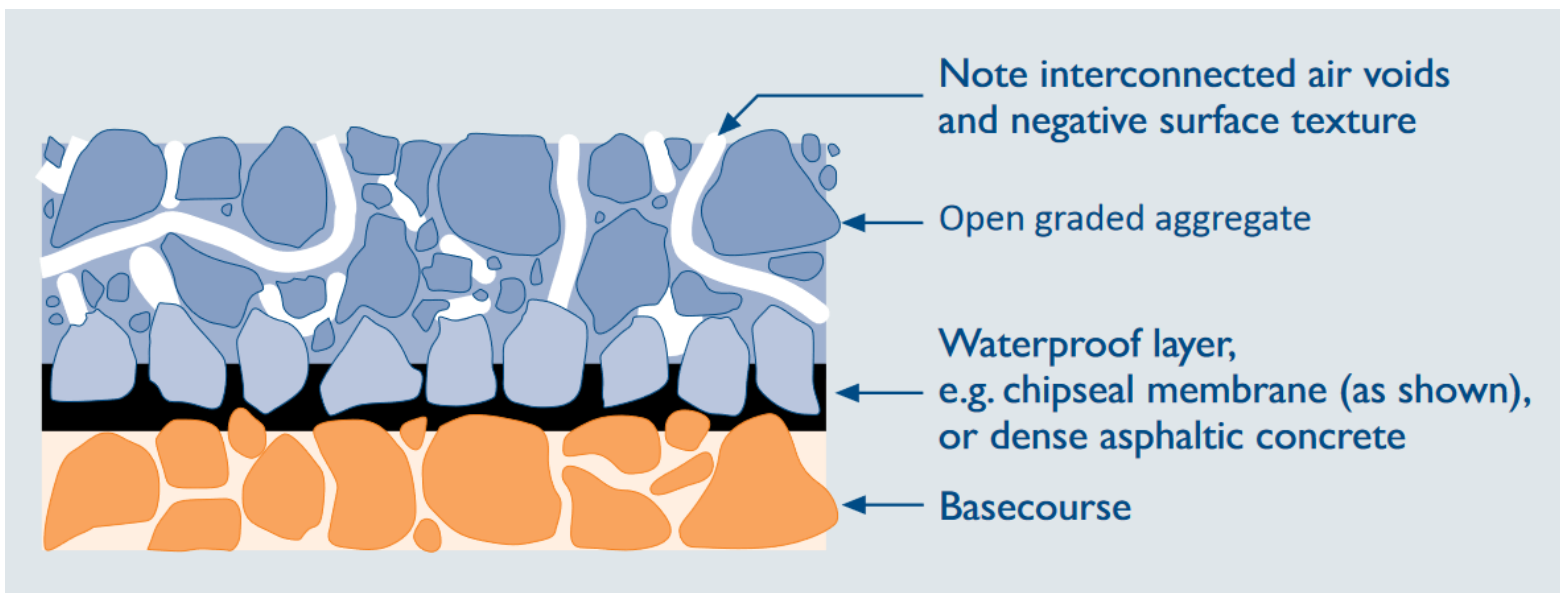
# Low noise road surface and sustainable pavement design

