

THORN

TIPS #3: **Contractors Guide** **to NCC (BCA)**

LumExpress



What is the National Construction Code (NCC) 2011?

The NCC, previously known as the Building Code of Australia, is produced and maintained by the Australian Building Codes Board on behalf of the Australian, State and Territory Governments. The NCC is given legal effect by building regulatory legislation in each State and Territory.

The legislation consists of an Act of Parliament. NCC 2011 is a uniform set of the technical provisions for the design and construction of buildings and other structures throughout Australia.

Part J6, which relates to Artificial Lighting and Power, has been included in the building code to ensure that all new constructions and refurbishments meet a minimum efficiency level.

Fast Facts

- 1.** Building's certificate of occupancy will not be issued until compliance has been approved by inspector.
- 2.** Failure to comply with building code J6 may incur rectification costs. This may include the cost of replacement light fittings, cost of labour and any other costs incurred in rectifying non compliance.
- 3.** Part J6 applies to all refurbishments and new works (class 2 to 9 buildings).
- 4.** LIKE DOES NOT MEAN SAME. Similar products can greatly differ in their real performance and power consumption - compare manufacturer's details.
- 5.** 'Green' products do not automatically ensure compliance - buyer beware!

For more information contact the Australian Building Codes Board directly or visit www.abcb.gov.au.

When Does J6.2 Affect You?

When a client contracts or tenders a building project under the design and construct method.

Electrical Contractors must ensure they do not exceed the maximum illuminated power densities as set out in Part J6 Table J6.2a of the NCC 2011.

OR

When the electrical contractor substitutes a light fitting specified by an electrical engineer or architect.

Basic Watts per/m² Calculations

TOTAL WATTS OF ALL LIGHTING LUMINAIRES

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AREA (m²)

=

WATTS/m² x ADJUSTMENT FACTORS*

***Adjustment factors are used to improve the Watts/m² output of an application. Refer to Adjustment Factors page for more information.**

Maximum Illumination Power Density (Table J6.2a)

The following table provides an index of the recommended lux level in different applications.

Space	Maximum illumination power density (W/m ²)*	Recommended Lux Level AS1680 Series
Auditorium, Church & Public Hall	10	240
Board Room and conference room	10	240
Carpark - General	6	40
Carpark - Entry Zone (first 20m of travel)	25	800
Common rooms, spaces and corridors in a Class 2 building	8	40 - 80
Control Room - Switch Room	9	240 - 320
Corridors	8	40
Courtroom	12	320
Entry Lobby from outside the building	15	160
Dormitory of a Class 3 building used for sleeping only	6	*
Dormitory of a Class 3 building used for sleeping and study	9	*
Health care - Examination Room	10	500 - 600
Health care - Patient ward	7	320
Health care - Children's ward	10	320
Health care - All Patient care areas including corridors where cyanosis lamps are used	13	**
Laboratory - Artificially lit to an ambient level of 400lx or more	12	400 - 600
Kitchen and food preparation area	8	240
Library - Stack and shelving	12	240
Library - General library and reading room	10	240 - 320
Lounge area for communal use in a Class 3 building or Class 9c aged care building	10	*
Museum and Gallery - Circulation, cleaning and service lighting	8	80
Office - Artificially lit to an ambient level of 200lux or more	9	320
Office - Artificially lit to an ambient level of less than 200lux	7	*
Plant Room	5	80
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of foods or drinks	18	160
Retail space including a museum and gallery whose purpose is the sale of objects	22	400

School - General purpose learning areas and tutorial rooms	8	240
Sole - occupancy unit of a Class 3 building	5	*
Sole - occupancy unit of a Class 9c aged care building	7	*
Service area , cleaner's room and the like	5	40 - 80
Toilet, locker room, staff room, rest room and the like	6	80
Storage with shelving no higher than 75% of aisle lighting	8	160
Storage with shelving higher than 75% of aisle lighting	10	160
Wholesale Storage and Display Area	10	160

*No recommended Lux Level.

**Recommended Lux Level varies depending on area - refer to AS1680.2.5.

The maximum illumination power density noted in the above table are based on the NCC 2011 Building code of Australia - Volume One. It is important to note that the classification for spaces and allocated figures are reviewed on a regular basis.

