



## 73 Roadside Hazard Treatment Policy

### **BACKGROUND**

Berrigan Shire Council is responsible for the care and management of 1367km of roads within its council area. These roads are of varying standards and carry traffic volumes from less than 10 vehicles per day to almost 5,000 vehicles per day for the Main Road between Barooga and Cobram. By far the greatest length of road within the Shire is rural road with a 100km/hr default speed limit.

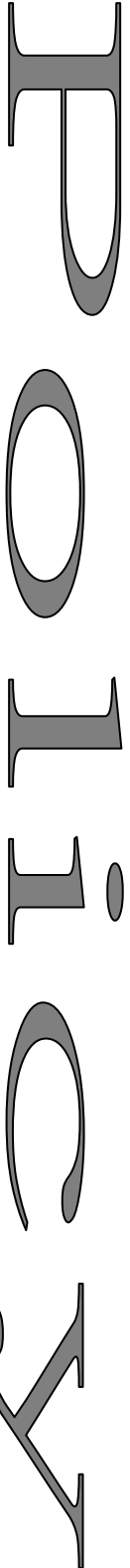
In managing this road network one of the main objectives is to optimize the safety to road users within the limits of Council's available resources.

A large percentage of motor vehicle accidents on rural roads are single vehicle run off road incidents (In Berrigan Shire 72% of accidents from 2005 to 2010) with a significant number of these resulting in vehicle rollovers or collision with roadside objects such as trees or poles. The risk of collision with these objects is reduced by providing a clear zone distance from the edge of the traffic lane to the object with a trafficable batter slope and the generally accepted clear zone distances are set out in the Austroads Guide to Road Design Part 6 - Roadside Design, Safety and Barriers, Section, Table 4.1. Table 4.1 indicates that for a 100km/hr road and a batter slope of 4:1 to 5:1 and carrying less than 750 vehicles per day, a clear zone of 10.0m is required. Given the width of many of the road reserves within the Shire are only 20m and the extent of native vegetation existing on the road reserves, this national guidance is never going to be achievable or desirable to implement clear zones of this calibre.

As a compromise and following consultation with its community, Berrigan Shire Council has adopted a local response based on the relative risk associated with lower traffic volumes.

The local standard was adopted following consideration of reports presented to the Technical Services Committee by the Director Technical Services on 13<sup>th</sup> April, 2010 and 2<sup>nd</sup> November, 2011, that referenced recent technical papers and Austroad guidelines, and following community consultation.

### **ROADSIDE HAZARD ASSESSMENT AND TREATMENT**





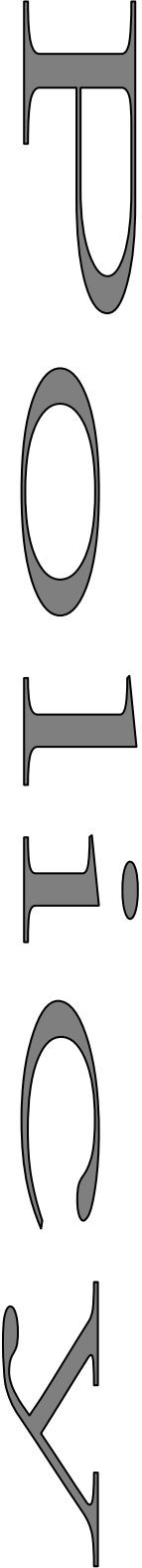
Berrigan Shire has 1367km of road to manage and much of this has 100km/hr speed limits and contains millions of roadside hazards of varying risk ratings. It is not economically possible to treat or remove all of these hazards and therefore a risk evaluation process must be developed and used to determine priorities for these works. In developing this process a number of underlying assumptions and parameters must be accepted, and the outcome must be manageable and workable. These assumptions and parameters are detailed in the consideration of different road classifications and different types of hazards below.

### ***Scope of Assessment***

The scope of this assessment has been limited to roads that have a 100km/hr speed limit as they constitute the majority of road length and are considered to be the highest risk due to vehicles travelling at higher speed.

### ***Road Classifications***

Berrigan Shire Council's road classifications were confirmed in the adoption of the Asset Management Plan for Roads and Bridges in 2009 and are set out below in Table 1 Road Hierarchy.





