

# **Climate Change Impacts on Transport Network**

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**M74**  
COMPLETION



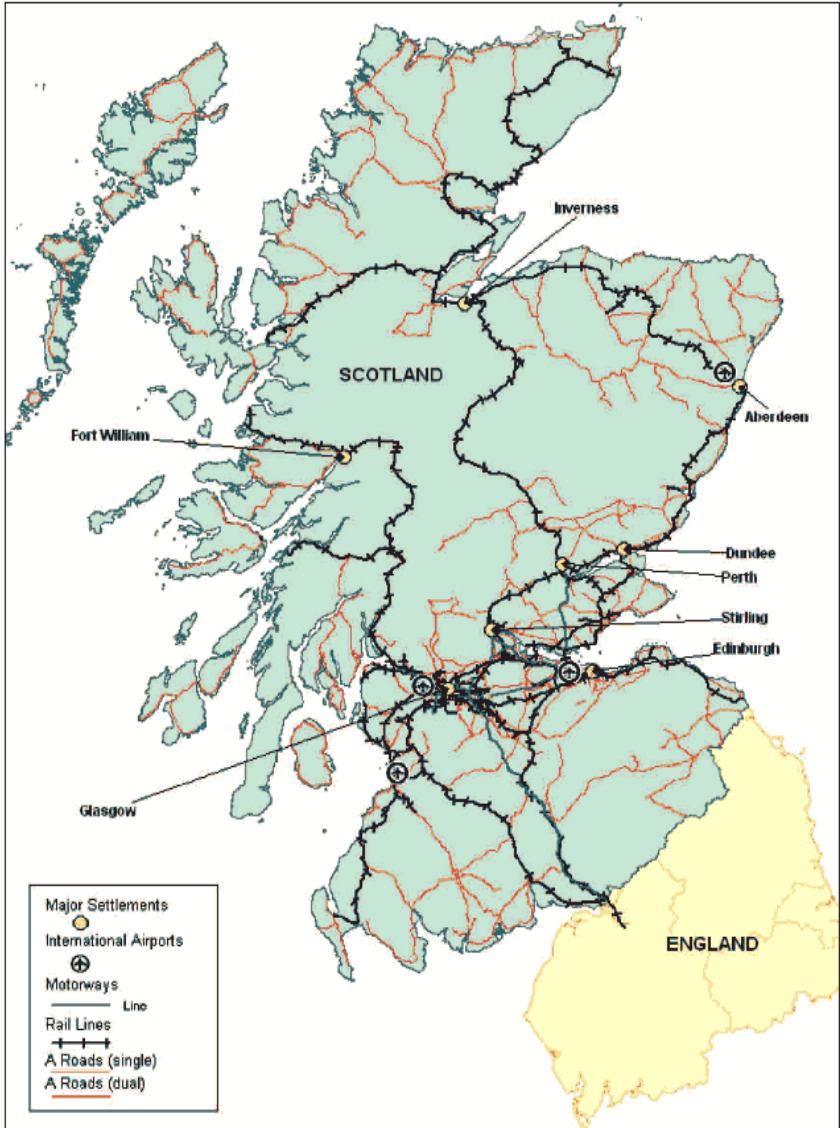
**Borders Railway**  
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**FORTH**  
REPLACEMENT  
CROSSING



