



Image courtesy of Northern Territory Cricket

# ***GUIDANCE NOTE 06***

## ***FLOODLIGHTING***



**CRICKET**  
AUSTRALIA

# GUIDANCE NOTE 06

## FLOODLIGHTING

### Introduction


The way cricket is being played and consumed continues to evolve. The rise of short-form cricket (in particular T20 competitions) and the emergence of new modified programs and activities means cricket is now being played by more participants, more frequently, at more venues (including indoors) and by a wider, more diverse playing group than ever before. Floodlighting for cricket venues is emerging as one growing infrastructure need and provides an opportunity to support more flexible scheduling of programs and activities.

The term ‘Lighting up Cricket’ features heavily in several state infrastructure strategies, particularly those states located in the country’s north, where no daylight savings and/or climatic conditions mean playing and training in the evening under lights is often the more preferable, or in some instances, the only opportunity for cricket to be played.

In land-locked municipalities, where access to unoccupied open green space is challenging, facility owners and managers are looking for innovative ways to increase the carrying capacity of their existing venues. Floodlighting of sports fields and training facilities provides one solution to increase programming beyond standard daylight hours.


This Guidance Note provides information relating to the following floodlighting applications and should be read in conjunction with AS 2560.1 and AS 2560.2:

- Outdoor cricket — competition and ball fielding skills
- Cricket training — outdoors (outdoor practice pitches and nets)
- Cricket training — indoors (indoor practice pitches and nets)
- Indoor cricket — competition and training.

 **AS 2560.2 is a non-mandatory, best practice and industry adopted standard. It does not include the special lighting requirements for television broadcasting.**


It is recommended this Guidance Note be used during the initial scoping phase of a cricket lighting project to ensure:

- Appropriate lighting levels are provided, relevant to the level of competition or training, and
- Consideration has been given to recommended lighting design and construction tips.

 **Please refer to Appendices section for examples of varying competition levels/ content and associated lighting levels.**

### Recommended lighting levels

The following tables outline the recommended minimum lighting levels for non-broadcast indoor and outdoor cricket competition and training activities.

 **Recommended lighting levels in AS 2560.2 do not guarantee player/umpire/coach/spectator safety during cricket competition and training activities. Moreover, it is not a mandatory requirement that cricket lighting projects completed prior to the standard's introduction meet AS 2560.2 provided they aligned with the recommended level of lighting at the time of installation. However, testing undertaken by Cricket Australia has informed what is considered to be both a safe and suitable level of lighting, and it is strongly recommended providers seek to increase their lighting levels to meet the recommended minimum standards prescribed in the standard.**

OUTDOOR CRICKET		Average horizontal maintained illuminance				
AS 2560.2 CLASS	Level of competition (M=Male; F=Female)	Square	Infield	Outfield	Practice* on-field	Physical exercise**
I	■ International (M) ■ Domestic (M)	1500	1500	1000	750	50
II	■ Match Simulation — National/State (M)	1000	850	700	500	
III	■ International (F) ■ Domestic (F) ■ Premier Senior — 1st and 2nd XI (M) ■ National Youth Championships (U/19 M)	750	600	500	400	
IV	■ Premier Senior 1st XI (F) ■ Premier Senior — All other (M) ■ National Youth Championships (U/19 F)	500	400	300	300	
V	■ Premier Senior — All other (F) ■ Community Senior (M) ■ National Youth Championships (U/17 M) ■ Premier Junior (M&F) ■ Junior Cricket Stage 3 (M)	300	250	200	150	
VI	■ Community Senior (F) ■ National Youth Championships (U/16 F) ■ Junior Cricket Stages 2 & 3 (F) ■ Junior Cricket Stages 1 & 2 (M)	200	200	200	100	
VII	■ Junior Cricket Stage 1 (F) ■ Cricket Blast (M&F) ■ Schools Programs (M&F)	100	100	100	75	

- Notes:**

  - Lighting levels relate to non-broadcast outdoor cricket competition.
  - Lighting levels provided are based on use of a standard white ball, however are also considered appropriate for a pink ball.
  - The use of sight screens that contrast with the ball colour is important to enable quick and clear visual identification.
- \* Non-competitive throwing and fielding (catching, ground balls)

