ROADSIDE HAZARDS ON THE KINGS HIGHWAY NEAR BRAIDWOOD

DISCUSSION PAPER

SEPTEMBER 2011
I. The problem

The RTA is seeking your input to help address the issue of crashes into roadside hazards on the Kings Highway, on both sides of Braidwood.

There have been 17\(^1\) crashes, including five fatal crashes on the Kings Highway near Braidwood between 1 June 2004 and 31 May 2011. More than half of these crashes involved a collision into roadside objects. In all five fatal crashes a vehicle collided with a tree.

Roadside hazards in this area include trees, culverts (drains), and Mona Creek where it is located close to the road.

The key issue is the severity of these crashes is extreme – people have been hurt and died.

Two lengths of the Kings Highway are being considered:
- East of Braidwood (Batemans Bay side) - around 3.8kms of road from the edge of town, just east of Monkittee Street.
- North of Braidwood (Canberra side) - around 1.8kms of road between Nemiga Road and Deloraine Lane.

These road lengths have a range of distinct road safety risks and hazards that may impact on potential improvement options.

\(^1\) This number of crashes includes those recorded in the RTA database as at 9 August 2011. Data for the period from 1/1/2011 may be incomplete and is subject to change.
2. Background

The Kings Highway is a key arterial road connecting the Princes Highway at Batemans Bay in the Eurobodalla Local Government Area, through the township of Braidwood in Palerang Local Government Area, to Queanbeyan in the west.

Near Braidwood, the Kings Highway is a rural undivided two lane, two way road. The two sections under review have broken centre lines with sealed road shoulders which vary from one to one and a half metres in width. The speed limit is 100km/h with a 60km/h speed limit closer to the township of Braidwood. Four of the fatal crashes occurred in the 100km/h zone and one occurred just entering the 60km/h zone.

The RTA has prepared a corridor strategy for the road transport system from Queanbeyan, at the Australian Capital Territory (ACT) boundary, to Batemans Bay on the NSW South Coast.

The strategy addresses road safety, transport efficiency and asset maintenance issues and sets a 25 year framework for management of the corridor.

This project considers six of the short-term priorities identified in the corridor strategy.
3. Crash history

There have been 172 crashes, including five fatal crashes on the Kings Highway near Braidwood between 1 June 2004 and 31 May 2011. Figures 2 and 3 show the location of crashes. More than half of these crashes involved a collision into roadside objects. In all five fatal crashes a vehicle collided with a tree.

Roadside hazards in this area include trees, culverts (drains), and Mona Creek where it is located close to the route.

Around three times as many crashes occurred during daylight hours than in darkness and around three times as many crashes occurred on a dry road surface compared to on a wet road. Fatigue was a contributing factor in four of the crashes and inappropriate speed in one.

Thirteen of the 17 crashes involved vehicles approaching Braidwood from both sides of town. Drivers involved in the fatal crashes lived in nearby areas including ACT, Goulburn, Queanbeyan, Yass and Braidwood. Twelve of the total recorded crashes involved a single vehicle with the remaining five being rear-end type crashes.

While the number of crashes is not particularly high, the severity of the crashes was extreme. This may have been related to the accepted survivable speed of vehicles when impacting with various objects. The National Road Safety Strategy 2011-2020 identifies that the chance of surviving a crash with a tree/pole decreases rapidly above an impact speed of 40km/h.

Regardless of the cause, the severity of the crashes is related to the impact speed.

Kings Highway, north of Braidwood

- Between 1 June 2004 and 31 May 2011 there was a total of seven2 recorded crashes on this section of road, with two resulting in someone being killed. Four of the other crashes resulted in people being injured. One crash did not result in any people being injured or killed.
- Five of the seven crashes involved vehicles leaving the road and hitting an object.
- One of the seven crashes involved a vehicle leaving the road but not hitting an object.
- One of the seven crashes involved a vehicle hitting an animal.
- Most crashes occurred during daylight hours.
- Most crashes occurred on a dry road surface.
- Fatigue was identified as a contributing factor in three of the crashes.
- Five of the crashes (including one fatal crash) involved vehicles travelling towards Braidwood.

