

Table 37  
EXISTING INDUSTRIAL DENSITY

<i>Type of Industry</i>	<i>District</i>	<i>Acreage occupied by Industry</i>	<i>Additional acreage held by Industry</i>	<i>Industrial Workers</i>	<i>Workers per acre occupied by Industry</i>
General Manufacturing	Central	1,622		141,089	87
"	Western	736	787	30,742	42
"	Northern	609	165	25,579	42
"	Eastern	331	330	9,115	28
"	Southern	680	674	22,831	34
General Manufg.	Whole area	3,978	1,956	229,356	58
Oil and Explosives	Whole area	1,203	1,600	2,860	2.5
Extractive Industry	Whole area	1,163	175	6,419	5.5
Total Industry		6,344	3,731	238,635	38

goods. Any density figure must therefore give proper weight to each section in accordance with the importance or size of that section in relation to others. This has been done in each instance by "weighting" the figure for each section according to the proportion of employees engaged in each section. A density figure has thus been arrived at for each broad group of industry based on the weighted average of each section comprising such groups. Table 38 is a summary of the density standards which have been adopted.

The gross density figures have been calculated from the site density figures by making allowances for roads and right-of-ways and for land unsuitable for development. Because of the large proportion of small factory sites in the inner areas and the higher proportion of total area taken up by roads and right-of-ways, 25 per cent. has been added for such roads in these areas. In the outer areas 10 per cent. has been added. In addition five per cent. has been allowed for unusable land throughout the area. An industrial density standard of 70 persons per acre for the inner areas and 50 persons per acre for the outer areas, with an average gross density of 60 persons per acre is considered reasonable. These figures are all based on the full development of sites in accordance with desirable standards. In estimating future requirements, allowance has to be made for land held but not used or land only partially used. Some additional allowance should also be made to ensure freedom of choice of sites.

It should be emphasised that these figures are only general standards based on the existing structure and trends, and that any variation in the relative significance of any particular section of industry, especially those with low density standards requiring large land areas, would have a considerable effect on the overall density standard. The figures should only be used in the broadest sense, and wherever the type of industrial development can be identified the

specific density standards applicable to that type of industry should be used.

#### FUTURE INDUSTRIAL NEEDS OF MELBOURNE

In attempting to estimate the likely future course of Melbourne's industrial development at this stage of Australian progress, it is necessary to realise from the outset that it will be influenced by many variable and uncertain factors, such as the future population, the future national policy regarding the protection of local industries which may well be subject to change through international developments beyond Australia's control, scientific developments in the field of both primary and secondary industry, the success or otherwise of any policy of decentralisation, and so on. The whole industrial development of Melbourne and Australia has been very rapid over the past 15 years through abnormal factors such as the war and the post-war boom. The future may well see a levelling out of many inefficient and highly vulnerable industries that have developed under these abnormal conditions. Any estimates, therefore, must necessarily be arbitrary and subject to change according to the effect of these various intangible factors. However, some attempt must be made to estimate the most likely course of development in the light of available information.

The method followed has been firstly to study the past trend of development of various industries in terms of employment, and endeavour to make some statistical estimate of future employment in accordance with the growth in the population. Secondly, to adjust such statistical projections and make allowance for the factors mentioned above and by obtaining the best possible information on the likely future course of industrial development from leaders in the industry itself. One factor that seems to emerge is that the future size of Australian industry is basically dependent on the size of the Australian market, which means the total population. The distance of Australia from the centre of



world markets, the limited size of the Australian market, and the relatively high unit costs of Australian production are limiting factors to the development of any appreciable export trade in many manufactured goods.

It is necessary, therefore, to distinguish between the various industries which tend to grow in relation to the population and those which do not. It is further necessary to make some general estimate of the proportion of the future work force that will be available for industry. From this an estimate can be made of the proportion that is likely to be absorbed by each section of industry.

From a study of the various sections of industry, it is evident that the relative importance of the major industries is changing. In 1920 clothing was the largest in terms of employment. Today it is engineering. Of the main groups it would seem that food, clothing and textiles, and paper and printing tend to grow in relation to the total population. However, over the past 30 years production in engineering and chemicals and in various newer specialised industries such as plastics has grown more rapidly in proportion to population than in other fields. The future employment in these industries, therefore, cannot be projected according to past trends. Employment in engineering has risen from 20 per cent. of the work force in 1933 to 32 per cent. of the work force in 1947, an increase of 60 per cent., which, if continued, would rapidly absorb the whole industrial work force.

The future distribution of industrial employment which has been used in estimating the future needs of industry is based on the following broad deductions and estimates. It has been assumed that the clothing and food industries will generally tend to grow with the population and absorb their present proportion of the industrial work force; that

textiles, building and construction, timber and furniture, mining and quarrying will fluctuate more according to economic conditions, but will also tend to employ the same proportion of the work force over the long period; that chemicals, rubber and various new miscellaneous sections such as plastics will tend to increase their proportion of the work force, and that engineering will continue to grow with the population, but may absorb a slightly lower proportion of the work force over the long period.

In arriving at the likely future distribution of the work force there are two factors that will affect most sections of industry, namely the question of increased mechanisation and shift work. To a degree these factors are inter-related, but throughout most of industry may tend to average themselves out. However, mechanisation has its greatest scope in the fields of volume or mass production, and for that reason its effect should be most marked in sections of engineering, food, clothing and textiles and chemicals. Shift work is largely dependent on management-labour policy but its greatest scope is similarly in those highly mechanised industries engaged in volume production and using expensive plant installations. With regard to the principal industries, the chief factors affecting their likely development may be summarised as follows:

In general, the heavy industries in the *engineering* field are economically sounder with regard to future development than many of the light industries. The field is one that tends to fluctuate with economic conditions, but at this stage of national development the heavy sections such as foundries, heavy machinery manufacture, steel fabrication, the automobile and agricultural implement industries should all continue to develop with population growth. In the lighter fields, such as the manufacture of small fittings, tools and

Table 38  
INDUSTRIAL SITE DENSITY STANDARDS BASED  
ON FULL SITE DEVELOPMENT

Industry	Inner Areas		Outer Areas		Overall Density	
	Site	Gross	Site	Gross	Site	Gross
Engineering	85	65	65	55	75	60
Clothing	290	220	150	130	220	200
Textiles	140	110	85	75	120	100
Food, Drink, Tobacco	60	45	40	35	50	40
Timber, Furniture, Woodwork	30	20	20	15	25	20
Paper, Stationery, Printing, Bookbinding (ex. Newspaper industry)	100	80	70	60	80	65
Chemicals (ex. Oil and Explosives)	100	80	30	25	50	40
Skins, Leathers, Furs	65	50	60	50	60	50
Rubber	100	80	80	70	90	70
Miscellaneous	130	100	90	80	110	90
General Manufacturing (excluding Oil, Explosives and Extractive Industries)	90	70	60	50	75	60
Oil and Explosives			3	2.5	3	2.5