

# OUTDOOR LIGHTING: SHINING A NEW LIGHT

## CHANGES TO AS1158.3.1 P-CATEGORY LIGHTING

LED lighting has revolutionized lighting for nearly every lighting application. Advancements in a technology call for evaluation of regulations and standards that involve this technology. AS1158.3.1, which covers the Category-P lighting including, carpark, streets, pathway, and some other exterior area, has now been updated with numerous changes to its previous version, released in 2005. This update was required to address the widespread use of LED lighting and call for more optimized and stringent lighting design solutions that LED lighting can offer with careful lighting design and well-engineered LED luminaires.

One of the notable changes in the revised standard is the addition of 'minimization of energy consumption' to the primary design objectives of the standard. Another significant change is the **amendment of lighting sub-categories** as well as more stringent lighting and glare requirements. There are several other changes, however the scope of this article revolves around these two main changes. P-category lighting has been characterized by technical parameters such as average horizontal illuminance, min. point horizontal and vertical illuminance, and uniformity. Average and minimum point horizontal illuminance ensures there is enough light on the ground. Minimum point vertical illuminance ensure pedestrians can be safely spotted. Uniformity recommendations limit the abrupt over- or under-lit areas. In general, the uniformity requirements across all the new lighting sub-categories is now more stringent. In other words, the standard revision **demand**

**more uniform outdoor lighting.** This would be possible to achieve with carefully proposed luminaire locations and tilt and using lights with well-engineered optics. Previously, sub-categories P1-P5 covered both street/roads and pathway/cycleways. This has now been split into sub-categories PR(street/road) and PP (pathway/cycleway). PR sub-category, carries over requirements from the older version of the standard for roads/street with minor changes to average and minimum point horizontal illuminance, whereas vertical illuminance requirements have been scrapped. Compliance to **pathway/cycleway lighting standard is now substantially rigorous**, with lighting expected to be at least twice as uniform, and vertical illuminance calculations mandatory for all sub-categories.

P1	PR1	Local roads, streets	P6	PA1	Outdoor public activity, transport terminals, service areas	P9	PE1	Outdoor connecting elements - stairs, ramps, footbridge, and subway			
	PR2			P7			PA2		P8	PE2	
	PR3						PA3			PE3	
	PR4		P11a	Outdoor carpark areas - General		P12	PCD		PCX		
	PR5									P11b	PC1
	PR6										PC2
P2	PP1	Pathway, cyclist paths, park paths, walkways	P11c	PC3	Outdoor carpark - Pedestrian Crossing						
	PP2			P12							
	PP3										
	PP4										
	PP5										

**New sub-category for outdoor carpark** area has been introduced. It lays down technical parameters for pedestrian crossing areas in the carparks. Being a high-risk area, the new sub-category dictates lighting parameters nearly seven times higher than the lowest carpark lighting sub-category (PC3). The newly introduced **Discomfort Glare Index (DGI)** metric aims to reduce discomfort glare from lighting installation by promoting good, efficient lighting design process and restricting the use of lights with poorly designed optics. It takes into consideration the light aiming/tilt, mounting height, flashing area (generally, light emitting area) and optics of the light. In general, luminaires with light emitting area concentrated in a small area (such as COB or densely packed LEDs over a small area) are penalized. DGI limits will also make it difficult to use light with no or poor optical control. If you need to know more about how we can assist with lighting design to the new standard or if you have any queries regarding its technical aspects, feel free to contact us at any time. DNS Lighting offers outdoor lighting solutions with numerous, well-engineered optical distributions that will stand the test of the requirements of the new AS1158.3.1.

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