



GRADUATE PL

Adopted 18<sup>th</sup> June 2007

# Sign Asset Management Plan

2007 - 2011



**LatrobeCity**  
*a new energy*

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# 1 Executive Summary

This document is the first draft of the Sign Asset Management Plan (SAMP) and it is was circulated within the organisation for comment before being finalised and presented to Council and adopted on 18<sup>th</sup> June 2007.

The Asset Management Strategy 2007 – 2011 is the overarching document used in the development of this Sign Asset Management Plan with the main objective being to develop a structured set of scheduled actions aimed at improved asset management to support services and provide infrastructure that is sustainable, appropriate, accessible and responsive to the community.

This Sign Asset Management Plan (SAMP) applies to all hazard, regulatory (including parking), warning, tourist, street name and advisory signs within the road reserves, car parks and walking/cycling trails within Latrobe City that Council is responsible for maintaining.

Retroreflectivity testing of all of Council's hazard and regulatory signs is now complete apart from parking signs which have been spatially located but were not tested for retroreflectivity. Street name signs are yet to be located or tested.

Retroreflectivity testing offers many advantages over traditional subjective day and night time visibility testing of signs, however the major flaw with the procedure is not having an Australian Standard, VicRoads or Australian Road Research Board (ARRB) endorsed level at which a sign should be replaced. The retroreflectivity level at which a sign is deemed for night testing has been selected following consultation with the sign manufacturers and is based on the level at which a sign will be replaced under warranty. The numbers of signs failing the retroreflectivity test but passing the night time visibility and legibility test indicates that the level selected may be too high. Without a recognised standard, it is best that Latrobe City is not the only road authority using the retroreflectivity test for sign replacement but continues with the annual night time testing possibly in conjunction with the retroreflectivity test.

782 signs have been identified for replacement as a result of these inspections. The budget for 2006/2007 for sign replacement is \$48,000 and this has been spent on reactive sign replacement and not on this programmed work.

Council has a drawing, LCC 656 which details the standard for street name signs. These signs have a white Class 1 reflective sheet background with lettering in blue. It is important that these standards are used across the municipality in all new and replacement situations including new subdivisions and streetscaping works.

## 2 Scope

This AMP (Asset Management Plan) applies to all hazard, regulatory (including parking), warning, tourist, street name and advisory signs within the road reserves, car parks and walking/cycling trails within Latrobe City that Council is responsible for maintaining. The scope does not include inspection methods as they are detailed in Latrobe City Council Procedure CI-OM 036 Sign Replacement Testing Procedure.

## 3 Introduction

The Asset Management Strategy 2007 – 2011 is the overarching document used in the development of this Sign Asset Management Plan with the main objective being to develop a structured set of scheduled actions aimed at improved asset management to support services and provide infrastructure that is sustainable, appropriate, accessible and responsive to the community.

The IIMM (International Infrastructure Management Manual) states that the goal of infrastructure management is to meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers. The key elements of Asset Management are:

- Taking a lifecycle approach
- Developing cost effective management strategies for the long- term
- Providing a defined level of service and monitoring performance
- Understanding and meeting the impact of growth through demand management and infrastructure investment
- Managing risks associated with the asset failures
- Sustainable use of physical resources
- Continuous improvement in Asset Management (AM) practices.

A comprehensive data collection and assessment inspection of all Council's hazard and regulatory signs including parking signs has been carried out and a list of defects has been prepared for Infrastructure Operations to programme replacement of effected signs.

The SAMP conforms with Latrobe's 2021 vision of sustainability to develop and implement asset management strategies for Latrobe City and implement whole of life maintenance requirements. It will also enable accurate estimates of the valuations of assets in accordance with Australian Accounting Regulations.

## 4 Current Situation

Retroreflectivity testing of all Council's hazard and regulatory signs has been undertaken in accordance with Council procedure CI-OM 036. Parking signs have been spatially located but were not tested for retroreflectivity as Latrobe City does not restrict parking in the evening hours and so does not require reflective signs. Assessing the location, mounting details and sign condition of street name plates has commenced and is due to be completed in 2007/2008. However it should be noted that there are many non-standard street name plates being used throughout the municipality. There are many street name plates that have the old Latrobe Shire logo and there are many signs in the Traralgon area that are blue with yellow letters while in some newer subdivisions there are green plates with white letters and white plates with green letters. There are even a few decorative non-reflective name plates and poles in some locations. These signs will make up the replacement program for the next few years. Warning and Tourist signs have not yet been located or tested.