The following two images show the lengths of road being reviewed and information about crashes that have occurred over the past seven years.

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2 This number of crashes includes those recorded in the RTA database as at 9 August 2011. Data for the period from 1/1/2011 may be incomplete and is subject to change.
Figure 2: Crash history on the Kings Highway north of Braidwood.

A large version of this crash map is available on the RTA project website.
Kings Highway east of Braidwood

- Between 1 June 2004 and 31 May 2011 there have been 10 recorded crashes on this section of road, with three resulting in someone being killed. The other seven crashes did not result in any people being injured or killed.
- Five of the 10 crashes were rear end type crashes.
- Four of the 10 crashes involved vehicles leaving the road and hitting an object.
- One of the 10 crashes involved a vehicle hitting an object on the road.
- Most crashes occurred during daylight hours.
- Most crashes occurred on a dry road surface.
- Recorded contributing factors included inappropriate speed in one case and fatigue in another.
- Eight of the crashes (including all three fatal crashes) involved vehicles travelling towards Braidwood.

Figure 3: Crash history on the Kings Highway east of Braidwood.

A large version of this crash map is available on the RTA project website.

4. Traffic volumes and speed

In 2006 there was an average of 3244 vehicles per day (vpd) on the Kings Highway 1.5kms east of Braidwood. Traffic counts recorded in late 2010 show an average of around 4100 vpd north of Braidwood and 2900 vpd east of town. There is a relatively low volume of heavy vehicles.

Speed of vehicles over a week in late 2010 is shown in the following tables. The average speed east of Braidwood is close to the speed limit. Higher speeds were recorded at night. The speed of vehicles north of Braidwood is less than those recorded east of Braidwood. The speed profile is not considered unusual.

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3 This number of crashes includes those recorded in the RTA database as at 9 August 2011. Data for the period from 1/1/2011 may be incomplete and is subject to change.
### Kings Highway north of Braidwood

#### Average Daily Traffic Volumes by Type of Day

<table>
<thead>
<tr>
<th></th>
<th>Southbound</th>
<th>Northbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Vehicles</td>
<td>Light Vehicles</td>
</tr>
<tr>
<td>All Days</td>
<td>2100</td>
<td>1944</td>
</tr>
<tr>
<td>Week Days</td>
<td>2076</td>
<td>1888</td>
</tr>
<tr>
<td>Weekend Days</td>
<td>2139</td>
<td>2053</td>
</tr>
</tbody>
</table>

* The 85th % column in the table indicates that 85% of motorists measured were travelling at or below the listed speed.

### Kings Highway east of Braidwood

#### Average Daily Traffic Volumes by Type of Day

<table>
<thead>
<tr>
<th></th>
<th>Eastbound</th>
<th>Westbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Vehicles</td>
<td>Light Vehicles</td>
</tr>
<tr>
<td>All Days</td>
<td>1599</td>
<td>1473</td>
</tr>
<tr>
<td>Week Days</td>
<td>1559</td>
<td>1413</td>
</tr>
<tr>
<td>Weekend Days</td>
<td>1677</td>
<td>1598</td>
</tr>
</tbody>
</table>

### Kings Highway north of Braidwood

#### Speed by Type of Day - All Vehicles

<table>
<thead>
<tr>
<th></th>
<th>Southbound</th>
<th>Northbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average (km/h)</td>
<td>85th % (km/h)*</td>
</tr>
<tr>
<td>All Days</td>
<td>92.4</td>
<td>101.2</td>
</tr>
<tr>
<td>Week Days</td>
<td>92.4</td>
<td>101.2</td>
</tr>
<tr>
<td>Weekend Days</td>
<td>92.3</td>
<td>101.2</td>
</tr>
</tbody>
</table>

* The 85th % column in the table indicates that 85% of motorists measured were travelling at or below the listed speed.

