

Table 40 gives an estimate of the total net acreage of all sites which would be required for general manufacturing purposes (excluding the oil and explosive industries) when the population reaches 2,500,000. The relation between the density and site requirements of these industries is also illustrated in diagram 34.

To arrive at the total gross area which should be zoned for such industry additional allowances need to be made for the following factors:

- (a) Partial development of land.
- (b) Additional land to ensure freedom of choice in selecting sites.
- (c) Space for roads and public amenities.
- (d) Unusable portions of industrial land.

The present acreage occupied and held by these industries total some 6,000 acres, of which about one-third is held by industry but is not being used. In addition, while most sites in the inner areas are fully developed, many of the occupied sites in the outer areas are barely 50% developed, and the total area used is generally only about 75% developed. The proportion of land at present held by industry is abnormally high because of several factors. The post-war boom caused many industries to secure land for future expansion, while low land values in the outer area, high taxation and speculation have all contributed to unnecessarily large areas being acquired. Many of the largest organisations have already secured adequate space to cope with any likely expansion, while others have bought more than they are ever likely to need and may well find it expedient to sell portion at some future date.

For these reasons it is felt that an allowance of 30% over and above the net site requirements should be adequate to provide for such undeveloped industrial land in the future.

Table 40
ESTIMATED AREA REQUIRED FOR GENERAL
MANUFACTURING INDUSTRIES FOR POPULATION
OF 2,500,000

<i>Type of Industry</i>	<i>Est. No. of Workers</i>	<i>Site Density Persons per acre</i>	<i>Est. net site Acreage Required</i>
Engineering	142,500	75	1,900
Clothing	78,000	220	350
Textiles	46,000	120	380
Food	50,500	50	1,010
Paper and Printing	23,000	80	290
Timber and Furniture	23,000	25	920
Chemicals (excluding Oil and Explosives)	23,000	50	460
Skins, Leather and Furs	9,250	60	150
Rubber	9,250	90	100
Miscellaneous	32,250	110	300
Total Net Site Acreage (excluding Oil and Explosives)			5,860

A further allowance of 30% should ensure that sufficient land is always available to provide for freedom of choice. The total area arrived at after taking these factors into account has then to be further increased to allow for roads and unusable land. Based on existing conditions in both the inner and outer areas additional allowances of 25% for roads and 5% for unusable land would seem reasonable.

When all these allowances are added to the net site requirements a total of approximately 12,000 acres is indicated as the future overall land requirements for general manufacturing industry.

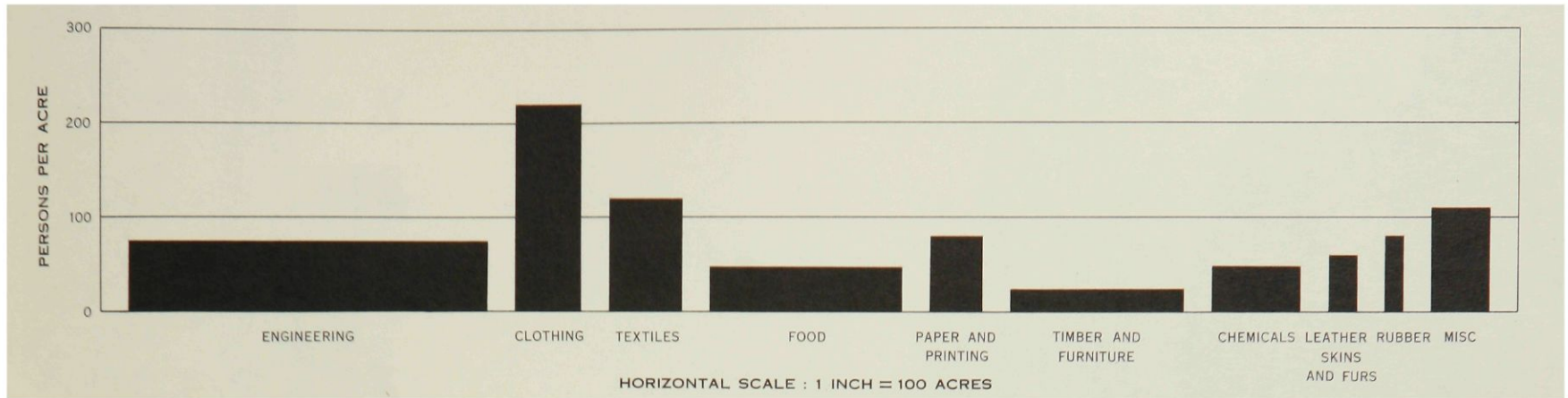
In a similar manner an area of 4,000 acres was calculated as the future gross requirements of the oil and explosive industries. The present acreage occupied by these industries total 1,203 acres, while another 1,600 acres is held for future development, making an existing total of some 2,800 acres. A considerable proportion of this land is outside the urban area. These industries are confined to a few large organisations, most of which have already secured large holdings for future development. In the explosives industry it would seem that an increased proportion of new developments in this field will take place outside the Melbourne area. Because of these factors, a smaller allowance has been made for additional land than with other industries. In addition, because of the large individual site areas involved, the proportion of the space needed for roads is also smaller.

