

FUTURE ROADS CONFERENCE: BUILDING RESILIENCE INTO YOUR ROADING NETWORK

8-9 November Hamilton

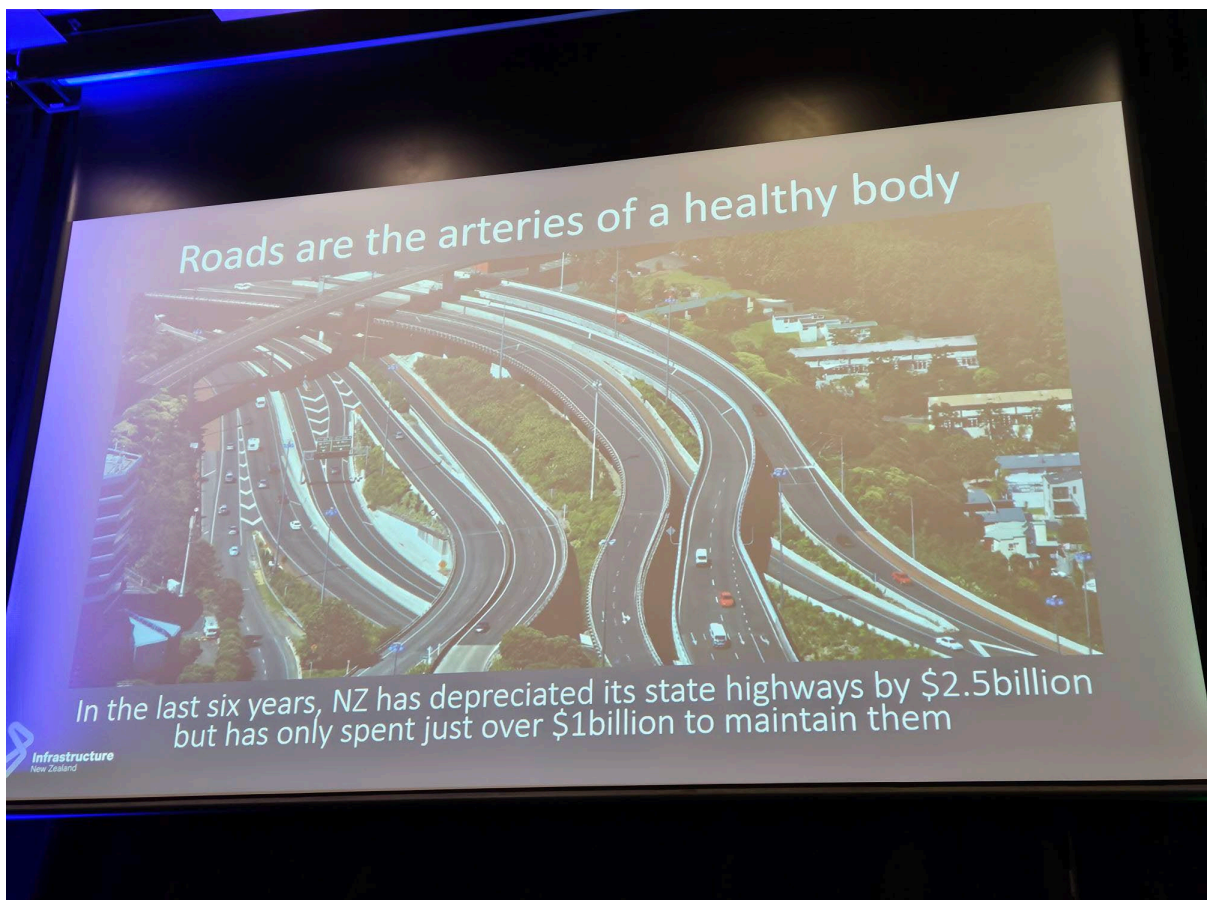
This is the second year the conference has been held. It is promulgated by Freeman Media with the tag line “A two-day conference for the New Zealand roading sector providing a forum for strategy, discussion and execution” and is designed to attract an audience from road owners, engineering and infrastructure service communities. The cost per delegate was \$2,012.50.

