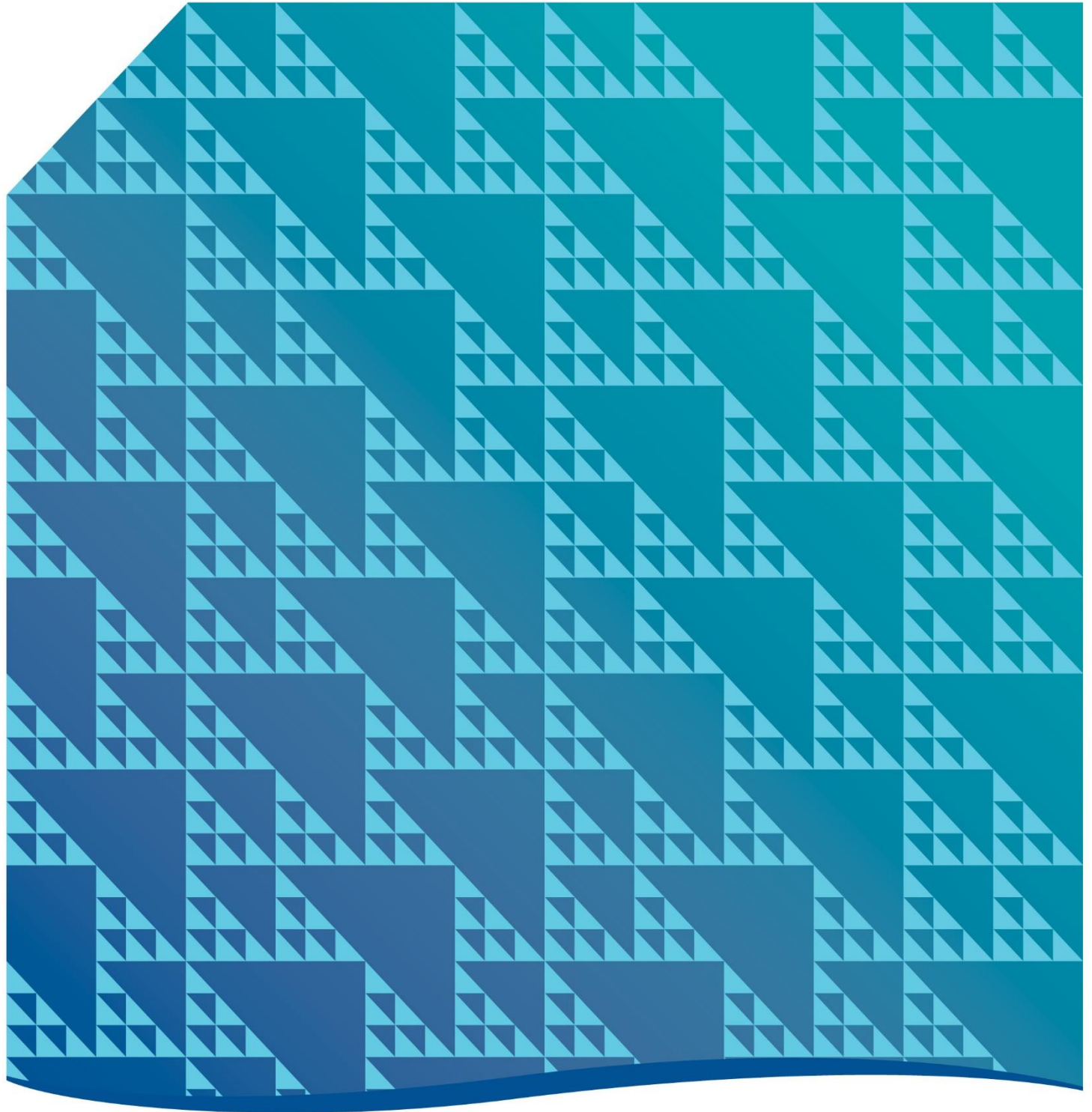


T9 – Lighting

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Revision History

Version No.	Date	Description of changes
1.1	17 Aug 2020	Template updated and old references to superseded documents/entities updated

T9.1 Scope

This specification sets out the requirements for the provision of street lighting.

This specification is part of the set of specifications comprising the Professional Services Specifications (PSS).

T9.2 General

Where a lighting warrant is met, or agreement is reached with Local Government, the Consultant shall prepare a lighting design in accordance with the Australian Standard.

Lighting shall be provided in pedestrian underpasses.

In general, rural roads need not be lit.

T9.3 Warrants for Lighting

T9.3.1 Existing Roads

The warrant for lighting of existing roads shall be assessed according to traffic volumes and/or a high night time accident rate compared to the day time accident rate.

T9.3.1.1 Traffic Volume Warrant

The traffic volume warrants are given in Tables 9.1 and 9.2. Lighting shall be provided when the current annual average daily traffic (AADT) volume exceeds the respective specified figure related to the relevant type or feature of road.

T9.3.1.2 Night Accident Volume

The night accident warrant shall be considered when the problem is one isolated to night events, and not a general deficiency of the geometric design.

