Pavement Friction management – Scotland and New Zealand

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Outline

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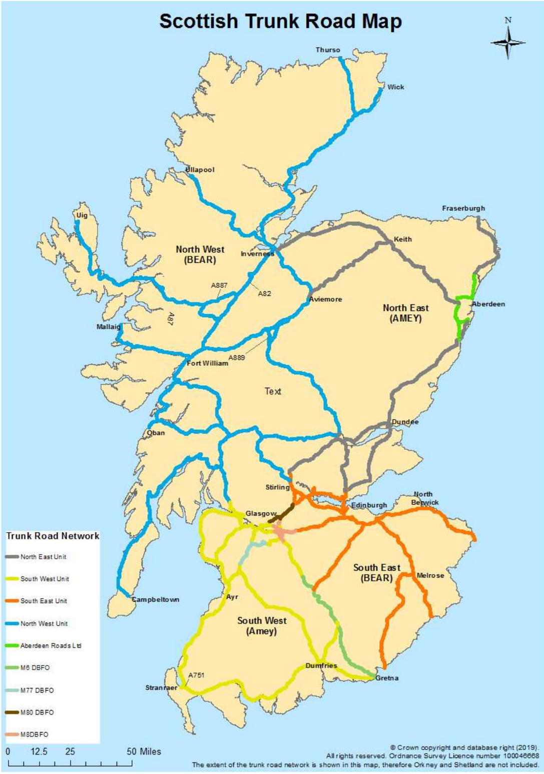
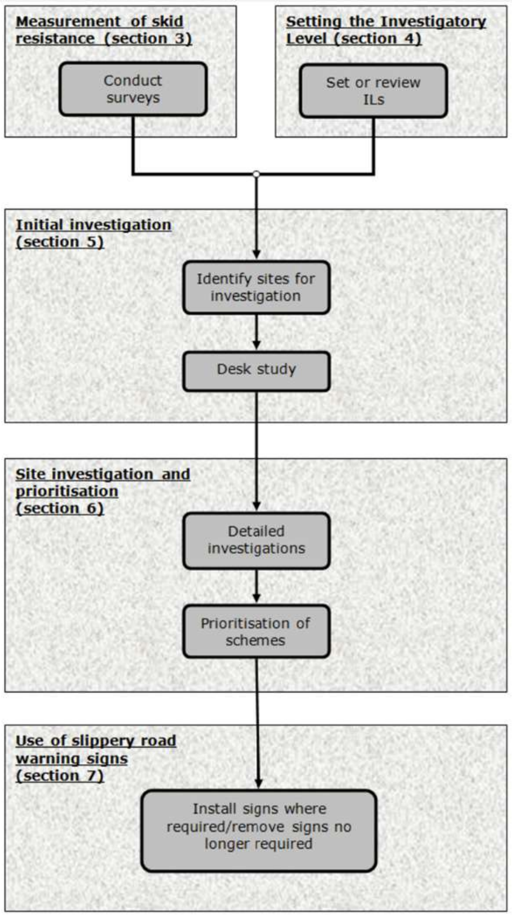
- Background to Transport Scotland methodology
- Implementation
- Benefits
- New Zealand skid strategy
- Implementation
- Benefits

Transport Scotland Skid Methodology

- Transport Scotland manage the ‘trunk’ road network in Scotland
- Diverse network
  - Motorways
  - Single carriageway remote roads
- Climatic variation – wet in west, dry in east
- Mountainous in NW
- Road safety framework to 2030
  - Vision zero by 2050
  - 50% reduction to killed/ seriously injured by 2030
  - Safe system approach – safe roads and roadsides
- Scottish common law duty to maintain roads