The 2022 event attracted 307 attendees representing 132 organizations with 31 exhibitors. I don't have the figures for this years event but I suspect they would be similar albeit disappointing how many people leave before the conference concludes which must be incredibly disappointing for the presenters who are slotted in after lunch on day two.

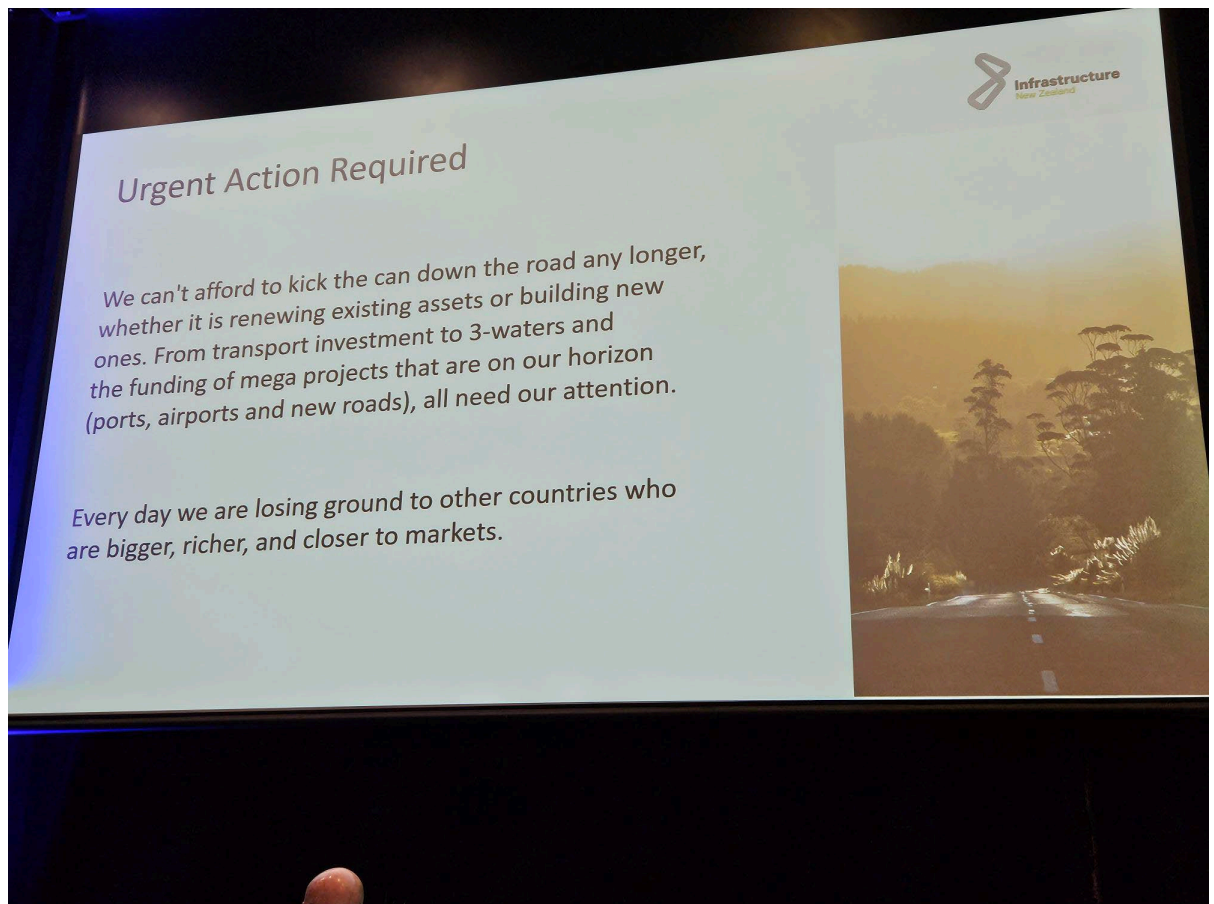
You always come away from conference with so much information there is a danger of writing a report that resembles a novel. So, to keep this shortish and interesting I will focus on our no.1 burning issues. Pavement integrity, funding and resilience.