Some non-standard street name signs that are to be replaced in the coming years:



A standard sign with a background of Class 1 material with Blue Legend:



Signs inspected and results are as follows:

	Signs				
	Hazard	Regulatory	Parking	Warning	Tourist
<b>Number of Signs</b>	<b>2816</b>	<b>2956</b>	<b>1352</b>	Unknown	Unknown
<b>Retroreflectivity</b>					
<b>Not Tested</b>	183	103	1352	Unknown	Unknown
<b>Passed</b>	1599	1652	N/A	Nil	Nil
<b>% Passed</b>	<b>61%</b>	<b>58%</b>	N/A	Nil	Nil
<b>Failed</b>	1034	1201	N/A	Nil	Nil
<b>% Failed</b>	<b>39%</b>	<b>42%</b>	N/A	Nil	Nil
<b>Night Time Tested</b>					
<b>Tested</b>	<b>363</b>	<b>964</b>	N/A	Nil	Nil
<b>Passed</b>	211	641	N/A	Nil	Nil
<b>Failed</b>	152	323	N/A	Nil	Nil
<b>% Failed This Test</b>	<b>42%</b>	<b>34%</b>	N/A	Nil	Nil
<b>% Failed Overall</b>	<b>6%</b>	<b>11%</b>	N/A	Nil	Nil

The majority of signs failing the retroreflectivity test were tested at night using the legibility and visibility sight distances defined in CI-OM 036 to determine a final list of failed signs. Some signs were obviously going to fail the night test because of colour loss or delamination, so were eliminated from the additional test.

A total of 475 signs failed both tests which is 8.7% of the total signs tested. A total of 782 signs has been identified as requiring replacement. As this is the first time that the entire network of signs is being evaluated it is expected that after a replacement

program is finalised, the number of signs failing future tests will be considerably lower.

The budget for 2006/2007 for sign replacement is \$48,000 and this has been spent on reactive sign replacement and not on this programmed work. All hazard sign and regulatory signs in Latrobe City except for parking signs are to be replaced with Class 1 signs at their end of life as per procedure CI-OM 014, which was amended following advice from VicRoads that they are intending to phase out the lower specification Class 2 and Class 2A regulatory signs.

Current replacement cost for a 'Give Way' regulatory sign is approximately \$33.00, while including labour to erect the sign and bracket replacement would add a further \$35.00. Some poles may also need replacing so the initial estimate of the replacement cost for the signs failing the night time test would be approximately \$50,000 to \$60,000.

## 5 Inspection Plan

An analysis of the inspection results and the retesting conditions for signs in procedure CI-OM 036 will result in further inspections for the 2007/2008 & 2008/2009 years. In summary this procedure requires assessment of the signs condition in the following situations:

The assessment of sign condition for the purpose of this procedure shall occur via a *dedicated* audit process, i.e. not undertaken as part of regular patrol maintenance. Such dedicated audits shall be carried out on the following cycle:

- Regulatory signs (other than parking signs), Hazard, Temporary and Warning signs (with or without a date stamp): test **annually for night time visibility**, *once they are within 10% of minimum required performance level for retroreflectivity (as per **Appendix 5**)*;
- All other signs: **every three years**. This includes:
  - Regulatory, Hazard, Temporary and Warning signs not yet known to be at the point requiring *annual* night time visibility assessments – **test for daytime and night time visibility**;
  - Street Name Blades, Safety related guide signs - **test for daytime and night time visibility**;



- Parking signs - **test for daytime visibility only, except for those signs where a night time parking control applies (daytime and night time test applies);**
- Tourist (usually brown/white), other Guide, and other signs - **test for daytime visibility only, except upon request or complaints about night time visibility.**

The list of Regulatory, Hazard, Temporary and Warning Signs to be tested shall typically be as per Appendix 1. Tourist, Guide and Parking signs are not listed.

This table shows the signs due for night time testing in the year 2007/2008:

<b>Total Hazard and Regulatory Signs</b>	<b>5772</b>
<b>Total to be Night Tested 2007/2008</b>	<b>4539</b>
<b>% of Total Signs to be Tested</b>	<b>79%</b>

These figures will vary slightly if any of these signs are replaced during reactive maintenance.