Transport Scotland – pavement friction



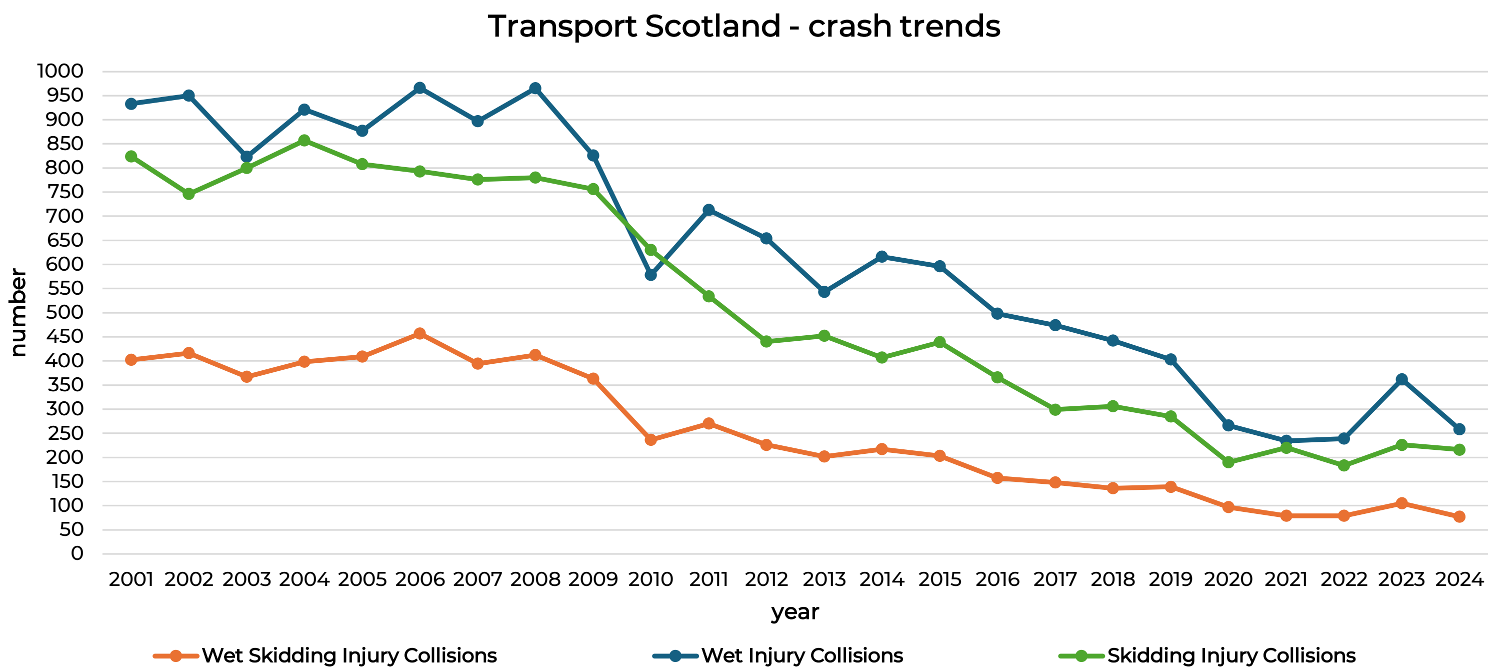
- Apply CS228 with local implementation
- Local application of Investigatory levels informed by crash history
- Annual network survey
- Priortisation using friction/ crash/ site type and texture
- Delivery through 'Operating Companies'
- Significant length below IL, so need to exercise judgement in determining priorities
- Formal processes started in 2009

