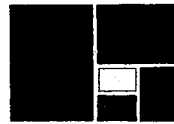


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QUEENSFIELD THE BRISBANE INDUSTRIAL PARK



The Urban Planning and Research Centre

117 Harrington Street,
Sydney, N.S.W.
telephone 27 3633
cables Urbsearch Sydney

June 24, 1963.

The Managing Director,
Industrial Estates (Qld) Pty. Ltd.,
care Savoy Corporation Ltd.,
Head Office,
155 King Street,
SYDNEY. N.S.W.

Dear Sir:

Herewith we transmit to you our Report on the economic and functional feasibility of QUEENSFIELD - The Brisbane Industrial Park at Wacol. The title of the Report - STUDIES IN THE LOCATION AND GROWTH OF MANUFACTURING AND DISTRIBUTION INDUSTRIES IN BRISBANE - indicates the wide range of factors we have examined to test QUEENSFIELD's feasibility. We strongly commend to your attention the recommendations contained in Part III Section 4 at the end of the Report.

The research studies described herein have been carried out during 1962/63, under my leadership, by a team of urban and regional planning specialists. The team has included Mr. B.J. McDonald, A.S.T.C., Dip T.C.P. (Syd), Civil Engineer, and your Company's initial Project Manager; Mr. B.C.S. Harper, B.E., Dip T.C.P. (Syd), M.Sc. (Queen's), A.M.I.E. (Aust), M.A.P.I.; and Mr. G.W. Smith, B.Surveying (Qld), A.M.I.S. (Aust), Authorised Surveyor (Qld. and N.S.W.), M.A.P.I. Mr. Smith has been Research Director of Urbsearch since April 1963, and has written the final report. Previously, Mr. Smith was, for five years, the Research Officer of the Brisbane City Council's New Town Plan Section. He possesses unique experience and knowledge of industry in metropolitan Brisbane.

QUEENSFIELD

THE BRISBANE INDUSTRIAL PARK AT WACOL

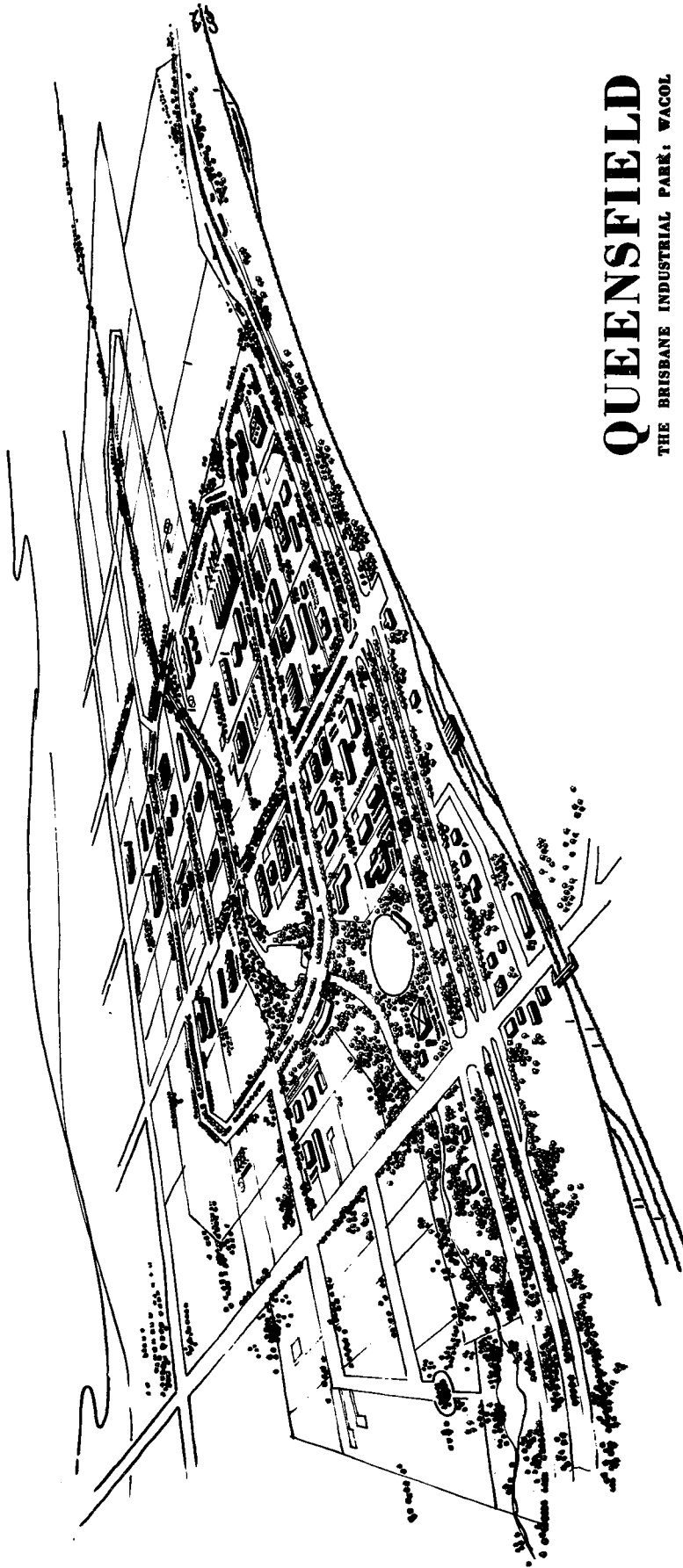
**STUDIES IN THE LOCATION AND GROWTH
OF MANUFACTURING AND DISTRIBUTION
INDUSTRIES IN BRISBANE.**

