



the existing workings in most of these municipalities are worked out the opening of further quarries is unlikely. It is estimated that there is sufficient material in these workings to supply the industry's needs for 75 years at the current output. Apart from the present workings there are no substantial deposits of brickmaking reef in the northern suburbs, and it would seem that the future source of supply must come from the east. The deposits in the Templestowe and Mulgrave areas are very extensive, and the future of the brickmaking industry would appear to be largely bound up with these areas.

Clay

There are no clays in the metropolitan area suitable for making the finer types of pottery such as chinaware and porcelain, but there are clays suitable for the manufacture of other products such as roofing tiles, terra cotta ware, special bricks and earthenware pipes. The quantities of clay used annually for these various purposes is estimated as follows: Roofing tiles and terra cotta ware, etc., 50,000 cubic yards; earthenware and special bricks, 150,000 cubic yards.

Nearly all the white clay used for earthenware pipes and special bricks comes from Campbellfield to the north and Tally Ho to the east. Small deposits have been found at Preston and Heidelberg, but none of these is large enough to warrant opening pits. The Mitcham area supplies about 15,000 cubic yards of the darker clays used annually for the manufacture of earthenware. It is estimated that the white clay at Campbellfield will last for 40 years at the present rate of extraction. Although Tally Ho has several years' supply in the present working, the industry is basically dependent on Campbellfield, and investigations are to be undertaken to locate possible additional sources around the Campbellfield and Tallo Ho areas.

Most of the clay for tiles and terra cotta ware comes from the Blackburn-Mitcham-Mulgrave areas, but large quantities have also been obtained from the northern and eastern suburbs which supply the "reef" for red bricks. Most of the clays in the silurian reef area are suitable for this purpose. It is estimated that more than 5,000,000 cubic yards of such clays remain in the existing deposits, which is enough to supply the industry at its present rate of usage for up to 100 years. The outer eastern suburbs have sufficient quantities to supply the demand indefinitely.

Except for workings in the Dandenong area, clays suitable for firebrick manufacture come mainly from outside the metropolitan planning area.

Stone

Of the 1,600,000 cubic yards of stone quarried annually from the metropolitan area, about 400,000 cubic yards are used for the manufacture of concrete, and the remainder for roadmaking, ballast and other purposes. This stone is obtained from the basaltic areas to the west and north, where the thickness of deposit varies from a few feet up to hundreds

of feet. Much of the land containing stone has been built upon, and in some areas quarrying of stone is prohibited by municipal by-laws. Quarries are still working in the municipalities of Footscray, Sunshine, Keilor, Essendon, Brunswick, Coburg, Preston, Northcote, Whittlesea, Heidelberg and Richmond.

Most of the quarries in production have been supplying stone for many years, and although their future life varies considerably, it is generally estimated that they will produce about 70,000,000 cubic yards of stone, which gives them an average life of 45 years. The expansion of the city is covering much good stone, but there are sufficient quantities in the outer metropolitan area to provide for any likely future requirements. In general, it appears most likely that the future supply will come from along the valleys of the Maribyrnong River and the Kororoit, Merri and Darebin Creeks, from the Brooklyn area and from North Essendon and Epping.

Future Metropolitan Land Requirements for Extractive Industries

At the present time the extractive industries occupy some 1,350 acres within the metropolitan planning area, of which 1,163 acres are being used for this purpose. Most of this land is located outside the urban area. As has been found from this survey, the majority of the existing workings are capable of producing at the present rate for at least another 25 years. It would seem, therefore, that additional land requirements for extractive industries within the metropolitan planning area will be limited, and largely confined to areas outside the boundary of future urban settlement. In addition, some of the old used-up areas will be gradually reclaimed for other purposes. It seems likely that the future land requirements within the metropolitan area may well be confined to between 1,500 and 2,000 acres.

EXISTING LAND USE

Melbourne has so spread its urban boundaries that it now covers an area of land comparable in size to some overseas cities with more than twice its population. Chicago, for example, has a population of 3,500,000 in a similar land area to Melbourne, while New York has 8,000,000 people in an area barely one-third greater.

This widely-spread urban development is a feature of all Australian cities where the density of population per acre of land is amongst the lowest in the world. Melbourne has an overall population density of only 9.3 persons to the acre. Sydney is somewhat similar, Brisbane even lower. Most overseas cities of more than 1,000,000 people have over 20 persons to the acre, while the average density in some European cities exceeds 50 persons. Although it is difficult to compare cities accurately by overall density figures because of the rather arbitrary nature of fixing administrative boundaries, it is at least clear that Melbourne, in keeping with other Australian cities, already occupies a larger area of land