\*\* Non-ball activities

CRICKET TRAINING OUTDOORS		
AS 2560.2 CLASS	Level of competition (M=Male; F=Female)	Average horizontal maintained illuminance
I	<div><div></div>International (M)</div> <div><div></div>Domestic (M)</div>	1000
II	<div><div></div>International (F)</div> <div><div></div>Domestic (F)</div> <div><div></div>Premier Senior — 1st &amp; 2nd XI (M)</div> <div><div></div>National Youth Championships (U/ 19 M)</div>	750
III	<div><div></div>Premier Senior — 1st XI (F)</div> <div><div></div>Premier Senior — All other (M)</div> <div><div></div>National Youth Championships (U/19 F)</div>	500
IV	<div><div></div>Premier Senior — All other (F)</div> <div><div></div>Community Senior (M)</div> <div><div></div>National Youth Championships (U/ 17 M)</div> <div><div></div>Premier Junior (M&amp;F)</div> <div><div></div>Junior Cricket Stage 3 (M)</div>	300
V	<div><div></div>Community Senior (F)</div> <div><div></div>National Youth Championships (U/ 16 F)</div> <div><div></div>Junior Cricket Stages 2 &amp; 3 (F)</div> <div><div></div>Junior Cricket Stages 1 &amp; 2 (M)</div>	200
VI	<div><div></div>Junior Cricket Stage 1 (F)</div> <div><div></div>Cricket Blast (M&amp;F)</div> <div><div></div>Schools Programs (M&amp;F)</div>	100

**Note:** Lighting levels provided are based on use at a standard white ball, however are also considered appropriate for a pink ball.

CRICKET TRAINING INDOORS		
AS 2560.2 CLASS	Level of competition (M=Male; F=Female)	Average horizontal maintained illuminance
I	<div><div></div>International (M)</div> <div><div></div>Domestic (M)</div>	1500
II	<div><div></div>International (F)</div> <div><div></div>Domestic (F)</div>	1000
III	<div><div></div>Premier Senior — 1st &amp; 2nd XI (M)</div> <div><div></div>National Youth Championships (U/ 19 M)</div>	750
IV	<div><div></div>Premier Senior (F)</div> <div><div></div>Premier Senior — All other (M)</div> <div><div></div>National Youth Championships (U/ 19 F)</div> <div><div></div>National Youth Championships (U/ 17 M)</div> <div><div></div>National Youth Championships (U/ 16 F)</div> <div><div></div>Community Senior (M)</div> <div><div></div>Premier Junior (M&amp;F)</div> <div><div></div>Junior Cricket Stage 3 (M)</div>	500
V	<div><div></div>Community Senior (F)</div> <div><div></div>Junior Cricket Stages 1,2 &amp; 3 (F)</div> <div><div></div>Junior Cricket Stages 1 &amp; 2 (M)</div> <div><div></div>Cricket Blast (M&amp;F)</div> <div><div></div>Schools Programs (M&amp;F)</div>	300

**Note:** Lighting levels provided are based on use of a standard white ball, however are also considered appropriate for a pink ball.

INDOOR CRICKET		
AS 2560.2 CLASS	Level of competition (M=Male; F=Female)	Average horizontal maintained illuminance
I	<div><div></div>International Series (M)</div> <div><div></div>National Championships (M)</div>	1000
II	<div><div></div>International Series (F)</div> <div><div></div>National Champtions (F)</div> <div><div></div>National Indoor Cricket Loague (M&amp;F)</div> <div><div></div>Premier — Inter Centre Competition (M&amp;F)</div>	750
III	<div><div></div>National Junior Championships (M&amp;F)</div> <div><div></div>In Centre Competiton (M)</div>	500
IV	<div><div></div>In Centre Compotiton (F)</div> <div><div></div>Junior Competition (M&amp;F)</div> <div><div></div>School Sports (M&amp;F)</div> <div><div></div>Entry Level Programming (M&amp;F)</div>	300

**Note:** Lighting levels provided are based on use of a standard yellow indoor cricket ball.



FLOODLIGHTING TIPS

- Where training facilities are being used for warming up for a game held at a ground with higher illuminance levels, e.g. for TV broadcast, then a higher level should be considered to acclimatise the batter.
- Where the practice pitch is used for high-performance training and high-speed video is employed, higher illuminances may be appropriate together with additional vertical illuminance analysis. A qualified lighting designer should be consulted.
- Light loss from nets can be expected; actual losses will depend on the net transmittance factor. When measuring, values can be expected to be lower due to the attenuation of nets.
- It is important to utilise a suitable visual background/wall against which the player and the ball are contrasted to enable quick and clear visual identification.
- When installing lighting indoors, ensure there is adequate distance between the roof netting and the lighting, taking into account the ‘spring’ of the netting.

## Planning and design considerations

The following processes, tips and considerations are provided to assist in new floodlighting installations for cricket. The 'Project Planning and Delivery Stages' and related steps outlined in Section 2 should also be adopted.

### Design process

All cricket lighting should be designed by a qualified lighting and electrical engineer. A structural engineer will also need to be engaged to assist with the footing design.

Some detailed information is required before the engineer can proceed with their design works. They will generally require the following for a new outdoor installation:

- A feature survey and/or civil detailed design drawings to overlay the lighting design on. This will ensure you achieve the most accurate design outcomes.
- Information regarding the existing site including the power installation.