JUNE, 1963.

A REPORT PREPARED FOR

**INDUSTRIAL ESTATES (Q'LD) PTY. LTD.
A SUBSIDIARY OF THE SAVOY CORPORATION LTD., BY**

**THE URBAN PLANNING & RESEARCH CENTRE
117 HARRINGTON STREET, SYDNEY, N.S.W., AUSTRALIA
TELEPHONE: 273633 TELEGRAMS: URBSEARCH, SYDNEY.**



QUEENSFIELD

THE BRISBANE INDUSTRIAL PARK, WACOL

A SAVOY CORPORATION PROJECT

PLANNING CONSULTANTS, CLARKE GARRARD YEOHANS
117 HARRINGTON STREET SYDNEY N.S.W. 2011

INTRODUCTION

1. History of the Project

In 1959, following the return from an overseas tour by the then Deputy Premier and Minister for Labour and Industry, the Queensland Government decided to promote the concept of the Industrial Estate as a new approach to industrialization. In March 1960, the Government called tenders for the development of an Industrial Estate on an area of 380 acres near the Wacol Railway Station, fronting the main Sydney-Brisbane Highway. No tenders were received on that occasion.

Subsequently, another developer suggested an alternative site to the Queensland Government. In April 1962, the Government called tenders for development of this alternative site as an Industrial Estate. At this juncture, the Savoy Corporation Ltd. indicated to the Queensland Government its interest in the venture.

After extensive preliminary investigations, the Corporation informed the Queensland Government that the alternative site then being considered was unsatisfactory for a number of reasons. The land was liable to flooding. It also suffered from poor road access, and visibility from the main highway was very limited. The Government, after consultations with other interested parties, abandoned the suggested alternative site and withdrew its call for tenders.

The Queensland Government then approached the Savoy Corporation and asked if it were interested in developing the originally proposed State-owned site at Wacol.

The Corporation carried out further surveys to determine the probable costs of development of the site, the availability of industrial land, and the growth of the market for industrial land in the City of Brisbane. In addition, preliminary planning of an Industrial Park was undertaken, according to the highest standards of British and American practice.

INTRO. / 1,2

The Savoy Corporation finally decided that the project was a realistic proposition and indicated its desire to proceed with the development to the Queensland Government.

After many months of careful investigation, planning and negotiation, an Agreement covering the development of the QUEENSFIELD Industrial Park was signed by the Queensland Government and Industrial Estates (Q'ld) Pty. Ltd., a subsidiary of the Savoy Corporation. The Agreement is dated February 12th, 1963.

2. The QUEENSFIELD Site - See Map 1

The site is located on the southeastern side of the main Sydney-Brisbane Highway between Wacol and Gailles Railway Stations. It has a frontage of 4,250 feet to the Highway (Ipswich Road), and frontages to Progress Road, to Boundary Road and to Waterford Road.

Wacol Station which lies opposite the northwestern corner of the site is 11 miles from Brisbane by the existing road system. With the construction of the Darra Parkway from Darra to Kenmore, including the new Centenary Estates Bridge over the Brisbane River, this distance will be considerably shortened. This road is scheduled for completion in 1966/67.

Topographically, the land is a wide shallow valley, traversed by a small creek which meanders over the site from south to north. The eastern side of the site is elevated, but the general slope is very gentle. The western boundary is slightly elevated above the lower central section.

The land is lightly timbered with considerable second growth and undergrowth except towards the southwest, where a large cleared area was once used as a race-horse training track. This area is

INTRO./2

largely freehold land, and is being developed by Rocla Pipes Ltd. for its new Brisbane factory.