We heard:

- New Zealand now has 110,000km of road
- The funding model is 'stuffed'
- Under investment in renewals and preventative maintenance has lead to a period of prolonged sweating of the assets



- Everyone is in the same boat. Auckland has over a hundred years of Opex and maintenance needs ahead of her before they can even begin the conversation about planning for an additional 250,000 residents
- As a country we have underfunded infrastructure and we are losing ground to other bigger, richer markets

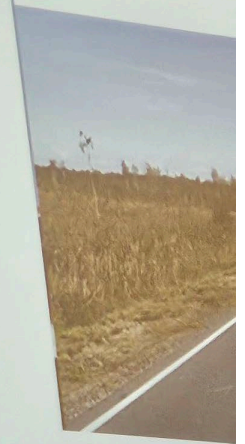


- Increased vehicles loads and volumes are all working away on our road surfaces
- All road surfaces are porous. Asphalt, chip seal and even concrete albeit to a lesser degree
- Regardless of whether the road is unsealed, chip sealed or asphalt they are all flexible and microscopic wave action is created every time a vehicle travels across the surface. (In the demonstration it looked like a tiny bow wave is formed ahead of each tyre movement)
- Add in heavier more frequent rainfall, minute cracks are formed. Hydrological action works on those cracks with each passing vehicle and it doesn't take long before the crack becomes a pothole as once the crack appears water is pressurized into the crack by each passing tyre.
- Water is the Kryptonite of roads

Liaki – asset guardianship

- Increased vehicle loads, increased deterioration, more potholes
- Frequency of extreme weather events are increasing with climate change
- Assets deteriorating faster than renewals rate

Road smooth travel exposure – condition survey data by road type:

