

tion can be used as a guideline at the design concept stage, but it does not take account of energy use.

In practice, much energy is wasted outside normal working hours by lighting being left on when not required, although some lighting may be needed for cleaning and security. Override controls should provide full lighting in emergency conditions at night. Similarly, lighting may not be needed during working hours if there is sufficient daylight or if spaces in the building are vacant. Adequate lighting controls should be installed to allow the building occupants to use only that lighting which is actually needed at any particular time. The control system should be flexible enough to allow an appropriate level of lighting to be achieved and lighting that is not required to be switched off. This may be achieved by:

- localised switching, using switches provided throughout the space and not concentrated at the point of entry
- time switching, providing automatic switching of luminaires to a predetermined schedule
- automatic switching or dimming of lighting in relation to occupancy and daylight level measured by a photoelectric sensor.

Further details of such control systems are given in sections 3.7, Energy management, and 3.8.1, Costs and energy use; also in Lighting controls (see CD).

The ultimate aim must be to achieve the desired lighting solution at the lowest practical energy use. It is possible that a higher installed load combined with a suitable control system to give low hours of use will result in lower energy consumption than an alternative installation with a lower power loading but poorer control. It is thus important to consider both aspects.

### 2.4.3 Lighting energy targets

Table 2.5 provides targets of power density, averaged over the space, for general lighting for a range of applications with particular task illuminance values. The values of average installed power density per application are based on current good practice using efficient lamps and luminaires in good quality installations; however, improvements on these values could be possible. The targets are for an average-sized space (room index of 2.5), with high room surface reflectances (ceiling reflectance 0.7, wall reflectance 0.5, and floor reflectance 0.2) and a high degree of installation maintenance. The values are in average watts/metre<sup>2</sup> for the space and at particular task illuminance levels.