## 6 Future Considerations

There is not enough data available to determine the useful life of a sign with the useful life also affected by location and positioning, ie signs facing to the north and west fade faster than others due to higher ultra violet light degradation effects. The testing that has been carried out to date has identified 475 signs that failed both retroreflectivity and night time visibility testing and along with another 307 signs that were damaged making a total of 782 that should be replaced as soon as practicable. The budget for sign replacement has traditionally been expended on reactive sign maintenance and does not have the capacity to complete this work without additional funds being made available both for sign purchase and installation. As data collection is still progressing it is difficult to estimate future replacement funding past what it required to replace the 782 signs that have already failed the night time visibility and legibility tests.

Retroreflectivity testing does offer many advantages over traditional subjective day and night time visibility testing of signs as well as reducing the OH&S risk of having people conducting visibility tests from the roadway. However the major flaw with the procedure is not having an Australian Standard, VicRoads or ARRB endorsed level at which a sign should be replaced. The retroreflectivity level at which a sign is deemed for night testing has been selected following consultation with the sign



manufacturers and is based on the level at which a sign will be replaced under warranty. The number of signs failing the retroreflectivity test but passing the night time test indicates that the level selected may be too high, but without a recognised standard, it is best that Latrobe City is not the only road authority in Australia that uses retroreflectivity testing for sign replacement. Retroreflectivity testing is scheduled to be carried out again in 2009/2010 and it is hoped that an Australian Standard will be introduced to give better guidance on the results. If however a standard has not been introduced then a decision will need to be made as to whether to do a full night time visibility test on all signs in lieu of daytime testing and retroreflectivity testing.

The next iteration of this AMP should also include an estimated value on the replacement cost of the city's signs.

Council has a drawing LCC 656 which details the standard for street name signs. These signs have a white Class 1 reflective sheet background with lettering in blue. This standard should be used across the municipality in all new and replacement situations including subdivisions.

## 7 Definitions

AMP	Asset Management Plan
Retroreflectivity	The physical ability of a material to reflect light back in the direction of the original light source (e.g. vehicle headlight), normally at night.
Retroreflectometer or Photometer	A scientific testing device used in the field to test the retroreflectivity of a sign.
SAMP	Sign Asset Management Plan

