



## LIGHTING FOR PEOPLE WHO ARE VISUALLY IMPAIRED

This Factfile gives some basic information. More detailed information can be found in the publications listed in the bibliography below.

### **Society of Light and Lighting recommendations**

The recommendations published in Society of Light and Lighting and CIBSE guidance documents were produced for a standard adult building user who has normal sight and is between 40 and 50 years old.

The human eye loses sensitivity during life, and the cornea yellows. As a result, in general, the 70 year old eye can require up to three times as much light as the 20 year old eye for the same visual performance. In addition, the eye loses flexibility, so that adaptation to changes in lighting level, or illuminance, takes longer.

For premises to be occupied predominantly by individuals significantly older than 50 years, some adjustment to recommended task illuminances will therefore be appropriate. In addition, sudden changes in illuminance should be avoided to prevent adaptation difficulties. The light transmission qualities of the eye also deteriorate with age. It is therefore very important to minimise glare.

The Society is only able to provide general recommendations for lighting for people who are visually impaired because the nature and extent of particular vision problems often requires individual lighting solutions. The role of lighting control is important in providing an acceptable lighting solution for people who are visually impaired.

### **Important aspects of lighting for people who are visually impaired**

For many visually impaired individuals, an increase in illuminance will lead to increased visual performance. However, for a significant minority an increase in general illuminance will actually lead to reduced visual performance. It is therefore normally wise not to increase the average maintained illuminance in a space significantly above the figure recommended in

the SLL Code for Lighting, but instead to provide localised or task lighting to assist those who find it useful.

If the type of visual impairment is known, e.g. for an individual in their own home, the illuminance can be adjusted as appropriate. However, even if the overall illuminance is increased to facilitate perception of the boundaries of the space, furniture and movement around the room, localised lighting for specific tasks will still normally be appropriate.

There are circumstances, such as communal dining facilities, workshops, kitchens where localised lighting is not practicable and the general lighting should be provided at illuminances above those recommended in Society of Light and Lighting and CIBSE guidance documents, but with suitable dimming controls.

Ensure that stairs, ramps and slopes are lit so that they can easily be identified when approaching in either direction. Low level lighting can put light onto the treads without glare, but care is needed to ensure that it provides adequate differentiation between treads and risers.

Glare should be strictly controlled, whatever the type of visual impairment. Light sources should always be shielded from view at normal angles. Task lights should be chosen which provide good shielding of the source.

All localised luminaires emit heat. Since the head of the user will probably be very close to the luminaire, great care is needed to choose luminaires, which are cool to the touch. These will normally use compact fluorescent rather than incandescent lamps.

### **Colour rendering - Colour and luminance contrast**

Just as important as the lighting itself is the choice of decor and ensuring that there is colour and luminance contrast between, e.g. doors and their handles. Approved Document M of the Building Regulations 2010 gives a requirement

## LIGHTING FOR PEOPLE WHO ARE VISUALLY IMPAIRED

for contrast between doors, door furniture and door edges, and uses the term 'contrast visually'. However the criterion is based on laboratory measurements, and does not take account of the colour rendering properties of the light source present in the actual room or space.

To assist colour discrimination, the colour rendering index of the light source should be at least Ra80, the recommendation for most interiors, and where feasible, lamps of Ra90 should be used. Fluorescent lamps with this colour rendering performance are readily available, as are some metal halide lamps. Colours for doors and doorframes should be chosen to provide good colour and luminance contrast. Door furniture should be chosen which contrasts well with the door. Doors should not be the same colour as the walls in which they are set. The same principles apply when choosing handrail colours in order to provide contrast with the background wall. To aid orientation and navigation, floors and walls should not be the same colour; nor should walls and ceilings. Floor colours should be chosen to give a floor cavity reflectance near the upper end of the recommended range (20-40%).

### Exterior lighting

For pedestrian areas, low level lighting by means of bollards which do not emit light above the horizontal will often find favour with people who are visually impaired because it provides light on the ground without glare.

Ensure that stairs, ramps and changes of level are lit so that they can easily be identified when approaching in either direction.

Ensure that lights over entrances and exits do not emit glare to those entering or leaving the building. Unshielded bulkhead luminaires will not normally be suitable. Consider the need to provide a gradual reduction in illuminance from inside to outside at night. This will allow the extended adaptation times of people who are visually impaired to be accommodated.

In car parks serving shopping malls or other external areas, ensure that pedestrians leaving the shops and moving towards the car park do not suffer from glare from high mast or roadway type lighting of the parking areas.

### Emergency lighting

Whilst the emergency lighting provided by traditional overhead emergency lighting luminaires is acceptable for people who are

visually impaired, the exclusive use of photoluminescent way guidance systems is not recommended. The various forms of electrically powered way guidance systems are preferred by people who are visually impaired.

### Bibliography

Bright, K. T., Cook G. K., 2010, The colour, light and contrast manual: designing and managing inclusive built environments, Wiley-Blackwell, Oxford ISBN 978-1-4051-9504-1

British Standards Institution (BSI), 2010, BS 8300:2009+A1:2010 Design of buildings and their approaches to meet the needs of disabled people. Code of practice

Building Regulations 2010. Approved Document M - Access to and Use of Buildings (2004 edition incorporating 2010 amendments)

Commission Internationale de l'Eclairage (CIE), 1997, Technical Report 123, Low vision - Lighting needs for the partially sighted, CIE. ISBN 3 900 734 78 X

Goodman, C., 2008, Housing for people with sight loss: a Thomas Pocklington Trust design guide, IHS BRE Press, Bracknell, ISBN 978-1-84806-029-6

RNIB and Thomas Pocklington Trust, 2010, Improve the lighting in your home: make the most of your sight, London

Thomas Pocklington Trust, 2010, Good Housing Design – Lighting: a practical guide to improving lighting in existing homes, Good Practice Guide 5, Thomas Pocklington Trust, London, ISBN 978-1-906464-32-5

© Society of Light and Lighting  
222, Balham High Road  
Balham Sw12 9BS  
Tel. 020 8675 5211