Traffic Management Warrants Policy

Responsible Directorate	**Infrastructure**
Responsible Business Unit/s	**Engineering Design**
Responsible Officer	**Manager Engineering Design**
Affected Business Unit/s	**Engineering Operations**

Objective

This policy provides the basis for a rational and orderly approach in determining whether or not action should be taken to introduce a traffic management treatment for a particular road.

Scope

This policy describes a system to be used in objectively assessing the need and priority of traffic management measures to address traffic, road safety and amenity issues on local roads under the care and control of the City. The policy applies only to roads classified as Local Access roads or Local Distributor roads under the City's Functional Road Hierarchy.

Policy

Requests for traffic management treatments will be assessed and prioritised on a warrants-based system. Points will be allocated across a range of safety and amenity factors to ensure that funding is allocated to the highest priority projects in a fair and equitable manner.

1. Investigation

Upon receipt of a request for the implementation of traffic management treatments, the City will assess the data available for that road section or intersection. The intent of the policy is to allocate points on the basis of the contribution to road safety under the following parameters.

1.1 Travel Speed

The key indicator for this parameter is the 85th percentile speed. This factor will be determined on the basis of relevant traffic survey data undertaken within the last 3 years. If recent traffic survey data is not available, then traffic count classifiers will be placed along the road being considered to obtain current data.

Speed is a major contributor to the potential for crashes, and the likelihood of crashes increases when the travel speed is more than 10 km/h above the speed limit. The point scores increase gradually when the travel speed is 0-10 km/h above the posted speed limit, and increases more sharply as the travel speed exceeds 10km/h and 20km/h above the posted speed limit.

In terms of risk and the potential for crashes, there is no inherent difference between Local Access and Local Distributor roads. The scores for speeds in excess of the speed limit are therefore the same regardless of the road classification.

1.2 Traffic Volume

The key indicator for this parameter is the average weekday traffic volume measured in vehicles per day over the course of a week. This factor will be determined on the basis of relevant traffic survey data, as described in Section 1.1.

There is an expectation of higher traffic volumes on Local Distributor roads than on Local Access roads, and a differentiation in scores is therefore appropriate for these two classes of road.

1.3 Crash Data

The key indicator for this parameter is the frequency and severity of crashes within the most recent 5-year period on record. Crash data sourced from Main Roads WA's Crash Analysis Reporting System (CARS) will be used in the assessment. Anecdotal evidence and reports from motorists and residents cannot be considered as the details of these incidents can never be verified.

To prevent long road sections from scoring excessively, the number of crashes will be divided by the road section length to form a crash rate per kilometre. To prevent short road sections from scoring excessively (for a relatively small number of crashes), a minimum road length of 0.5 km shall be used in determining the crash rate per kilometre.

1.4 Road Design and Topography

Sharp bends, crests or steep hills may be considered dangerous when travel speeds are high. It is therefore appropriate to allocate points to locations where the potentially deficient geometric factors are combined with higher speeds.

1.5 Vulnerable Road Users

The potential for injury to vulnerable road users will increase as traffic volumes increase due to the higher risk exposure. Consequently, the scores increase on roads with higher traffic volumes.

The classification of a major pedestrian crossing point relies on engineering judgement, but generally would be reserved for major commercial or educational precincts, near public transport hubs or adjacent to major sporting grounds and reserves.

The classification of an important bicycle route also relies on engineering judgement, but generally would be reserved for Perth Bicycle Network (PBN) routes, roads with on-road cycling facilities or where the volume of bicycle traffic and the level of interaction with motor vehicles is high.

1.6 Activity Generators

This parameter offers a point of differentiation from normal residential abutting land uses. For this reason, a number of land uses have been selected that are most likely to contribute to road crashes through high pedestrian movements, including educational institutions (colleges and schools) and retail. Activity generators should only be considered where there is direct frontage to the road being assessed.

1.7 Amenity

The key indicators for this parameter are the percentage of heavy vehicles and percentage of peak hour traffic. These factors will be determined on the basis of relevant traffic survey data, as described in Section 1.1.

The percentage of peak hour traffic will be used to determine the level of non-local through traffic (or 'rat running') that occurs along a road section. It is generally considered that this will mostly occur on local roads during peak hour traffic periods, and traffic will generally comprise local residents at other times. In traffic engineering practice, it is generally accepted that approximately 10% of the daily traffic flow will occur during the peak hour. When the percentage of peak hour traffic is significantly higher than this amount, there is some indication that the level of non-local through traffic is higher than normal.

There is an expectation that the percentage of heavy vehicles and non-local traffic will be higher on Local Distributor roads than on Local Access roads, and a differentiation in scores is therefore appropriate for these two classes of road.

2. Level of Action

2.1 The parameters listed in Section 1 and numerical weightings in Table 1 will be used to determine the total score. The total score will be checked against the threshold levels in Table 2 to determine the category of the road section and the level of further action to be taken.

2.2 Category 1 sites are the highest priority locations and will be listed on the City's Forward Capital Works Program for inclusion in future Design and Construction Programs. These programs will be reviewed annually using the total score as the basis for prioritisation of design projects.

When developing projects listed on the Design Program, investigations will be undertaken to determine the suitability of various treatment options, and concept designs will be prepared to allow consultation with Ward Councillors and the community. The community consultation will extend to include all owners and occupiers of properties on the road section under consideration, in addition to all owners and occupiers of properties located on side roads up to 100 metres from the road under consideration. A project will proceed to detailed design if there is majority support from the responses received during the community consultation, or if changes can be made to address the primary issues of concern raised during the consultation.