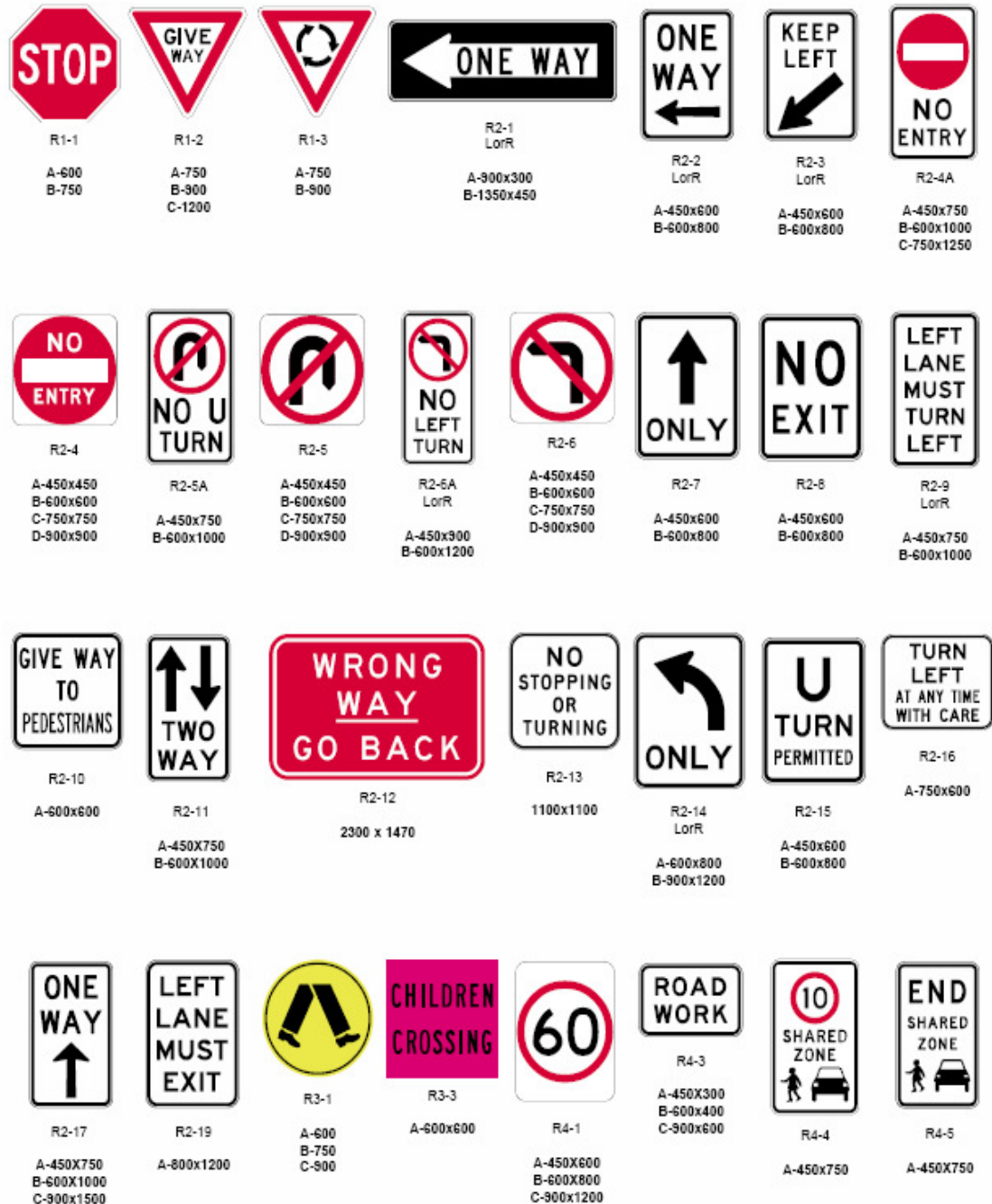
## 8 References

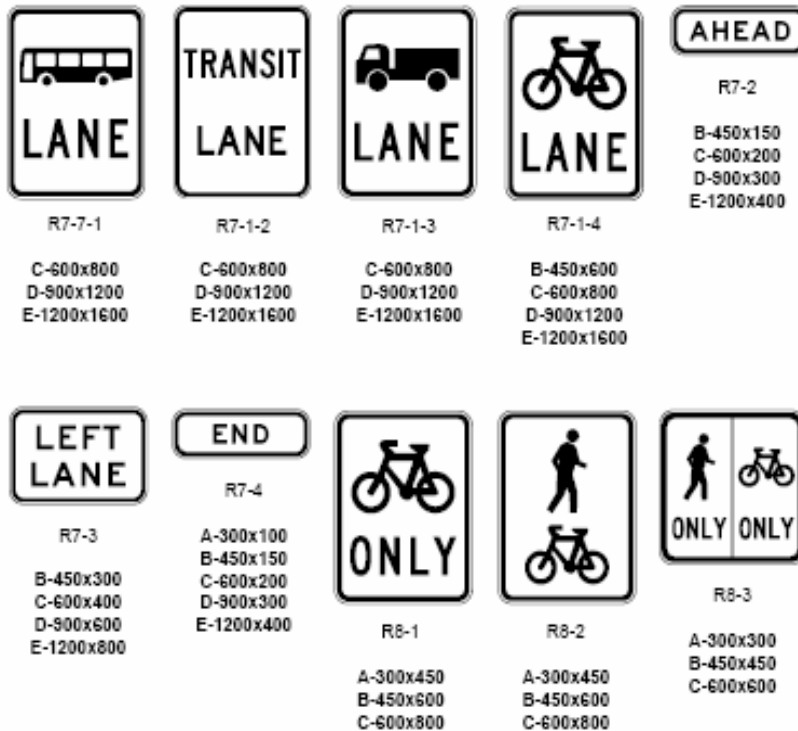
- Latrobe City Sign, Guidepost and Fireplug post placement/replacement procedure (CI-OM 014)
- Latrobe City Service Specifications (Document 6 - Contract no. 10260).
- Latrobe City Maintenance Activity Manual.
- Manual of Uniform Traffic Control Devices, Part 3 – AS 1742.3.
- Manual of Uniform Traffic Control Devices for General Use, Part 2 - AS 1742.2.
- VicRoads - Traffic Engineers Manual Volume 2, Section 6.3.2.

