

LIGHTING AUDIT TOOL

Using a Light Meter

The use of meters to check lighting levels is fraught with difficulty as the output from lighting installations varies over time and is heavily dependent on the elapsed time from the most recent lamp (bulb, tube) renewal.

Light meters can provide a quick guide to the current state of the lighting. When using a light meter the following issues should be considered.



- **Height:** Measure at the appropriate height. Take readings at the height of the surface being viewed (working plane), e.g. table top for dining rooms, at the floor for corridors.
- **Proportionality (of the measuring grid):** There should be sufficient points to obtain reasonable accuracy but not too many as to make the task onerous. For example: for a 4m by 5m room, use a minimum of 12 and a maximum of 20; for a 1m by 2m workspace use a minimum of 6 and a maximum of 12.
- **Inclusion of daylight:** If only the artificial light levels are to be measured either completely shield any daylight or make a first measure with the artificial lights on then subtract a second measure with them turned off. If daylight is to be included remember it varies continuously throughout the day.
- **Shadows:** Take care that the measurer's body does not block light that would otherwise reach the meter detector.
- **Full output:** Don't take measurements immediately after turning the lights on. Allow at least three minutes for them to reach full output, or six minutes for compact fluorescent lamps (energy saving bulbs).
- **Orientation:** Most measurements are of horizontal illuminance, i.e. the meter detector is placed horizontally. To obtain vertical illuminance, e.g. at the mid point of a relevant door, place the meter detector on the vertical surface of the door.
- **Records:** If you are considering repeating the measurements in the future, keep a record of the location and size of grids, the type of meter used, the date, details of any artificial lights not working and ambient temperature.
- **Accuracy:** Don't expect too much; only expensive meters are very accurate. In general errors of $\pm 10\%$ can be disregarded, so if you expect 300 lux and you measure between 270 and 330 lux then no further consideration is required.

Target lighting levels for areas used by people with dementia.

Providers of care need to understand the importance of light as a tool to support many aspects of the needs of people with dementia. A wealth of information is contained in 'Light and lighting design for people with dementia' available at:

<http://www.hammond.com.au/shop/design-for-dementia>

Below is a recommendations table of target lighting levels. A low cost light level meter (a photographer's light meter works well) can be used in the facility to measure the current light level. These can be purchased from any electrical or camera store for around \$50-100 and should be able to measure in lux. It is recommended to have increased direct lighting where people will sit and read, dine or carry out activities.

Lighting Assessment Table			
Area ²	Current lighting level (in lux)	Maintained ³ average horizontal illuminance (in lux) not less than:	Notes:
Living rooms ¹		300	
Kitchens		600	
Bathrooms and Toilets		300	
Bedrooms		300	
Dining rooms		300	
Corridors – night		100	
Corridors – daytime		150	

Notes:

1. For recreation provide 300 lux from artificial lighting but supplement by 300 lux daylight when available or 300 lux from free-standing lighting units when daylight is not available.
2. Recent guidance from relevant professional bodies emphasises that the light levels should be applied only to the task areas, e.g. worktops in kitchens, table-tops in dining rooms. In non-task areas, e.g. between tables, lower levels will be acceptable. However, the values should be an absolute minimum of one third of those on the task areas and preferably be no lower than one half. Due to the nature of lighting design it is likely that when the task areas are properly illuminated there will adequate light on most of the non-task areas.
3. Maintained means the minimum level that is reached, usually just before lamps are renewed.

Guidance on lighting is given in the publication 'Light and lighting design for people with dementia' which can be purchased at <http://www.hammond.com.au/shop/design-for-dementia>. The author of this article is David McNair who is Director of Lighting at Stirling University's Dementia Service Development Centre <http://dementia.stir.ac.uk/>