2.3 Category 2 sites will be considered for further review within a 12-month period or on the basis of historical data. Should there be an increasing trend in traffic volumes, travel speeds and/or crash statistics, it may then be considered for listing on the City's Forward Capital Works Program for future design and construction.

2.4 Category 3 and 4 sites require no further action to be taken. Consideration may be given to implementing low cost non-capital solutions (such as signage and line marking) for Category 3 sites, if appropriate.

2.5 Council may review the threshold levels in Table 2 depending on the number of requests received and desired level of expenditure for traffic management treatments.

Table 1. Warrant Criteria and Weightings

Category	Parameter	Range / Item	Point Scores for Each Parameter	
			Local Road	Local Distributor
Speed	85th Percentile Speed exceeds Posted Speed Limit (PSL) [km/h]	< 10 km/h over PSL 10-20 km/h over PSL > 20 km/h over PSL	1 per km/h 10 + 4 per km/h 50 + 6 per km/h	1 per km/h 10 + 4 per km/h 50 + 6 per km/h
Traffic Volumes	Average Weekday Traffic [vehicles per day]	0-1000 vpd 1000-2000 vpd 2000-3000 vpd 3000-4000 vpd 4000-5000 vpd 5000-6000 vpd 6000-7000 vpd > 7000 vpd	0 6 12 18 24 30 36 36 + 6 per 1000	0 0 0 0 6 12 18 18 + 6 per 1000
Crash Data	5-year Crash Data	Fatal crashes Injury crashes PDO Major crashes PDO Minor crashes	15 per crash/km 6 per crash/km 3 per crash/km 2 per crash/km	15 per crash/km 6 per crash/km 3 per crash/km 2 per crash/km
		If road section is less than 500m, assess for 0.5 km length		
Road Design and Topography	Restricted sight – crest curve	Below PSL 0-10 km/h over PSL > 10 km/h over PSL	2 5 10	2 5 10
	Restricted sight – horizontal curve	Below PSL 0-10 km/h over PSL > 10 km/h over PSL	2 5 10	2 5 10
	Bends with unrestricted sight distance	Below PSL 0-10 km/h over PSL > 10 km/h over PSL	0 2 5	0 2 5
	Steep hill	Below PSL 0-10 km/h over PSL > 10 km/h over PSL	0 2 5	0 2 5
Vulnerable Road Users	Major Bicycle or Pedestrian Crossing Point [Average Weekday Traffic]	< 1000 vpd 1000-2000 vpd 2000-3000 vpd 3000-4000 vpd 4000-5000 vpd > 5000 vpd	0 1 2 3 4 5	0 1 2 3 4 5
	Important Bicycle Route [Average Weekday Traffic]	< 1000 vpd 1000-2000 vpd 2000-3000 vpd 3000-4000 vpd 4000-5000 vpd > 5000 vpd	0 1 2 3 4 5	0 1 2 3 4 5
Activity Generators	Educational Institution (School / College) [85% Speed]	< 40 km/h 40-50 km/h 50-60 km/h > 60 km/h	0 3 6 9	0 3 6 9
	Retail [85% Speed]	< 40 km/h 40-50 km/h 50-60 km/h > 60 km/h	0 2 4 6	0 2 4 6

Table 1. Warrant Criteria and Weightings continued…

Category	Parameter	Range / Item	Point Scores for Each Parameter	
			Local Road	Local Distributor
Amenity Factors	Heavy Vehicles (Austroads Class 3 above) [%]	0-2%	0	0
		2-4%	2	0
		4-6%	4	2
		6-8%	6	4
		8-10%	8	6
		> 10%	10	8
	Peak Hour Traffic (Rat Running) [%]	0-10%	0	0
		10-15%	2	1
		15-20%	5	4
		> 20%	10	8

Table 2. Threshold Levels for Action

Total Score	Category	Typical Response
Over 70 points	1	Suitable solutions to be considered for funding and implementation in future budgets.
50 to 70 points	2	Site that requires further review to determine if there is an increasing or decreasing trend in traffic volumes, speeds and crash data. The review should be undertaken within a 12-month period, or using historical data.
30 to 50 points	3	No capital works solutions required. Consider low cost non-capital works solutions (e.g. signage and line marking improvements) if appropriate.
Under 30 points	4	No further action required.

Definitions

Traffic Management Treatment means any treatment constructed within the public road reserve that organizes, arranges, guides and controls both stationary and moving traffic, including pedestrians, cyclists and all types of vehicles, to provide for the safe, orderly and efficient movement of persons and goods and to protect and enhance the quality of the local environment on and adjacent to roads.

85th Percentile Speed means the travel speed at which 85% of vehicles are travelling at or below and is measured in kilometres per hour.

Injury Crash means a crash that results in hospitalisation or medical treatment of one or more occupants, as listed in Main Roads WA's Crash Analysis Reporting System (CARS).

PDO Crash means a crash that results in property damage only (major or minor) and does not require hospitalisation or medical treatment, as listed in Main Roads WA's Crash Analysis Reporting System (CARS).

Heavy Vehicles means all vehicles designated as Class 3 and above in the Vehicle Classification System shown in the *Austroads Technical Report AP-T60/06 Automatic Vehicle Classification by Vehicle Length*.

Relevant management practices/documents

City of Stirling Functional Road Hierarchy
Austroads Guide to Traffic Management (Part 8: Local Area Traffic Management)
Austroads Technical Report AP-T60/06 Automatic Vehicle Classification by Vehicle Length

Legislation/local law requirements

Road Traffic Code 2000, Regulation 11, Clause 2

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Relevant delegations	Not applicable			
Initial Council adoption	**Date**	10 December 2013	**Resolution #**	1213/007
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