The QUEENSFIELD site is presently undeveloped except for a small service station at the northwestern corner and four inferior-quality houses along the Ipswich Road frontage. A small State primary school, Carole Park, occupies a part of the site on the eastern, Boundary Road frontage. All existing development will be either removed or relocated.

The workforce for the Industrial Park can be drawn from the surrounding residential suburbs. These include Inala, a Queensland Housing Commission dormitory suburb about $1\frac{1}{2}$ miles to the east of the Park site. Its present population is approximately 15,000 and this will increase to an expected ultimate of 30,000 over the next decade.

To the north, the Centenary Estates project, which is only in its initial stages, will provide homesites for a population of 40-50,000 over the next 20 years. These will all be within 3-4 miles of QUEENSFIELD. Significantly, the range of homesites to be made available will cater for all income groups.

Inbound towards Brisbane, within 5 miles of QUEENSFIELD and spread along the Railway line, are the suburbs of Darra, Oxley, Corinda, Sherwood, Graceville and Chelmer, which have an existing population of over 20,000 and which will ultimately house some 35,000 persons.

In the opposite direction, the City of Ipswich contains a population of some 49,000 persons. It is one of the most rapidly expanding provincial cities of Queensland. Although the main concentration of population is about 10-11 miles from QUEENSFIELD, there has been a significant growth of residential development in the intervening suburbs in recent years.

INTRO. /2,3,4

The land uses immediately surrounding the site are predominantly rural or can be classed as special uses. To the east the area between QUEENSFIELD and Inala is held as small crop farms producing grapes, fruit and vegetables for the Brisbane market. To the south, the land is undeveloped - the main product, if any, is timber - with some residential development adjoining the south-western corner of the site. Westwards, across the highway and the main western railway line is the Gailes Golf Links which are on part of the site of the Goodna Mental Hospital. To the north, the land is in Commonwealth Government ownership and contains the Wacol Army Camp and Wacol Migrant Centre.

3. Area

The total area of the site is now approximately 420 acres, but it is expected that a further area to the south of the present site will ultimately be included in the QUEENSFIELD Industrial Park. The land is all Crown Land under the control of the Queensland State Government.

4. Requirements of the Queensland Government

The Queensland Government requires that Industrial Estates (Q'ld) Pty. Ltd. fulfills the following obligations:-

- a. To submit within three months detailed plans of the works which the Company will perform, in order that design aspects can be checked with all authorities.
- b. To be responsible for negotiating, with the Brisbane City Council, the terms and conditions under which the bulk supply of water will be available to the Estate and to be responsible also for arranging the supply of electric power by the supply authority.

INTRO. / 4, 5

- c. At the Company's cost, to:
 - (i) Construct all internal roads.
 - (ii) Subject to arrangements with the Brisbane City Council and the Department of Main Roads, reconstruct perimeter roads together with the necessary drainage.
 - (iii) Adequately drain the area.
 - (iv) Construct and install an efficient sewage system according to a rigid specification.
 - (v) Supply water and power reticulation throughout the area.
 - (vi) Realign and pitch Sandy Creek through the area.
- d. To be responsible for negotiating, with the Brisbane City Council, the terms and/or conditions on which the continued efficient operation and maintenance of the sewage system may be effected.
- e. To completely develop, subdivide and service in accordance with the above conditions, an initial area of not less than 60 acres (exclusive of roads) within 18 months from the commencement of the development lease on February 12th, 1963. In addition, the Corporation is required to develop a second area of not less than 60 acres within 18 months from the date at which 75% of the original 60 acres will have been sold or leased.

5. Tenure of land during and after development

In the first instance, Industrial Estates (Q'ld) Pty. Ltd. has been granted a 30 year development lease of the QUEENSFIELD Industrial Park site.

INTRO. /5,6

Upon completion of the roads, services etc. to the satisfaction of the Authorities involved, upon payment of an agreed price and upon compliance with all the requirements of the Acts, the Savoy Corporation will be granted freehold title to the land. This title will be made available in respect of industrial sites as they are sold provided that evidence is submitted that the land will be used for industrial purposes.

6. Summary of Studies

This, then, is an outline of the history and requirements of the Queensland Government's efforts to establish an Industrial Park and of the Savoy Corporation's commitments in the development of QUEENSFIELD.

The ensuing report sets out the investigations and research carried out by the Corporation and its consultants.

Broadly, the report consists of three main parts:-

Part 1 deals with industry as it exists today in Brisbane. It outlines its history, its recent growth, its location and its deficiencies. In addition, it sets out information on the cost and availability of land for industrial purposes and the suitability of the land available. Finally, it reports on the attitude of management of industry in Brisbane to the various problems of location and site requirements.