### Kings Highway east of Braidwood

#### Speed by Type of Day - All Vehicles

<table>
<thead>
<tr>
<th></th>
<th>Eastbound</th>
<th>Westbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average (km/h)</td>
<td>85th % (km/h)*</td>
</tr>
<tr>
<td>All Days</td>
<td>98.8</td>
<td>107.3</td>
</tr>
<tr>
<td>Week Days</td>
<td>98.6</td>
<td>107.3</td>
</tr>
<tr>
<td>Weekend Days</td>
<td>99.3</td>
<td>107.3</td>
</tr>
</tbody>
</table>

* The 85th % column in the table indicates that 85% of motorists measured were travelling at or below the listed speed.
Alot of the traffic on the Kings Highway both sides of Braidwood is associated with weekend and holiday periods and travel between Canberra/Queanbeyan and the coast. This is reflected in traffic volume peaks shown in the following charts from a survey in late 2010. Similar peaks are also evident at holiday times in weekly data over 12 months.
5. Possible improvements

The RTA employs the Safe Systems Approach to reduce death and injury on NSW roads. This approach recognises that human error is inevitable. Through the introduction of safer speeds, safer roads and safer vehicles, as well as increased driver education and the use of road safety technology, the RTA aims to reduce the severity of crashes. In applying the Safe Systems Approach, the RTA endeavours to design, construct and maintain roads to reduce the risk of crashes and to reduce harm to people if a crash does occur.

A clear zone is a concept used in road design to allow a hazard free roadside which allows drivers of vehicles leaving the road to recover control or avoid an impact that may cause death or serious injury. This concept assumes that vehicles may leave the road for a variety of reasons and aims to minimise the consequences.

On a new road with a speed limit of 100km/h and a fairly flat roadside area, standards require a minimum clear zone width of nine metres. On existing roads, the RTA aims to achieve maximum possible clear zones. The two sections of the Kings Highway either side of Braidwood have many trees and some culvert headwalls within five metres of the travel lanes – in several places, even much closer.

Common approaches to roadside hazards are to remove or relocate the hazard, protect vehicles from the hazard and/or change the driving environment.

Since some trees have fallen over in the past and all trees have a limited life (subject to the species and environment), there are both short and long term issues to consider.
Some design considerations include:
- Minimum lane width targets of 3.5 metres.
- Road network planning targets to provide two metre wide sealed shoulders.
- Road network planning targets to provide a five metre clear zone (nine metres is the standard for new roads).
- Required space (up to 1.8 metres) between safety barriers and protected hazards.
- Providing space for vehicles to pull over and stop well clear of moving vehicles.

Our options to reduce the impact of crashes need to be:
- Workable and acceptable to the community.
- Affordable.
- Considerate of this special landscape.

6. Project approach

The RTA will seek community feedback by:
- Providing information to all households on the project.
- Hosting an online forum from Monday 19 September until Monday 31 October 2011. The forum can be accessed from the RTA project website and will provide opportunity for the community to comment, make suggestions and respond to comments from other people.
- Hosting a workshop in Braidwood on Thursday 13 October 2011. This will provide opportunity for the community to talk with RTA staff and other members of the community about the road safety concern.
- Submissions are welcome in writing by email to braidwood_hazards@rtansw.gov.au or by post to
  Ian Almond
  Level 4, 90 Crown Street
  Wollongong NSW 2500

Following the workshop and online forum period, the RTA will prepare an issues report documenting the issues and ideas raised before considering possible options.
7. Further reading

1. RTA Corporate Plan BluePrint Update 2011 (RTA, 2011) -

2. Queanbeyan to Batemans Bay Corridor Strategy September 2009 (RTA 2009) -

3. The National Road Safety Strategy 2011-2020 (May 2011, Australian Transport Council) - the strategy is firmly based on Safe System principles and is framed by the guiding vision that no person should be killed or seriously injured on Australia’s roads.

4. Speed Fact Sheets (RTA 2011) -

5. NSW Speed Zoning Guidelines (RTA 2009) -

6. Landscape Guideline (RTA 2008) -

7. Beyond the Pavement (RTA 2009) -