Notes

- In areas not listed above, the maximum illumination power density is -
 - for an illuminance of not more than 80lx, 7.5W/m²; and
 - for an illuminance of more than 80lx and not more than 160lx, 9W/m²; and
 - for an illuminance of more than 160lx and not more than 240lx, 10W/m²; and
 - for an illuminance of more than 240lx and not more than 320lx, 11W/m²; and
 - for an illuminance of more than 320lx and not more than 400lx, 12W/m²; and
 - for an illuminance of more than 400lx and not more than 480lx, 13W/m²; and
 - for an illuminance of more than 480lx and not more than 540lx, 14W/m²; and
 - for an illuminance of more than 540lx and not more than 620lx, 15W/m².
- For illumination levels greater than 620lx, the average light source efficacy must not be less than 80 Lumens/W.
- For enclosed spaces with a Room Aspect Ratio of less than 1.5, the maximum illumination power density may be increased by dividing it by an adjustment factor for room aspect which is:

0.5 + (Room Aspect Ratio/3)

The Room Aspect Ratio of the enclosed space is determined by the formula:

A/(HxC)\Where:

A is the area of the enclosed space

H is the height of the space measured from the floor to the highest part of the ceiling

C is the perimeter of the enclosed space at floor level

- In addition to 3, the maximum illumination power density may be increased by dividing it by the illumination power density adjustment factor in Table J6.2b where applicable.
- Circulation spaces are included in the allowances listed in the table.

Adjustment Factors (Table J6.2b)

The following table provides a list of illumination power density adjustment factors that may apply.

Item	Description	Illumination Power Density
Lighting timer in accordance with specification J6	For corridor lighting	0.7
Motion Detector in accordance with specification J6	<p>(a) Where:</p> <p>(i) at least 75% of the area of a space is controlled by one or more motion detectors ; or (ii) an area of less than 200m² is switched as a block by one or more detectors.</p> <p>(b) Where up to six lights are switched as a block by one or more detectors.</p> <p>(c) Where up to two lights are switched as a block by one or more detectors.</p>	<p>0.9</p> <p>0.7</p> <p>0.55</p>
Manual dimming system	<p>(a) Where at least 75% of the area of a space, in other than a sole - occupancy unit of a Class 2 building or a Class 4 part, is controlled by manually operated dimmers.</p> <p>(b) Where at least 75% of the area of a space, in a sole - occupancy unit of a Class 2 building or a Class 4 part, is controlled by manually operated dimmers.</p>	<p>0.95</p> <p>0.85</p>
Programmable dimming system	Where at least 75% of the area of a space is controlled by programmable dimmers.	0.85

<p>Dynamic dimming system</p>	<p>Automatic compensation for lumen depreciation</p>	<p>The design lumen depreciation factor of not less than; (i) with fluorescent lights, no less than 0.9; or (ii) with high pressure discharge lights, no less than 0.8</p>
<p>Fixed Dimming</p>	<p>Where at least 75% of the floor area is controlled by fixed dimmers that reduce the overall lighting level and the power consumption of the lighting</p>	<p>% of full power to which the dimmer is set divided by 0.95.</p>
<p>Daylight Sensor and Dynamic Lighting control device in accordance with Specification J6 - dimmed or stepped switching of lights adjacent to windows</p>	<p>(a) Lights within the space adjacent to windows other than roof lights for a distance from the window equal to the depth of the floor to window head height. (b) Lights within the space adjacent to roof lights.</p>	<p>0.5* 0.6*</p>

*The illumination power density power density adjustment factor is only applied to lights controlled by that item. This adjustment factors does not apply to tungsten halogen or other incandescent sources.

Notes

A maximum of two other illumination power density adjustment factors for a control device can be applied to an area. Where more than one illumination power density adjustment factor (other than for room aspect) apply to an area, they are to be combined using the following formula:

$$A \times (B + [(1 - B) / 2])$$

Where:

A is the lowest applicable illumination power density adjustment factor; and

B is the second lowest applicable illumination power density adjustment factor.

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LIGHTING PEOPLE

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Contact a local Thorn representative on 1300 139 965 to discuss your next project.

This handbook has been designed as a general guide only. It only includes extracts from the NCC 2011 - BCA (Part J6). For detailed information on standards and compliance please contact the Australian Building Codes Board directly or visit www.abcb.gov.au. Note that other regulations including local State variations and alterations may also apply.

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