Part II sets out the future of Brisbane seen through reports of various Authorities and researchers in the fields of demography and industrial development.

Part III contains an analysis of the industries which are likely to find QUEENSFIELD a suitable location or which, by the nature of

INTRO. /6

their processes, are suitable for inclusion in the Industrial Park. It describes studies at greater depth into selected industries and their detailed locational requirements. Section 4 of this Part sets out the Conclusions reached, and the recommendations made by the Urban Planning and Research Centre to the QUEENSFIELD management.

PART I. AN OUTLINE OF THE PRESENT SITUATION

I. Industry in Queensland - Historical Notes

From the earliest days of Australian settlement, the processing of a variety of products, of primary or of naturally occurring origin, had been carried on in a limited way. These activities covered sawmills, flourmills, brickworks, lime kilns, boiling-down works and breweries. The discovery of mineral deposits, and the introduction of railways, laid the foundations of the present diversified industrial structure.

Prior to Federation, manufacturing industry in Australia was engaged primarily in the production of goods for local use, mainly foods, furniture, bricks, clothing made from imported materials, printing, repairing rather than the manufacturing of machinery, and the preliminary treatment of primary products such as wool-scouring and sawmilling. The removal of interstate trade barriers, and the introduction of Commonwealth-wide duties on some items of imports, gave manufacturing industries an impetus which was further expanded by the 1914-18 War. In 1921, the formation of the Tariff Board helped materially to foster new industries by offering them high tariff protection.

The diversification of the basic industries in Australia continued during the depression period of the thirties when the paper, chemical and engineering industries developed and expanded behind very high tariffs. The Second World War, by halting imports and by turning Australia into a supply base, stimulated further rapid growth in the engineering, textile, food processing and chemical industries.

After the War, several factors continued to assist industrial expansion. General world shortages of materials, the return of war industries to civil production, the adaption of military installations to industrial use, and Governmental assistance, particularly in decentralization schemes for industry, all helped to place Australian manufacturing industry on its present firm foundations.

I. / 1

Over recent years, migration and natural population increase, higher living standards, and a small, but increasing, export market, have produced the greatest era in the expansion of manufacturing that Australia has yet witnessed.

In Queensland, largely as a result of early political policies, primary industry has, until recently, been favoured by Governmental actions more than has secondary industry. These early attitudes delayed the development of manufacturing within the State. When Federation came, the removal of trade barriers between the States forced the newly developing Queensland industries to compete with comparatively well established Southern firms. Even then, economies of scale allowed the Southern manufacturers to market their goods in Queensland, competitively with and even cheaper than the local producer. These economies outweighed transport costs.

The result of this has been that in many lines, the Queensland market is still supplied almost completely from other States. At the same time, certain industries in Queensland have established themselves as major suppliers of the Australian market and also as export income earners.

The distribution of manufacturing industry in Queensland follows the overall Australian pattern. The concentration of population into the relatively few capital cities has resulted in almost all market oriented industries establishing in close proximity to these metropolitan areas. This concentration has been further accentuated by the pattern of road and rail routes radiating from the capitals, and the variable freight rates on railways which favour the movement of raw materials rather than of finished products.

In fact, the only major industries which have located away from these centres are those with strong locational requirements which could not be satisfied within the metropolitan regions or which are connected with the processing of primary products (including minerals) not produced close to the Capital cities.

I./1

In recent years, some decentralization has occurred in Queensland's industry. For example, Townsville has developed the nucleus of an industrial city. The fact remains, however, that with some exceptions notably the metallurgical, slaughtering, and dairy products industries, the bulk of Queensland's manufacturing is concentrated in the City of Brisbane.

Queensland manufacturing has developed with the growth of the State, but this growth has not been as rapid as in N.S.W. and Victoria. In the twenty two years, 1938-39 to 1960-61, the number of factories in Queensland increased by 91%, compared with 149% in N.S.W. and 86% in Victoria. The number of factory employees increased by 93%, compared with 106% in N.S.W. and 93% in Victoria. The value added to raw materials by the process of manufacture, which is probably the best measure of activity in manufacturing industry, increased in Queensland by 780%, compared with 970% in N.S.W. and 960% in Victoria.

If value of factory production is compared to State population, it becomes evident that industrialization in Queensland has not developed at the same rate as it has in the other States. In 1960-61, for example, value of factory production per head in Queensland was £112, compared to £246 in New South Wales, £239 in Victoria, £176 in South Australia, £131 in Western Australia and £175 in Tasmania. A major reason for this apparently low figure is the low percentage of the total population engaged in manufacturing in Queensland - a reflection of its primary producing character. To illustrate this, in 1960-61, Victoria had 13% of its total population engaged in factory production, N.S.W. had 12%, South Australia 10% and Tasmania 9% whilst Queensland and Western Australia had only 7%.

