



Figure 15.3
Bye-law housing, Wood
Green, London.
(Source: Edwards, 1981.)

development in the cities was reckoned on average to be around 31–41 dwellings per acre (76.5–101 dwellings per hectare), but ranged between 60 and 200 persons per acre (150 and 500 persons per hectare), although it is hard to find agreement on, or a common form for the precise figures (Swenarton, 1981; Muthesius, 1982). Although overcrowding was reduced, this ubiquitous form of development was often built to poor standards, and still at reasonably high densities, and was perceived by some as failing to provide a sufficiently healthy and spacious environment for its inhabitants.

At the same time as the explosion of bye-law housing, other ideas were being developed. Philanthropic industrialists were

building model villages at Port Sunlight near Liverpool in 1887 (by W.H. Lever, soap manufacturer), and at Bourneville near Birmingham in 1894 (by George Cadbury, chocolate manufacturer). These were developed at low densities of between 5 and 8 dwellings per acre (12 and 20 dwellings per hectare) (Burke, 1971). They gave inspiration and reinforcement to Ebenezer Howard's powerful advocacy for the '*Garden City*', published in 1898. He gave no specific figure for housing density, but rather an indicative plot size, which has been interpreted as a density of 14.25 dwellings per acre (35 dwellings per hectare) (Osborn cited in Burke, 1971). In 1903, Howard raised capital to form a public company 'First Garden City Limited' and purchased a site at Letchworth about 55 km north of London. The new garden city was planned at a density of between 6 and 12 dwellings per acre (15 and 30 dwellings per hectare), and the designers were Raymond Unwin and Barry Parker (Figure 15.4).

From the mid-19th century to the first decade of the 20th century, cities expanded apace, with new development occurring at ever-decreasing densities, spreading out into the suburbs (Table 15.1). Even so, by the start of the First World War, living space for the many remained in dense and overcrowded areas, in housing that was in poor condition. Towards the end of the war, the government decided it needed to act to improve the conditions for those returning from the conflict. For the first time, government stepped in to set density standards, and as will be seen, the ideas of Howard and the influence of Unwin won the day. However, a small diversion is needed to understand what might be meant by the many figures used to express density.

Measuring density

It should be apparent from the above that there are difficulties in determining density figures. When looking back in time it is possible to make some approximations, but there are many differences, and this makes comparison problematic. One of the first problems is to clarify whether the density is measured and recorded as a gross or a net figure – as gross densities usually refer to a whole area and include all uses, net densities are solely concerned with residential uses. At the largest of scales gross figures are produced for countries and for cities, and these are normally expressed in persons per km² or per 1000 hectares (e.g. World Resources Institute, 1996; UN, 2002). Density