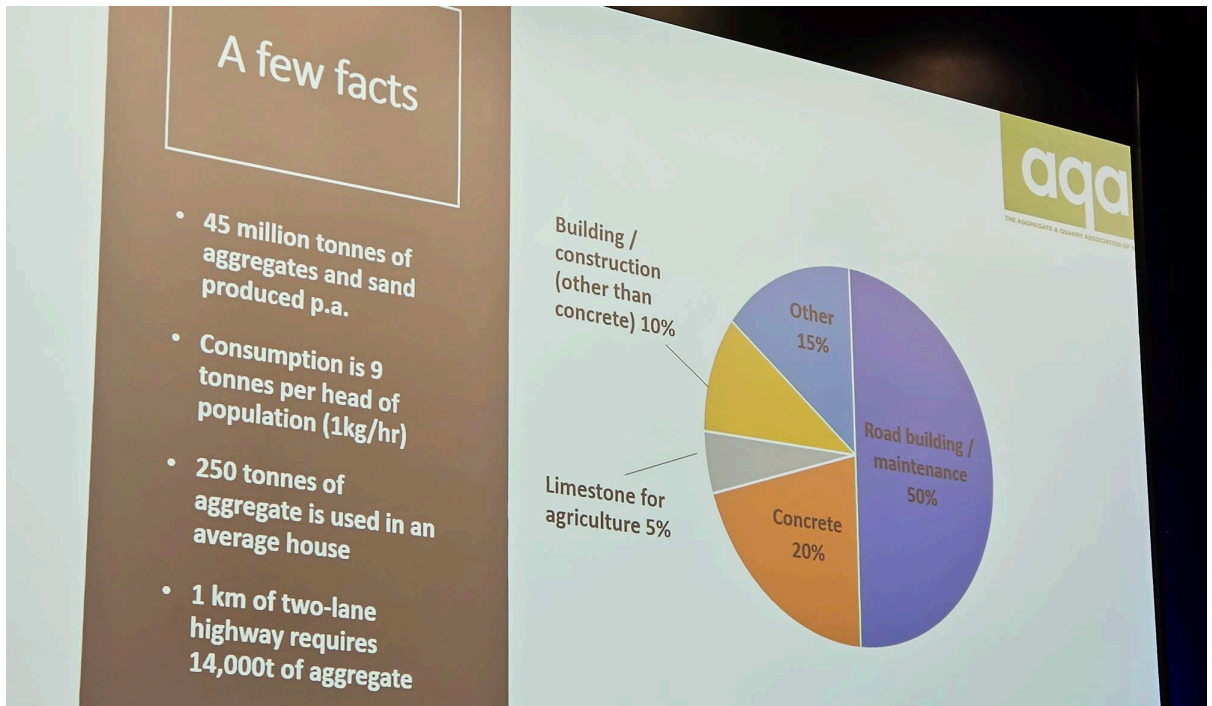


Root Cause Pavement Issues = Moisture Sensitivity



HIWAY GROUP

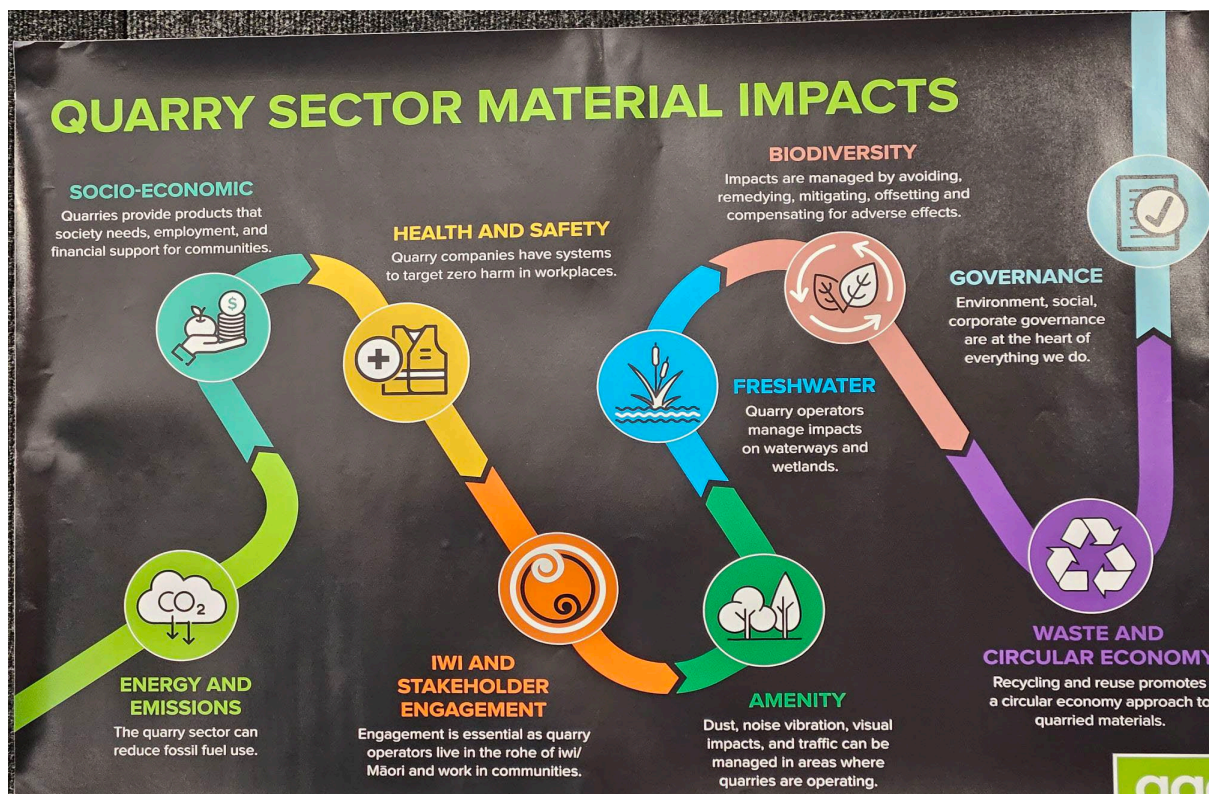
- We are one of the largest consumers of aggregates in the world.
- Sand and aggregate are the most consumed product in the world after water
- New Zealand's insatiable demand for these products makes us the third largest consumer of sand and aggregate in the world per head of population



- 60% of aggregate demand goes into roading and roading infrastructure
- Currently sand comes from rivers, land based alluvial quarries, and dredging or marine environments around Auckland. This is supplemented by small quantities of manufactured sand
- Environmental concerns and the impacts of climate change are impacting heavily on the availability of sand from traditional sources at a time when demand is increasing significantly.