Whilst Queensland appears to be an undeveloped State in terms of secondary industry, it is the only State in the Commonwealth which has a credit balance in terms of international trade. This, again, is a reflection of the importance of the primary and mineral producing industries in the State's economy. In terms of interstate trade, however, Queensland shows a deficit of imports over exports of over £100,000,000 in value, most of which is made up of manufactured articles.

I. / 1

The following table summarises the position in 1959-60:-

	N.S.W.	Vic.	Q'land.	S.A.	Total Australia
<u>Factory Production</u>					
Total value of Production (in £A000)	916,446	686,501	162,392	162,973	2,074,882
Value of Produc- tion per person employed. £A	1,962	1,799	1,551	1,646	1,833
Value of Produc- tion per head of population. £A	241.40	243.47	109.86	174.56	205.65
Average Salary per male Employee. £A	1145.65	1145.80	971.95	1088.21	1111.86
Average Salary per female Employee. £A	650.82	649.38	528.65	575.58	633.25
<u>Agricultural Production</u>					
Net Value of Agricultural Production (in £A000)	98,171	104,031	73,471	58,323	391,861
Net Value per head of Population. £A	25.4	36.0	48.8	60.9	37.7

I. / 1

	N.S.W.	Vic.	Q'land.	S.A.	Total Australia
<u>Pastoral Production</u>					
Net Value of Pastoral Production (in £A000)	159,960	116,181	94,346	36,119	458,169
Net Value per head of Pop- ulation. £A	41.3	40.2	62.7	37.7	44.1
<u>Mining & Quarrying Production</u>					
Net Value of Mining & Quarrying Production (in £A000)	62,777	13,158	27,460	11,404	138,685
Net Value per head of Pop- ulation. £A	16.2	4.5	18.3	11.9	13.3

It can be seen from these figures that whilst Queensland has a lower net value of factory production per head of population than the other three States, it is a leader in the fields of primary production when these are expressed in terms of population.

The absence of the more sophisticated forms of production from Queensland industrial output must be held largely responsible for the low figure for the value added per employee. The value added in the main productive processes in Queensland is low when compared with production in other States. For example, in the motor industry, Queensland plants are largely final assembly units which add only a small part of the value of production per vehicle when compared to the Victorian plants which produce the components and do the main assembly.

I. / 1, 2.

Employers in Queensland who have experience with labour in other parts of Australia and the world, report that the Queensland worker is as good as, if not better than, his counterpart in other places.

2. The Composition of Manufacturing Industry in Brisbane

In 1960-61, 55,794 workers were employed in factories in Brisbane. This was 9.4% of the total City population. This represented an increase of 1201 persons in the manufacturing industry workforce since 1954 - a period during which the population had increased by 80,000. In comparison with Sydney, Melbourne and Adelaide, it becomes obvious that Brisbane is less industrialized than these cities since they all have higher proportions of their total populations employed in manufacturing (see Table 1).

The variety of industries present in Brisbane is not as great as in the other capitals mentioned. Consequently, the pattern of manufacturing industry is much less complex.

In Brisbane, the broad category - food production - is the largest employer of workers in manufacturing industry (see Table 2). In fact, the predominating industries can be classed as first stage resource users engaged in processing large inputs of locally produced raw materials. This class embraces the slaughtering, food canning, bacon and ham curing, plywood making, sawmilling and hide tanning and curing industries - all of which are well established in Brisbane.

Second-stage resource user industries are less well developed but those established play an important role at both the State and National level. Engineering is the major employer in this field and in Brisbane a large number of firms engage in its various types of activity ranging from shipbuilding and heavy electrical equipment, through structural engineering works to small specialized jobbing plants. Other second stage resource users which are well represented are the production of furniture, paint, textiles, clothing and packaging. Table 3 sets out the composition of manufacturing

I. / 2, 3

industry in Brisbane. There are obvious gaps in Brisbane's industrial composition. Those industries mass producing durable consumer goods are not well represented. In general, the more advanced types of industry have not yet established in Brisbane in any significant quantity.

There are a variety of reasons for their absence, most of which can be traced back to the lack of enthusiasm which greeted secondary industry attempting to establish itself in the early years of Statehood. The abolition of customs barriers between States, which came about with Federation, allowed the larger manufacturers in Sydney and Melbourne to use economies of scale to overcome freight disadvantages to successfully supply the then small Brisbane and Queensland markets. This situation remains to the present day and has been enforced because of past Governmental policies on such matters as company taxation and succession duties. The collection of succession duties, on shares held by non-residents in any company having Queensland assets, has greatly reduced investment in Queensland and consequently the growth of manufacturing in Brisbane. This legislation has recently been amended.