Transport Scotland – delegating to Operating Companies

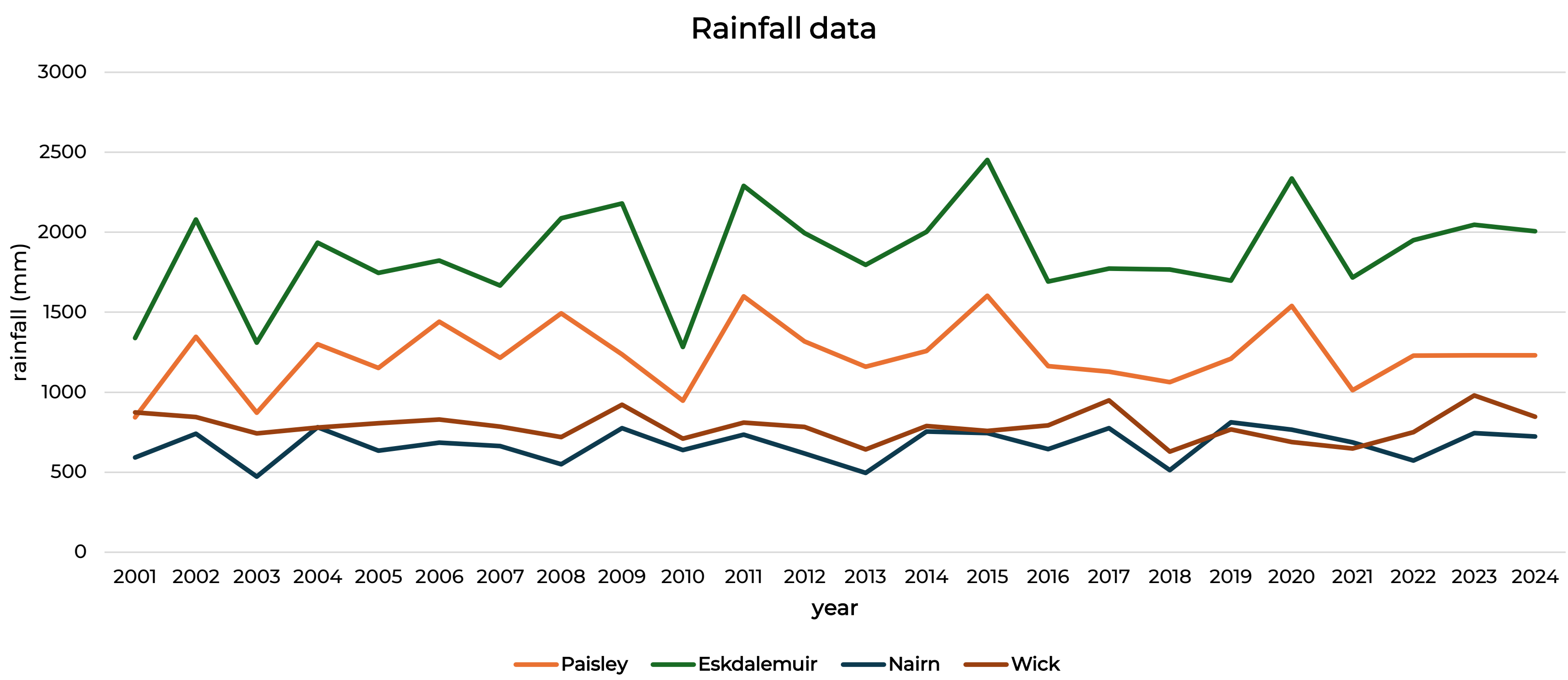
Transport Scotland

- Undertake surveys, publish long list
- Maintain and update the policy
- Audit OC activities
- **Operating Companies**
- Implementation of the Skid Policy
- Maintain such records as required to support the decisions made in implementing the skid policy;
- Undertake Initial and Detailed Investigations;
- Implement the 3-year review of SCRIM Site Category and Investigatory Level;
- Review and approve the outcomes and recommendations from Detailed Investigations;
- Report on the implementation of the Skid Policy on an annual basis);
- Advise Transport Scotland on the need to erect Slippery Road Signs;
- Take part in reviews or audits with Transport Scotland or their advisors.