Consider and consult with likely co-tenant sporting codes (all codes of football) with a view to reducing/sharing infrastructure costs, mutual lighting compliance and other shared efficiencies.



If a co-tenant sporting code (e.g. football) is leading a lighting upgrade at a highly utilised site by cricket, encourage the lighting design and related lighting levels to meet the requirements of both sports, or, at a minimum, seek to have the design future proofed to enable an increase in lighting level(s) at a later stage.



When developing a new lighting design, consider the location of any trees around the perimeter of the playing field to minimise the need for tree removal.

### Average horizontal maintained illuminance

The illuminance values in the tables above are what is termed average horizontal maintained illuminance, being the value below at which the average illuminance level on the field of play is not allowed to fall.

For new projects, the average illuminance will need to be higher than the maintained value considering light loss over time due to the environment and scheduled maintenance periods.

It is recommended the lighting design use and justify a depreciation factor, known as 'Light Loss Factor', accounting for luminaire lumen depreciation and luminaire dirt depreciation applicable to the site.

It is recommended lighting testing be conducted at the beginning of each season to ensure the average horizontal maintained illuminance remains in line with recommended lighting levels.

Being exposed to the elements, it is common for lamps or luminaires on floodlights to accumulate dirt/dust or be subject to movement as a result of high winds.

Uncleaned and/or misdirected lighting can significantly impact on average horizontal maintained illuminance levels.

### Pole configuration and heights

In an outdoor situation, the lighting towers should ideally be located so that they do not line up with the cricket pitch.

The height of the poles is determined by the size of the playing field. Under the standard, Class I and II venues require poles with a minimum height of 40 metres, while poles at Class III-VII venues should be 30 metres in height.

### Player glare

Glare can occur when the placement of the lamp is in the line of sight of the ball in player's main view directions. The positioning and height of the light towers will affect the amount of glare present.

A maximum glare rating  $GR_{max} = 50$  is permitted.

### Obtrusive light

All external lighting designs are required to meet the requirements of AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting.

Conformance to this standard shall be demonstrated by the results of calculations and analysis of design methods with respect to the standard. This should be provided with the lighting design and is normally a requirement for the granting of a development or building permit.

The standard sets illuminance and intensity limits in environmentally relevant vertical planes depending on ambient lighting conditions. It also sets limits for limiting glare to transport systems/road users and upward waste light directed into the night sky.

The design should conform to the environmental zone which varies as to the usage and location of the space. For example: suburban areas in towns and cities are rated as category A3 with equates to 10 lux vertical illuminance and maximum luminous intensity per luminaire of 12500 cd at windows.

### Civil and structural works

The foundation design of the same pole and floodlight system may differ between sites due to differing soil conditions.

The number and type of light fittings per tower (wind sail area and weight), the site's wind rating and the site's soil type can affect the depth and outside diameter of the concrete footing required.

The Geotechnical report should be taken at the pole positions and be at a depth of 6m.

### Building permit

Pending the height of new lighting poles or structures, it is recommended you consult with your relevant Building Authority to confirm if a building permit is required.



## Lighting in the vicinity of an airport

If your venue is within a 6km radius of an airport, the relevant authority should be contacted to determine whether any particular restrictions apply.



Whether it be a new installation, or an upgrade to existing lighting, obtaining a hand over manual at the end of the works that outlines the practical completion date, relevant contractor /lighting consultant contact details, warranty period, maintenance history and ongoing servicing requirements is strongly encouraged.

## LED lighting

Many floodlighting installations are being upgraded to LED for the additional benefits they can provide a venue or field of play.

Replacing an installation with LED luminaires is desired due to the advantages of:

- Instant operation.
- Energy savings, in the order of 50%.
- Low maintenance: regular lamp replacement not required (note that if the LED(s) fail, a replacement of the whole luminaire may be required).
- Ability to provide improved lighting control allowing excellent lighting uniformity and less spill to neighbouring properties.
- Option to dim (**Note:** not all luminaires can be dimmed. This will depend on the driver technology choice).

Indoor installations, whether metal halide or fluorescent installations can be replaced with LED alternatives usually in the same position taking advantage of the existing wiring.

A one for one replacement of pole mounted metal halide luminaires can provide higher levels of illuminance with lower energy use. It is important to choose luminaires with low windage so as to not overload the pole. If there is building permit information of the installation, the designer will be able to calculate the maximum number of floodlights of a certain type that can be installed.

An upgrade to an existing installation should meet all the factors of a new installation.



If upgrading an existing lighting installation, being able to provide a copy of the 'as-built' drawings to your electrical lighting engineer will assist with the design process.

