

# Future Roads for Future Loads

IRTEENZ

14 November 2023

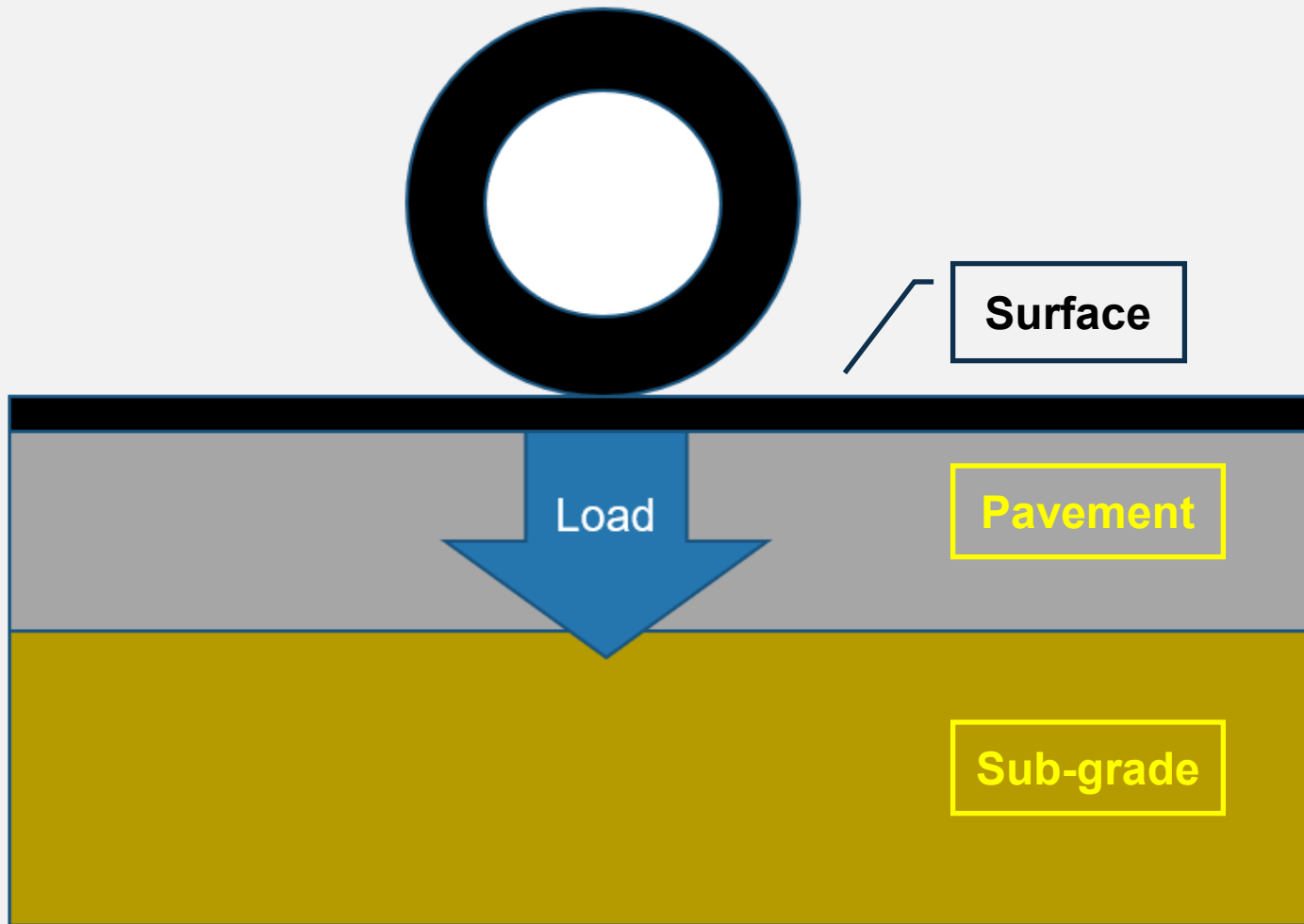


# Setting the scene

- Climate change is happening
- Decarbonisation need = heavier HCVs
- Road freight task is increasing
- Productivity demanding heavier loads
- NZ's roading network condition is fragile
  - *There are geological, seismic and drainage issues*
  - *Network is predominantly flexible, granular pavement*
  - *Maintenance/Renewals under-delivered in 22/23*
  - *Up to 10% of SH network "broken"*
  - *Maintenance/Renewal cost is escalating rapidly*
  - *Contractor capacity below what is needed*



# Road-building 101



Who damages the roads?

- One 10t axle is equal to 10,000 cars
- Cars consume capacity, Trucks consume the asset
- Cars don't damage road pavements, trucks do

# Our current M&O Strategy

- There are 10 years' of work to return full SH Network to acceptable LoS
- Rehabs become a core part of our Renewal programme
  - *We should be doing 450 – 500 km of Rehab every year – currently doing 150 km*
- Starting this year (2023), we ramp up Rehabs to 600 km pa by 2026/2027
- Funding need increases significantly (circa \$500M pa) by 2033

*And this returns the network to  
2014 level of service*

# Future Loads

- Increased number of alternative fuel vehicles
- Industry demand for heavier loads
- But what will this “demand” look like?
  - *Are we talking about increasing axle loads? Or...*
  - *More axles, so axle weights remain similar to current?*
  - *Could there be fewer, but heavier, trucks?*
- We need, as a priority, accurate demand forecasts for transport
  - *loads being carried from place to place,*
  - *axle loads on bridges and roads*