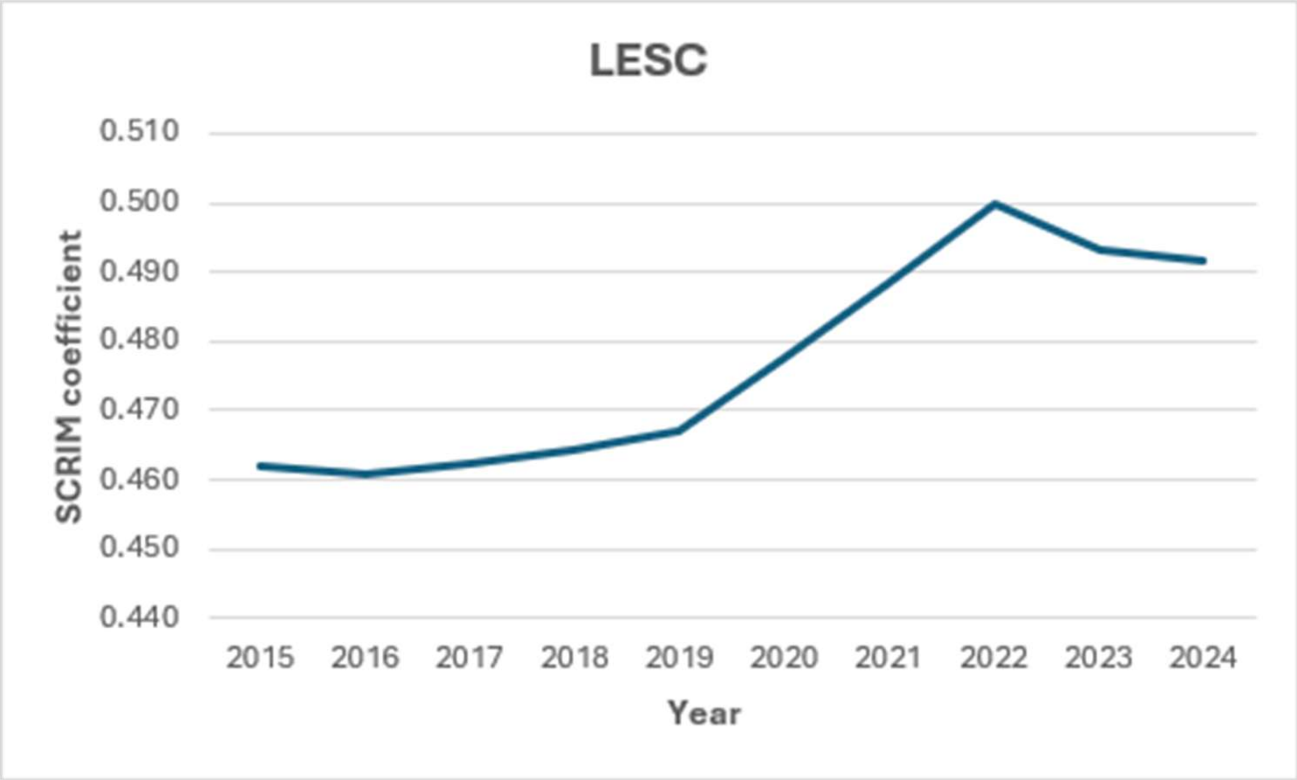
Transport Scotland – effects of policy



Transport Scotland – effects of policy



Transport Scotland – effects of policy



Transport Scotland – surface material

- TS2010 – bespoke SMA to balance durability and skid performance
- Type approval installation trial process
  - Lab testing and design
  - Product mix trial
  - Network trial
  - Final approval
- 3 level approval - based on skid performance
- In use for more than 10 years

Transport Scotland

New Zealand context

- NZTA Waka Kohati – SH network
- Diverse – Auckland motorways to 'Forgotten Highway'
- Climate – sub tropical north/ glaciers in south
- Road Safety principles
    - Evidence based
    - Cost effective
- Legal basis subject to common law /coroners inquests

New Zealand Skid Methodology T10

- Annual measurement – both wheelpaths/ all trafficked lanes
- Established risk based IL's – options for L/M/H
- Curve risk analysis
- Thresholds for SCRIM and texture
- Exception reporting
- Flushing tool
- 'SAL' process
- Aggregate performance
- Network Outcome contracts

New Zealand – exception reporting

- Exceptions based on SCRIM, Texture and crashes delivered within 2 weeks of survey
- 100 -160,000 sites identified annually – A and B
- Allows rapid deployment of ‘water cutting’ – treat the problem before crashes

New Zealand – flushing tool

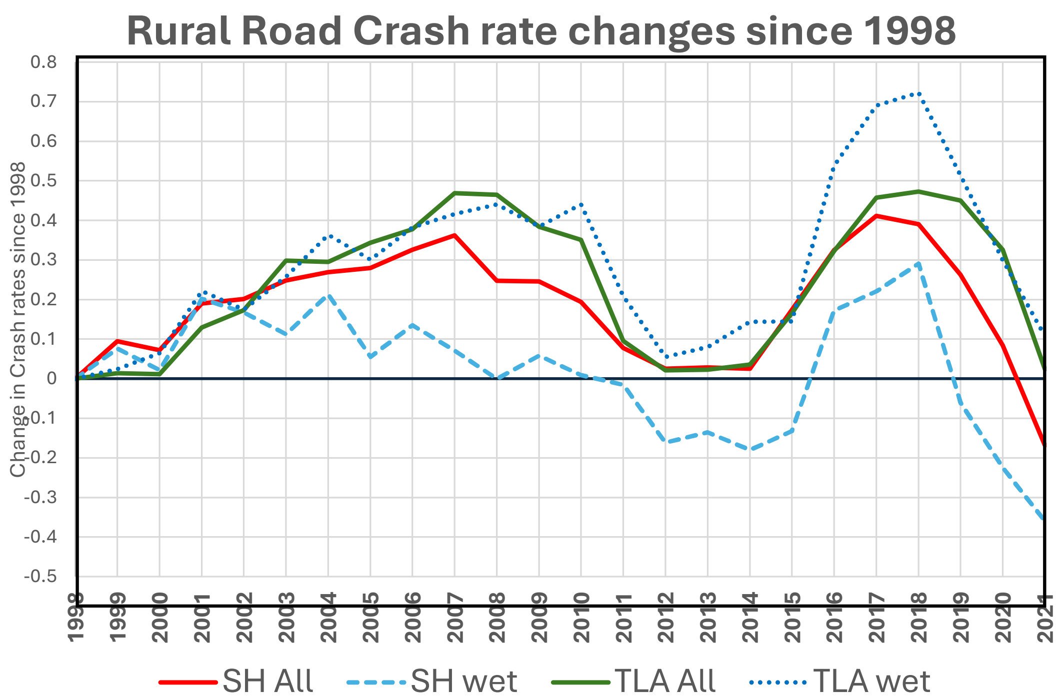
- NZ chip seals susceptible to flushing
- Programme approach
- Deterioration model used to forecast when intervention required
- Approx 1 million square metres treated annually