Greg Haldane, Waka Kotahi

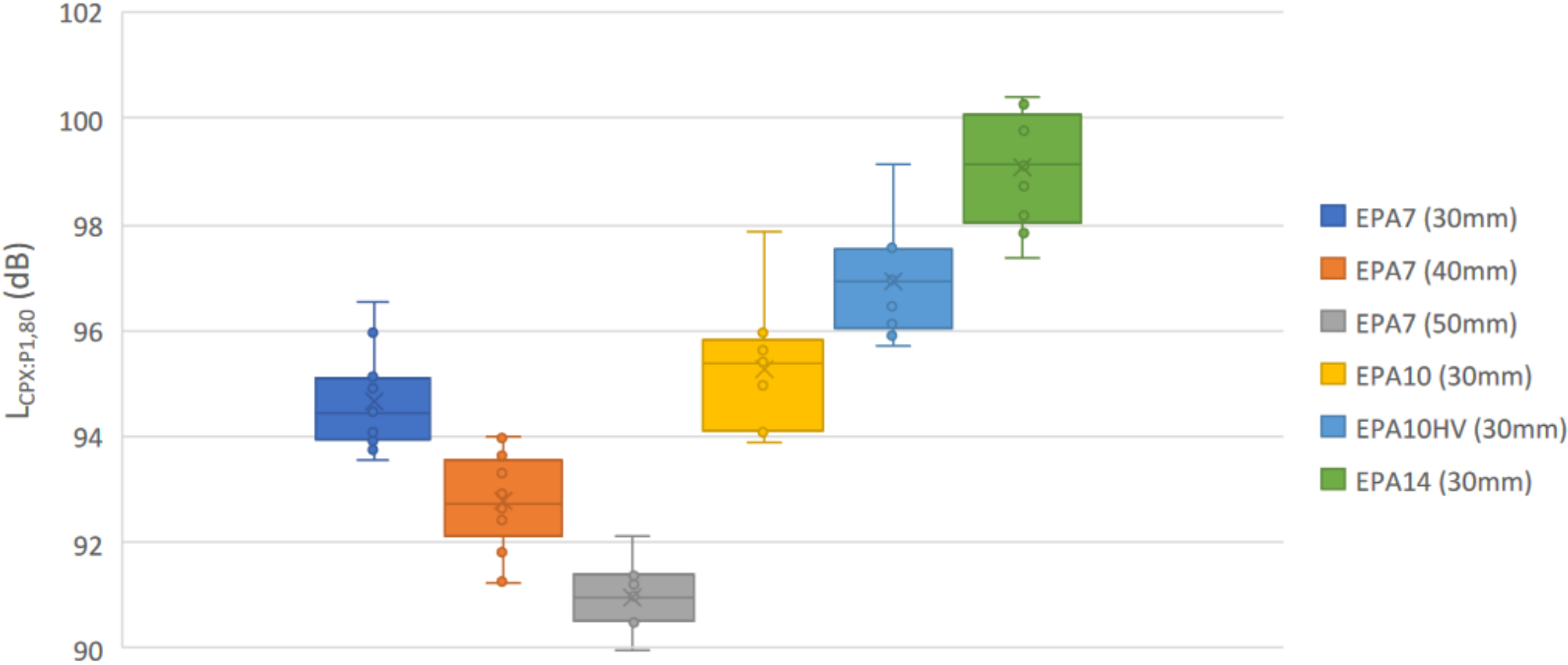
Stephen Chiles, Chiles Ltd



# What is porous asphalt?



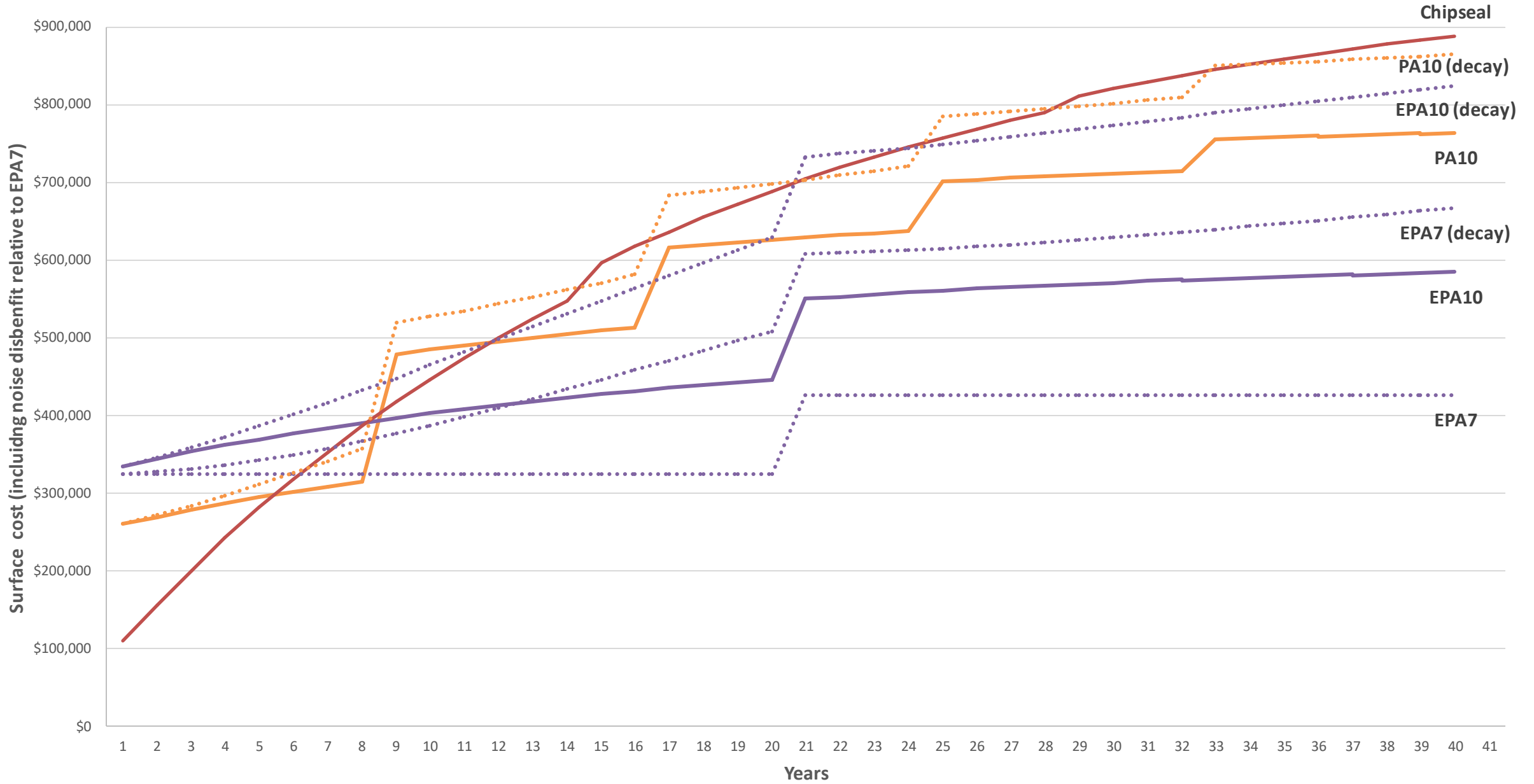
# How can we make porous asphalt quieter?



# Costs and noise benefits of epoxy in porous asphalt

Parameter	Value
Discount rate	6%
Surface area	10,000 m <sup>2</sup>
Houses benefitting	20 houses
Monetised benefit	\$495/dB per house, per year

	Chipseal	PA10	EPA10	EPA7
Cost	\$6/m <sup>2</sup>	\$25/m <sup>2</sup>	\$32.5/m <sup>2</sup>	\$32.5/m <sup>2</sup>
Resurface interval	14 years	8 years	20 years	20 years
Noise reduction	0 dB	4 dB	4 dB	5 dB
Degradation	0 dB/year	a) 0 dB/year b) 0.2 dB/year	a) 0 dB/year b) 0.2 dB/year	a) 0 dB/year b) 0.2 dB/year



# What about greenhouse gas emissions?

	Resurface interval	40 year CO <sub>2</sub> / lane km
PA	8 years	91,243 kg
EPA	20 years	53,238 - 76,096 kg

## Adding it all up...

Attribute	PA / EPA relative performance
Single surfacing cost	EPA 30% more expensive
Whole of life cost	EPA 70% less expensive
Noise and surface cost	EPA 30% less expensive
Carbon emissions	EPA 17 to 42% fewer emissions