Dispersal of Industry

When considering the extent to which industry is at present concentrated around the centre of Melbourne, it is logical to think immediately in terms of decentralising industry to the outer suburbs. It is a generally accepted fact that travelling time to and from work should be cut to a minimum so that each worker has maximum time for leisure, recreation and education. It is also generally recognised that conditions for work in many older industries in the central suburbs are still below desirable standards with regard to modern amenities, and that space for parking vehicles is inadequate. In the light of these facts, there is a strong social case for dispersing industry to the outer suburbs where there is adequate room for all necessary modern developments and where the work place can be brought closer to the home.

The problem, however, is much more complicated than it might appear. It really resolves itself into the question of the degree to which industry can be decentralised so as to provide maximum comfort and efficiency with minimum dislocation and cost to the community. This leads to a consideration of which industries are most suitable for decentralisation, the degree to which it is possible in each particular instance and the best type of location for new industrial sites.

From this survey it would appear that the clothing and textiles industries and some sections of the food industry



34 RELATION BETWEEN DENSITY AND SITE REQUIREMENTS OF GENERAL MANUFACTURING INDUSTRIES

offer the greatest scope for decentralisation. These industries employ a large proportion of female labour, do not have a very high traffic generation and in some instances are not as dependent on associated industries as most others. Certain sections of engineering where the industry is fairly self-contained or produces specialised lines with low unit transport costs are also suitable for limited decentralisation to locations providing an adequate local industrial labour force.

However, there is a considerable volume of engineering industry which is so linked with other industries that they all tend to be grouped fairly closely together to minimise transport costs and to draw from a wide industrial labour market.

There are also many light industries that distribute throughout the metropolitan area, such as some of the larger bakeries, breweries, ice-cream manufacturers, automobile servicing establishments, all of which need to be fairly centrally located to function efficiently and economically. Other industries such as printers and packaging manufacturers, naturally tend to gravitate around the bulk of industries which they service, with the result that large industrial centres grow with a cumulative effect. It is this close pattern of linked industries from the foundry to the assembly line to the many small associated industries and final delivery to the metropolitan distributors or shipment to country or interstate markets by road, rail or sea, that constitutes the problem of dispersing many industries. The great bulk of road traffic is generated within this network of operations. To spread the industries further out means increasing the distances for road haulage.

Similarly with the labour force. Unless there is an adequate local labour force to support an industry or group of industries in an outer area, this labour will have to be drawn from much further afield than if the industry were centrally located. This could result in increased and less

economical transport, whether public or private. The choice of jobs is much more restricted in smaller outer industrial areas, and a proportion of the local labour force will always tend to work either in the central area or in another industrial area where a more suitable job is offering.

In considering the future industrial needs of Melbourne, therefore, the following broad conclusions emerge with regard to location:

- (a) It is desirable to limit the concentration of industry around the central area.
- (b) Many sections of industry should remain centrally located because of their need to be near the port and distributive centre or because of their close linkage.
- (c) Those industries employing a high volume of female labour and without any particular location problems other than access to labour, such as clothing and textiles and some of the food industries, offer the best scope for general decentralisation. Various other light industries, such as sections of engineering and plastics and some of the service industries, are also suitable.
- (d) Dispersal of the heavy industries and their closely associated industries should be limited to as few broad locations as possible, with access to a wide labour market. These locations should be connected by adequate main traffic routes.
- (e) The special problem of the western district as regards availability of labour, and the special features of this area for low density industries suggest that future industrial development in the area should be confined where possible to such industries, or those closely associated with them.
- (f) However much new industries may desire a central location, the fact remains that few sites are available, and thus much of the new industrial growth must be dispersed.



Bourke Street, the hub of Melbourne shopping