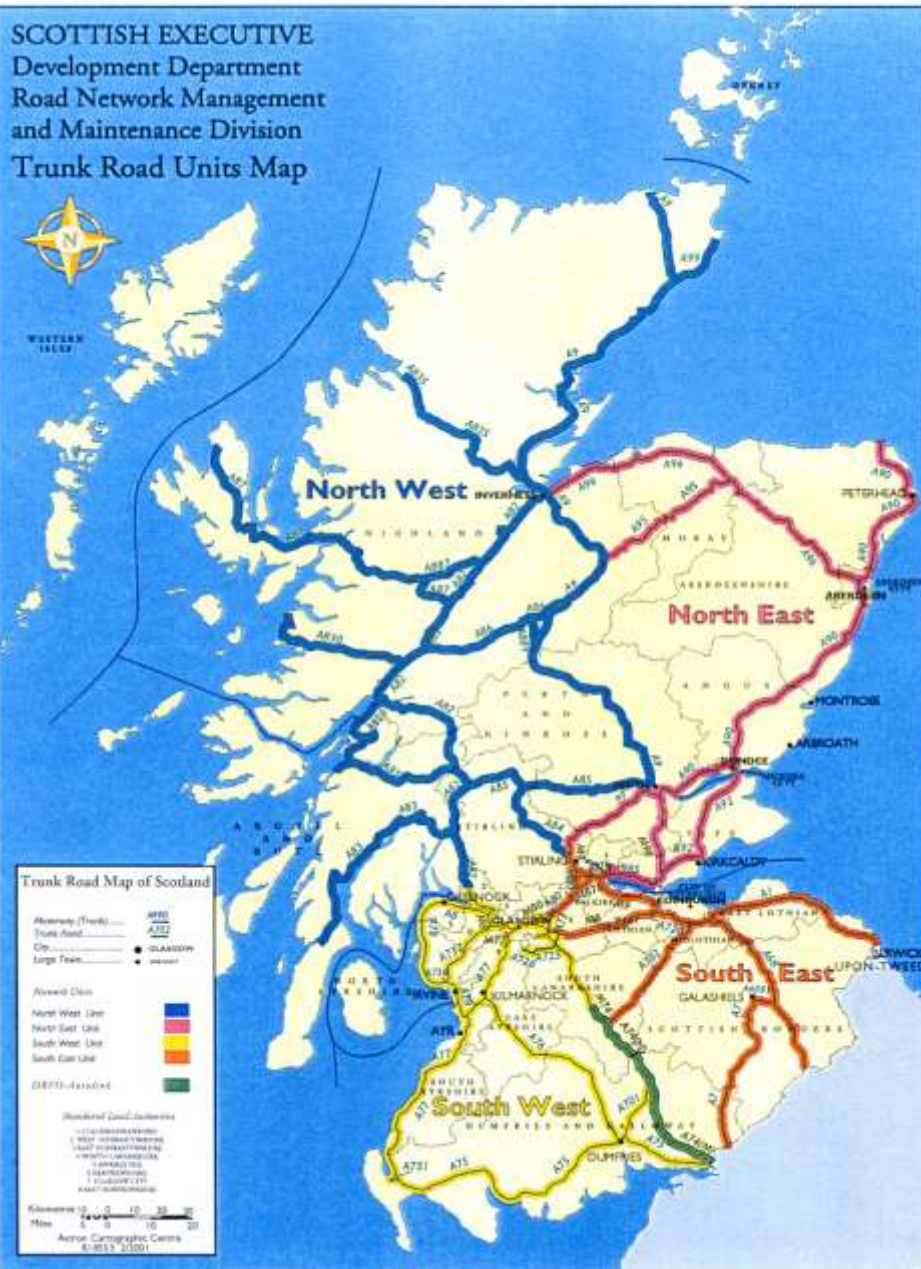
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SCOTTISH EXECUTIVE  
Development Department  
Road Network Management  
and Maintenance Division  
Trunk Road Units Map



WESTERN ISLES





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# HIGH WINDS



# FLOODING



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# COASTAL EROSION



# HIGH TEMPERATURES

# LANDSLIDES



A83 Cairndow



A9 Dunkeld



A85 Glen Ogle

# Climate Change Projections

- Study based on the following data sources:
  - UKCIP02 (2002)
  - Supplemented by Met Office data
- Predictions based on: 2020s, 2050s, 2080s
- Uncertainty predominant in predictions:
  - Different emission scenarios
  - Natural variability
  - Accuracy of modelling

# Climate Change Factors

- Occurrence of extreme high temperatures
- Occurrence of freezing conditions
- Length of growing season
- Extreme storm event rainfall
- River and stream flooding
- Groundwater
- Soil and sub-soil water content
- Occurrence of snow
- Extreme wind
- Occurrence of fog
- Coastal flooding

# Summary

- Climate Change is likely to result in greater impacts on the road network, through:
  - Higher temperatures
  - less freezing (freeze/thaw cycle change uncertain)
  - less snow
  - more rain
  - probably higher wind speeds
  - longer growing season
  - more river, stream and coastal flooding
- Uncertainty in predictions has to be recognised
- 28 recommendations for adaptation

# Update on Recommendations

## Priority Recommendations

- 6 priority recommendations
- 5 relate primarily to rain
- This is an area where changes are already being observed



. . . on Thursday 12<sup>th</sup> (August) , phenomenal weather conditions occurred. Around 400 million tons of water fell on the Tweed Valley in a 24 hour period, equivalent to more than 5in of rain over an area of 130sq. miles. Streams and rivers were turned into torrents, and embankments took on the consistency of melting chocolate. Older residents still recall the sight of animal carcasses floating past their houses. It was a miracle that no human life was lost . . .

. . . The area's railways were overwhelmed. The East Coast main line was cut in thirteen places, with seven bridges swept away and 6 landslips . . .



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