



# Standards Variation Note

<b>Our Ref:</b>	<b>D25#265777</b>
<b>From:</b>	<b>A/Manager Electrical Asset Management – Steven Howells</b>
<b>Reference:</b>	E&ITSDS-01-SVN-04
<b>Effective Date:</b>	19 March 2025
<b>Cease Date:</b>	Until further notice
<b>Standard:</b>	<b>08/62:</b> Lighting Design Guideline for Roadway and Public Spaces (Rev. 4W)
<b>Clause(s):</b>	<b>1.2:</b> References, <b>2.1.6:</b> Design Methods and Rules, <b>2.1.6.1:</b> Category V Lighting – Design Methods, <b>2.1.6.2:</b> Category P Lighting – Design requirements, <b>2.1.6.4:</b> Category PX Lighting – Design requirements, <b>2.1.6.5:</b> LTP Design Verification, <b>2.2:</b> Roadway Lighting, <b>2.3:</b> Public Spaces (Pathways and Cycleways) Lighting
<b>Subject:</b>	Clarification of lighting performance criteria and required drawings for lighting compliance verification

## Purpose and Application

The Standard Variation Notes (SVN) are intended to provide temporary modifications to existing Main Roads standards, while these standards are being updated to reflect the changes. It is important to note that the information contained in the SVN does not supersede any statutory regulations unless Main Roads has obtained explicit permission to do so.

It is also important to note that the content of the SVN may be updated, clarified, or integrated into the appropriate standard at a later time as part of a revision to the aforementioned standard. This ensures that the information provided in the SVN remains relevant and accurate.

This SVN provides up-to-date details of the performance criteria required for lighting on Main Roads' network. Additionally, it provides detail of what is required from projects to adequately demonstrate compliance with the required performance criteria.

## Background

Main Roads has recently completed a review of the existing published guidance around the required lighting performance criteria and has identified gaps and legacy requirements in the published standards. Additionally, a gap has been identified in published information for guidance in the required drawings to verify compliance with relevant lighting performance criteria to Main Roads required standards.

**Relevant Existing Clause(s)**

**1.2 References**

... [not shown for clarity] ...

AS/NZS 1158.1.1	Lighting for Roads and public spaces – Vehicular traffic (Category V) lighting – Performance & installation design requirements (including all up-to-date amendments)
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... [not shown for clarity] ...

AS/NZS 1158.3.1	Lighting for Roads and public spaces – Pedestrian area (Category P) lighting – Performance and installation design requirements (including all current amendments)
AS/NZS1158.4	Lighting for Roads and public spaces – Pedestrian area (Category P) lighting- Performance and design requirements

... [not shown for clarity] ...

**2.1.6 Design Methods and Rules**

Design Tools and methods identified under Australian Standards AS/NZS 1158.1.1 and AS/NZS1158.3.1 and Main Roads specific requirements shall be applied.

**2.1.6.1 Category V Lighting – Design Methods**

... [not shown for clarity] ...

**2.1.6.2 Category P Lighting-Design requirements**

... [not shown for clarity] ...

**2.2 Roadway Lighting**

... [not shown for clarity]

- Minimum lighting category for roadway lighting is category V3. Both luminance and illuminance design principals shall be applied to roadway lighting designs.

... [not shown for clarity]

**2.3 Public Spaces (Pathways and Cycleways) Lighting**

... [not shown for clarity]

- Point horizontal of no less than 5 lux with vertical Lux to AS1158.3 category P2;
- At locations where a PSP intersects another Path the horizontal and vertical illuminance shall

not be less than 20 lux;

- At locations of conflict and high pedestrian usage such as rail stations point horizontal and vertical illuminance of no less than 20 lux shall be achieved;

... [not shown for clarity]

- Spillage lighting level (roadway lighting only, not commercial lighting etc.) and reflectivity of any walls or surfaces in the vicinity of the lighting is to be included in lighting calculations.
- Minimum lighting category for PSP under pass lighting is P10 in accordance with AS/NZS 1158.3.1:2005.
- It is required to comply with V3 Category lighting requirements where a PSP intersects a road in accordance with AS/NZS 1158.1.1:2005.

... [not shown for clarity]

The levels of lighting required are as defined by the light technical parameters in the Table 2.1 for local roads and pathways of AS/NZS 1158.3.1

... [not shown for clarity]

**Clarification**

The modified clauses to *Lighting Design Guideline for Roadway and Public Spaces* (Rev. 4W) is detailed below. No other clauses are updated as part of this variation notice. Additionally, standard drawings 202348-005434, 202348-005435, 202448-008369, 202448-008370, 202448-008371, 202448-008372, and 202448-008373 have been published and are available on the Main Roads website.

Strikethrough text details withdrawn clauses from *Lighting Design Guideline for Roadway and Public Spaces* (Rev. 4W).

**1.2 References**

... [not shown for clarity] ...

AS/NZS 1158.1.1:2022	Lighting for roads and public spaces Vehicular traffic (Category V) lighting - Performance and design requirements
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... [not shown for clarity] ...

AS/NZS 1158.3.1:2020	Lighting for roads and public spaces Pedestrian area (Category P) lighting - Performance and design requirements
AS/NZS 1158.4:2024	Lighting for roads and public spaces Lighting of pedestrian crossings

... [not shown for clarity] ...

### 2.1.6 Design Methods and Rules

Design tools and methods identified under Australian Standards AS/NZS 1158.1.1 and AS/NZS 1158.3.1 and Main Roads' specific requirements shall be applied.

Spill lighting from other Main Roads' owned lighting shall be included in the calculation of LTPs for a design. Use of spill lighting from non-Main Roads' owned lighting shall not be used in calculations.