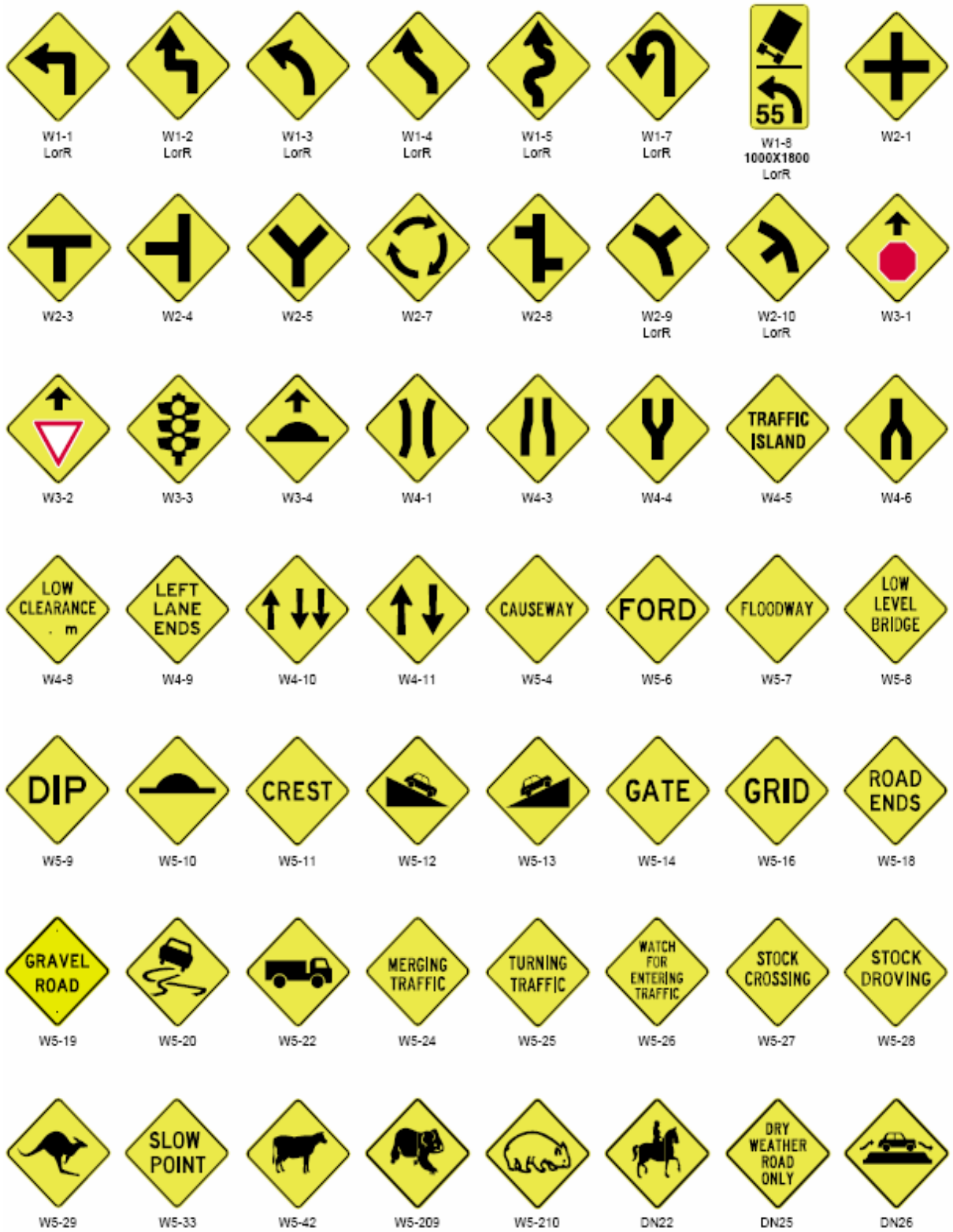
- AS/NZS 1906.1 (1993) Retroreflective materials and devices for road traffic control purposes – part 1 Retroreflective materials; - This standard has recently been updated but was not available at the time of writing this plan.
- Draft Australian/New Zealand Standard DR 05585 (2005): Retroreflective materials and devices for road traffic control purposes – part 1 Retroreflective Sheeting (Revision to AS/NZS 1906.1 (1993))
- “*Terminal Values of Road Traffic Signs*”, Australian Road Research Board Special Report No. 49, 1992.
- Road Management Act 2004 “*Code of Practice for Worksite Safety- Traffic Management*”
- LCC 656 Street Name Signs