The elimination of these investment disadvantages in Queensland, coupled with its continued growth, should result in the development of a better balanced industrial economy in Brisbane which now forms, together with surrounding districts, the third largest regional consumer market in Australia.

3. Wholesaling & Storage Facilities

Wholesale trading is second only to retailing as a source of employment in Brisbane. Actual statistical data about the quantity and type of trade carried on are not obtainable. It is known, however, that in the Central Business District alone, over 6 million square feet of floor space is used for wholesaling and associated storage facilities. The facts that, of goods shipped to and from Queensland, 90% of the imports and two thirds of the exports are handled by the port of Brisbane, indicate that the City is the major distributing centre for the State.

I. /3

Because of its large and rich hinterland, where a wide variety of products are produced, Brisbane is a major marketing centre. It is the State's only woollselling centre, has the largest stock sale yards, the State's bulk wheat export terminal, and the largest fruit and vegetable markets.

The distribution of storage facilities in the city reflects the modes of transportation originally used to carry the goods involved. The largest concentration is in the Central Business District. Here easy accessibility from showrooms and stock areas to the major market led, in the early days of the City, to the development of numerous multi-storey loft-type warehouse buildings.

These are now becoming obsolete because of traffic congestion and the use of improved methods of handling within the warehouses, e.g. forklifts and pallets. Consequently a large number of warehouses are relocating to suburban sites - the actual location being dictated in part by the value/bulk relationship of the goods handled.

It would appear that a major factor delaying the relocation of many of these firms is economic. Their central sites demand an intensive usage of the land because of their high values. As there is a lack of demand for space from alternative users, the buildings remain warehouses. Whether or not this situation will be of indefinite duration is hard to assess. The growing difficulties of traffic congestion, parking restrictions, and the greater dispersal of retail outlets over a growing metropolitan area are making the retention of many of these inner sites an ever increasing liability to the companies concerned.

Certain specific types of storage facilities have tended to congregate at specific locations throughout the City. For instance, wool stores have tended to cluster about the wharf facilities along the River although many are presently housed in old temporary wartime warehouses in more remote areas. A recent development has been a decision by a major woolbroker to establish a large wool store at Archerfield on a 100 acre site. This reflects the growing

I. /3,4

importance of the motor truck in goods transportation in Brisbane. Timber yards, as another example, are concentrated about railway sidings throughout the City.

The presence of the interstate standard gauge railway and the growing importance of interstate road transport has led, in recent years, to a marked increase in the number of warehouses locating on the southern fringe of the City. Transport terminals where, beside loading and unloading, a variety of service, repair, refreshment and accommodation facilities are available, have recently been established on the major roads leading to Brisbane - primarily on Ipswich Road. These terminals handle mainly interstate transports. Intercity operators still maintain depots, if not their main terminals, close to the centre of the city to facilitate pickup and delivery services. Drive-in wholesale centres catering for individual shopkeepers are now fairly common and the first large discount house will shortly be established in the Rocklea-Archerfield area.

The railways are responsible for the transport of long distance freight, particularly that of a bulky nature, including grain and coal. Perishables, especially fruit from the Granite Belt, are largely consigned by road and with the imminent relocation of the Roma Street Markets to Sherwood Road, Rocklea, an increased demand for facilities to cater for this trade can be expected. Already several cold storage units are being planned in adjoining areas.

Air transport is rapidly increasing in use but as yet it has not created any demand for special warehousing facilities other than those provided by the airline operators. Appendix I shows the centres which are connected to Brisbane by direct air services.

4. The General Location of Industry in Brisbane - see Map 2

There has never been a statutory town planning scheme for the City of Brisbane, but at the present time, a planning scheme for the City is before the Minister for Local Government for his approval. However, by powers granted under various ordinances, control over

I./4

the establishment of industries has been exercised by the Brisbane City Council and today there are distinct industrial areas. These can be divided into four groups in terms of their location in relation to the metropolitan area as a whole:-

- a. The Central Business District and the Inner Suburbs.
- b. Scattered Industrial Areas in the Residential Suburbs.
- c. The Lower Reaches of the Brisbane River.
- d. The Suburban Fringe.