When an accident rate for a road segment or intersection exceeds twice the state average and the proportion of night time to total accidents for the location exceeds 40%, then lighting of the location shall be examined in detail.

Accident rates, for a road segment or a road intersection, shall be calculated in accordance with appropriate Austroads Publications.

T9.3.2 New Projects

New road traffic volumes during the life of the road (normally 20 years) shall be predicted. The vehicular volume warrants given in Tables T9.3.3.1 and T9.3.3.2 apply for the initiation of a lighting design and provision for electricity supply facilities.

For all new projects involving a major intersection, junction or grade separated intersection in both urban and rural locations, a lighting design shall be provided. In such cases all conduits for street lighting shall be shown on

the construction plans irrespective of any decision to light the location and the conduits will be installed during construction.

T9.3.3 Local Lighting

The basic approach is to make the optimum use of retroreflective aids. Where lighting is provided however, it shall only be installed to highlight the actual hazard. This may involve tapering the lighting in and out of a section to allow for driver eye adaptation. Obstructions such as noses of medians, merges and diverges shall be delineated by retroreflective devices. If these obstructions are associated with background lighting, isolated lighting shall be installed to highlight the hazard.

Junctions shall generally be highlighted by retroreflective signs. Where the Local Authority considers this insufficient, lighting may be installed as indicated in Clause T9.3.3.2.

Information:

Lighting in rural areas to highlight a side road junction is generally convenience lighting to assist in indicating the point of departure from the highway, and not necessarily, for the use of motorists on the through route.

In some cases the Principal has agreed to share, with the Local Authority, the cost of lighting the full junction. This, however, has been an expensive and financially wasteful exercise for both the Principal and the Local Authority. This situation exists because the highway itself does not generally require illumination.

When lighting a full intersection or junction care must be taken to taper in and out from the high level of lighting at the junction. A change in lighting level along the highway is designed to allow for the driver's eye adaptation. Without an appropriate transition a driver is momentarily blinded by the level of lighting and has difficulty in seeing beyond the junction. After passing the location of high illumination the driver takes a long time period to again adjust vision.

This situation may be avoided very easily by not lighting the highway and by locating one or two lights on the side road. Such a solution does not affect the through motorist with regard to glare or change of eye adaptation, but serves to highlight the junction and reveal the geometry of the side road.

This solution is considerably cheaper to the Local authority than a shared scheme that includes lighting on the highway.

T9.3.3.1 Warrants for Lighting Urban Roadways

Road Type	Min. AADT	
	Continuous full lighting	Partial Lighting
1. Divided Carriageways (4 or more lanes)		
a) Limited access roads	30,000	20,000
b) Non-limited access roads	20,000	15,000
2. Single Carriageways (2 lanes) (excluding areas with no urban development)		
a) Limited access roads	17,000	12,000
b) Non-limited access roads	15,000	10,000

Note: On all sections of carriageways less than 0.5km long between lit road sections the carriageways shall be lit as per the adjacent sections.

T9.3.3.2 Warrants for Local Lighting

Road Feature	Min. AADT
	Partial Lighting
1. Interchange *(including ramps, intersections, crossroad and main carriageways through where: a) combined diverge or merge volumes b) single ramp volumes	10,000 5,000
2. Channelised Intersections and Junctions with: a) islands or medians on rural arterials (Minor road volume) b) islands on minor junctioning road where the 85 percentile speed on the through road exceed 100km/h (Through road volume)	5,000 2,500

Note: *Where connecting roads of an interchange meet the warrant for continuous full lighting, the interchange shall be fully lit.

Partial lighting means highlighting median noses, diverge and merge locations and side roads.

T9.4 Local Government Participation

T9.4.1 Apportionment of Costs

Road lighting may be installed at intersections and on roads not meeting the warrants given in Clause T9.3, at the request of the relevant Council and subject to the written agreement by the Council to share the costs. The Principal may contribute up to 75% of the capital charges for installation with the operational charges being met by the Council.

Arrangements shall be made to debit the Council with all capital, operation and maintenance charges. The Council shall pay such charges and, if shared with the State, subsequently claim the State share.

T9.4.2 Side Road Lighting

Where the main road is a proclaimed road, the Principal will meet the capital cost of a street light at the junction of a side road subject to:

- i) Council notifying acceptance of operational charges;
- ii) electric power (LV) supply being available within 300 metres;
- iii) AADT on proclaimed road exceeding 2500 vpd.

The Principal will meet the capital costs of lighting a new side road junction provided that:

- i) the main road is a deviation of a proclaimed road;
- ii) street lighting exists on the previous proclaimed road, and
- iii) the Council notify acceptance of the operational changes.

T9.5 Lighting Design Standard

Lighting design shall generally be in accordance with Australian Standards and with Austroads: Guide to Traffic Engineering Practice.

T9.6 Lighting Poles

Lighting poles shall be located where possible, so as to minimise the risk to impact by vehicles. Where there is no effective protection, frangible poles shall be used.



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