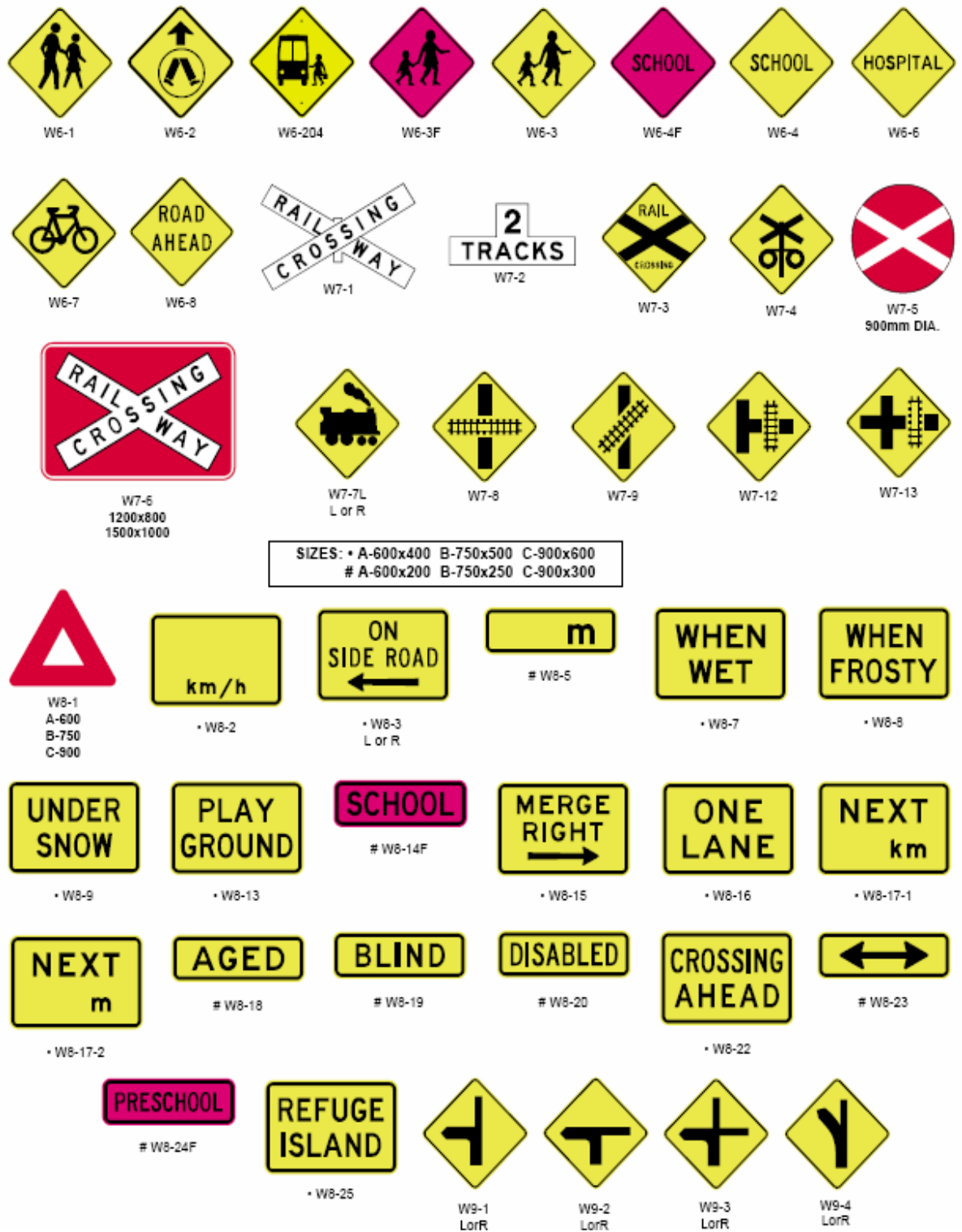
## 9 Appendix 1 – List of Regulatory, Hazard, Temporary and Warning Signs