These are dealt with briefly below: (see Map 2 for their general location)

a. The Central Business District & Inner Suburbs

These are the old established industrial areas. They contain some major enterprises but are generally characterised by a large number of smaller factories. Many of the larger firms are relocating to sites in the suburban fringe areas, e.g. R.M. Gow & Sons, and Hastings Deering, have recently moved from South Brisbane. This area tends to attract firms which employ female labour and the majority of the City's clothing, millinery and similar industries are located here.

With the possible exception of the Newstead area, there has not been a great deal of new building for manufacturing purposes within this broad zone. Warehousing has become the predominating use with a large number of new buildings being constructed in recent years. In almost all cases these represent the relocation of firms from congested inner areas to less congested sites within the inner suburbs, e.g. D.H.A. from the City to West End. The major individual industrial building in the area in recent years is the almost completed Queensland Newspapers plant at Bowen Hills - a plant with very distinct locational requirements.

Land is available in this area but it is highly priced (up to £45,000 per acre). Furthermore, it rarely becomes available in large parcels and is usually improved with a structurally sound but technically obsolescent building. Furthermore, all new buildings in this area are required by the Brisbane City Council to be built of first class materials throughout which makes the cost of new construction high.

b. Scattered Industrial Areas in the Residential Suburbs

These zones are almost all limited in extent. Their origins can usually be traced to either of two general sources or a combination of both. The older established zones are usually centred on some existing industry, e.g. Fowlers' Potteries at Alderby, Gibson's Tannery at Stafford, or old wartime installations as at Bulimba which have been overrun by sprawling suburbs. The newer zones which are mainly composed of smaller industries, represent lapses in planning control (for a variety of reasons) which have allowed individual plants to establish on isolated sites - frequently on land unsuitable for housing. In subsequent planning scheme proposals, these have served as the nuclei of industrial zones, e.g. Indooroopilly, Chermside and Yeronga.

The firms in these zones vary in size and type, and in a number of them there are considerable areas which have yet to be developed, e.g. Stafford. Land here is expensive (£5,000 - £10,000 per acre) and the remaining sites are often the poorest land. Filling and draining works would be required in the majority of cases.

c. The Lower Reaches of the Brisbane River

The Brisbane River below the City proper effectively divides the suburbs into two parts. Plans are presently being formulated to overcome this with the establishment of a cross river vehicular ferry at Hamilton. Topographically and industrially, the two sides of the River are very different.

On the North side, the land is very flat. Between Eagle Farm airport and the River, the State Government has a planned industrial area known as Hamilton Lands. This area of some 1800 acres has been under development for almost 30 years and is being reclaimed by hydraulic filling. Foundations in the area are very poor. Brisbane's major wharves are located along the River bank. This area has a great concentration of oil terminal installations and the Amoco oil refinery is about to be constructed downstream on a reclaimed area of Bulwer Island.

Industries established in Hamilton Lands include motor assembly, packaging, fertilizer, warehousing, machinery and builders' hardware manufacture, and a bitumen refinery.

Land is available for lease in Hamilton Lands as it is reclaimed - at present, a very slow process. In addition, a minimum of five feet of solid filling is required to give adequate foundations for industrial buildings of anything more than light construction.

North of the Hamilton Lands area, several firms have established large plants. These include the Ford Motor Company's assembly plant, Windsor's engineering works, Humes' pipe works and the Oxley plywood mill. The close proximity of the Brisbane Airport to this area results in the Dept of Civil Aviation controlling such matters as smoke emission and heights of buildings. The area is severely hampered because of very poor public transport services and because it is well removed from the working class residential areas. Road traffic movement to and from the area is restricted, particularly from the City, by Kingsford Smith Drive at Hamilton.

Under the present planning proposals the Southern Bank of the River is set aside for noxious and hazardous industry. In the east, with the exception of the site of the Ampol oil refinery, the land is low lying and flat, similar to the northern side. To the west, the land becomes undulating, rocky and elevated.

The eastern section was, until recent years, undeveloped

industrially but it is now beginning to become a centre of some importance with such plants as Provincial Traders poultry bulk feed installations, John Cox & Sons wood products and MacTaggart's Ltd. hide and skin stores now established. The Ampol refinery will be some $1\frac{1}{2}$ miles further downstream than any present industrial establishments. There is no other industrial land in the vicinity.

The western section, besides embracing the suburb of Murrarie, a residential area, contains the Brisbane abattoir, Borthwick's meatworks, two bacon factories, a margarine and fertilizer works, an oil terminal and a large plywood mill. All these establishments are set in very large sites. In many cases these are in use as holding paddocks for animals for the abattoirs. Consequently, land is not readily available although the existing development is very sparse.

d. The Suburban Fringe

The newer industrial areas are located on the fringes of the present urban area. Geebung to the North, Rocklea, Archerfield, Darra and Wacol to the South are the main areas. It is into these zones that most new industries of size gravitate, as do those relocating from sites closer to the city.