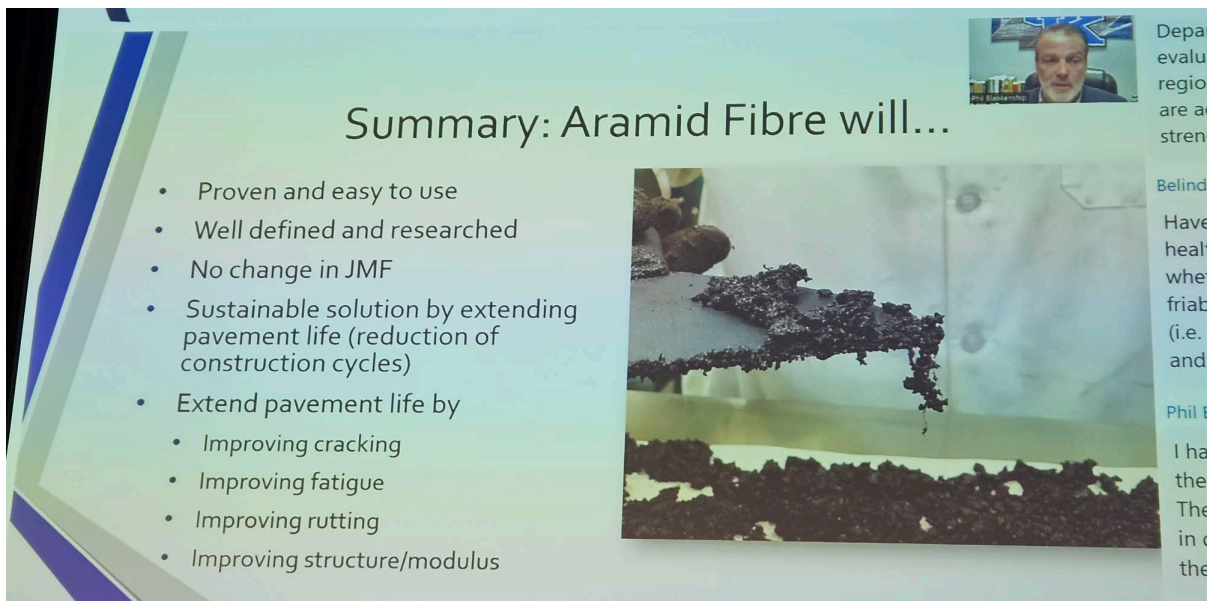
- New technologies are looking at recycling and repurposing but its labour intensive and it needs a good supply of recovered materials, plus its expensive. Manufactured sand is used a lot in China. Perversely this actually increased the tonnage rate. (Manufactured sand is artificial sand produced by crushing stones into small sand sized angular shaped particles which are then washed and finely graded to be used a construction aggregate). It needs a reliable source of raw material but has some workability issues that can lead to more water and cement requirements to achieve workability which leads to increased costs. There are also some workability and screeding challenges.
- The RMA is proving very difficult. The last quarry to be consented took over 7 years via the Environment Court. Millions is being spent in professional and legal fees. This is not sustainable. Urgent RMA reform is required



- Concrete overlays can add 30-40 years to pavement
- The presenter Eric Ferrebee who is the senior director of technical services for the American Concrete Pavement Association spoke about the long-term performance of concrete pavements and overlays in America.
- Concrete pavements and concrete overlays to existing pavements are regularly used as sustainable solutions in the United States.
- Concretes reputation for durability and longevity provides significant economic benefits and can also help reduce transport related environmental impacts.
- Our philosophy is do it once, do it right and then get out of the motorists way for the next 30 - 50 years.
- Experiments in the USA have shown that using different colours of concrete can reduce ambient air temperature by as much as 3°. That's equal to removing 4m cars from the fleet.
- It becomes cost effective once you have more than 50 truck movements per day. !!!