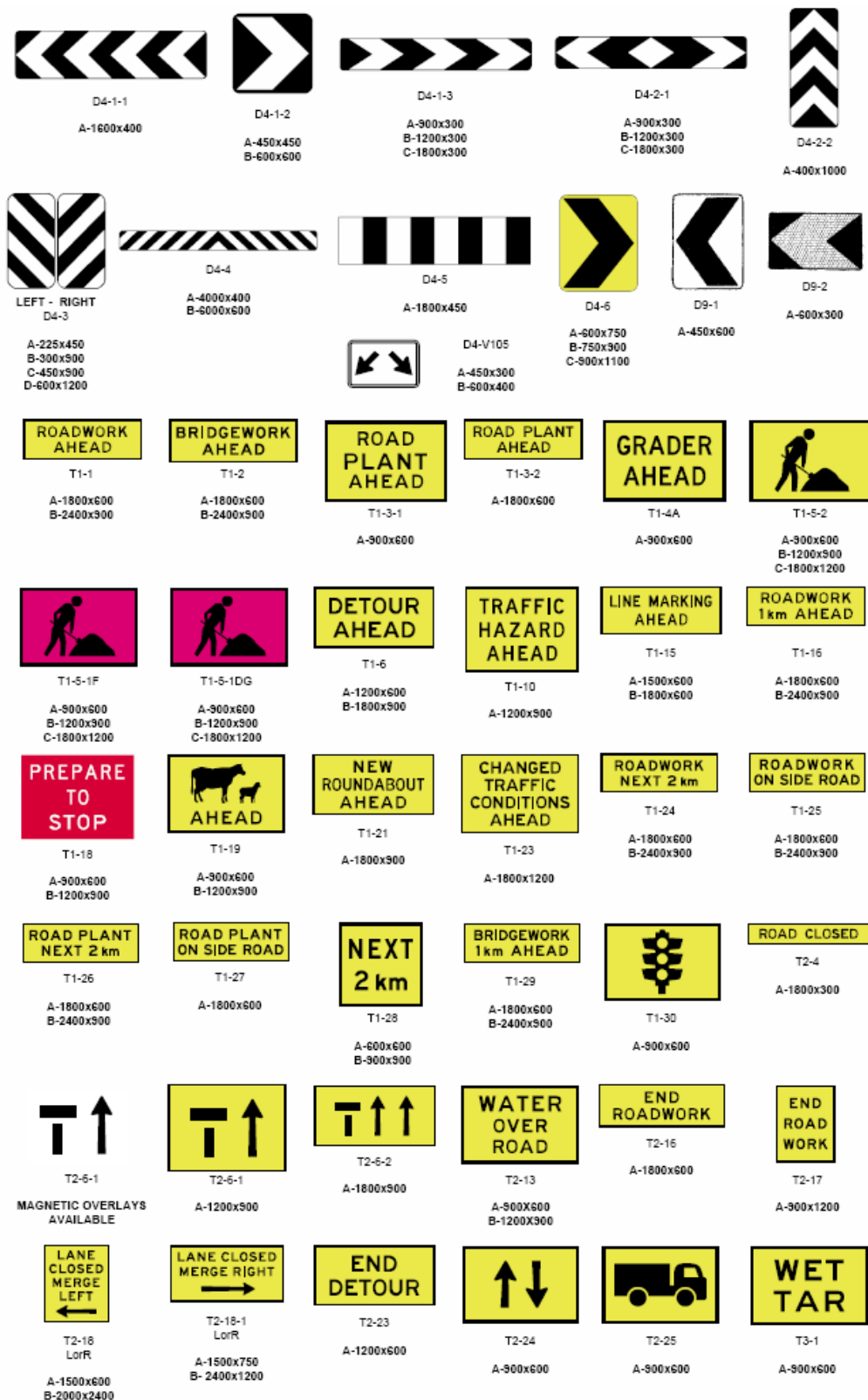
Typical Signs are shown below (some may not be in use at Latrobe City). The full list can be found in the AS 1742 series, with additional information in AS 1743 and AS 1744. **Note:** *any speed sign is a Regulatory sign.*