**Table 1 - Road Hierarchy**

Road Classification No.	Road Classification	Standard	Formation/Seal Width	Typical Warrants				
				Traffic Counts	% Heavy Vehicles	No. of Homes/Km	Mail Run	School Buses/Day
	<b>Highways (RTA Determined)</b>							
<b>1</b>	<b>Regional Roads</b>	Seal	7.5m	>300 AADT	n/a	n/a	n/a	n/a
<b>2</b>	<b>Arterial Roads</b>	Seal	7.5m	>300 AADT	>20%	n/a	n/a	n/a
<b>3</b>	<b>Collector Roads</b>	Seal	7.5m	>100 AADT	>20%	>3 homes/km	>1	>1
	<b>Collector Roads</b>	Gravel	6.0m	<100 AADT				
<b>4</b>	<b>Residential Access</b>	Seal	6.0m	>100 AADT	>20%	>3 homes/km	>1	>1
	<b>Residential Access</b>	Gravel	6.0m	<100 AADT		1 or more homes/km		
<b>5</b>	<b>Property Access</b>	Seal	6.0m	>100 AADT	>30%	No homes		
	<b>Property Access</b>	Gravel	5.0m	<100>10 AADT	>20%	No homes		
	<b>Property Access</b>	Formed	5.0m	<10 AADT		No homes		
	<b>Property Access</b>	Unformed	n/a	<1 AADT		No homes		

**NOTES:**

1. For a road to be considered for upgrading from formed to gravel or gravel to seal it must meet traffic count warrants plus 1 of the other 4 warrants.
2. Priority for works will be given to roads meeting the most warrants.
3. Urban streets construction standards determined on an individual basis depending on site conditions, traffic and in accordance with the Council's Subdivision Code.



Traffic volume is used as the key variable in determining the probability of an accident and therefore it is necessary to set the maximum projected traffic volumes for a particular class of road. The adopted volumes and classifications are set out in Table 2 below:

**Table 2**

Road Classification	Design AADT (vpd)	Design Lane Width (m)
<b>Sealed Roads</b>		
Regional Roads	1500	3.7
Arterial Roads	800	3.7
Collector Roads	300	3.7
Residential Access	200	3.0
Property Access	200	3.0
<b>Unsealed Roads</b>		
Collector Roads	100	3.0
Residential Access Roads	100	3.0
Property Access Roads	100	2.5

For unsealed roads it is assumed that if the traffic count (AADT) exceeds 100 vpd that the road will be upgraded to sealed standard and the roadside hazards addressed accordingly at the time of construction. This process will also be subject to availability of resources and prioritization processes of Council decision making.

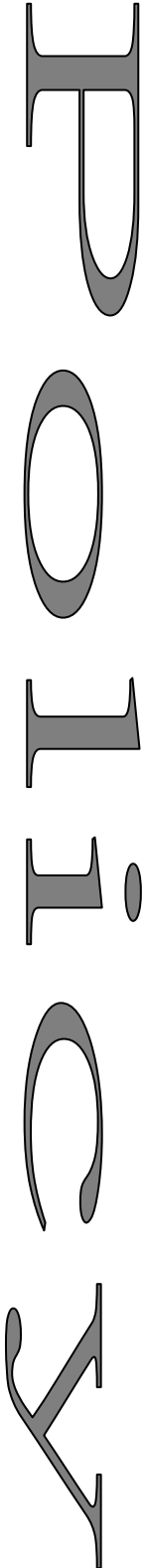
### ***Clear Zones***

The clear zone is measured from the outside of the adjacent traffic lane, however, given the wide variation in widths of Council's current road network it is considered that it would be more appropriate for most purposes to measure from the centre of the road and add the design lane width for that road type as set out in Table 1 above.

The width of clear zone required is directly related to the slope of the ground and as the majority of Berrigan Shire area is relatively flat and most roads have been constructed in a fill scenario, it has been assumed that the batter slopes within the clear zones will be 4:1 or flatter. Treatments for areas where the batter slope is steeper than 4:1 or the road is constructed in cut are considered in later discussion on Batter Slope hazards.

The width of clear zone is also directly related to alignment and for the following calculations it is assumed that the alignment is straight or has curve radii of 900m or more. Treatments for curves of smaller radii are considered in later discussion on curve hazards.

The Clear Zone widths as set out below in Table 3A are adopted for use on roads managed by Berrigan Shire Council.





For the lower classified roads with minimum Clear Zones of 2m the actual Clear Zone width will often be determined by the need to maintain drainage along the edge of the road formation. Sufficient width will need to be kept clear to allow maintenance of the drains.