- We heard about some other new technologies that can extend pavement life
- Aramid Fibre is one example
- Aramid is a Kevlar Fibre
- The presenter Phil Blankenship (Consulting Engineer and Owner of BATT Lab USA) spoke about the ability of Aramid Fibre
- It adds a physical reinforcement to the pavement extending its lifespan and load bearing capacity.
- It has some additional carbon reduction benefits and water proofing properties



- The quantities needed are tiny. Working from memory I think he said 295 grammes per tonne. The fibre is coated in wax to mix it into workable match sticks before it is added to the asphalt. The wax melts in the mixing process allowing the fibre to expand through the asphalt
- For the geeks Aramid is short for aromatic polyamide. They are used in aerospace and military applications for ballistic rated body armour fabric and ballistic composites.
- Aramid fibres offer excellent physical and chemical properties at high temperature
- The fibres work by spreading the force throughout the treated layer of the road surface reducing stress and fatigue where the tyres meet the road



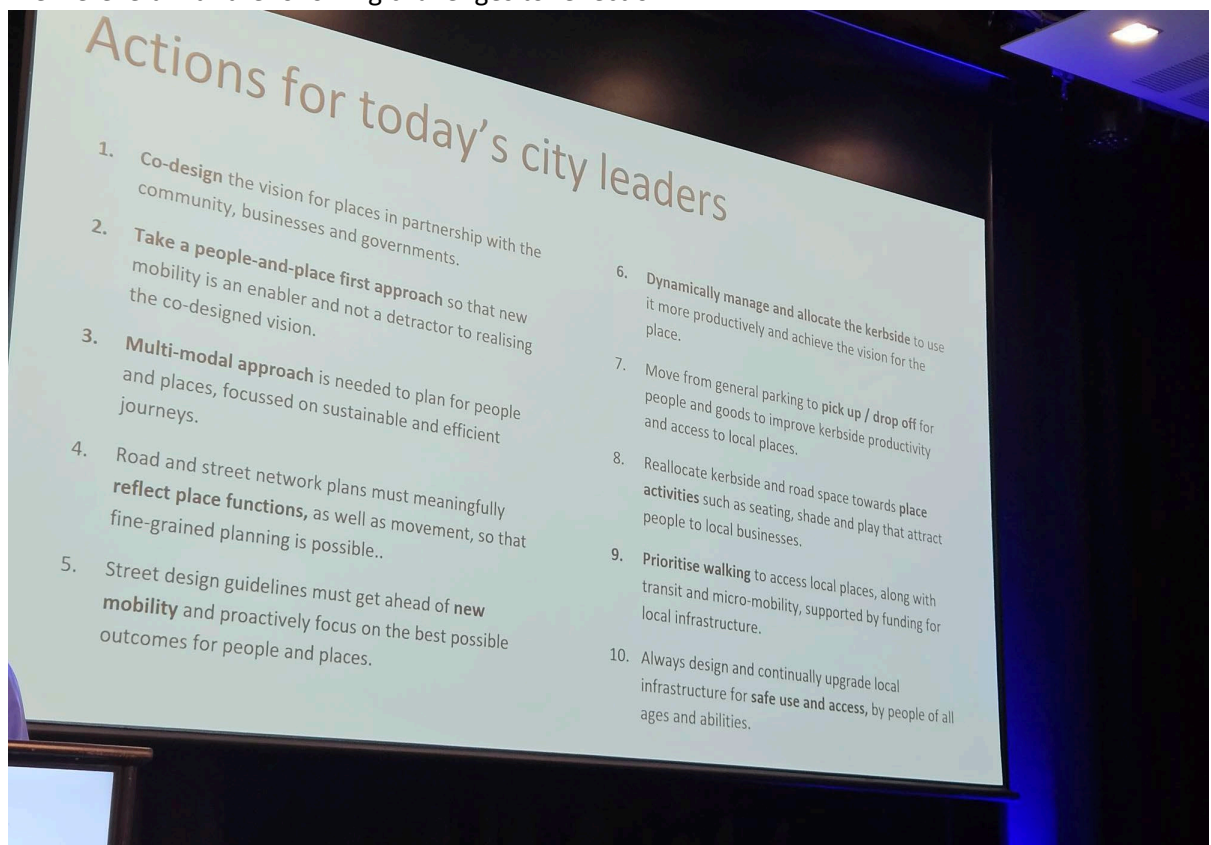
- We can no longer build our way out of congestion. There is finite land and finite funding
- The days are gone when motorists can park on some of our most expensive real estate. We need to plan for mode shift.
- If we ensure that public transport is cheap, efficient, on time, reliable, clean etc with bus lanes that allow for time savings then we will take the customer into a new experience.
- Mode shift will drive new Government funding priorities away from roads

What do we need to do to improve things?