New Zealand – SAL process

- Skid averaging length – nominally 100m
- Prioritised for crashes/SCRIM/ texture and traffic
- Top sliced funding – allocated on needs basis
- Central management of premium aggregates
- NZTA audit of programme and outputs
- NOC contract – pain/ gain mechanism

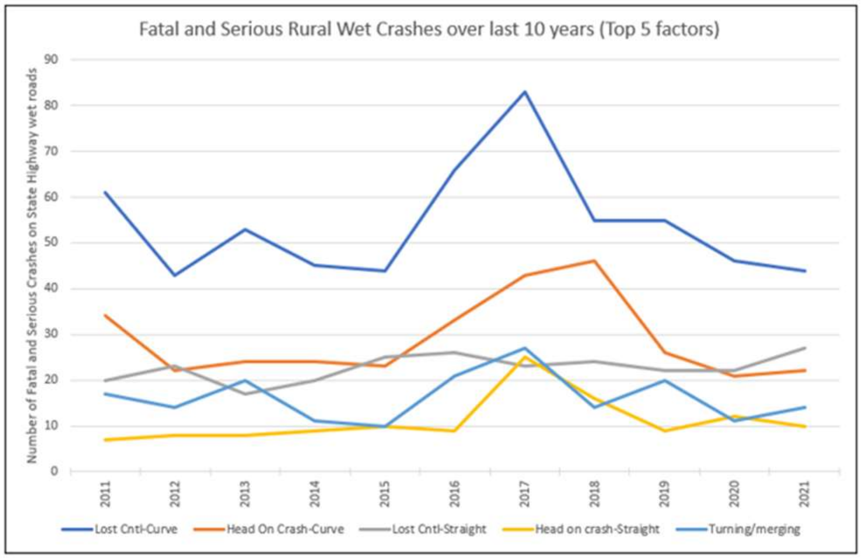
New Zealand – aggregate performance

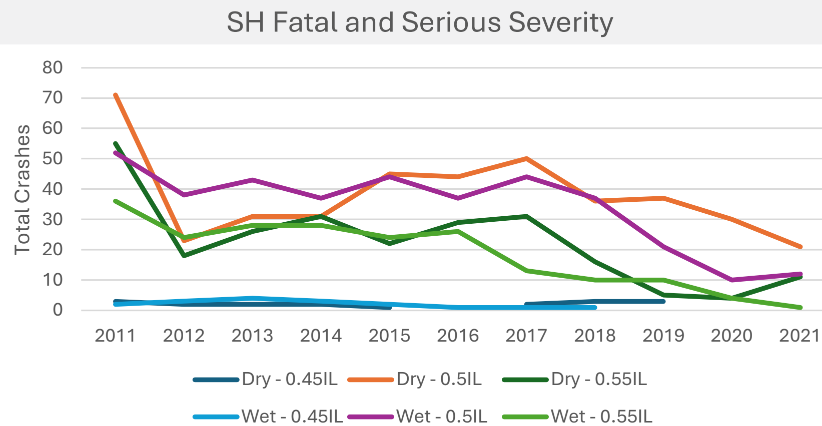
Strategy outcomes– NZTA Waka Kohati

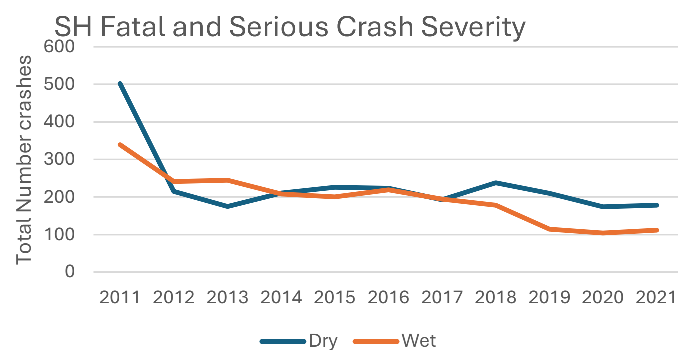


- Last 5 years analysis
- Annually prevent 20 fatal and 71 serious crashes
- BCR – 6.8 (survey + works v crash savings)
- Predicted personnel risk (crashes per 10^8 vehicles entering) – curves
- 2011 10.2
- 2024 6.8

Evidence that a skid strategy works – Waka Kohati







NZTA Waka Kohati

Conclusion

- Friction strategy set out in policy
- Data lead approach
- Embedded processes in supply chain
- Review and evaluation of benefits
- Supporting ‘Safe Systems’ – safer roads and roadsides.