If you are looking to retain existing light poles as part of a metal halide to LED lighting transition, consult with an electrical and/or structural engineer first to certify pole suitability.

## ESD considerations


- LED lighting is the most energy-efficient lighting technology. It also has the longest lifespan, minimising waste generation via less frequent replacement of luminaires.
- The ability to 'dim' lighting illuminance to required levels (e.g. varying levels of competition/training) or program them to switch on/off at certain times will minimise energy wastage (and provide cost savings).
- Ensuring the lighting design is as targeted as possible (e.g. onto the field of play) will minimise light spill and energy wastage.
- Consideration should be given to minimising the impact(s) sports field floodlighting may have on local wildlife (e.g. birds and insects).
- Regular inspection and maintenance of light poles and luminaires should support quality performance and longevity of this infrastructure.



Image courtesy of Apex Lighting

# Appendices – floodlighting

## Level of Competition / Content Examples



Level of competition/content examples current at time of publication. Please refer to online version of Guidelines in case of update. Cricket Australia also recommends that a Risk Management Plan be implemented at all venues with competition and/or training floodlighting provision to minimise the risk of injury to players, umpires, coaches and spectators whilst in use.

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AS 2560.2 CLASS	LEVEL OF COMPETITION / CONTENT EXAMPLE (M=Male; F=Female)
I	<ul style="list-style-type: none"><li>■ International (M)<ul style="list-style-type: none"><li>– International Cricket Council (ICC) fixtures, tour matches, Australia A, National Performance Squads (all formats)</li></ul></li><li>■ Domestic (M)<ul style="list-style-type: none"><li>– BBL, Sheffield Shield, One Day Cup, Futures League</li></ul></li></ul>
II	<ul style="list-style-type: none"><li>■ Match Simulation – National/State (M)<ul style="list-style-type: none"><li>– All formats</li></ul></li></ul>
III	<ul style="list-style-type: none"><li>■ International (F)<ul style="list-style-type: none"><li>– Tour matches, Australia A, International Emerging Series</li></ul></li><li>■ Domestic (F)<ul style="list-style-type: none"><li>– WBBL and National Cricket League</li></ul></li><li>■ Premier Senior – 1st and 2nd XI (M)<ul style="list-style-type: none"><li>– All formats</li></ul></li><li>■ National Youth Championships (U/19 M)</li></ul>
IV	<ul style="list-style-type: none"><li>■ Premier Senior – 1st XI (F)<ul style="list-style-type: none"><li>– All formats</li></ul></li><li>■ Premier Senior – All other (M)<ul style="list-style-type: none"><li>– All formats</li></ul></li><li>■ National Youth Championships (U/19 F)</li></ul>
V	<ul style="list-style-type: none"><li>■ Premier Senior – All other (F)<ul style="list-style-type: none"><li>– All formats</li></ul></li><li>■ Community Senior (M)<ul style="list-style-type: none"><li>– All senior club cricket (below premier level), including competitions such as Warehouse, Sub-District, Veterans etc</li><li>– All format representative cricket matches/tournaments on the basis all players participating in the competition are from the same 'Community Senior' level of play.</li></ul></li><li>■ National Youth Championships (U/17 M)</li><li>■ Premier Junior (M&amp;F)<ul style="list-style-type: none"><li>– All formats</li></ul></li><li>■ Junior Cricket Stage 3 (M)</li></ul>
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II	<ul style="list-style-type: none"><li>■ International (F)<ul style="list-style-type: none"><li>– Tour matches, Australia A, International Emerging Series</li></ul></li><li>■ Domestic (F)<ul style="list-style-type: none"><li>– WBBL and National Cricket League</li></ul></li><li>■ Premier Senior – 1st and 2nd XI (M)</li><li>■ National Youth Championships (U/19 M)</li></ul>
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INDOOR CRICKET	
AS 2560.2 CLASS	LEVEL OF COMPETITION / CONTENT EXAMPLE (M=Male; F=Female)
I	<ul style="list-style-type: none"><li>■ International Series (M)</li><li>■ National Championships (M)</li></ul>
II	<ul style="list-style-type: none"><li>■ International Series (F)</li><li>■ National Championships (F)</li><li>■ National Indoor Cricket League (M&amp;F)</li><li>■ Premier – Inter Centre Competition (M&amp;F)<ul style="list-style-type: none"><li>– E.g. Super League Competitions</li></ul></li></ul>
III	<ul style="list-style-type: none"><li>■ National Junior Championships (M&amp;F)</li><li>■ In Centre Competition (M)</li></ul>
IV	<ul style="list-style-type: none"><li>■ In Centre Competition (F)</li><li>■ Junior Competition (M&amp;F)</li><li>■ School Sports (M&amp;F)</li><li>■ Entry Level Programming (M&amp;F)</li></ul>