Ultimately, this requires a change of mindset. Doing things differently, being prepared to change our thinking and our models.

- Have a strong, developed vision of what we want to become
- De-politicise infrastructure - balance the discussion
- Acknowledge Local Government and Transport funding models are shot - so let's design new ones that work - electronic road pricing is a must!
- Hand power - delivery and funding - to the regions.
- Have honest conversation about what and where we build back after extreme weather
- Build emission reduction into the projects - and into energy transition
- Plan properly - New Spatial Planning Act
- Work on the system that builds infrastructure - planning, funding, delivery
- Have a 30 year plus pipeline - that goes beyond 3-year election cycles
- Speak with one voice

- 70% of transport emissions come from Diesel trucks. Think about how much diesel is burnt just transporting roading metal.
- There is an MBIE funded trial currently underway to test electric vehicles for roading crews but charging is problematic especially outside of the metro's. Example used was Arthurs Pass. Also, the weight this equipment carries is a big issue in how much range or time we can get when we get to site. The heavier the load the shorter the battery life.
- Traffic Management
- No slides were used for this presentation.
- Our presenter was Dave Tilton (Chairperson of the Temporary Traffic Management Industry Steering Group). Dave spoke to the significant change culture the sector is undergoing as it transitions towards a risk-based approach.
- He said the current COPTTM was a tick the box exercise that did not necessarily address the needs of the site or worker safety.
- The transition was to take a more site by site approach that offered bespoke solutions
- Dave spoke passionately that this was about worker safety and that this was what would be their key focus through the transition
- When asked if this would make the ship go faster (my words) or make traffic management cheaper, he didn't give a direct reply instead saying sometimes things may be simpler but equally sometimes traffic management to manage worker safety may require more interventions than currently are provided for.
- We were left with the following challenges to reflect on



Other presentations included:

- Executive Update from the Downer Group
- Infrastructure New Zealand. Presentation from CEO Nick Leggett on Smarter Roothing Solutions and their role in more dynamic infrastructure
- NTRA (National Transport Research Organization) on partnership with Waka Kotahi and opportunities for local roading authorities to optimise the roading dollar + off the shelf technology and solutions
- Heavy Mobile Equipment Management
- Workforce diversity, inclusion and sustainability.
- Procurement workshop
- RMA Reforms
- Labour Force Considerations
- Uber: Future of urban transport
- Dean Kimpton: CEO Auckland Transport spoke on Auckland's roading outlook and vision
- Josh Markham from Tonkin and Taylor spoke to the minimum requirements to address biodiversity in roading projects
- Michael He from Road Science spoke to bitumen emulsion stabilisation trials
- Michelle Farrell provided an update on the work being done by the National Pavement Technical Working Group
- Allen Brown from the Hiway Group spoke to recycled materials and their performance
- Jimmy Scott: General Manager of the Queensland Reconstruction Authority. Jimmy spoke to the significant rebuild and recovery since the catastrophic 2021/2022 weather related events
- Jo Wilton from Waka Kotahi presented on the SH25a rebuild
- Leaders panel on 2024 focus which was very metro focused with representatives from Wellington, Christchurch, Fulton Hogan, Deca and Waka Kotahi. Thank goodness for the fella from Fulton Hogan who at least tried to bring a rural and provincial voice to the forum.
- Road Profile: Marlborough District Council
Marlborough is one of the country's six unitary authorities. Its roading network maintenance contracts include state highways (NOC) and local roads which are managed by Waka Kotahi. Interesting model.
- Mayors Forum
Mayor Tepania along with Mayors Southgate (Hamilton), Church (Waikato) and Barry (Hutt City) closed out the event with a panel discussion on roads, road funding and the path forward.