1. SUMMARY

Landslides can create significant events which can lead to significant impacts on communication. Transport Scotland has now completed the above study and a variety of recommendations have been made.

2. RECOMMENDATIONS

The Committee is asked to note the comments in this report and request that appropriate management techniques are put in place by officers to manage any landslide events within our road network.

3. DETAILS

3.1 During August 2004, there were a number of landslides throughout Central and Western Scotland including those on the A85 in Glen Ogle, the A83 at Glen Kinglas and Cairndow; and the A9 north of Dunkeld. Fortunately during these events there were no injuries but other factors including road closures and long diversions had the effect of restricting access to these areas which are already relatively remote and as a result caused significant inconvenience to road users.

As a result Transport Scotland instigated the Scottish Road Network Landslide Study and this report has now been published by the Scottish Government.

3.2 The first part of the study considered the cause and effect of these events and from a geotechnical engineering point of view these events are considered as “Debris Flows”. The main objective of the study was to identify the areas most at risk which will then allow budgets and resources to be directed to those areas an interim report was prepared. At that time and from an Argyll and Bute Council perspective, one of the areas identified was the A83 between Ardgarten and Loch Shira.

3.3 Work has proceeded from this time on this report and a variety of issues have been considered. A Geographic Information System Assessment (GIS) was undertaken of the potential for debris flow landslides. The issues considered included the available debris material on the hillside, the hydrogeological conditions, the land use, the proximity of streams and burns and the angle of the hillside present. Based on this available information for all the areas adjacent to the Trunk Road Network within Scotland a model was prepared. The next stage was to review the
3.4 As a result of this work, a hazard ranking table has been prepared, identifying 67 sites, which represents just over 380 kms of the Trunk Road Network.

Enclosed in Appendix 1 are copies of the map showing these sites and also the hazard rank scores. In some respects the sites identified are not a surprise in that these locations within the Trunk Road Network are located beside hill sides. The Trunk Road Network in the centre and northeast of Scotland is generally located with relatively flat side slopes and therefore have minimal landslide risks.

As can be seen from the plan and table there are a number of locations in Argyll and Bute which have been identified as having a significant hazard scoring. These include

- The A83 – 37 Inverbeg and North (Ranking of 225)
- The A82 – 34 North Loch Lomond (200)
- The A83 – 02 Ardgarten to Rest and Be Thankful (180)
- The A83 – 04 Glen Kinglas (180)
- The A83 – 06 Clachan to Strone Point (170)
- The A83 – 05 Cairndow (150)
- The A85 – 15 Dalmally to West of Pass of Brander (135)
- The A83 – 18 South of Inverneil (125)
- The A83 – 20 North Tarbet (125)
- The A83 – 01 West of Succoth (100)
- The A83 – 07 East of Loch Shira (100)
- The A83 – 10 East of Auchindrain Fort Museum (100)
- The A83 – 12 West of Furnace (100)
- The A83 – 21 West of Tarbet (100)

The report then discusses the management techniques for these hazard areas and the possible mitigation techniques by using early detection with close circuit televisions or sensors within the hillside. Following this stage and if an event were to occur the appropriate action through the police traffic management would be instigated. In effect the road closure pre- planned diversion routes would be put in place. In addition increased signage on the Trunk Road Network would also be considered.

3.5 Within the report a number of specific recommendations have been identified. These include

- A series of management actions predicated towards exposure reduction.
- Opportunities for physical hazard reductions on new works and other appropriate schemes.
• The development of appropriate rainfall monitoring systems and the interpretative techniques to ensure that there is a proactive warning of these debris flow events.

• Continued review on the effects of climate change on debris flows and also full working with the Forestry Commission to ensure that any best practices in forestry harvesting are maintained.

• Continuing site inspections and the importance of reassessment at various locations.

• Review of rock slope survey work and also the need for separate assessment of scree slopes in parts of Glencoe and on the Island of Skye.

3.6 This report from Transport Scotland should be welcomed as it attempts to manage risk management techniques into possible landslides events. It should be recognised that there are 3,200 kilometres of Trunk road in Scotland whereas there are 2,300 kilometres of local authority road within Argyll and Bute Council. No direct inspection works have been undertaken on our road network but the relevant managers within Roads & Amenity Services are aware of possible locations where landslides could occur. From an Argyll and Bute Council perspective, this report will help inform improvements to management techniques rather than any proactive work on site. We cannot be complacent on this matter and we should be aware that there is always a possibility of landslides occurring within our network.

4. IMPLICATIONS

4.1 Policy None

4.2 Financial The costs of landslides can be great from the initial removal of material, traffic management requirements, through to any capital work required.

4.3 Personnel None

4.4 Equalities Impact Assessment None

4.5 Legal Argyll and Bute Council has a responsibility to maintain and manage the public roads in their local authority area.

For further information, please contact Stewart Turner, Head of Roads and Amenity Services (01546 604611).

Stewart Turner
Head of Roads and Amenity Services
29 October 2008
Map of Scotland showing the 67 highest hazard ranking sites in Scotland. (© Crown Copyright. All rights reserved Scottish Government 100020540, 2008.)
<table>
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<th>Site Code</th>
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<th>End-NGR</th>
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<th>Priority</th>
<th>Hazard Score</th>
<th>Exposure Score</th>
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