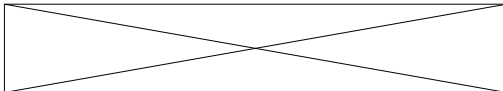
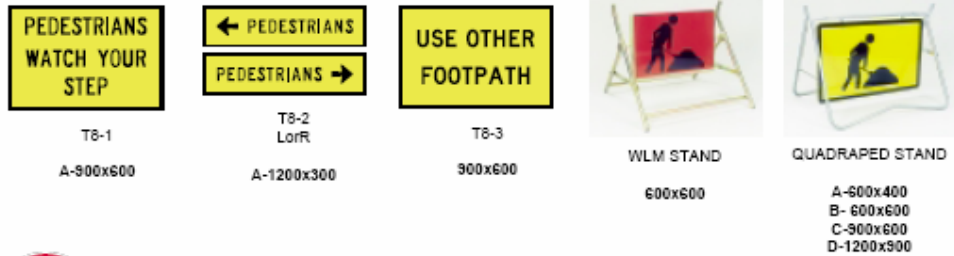
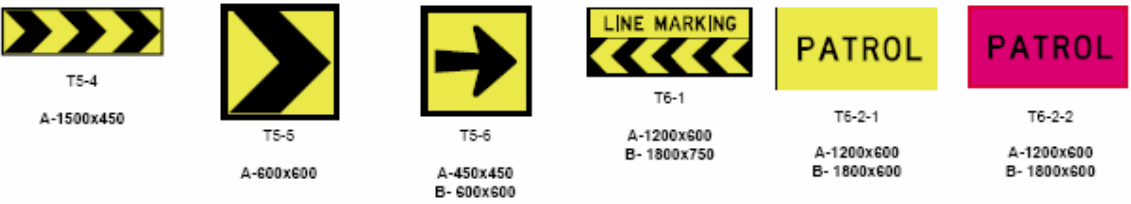
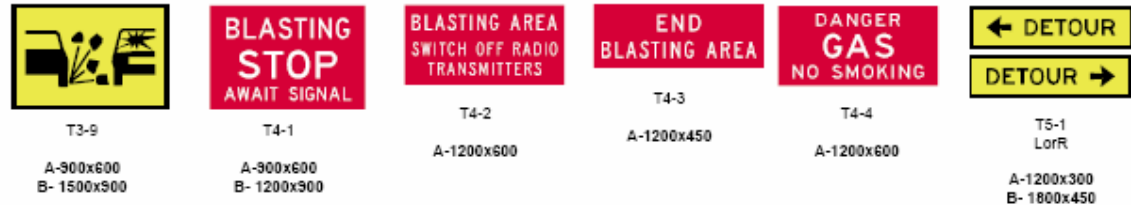
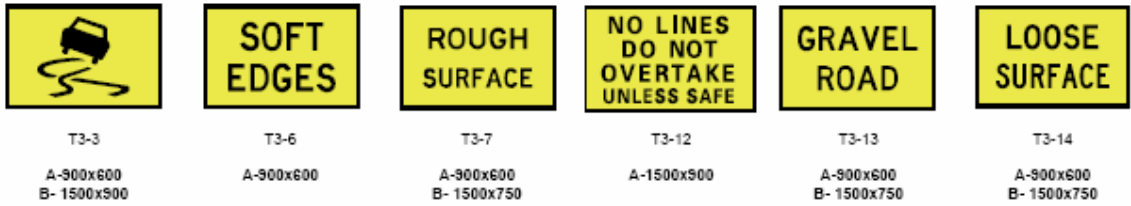












## 10 Appendix 2 – Retroreflectivity Performance Standards

This table is from procedure CI-OM 036

The **values shown below** are the “*Coefficient of Luminous Intensity per unit area*” (CIL/m<sup>2</sup>, or cd/lx.m<sup>2</sup>), for a light entrance angle ( $\beta$ ) of 4 degrees and observation angle ( $\alpha$ ) of 0.2 degrees.

This shall only apply to Regulatory Signs (except parking signs), Hazard, Temporary Works and Warning signs and Street Name Blades, note that fluorescent colours like pink on school crossing signs cannot be tested accurately with the retroreflectometer.

Class →	1W	1A (see Note 7)	1	2A	2
Colour ↓	<b>A = Annual Test if below this figure</b> <b>R = Replacement considered if below this figure</b>				
White	A= 342 R= 304	A= 720 R= 640	A= 225 R= 200	A= 126 R= 112	A= 76 R= 68
Yellow	A= 238 R= 212	A= 594 R= 528	A= 153 R= 136	A= 90 R= 80	A= 45 R= 40
Red	A= 67 R= 60	A= 193 R= 172	A= 41 R= 36	A= 22 R= 20	A= 14 R= 12.8
Blue	A= 17 R= 15	A= 37 R= 33	A= 11 R= 9.6	A= 8.1 R= 7.2	A= 6.3 R= 5.6
<b>Minimum Luminance Contrast Ratios (does not apply to black)</b>					
<b>Where Street Lighting present: 4</b> <b>Where Street lighting <u>Not</u> Present: 3</b>					

## 11 Appendix 3 – Minimum Distances for Sign Visibility and Legibility

These apply to both daytime and (for Regulatory, Hazard, Temporary Works and Warning signs, where performed) night time tests, i.e. as per Appendices 2 and 6.

Speed (km/hour)	Rural		Urban	
	Visibility distance* (m)	Legibility distance** (m)	Visibility distance* (m)	Legibility distance** (m)
40	As for urban	55	Traffic Planner to advise	55
50	As for urban	55	Traffic Planner to advise	55
60	As for urban	70	Traffic Planner to advise	70
70	150	70	Traffic Planner to advise	70
80	185	70	Traffic Planner to advise	70
90	230	100	Traffic Planner to advise	100
100	280	100	Traffic Planner to advise	100

\* Based on advice from the Traffic Planner

\*\* Generally based on upper limits of various examples given in Appendix E of Australian Road Research Board Special Report No. 49, 1992, increased by ~30% to account for recent research on dynamic sign legibility. Values may be conservative for some sign types and situations.