**Table 3A**

Road Classification	Design AADT (vpd)	Design Lane Width (m)	Minimum Clear Zone (m)	Minimum Clear Zone + Lane Width (m)
<b>Sealed Roads</b>				
Regional Roads	1500	3.7	5.0	8.7
Arterial Roads	800	3.7	5.0	8.7
Collector Roads	300	3.7	3.0	6.7
Residential Access	200	3.0	2.0	5
Property Access	200	3.0	2.0	5
<b>Unsealed Roads</b>				
Collector Roads	100	3.0	2.0	5
Residential Access Roads	100	3.0	2.0	5
Property Access Roads	100	2.5	2.0	4.5

In relation to specific hazards within the clear zones the following management principles will be followed:

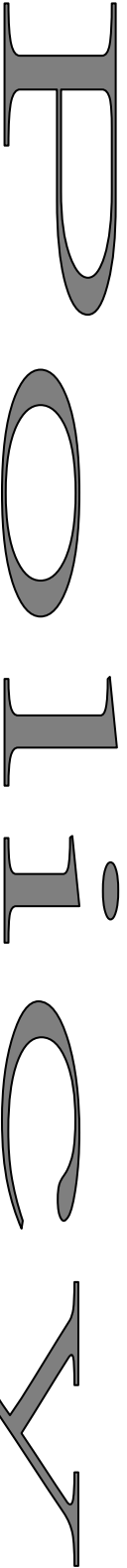
***Batters***

For fill batters a minimum grade of 4:1 shall be provided where possible for the area from edge of traffic lane to the required offset for minimum Clear Zone plus design lane width set out in Table 3A. Guard fence can be considered for protection where this minimum grade cannot be achieved. Resources will limit the amount of remedial earthworks and guard fencing that can be carried out and an ongoing program will be developed to address all identified hazards on a risk management basis.

For cut batters a minimum clearance distance for drainage shall be provided and all batters must be trimmed to have smooth faces.

***Trees***

The Austroads Guide to Road Safety – Part 9 indicates that trees of more than 100mm diameter are considered as non frangible hazards and therefore they should not be present within the area from edge of traffic lane to the required offset for minimum Clear Zone plus design lane width set out in Table 3A or within the limits of road drainage.



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There are many existing trees within this area and they should either be progressively removed or protected by guard fence. Resources will limit the amount of tree clearing and guard fencing that can be carried out and clear zone improvements will be affected by progressively working through the prioritized list, prepared following risk assessments of the road network, on a highest risk first basis.

Other than in areas that are protected by guard fence no new trees shall be allowed to establish within the clear zone. These must be controlled by an annual inspection and spraying program.

O

Areas where the road reserve is not wide enough to provide the required offset for minimum Clear Zone plus design lane width set out in Table 3A shall be progressively guard fenced with work to be prioritized on a highest risk first basis. It is likely to be many years before the low trafficked roads can be addressed.

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#### ***Utility Poles***

Utility poles are also non frangible hazards and should not be located within the required offset for minimum Clear Zone plus design lane width set out in Table 3A unless protected by a guard fence. Existing poles within this area that are not protected or adjacent to existing trees should be brought to the attention of the pole owner and work to be prioritized on a highest risk first basis.

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#### ***Drainage and Irrigation Structures***

Drainage culverts should extend to the outer limits of the required offset for minimum Clear Zone plus design lane width set out in Table 3A and be fitted with driveable headwalls.

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Culverts for access roads or intersecting roads should be located outside the required offset for minimum Clear Zone plus design lane width set out in Table 3A where possible and fitted with driveable headwalls.

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For existing culverts a program for modification to comply shall be developed with work to be prioritized on a highest risk first basis.

Irrigation pipe crossings shall extend for the full width of the road reserve. Existing irrigation crossings shall be programmed for modification to comply by the irrigation authorities with work to be prioritized on a highest risk first basis.

Bridges shall be fitted with guard railing on the bridge structure and approaches in accordance with Austroads Guidelines. There are many



bridges that currently do not meet these requirements and a program for modification to comply shall be developed in conjunction with the bridge manager (where this is not Council) with work to be prioritized on a highest risk first basis. For existing non compliant bridges it is essential that they have adequate signage to warn motorists of the danger and are adequately delineated. An inspection and maintenance program shall be developed for this purpose.

### **Curves**

Curves on Regional Roads shall be treated in accordance with guidelines set out in the RTA paper "Retro-fitting Road Safety to Existing Rural Roads" with works to be carried out where possible when roads are reconstructed and progressively on other curves to be prioritized on a highest risk first basis.

### **Shoulder Sealing**

Shoulders on roads classified as Regional, Arterial or Collector shall have shoulders sealed a minimum of 0.5m from the edge of the traffic lane. This work to occur as sections of road are reconstructed.

Adopted by Council 18/1/2012