# Future Roads

- If we (Waka Kotahi) accept that freight loads will get heavier...
- These increased loads will “consume” the life of our pavements faster
- That means our state highways will have to be strengthened
  - *Majority of our roads are unbound, granular pavements, and not “designed”*
- In the interim, more drainage to keep existing pavements as strong as possible
- Future treatments will need to utilise modified pavements
  - *Less chipseal*
  - *Deeper pavements (still granular/stabilised but compaction risk) (1)*
  - *More Foam bitumen (3)*
  - *More Structural Asphalt (4)*



# It's not just the roads...

- The state highway network includes thousands of structures
- They (bridges) are an even greater limitation to heavier HCVs
  - *Our bridge stock is quite old (esp local roads)*
  - *Majority of structures will need to be strengthened*
- Drainage maintenance will need to be better
- Alignments may need to be improved for longer trucks



All this adds to the cost of upgrading the network for  
future loads

# So how does our thinking have to change?

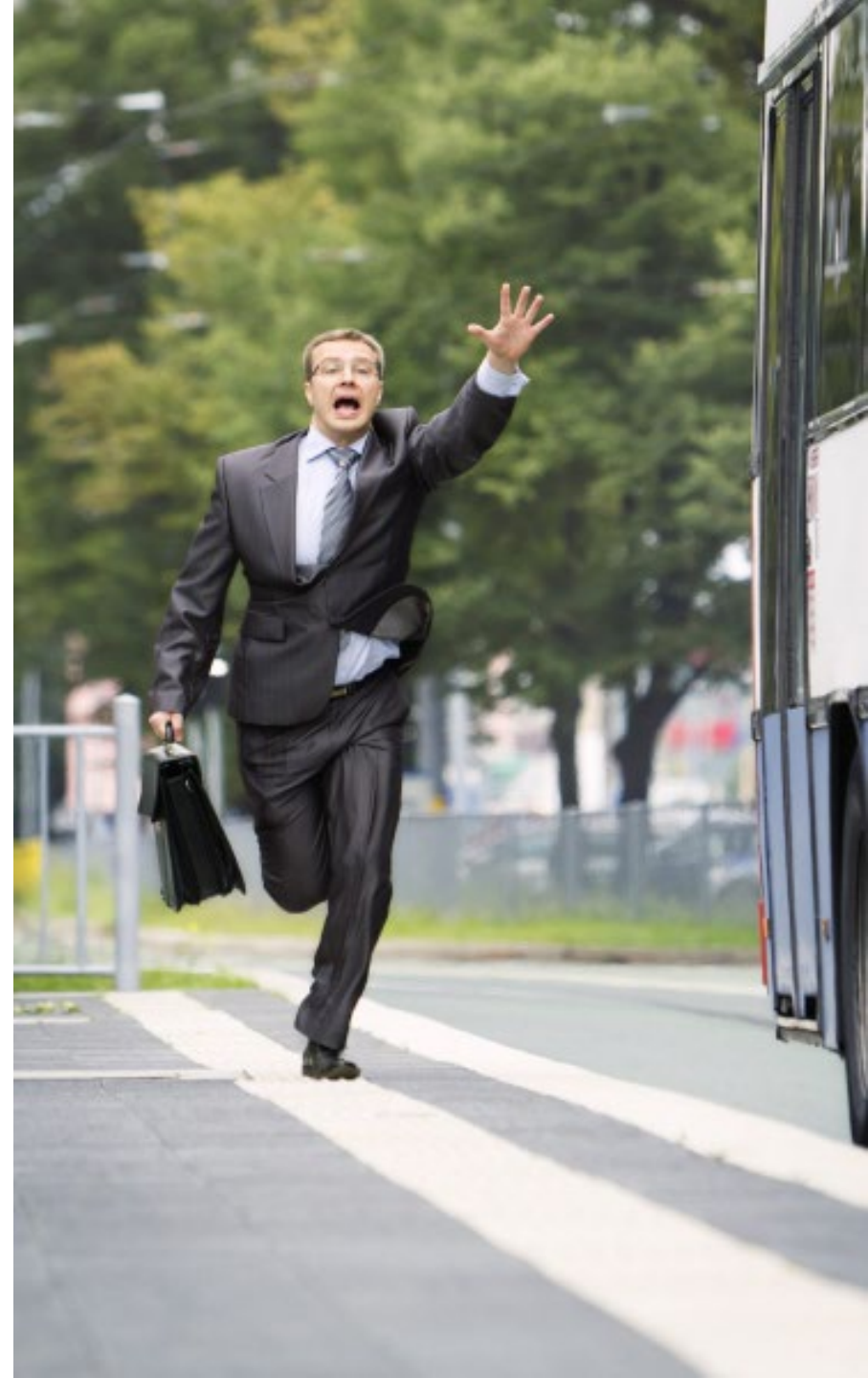
- Achieving a stronger network will require a significant up-front cost
- And NZ is very sensitive to current cost
  - *The funding environment is always constrained...*
- There needs to be a real shift in thinking to “whole-of-life” costs
  - *Stronger = longer service life*
  - *Stronger = less maintenance over time*
  - *Less maintenance/better condition = carbon reduction*
  - *Higher up-front cost = Lower whole-of-life cost*
  - *Less disruption to network users (resilience/road works)*





# What are we doing now?

- Awareness of the issue exists
- Evidence to support that awareness is being collected
- Risk vs consequence modelling undertaken
- We are engaging with funders on whole-of-life cost
  - *And there is general understanding of the current network need...*
  - *Understanding the future need*



# Questions/Comments