#### 2.1.6.1 Category V Lighting – Design requirements

The minimum lighting category for Main Roads owned roads, under the project scope, shall be V3 as per AS/NZS 1158.1.1.

#### 2.1.6.2 Category P Lighting – Design requirements

The design for pedestrian and shared pathways, under the project scope, is based on a hierarchy designated by their functions as defined by the [Department of Transport](#). The hierarchy is specified as per below:

- Primary – high demand corridors connecting major destinations of importance and form part of the spine of the Pedestrian and Shared Paths in Western Australia – Main Roads Principal Shared Paths are a subset of this category.
- Secondary – moderate demand routes that provide connectivity from primary routes and major centres of activities.
- Local – lower level of demand routes that provide access to local amenities and spaces, typically located in residential areas supporting the start or end of pedestrian trips.

Main Roads' **primary** routes shall be at least lit to PP2, in accordance with AS/NZS 1158.3.1, to provide a safe pathway for high demand activity on these pathways. For Main Roads' **secondary** and **local** routes, the lighting levels shall be chosen in accordance with Table 2.2 of AS/NZS 1158.3.1 based on a 15-year activity forecast, however, for safe use of all pedestrian and shared paths the minimum lighting category is PP3.

In addition to the requirements defined by AS/NZS 1158.3.1 and the lighting hierarchy above, the following lighting requirements shall also be met for all Main Roads' **primary** paths:

- Point horizontal of no less than 5 lux and point vertical in all plane directions of no less than 0.3 lux at 1.5 m above the ground surface.
- At locations where a path intersects another path, the point horizontal illuminance shall not be less than 20 lux and the point vertical in all plane directions shall not be less than 3 lux.
- At locations of conflict and high pedestrian usage such as rail stations point, the horizontal illuminance shall not be less than 20 lux and the point vertical in all plane directions shall not be less than 3 lux.
- It is required to comply with V3 Category lighting requirements where a path intersects a road in accordance with AS/NZS 1158.1.1.

The minimum lighting category for pedestrian and shared pathways underpass lighting is PE1.

#### 2.1.6.4 Category PX Lighting – Design requirements

Marked pedestrian crossings (pedestrian crossing) across a road shall be designed in accordance with

the requirements set out by AS/NZS 1158.4. The lighting category that the crossing shall meet is:

- PX2 for roads that are not lit to a category V level or PR1 / PR2 (e.g., local roads where pedestrian requirements dominate).
- PX2 for marked pedestrian crossing at a left turn slip lanes for signalised intersections.
- PX1 for all marked pedestrian crossings on roads that are lit to category V or PR1 / PR2.

### 2.1.6.5 LTP Design Verification

To demonstrate compliance with Main Roads LTP requirements, the project shall provide relevant drawings in the correct style. These drawings shall illustrate compliance with the applicable lighting categories.

For Category V lighting, drawings no. 202348-005435 and 202348-005434 serve as examples of the expected drawing style for demonstrating compliance with luminance- and illuminance-based LTPs, respectively.

For Category P lighting, an Isolux plot showing a 5 lux contour is required for all Main Roads primary pedestrian and shared pathways, demonstrating compliance with the minimum 5 lux horizontal point requirement. For straight sections of Main Roads pedestrian and shared pathways, a SAASTAN report shall confirm compliant spacings that meet the required LTPs for the lighting category. Where pathway geometry results in luminaire placement with a  $C = 90^\circ/180^\circ$  plane orientation exceeding  $15^\circ$  from the adjacent luminaire, typical SAASTAN spacing shall not be used. Instead, illuminance Isolux plots shall be provided.

For pathway intersections, compliance shall be demonstrated with a minimum horizontal illuminance of 20 lux and point vertical illuminance of 3 lux. If the intersection forms a T-junction or X-junction, and the width ratio of the two paths is less than 2:1, three or four lights may be installed, as illustrated in drawings no. 202448-008369 and 202448-008371, respectively. For all other intersection configurations, compliance with all applicable LTPs shall be demonstrated (refer to drawings no. 202448-008370 and 202448-008372).

For marked pedestrian crossings, compliance shall be assessed using an illuminance grid as per AS/NZS 1158.4. All test point values and calculation plane direction shall be provided. The expected drawing style is illustrated in drawing no. 202448-008373.

## 2.2 Roadway Lighting

... [not shown for clarity]

- ~~Minimum lighting category for roadway lighting is category V3. Both luminance and illuminance design principals shall be applied to roadway lighting designs.~~

... [not shown for clarity]

## 2.3 Public Spaces (Pathways and Cycleways) Lighting

... [not shown for clarity]

- ~~Point horizontal of no less than 5 lux with vertical Lux to AS1158.3 category P2;~~
- ~~At locations where a PSP intersects another Path the horizontal and vertical illuminance shall not be less than 20 lux;~~
- ~~At locations of conflict and high pedestrian usage such as rail stations point horizontal and~~

vertical illuminance of no less than 20 lux shall be achieved;

... [not shown for clarity]

- ~~Spillage lighting level (roadway lighting only, not commercial lighting etc.) and reflectivity of any walls or surfaces in the vicinity of the lighting is to be included in lighting calculations.~~
- ~~Minimum lighting category for PSP under pass lighting is P10 in accordance with AS/NZS 1158.3.1:2005.~~
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... [not shown for clarity]

~~The levels of lighting required are as defined by the light technical parameters in the Table 2.1 for local roads and pathways of AS/NZS 1158.3.1~~

... [not shown for clarity]

### **Further information**

Any additional questions or concerns on this Standard Variation Notice can be directed to the Main Roads *Technical Query and Request for Information Procedure* found on the Main Roads website.

**Recommended**



Campbell Millar

**A/ Senior Electrical Standards Engineer**

Date: 19 March 2025

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**Endorsed**

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**Approved**



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Date: 25 March 2025