The Geebung zone has an area of approximately 550 acres. It is still relatively undeveloped but several large plants are established. Adjacent to this zone, Huttons Ltd. are subdividing a large area for industrial purposes surrounding their Zillmere Bacon Factory which is being vacated. Development here is being hampered to some extent by the area's isolation from the interstate rail and road transport terminals.

The Rocklea - Archerfield area is developing rapidly. Rocklea is the centre of heavy engineering works with Commonwealth Engineering, Evans Deakin & English Electric dominating the scene. The development of the area is of recent origin. It was

I. /4

a munitions area during World War II. The Queensland Government owns a large area here and is leasing the existing buildings to a wide variety of industrial concerns.

West of this, towards Clapham Junction, is an area of mixed industries with builders' yards, food manufacturers, and engineering plants being the largest establishments. Towards Archerfield, the development is even more recent, with the majority of the establishments under ten years old. Outbound along Ipswich Road, the prestige factory area of Brisbane is developing. South of this general area towards Archfield Aerodrome and Coopers Plains are large tracts of vacant industrial land. The topography of the whole area is comparatively flat and flooding is a serious problem on some sites. The standard of roads in the undeveloped areas is poor. Here, as in the Hamilton Lands area, the Department of Civil Aviation exercises control over the height of buildings and chimneys erected.

The Darra Area has become the focus for the cement products industry based on the Queensland Lime & Cement Company's plant. The major developments are at Darra itself, but isolated plants have been established at Wacol Station, Gailes and along Ipswich Road. This area originally developed because of its clay deposits. Three brick and pipe works operate in the area.

The Centenary Estates project now being developed will include a large area of industrially zoned land, which is beginning to attract some plants, notably those associated with sand and gravel recovery from the Brisbane River. Much of it is unsuitable for anything but light industry, being very broken and rugged or alternatively being subject to flooding. It is believed that considerable rezoning of land from industrial to other purposes in this area is likely when the Town Plan proposals are finalized.

The Wacol zone is the site of the QUEENSFIELD Industrial Park project where already certain industries have definite sites selected and others are showing marked interest.

I./4,5

There are other industrial zones which have not been mentioned specifically in this short report. Some are well developed whilst others are at present devoid of any industrial development. Many of the latter are scattered over the southeastern quarter of the City where the City Plan is attempting to establish local industrial areas to provide employment close to the workers' homes.

Generally, it can be said that there are four major concentrations of industry:

- a. The inner suburbs
- b. Along the lower reaches of the River
- c. Geebung
- d. Along Ipswich Road from Rocklea to Wacol.

The prime advantages of each can be summarised in each case as:

- a. Ready accessibility to a large labour force, and in particular female labour.
- b. Accessibility to sea and air transport
- c. Accessibility to a large labour force
- d. Accessibility to labour and to interstate markets and/or suppliers.

5. Industrial Growth in Recent Years

As mentioned in Part I, Section 1, of this report, certain industries have grown to considerable importance in Brisbane under the prevailing economic conditions.

I. /5

In order to identify those manufacturing industries which have been expanding in importance in Brisbane in recent years, a study of the number of establishments and the number of workers in each census classification of industry was carried out. This was based on the official Brisbane Factory Statistics. Industries which have been able to expand under the prevailing economic conditions, seem likely to continue to do so and consequently may require new sites for their expanding activities. This analysis was carried out to cover the period 1956/57 to 1960/61. At the time of the analysis, statistics for the year 1961/62 were not available. These have now come to hand and have been added to the analysis. 1961/62 was a year of severe recession throughout the Australian industrial scene and its effect on industry in Brisbane was to reduce employment and, in some cases, the number of establishments in a large cross-section of industrial classifications.

For the purposes of this study, the effects of the 1961/62 recession have been disregarded in identifying the expanding industries because it was felt that these effects could only be of a temporary nature, and that with the return of normal economic conditions, expansion will continue.

There are 178 sub-classes of industry identified by the Census Bureau classification but of these, only 138 types are established in Brisbane. Furthermore, since statistics are not made available in cases where there are only three or less establishments in a sub-class, the number of sub-classes of factories which could be analysed was reduced to 74.

It was desired to identify the expanding industries which will be likely to seek additional or new land holdings and buildings. An expanding industry was defined as one showing an upward trend or stability in the Number of Establishments coupled with an increase in the Number of Workers employed. On this basis, the following classes constituted expanding industries in the City of Brisbane: -

I. / 5

Class 1 - 9	Other Cement Goods
Class 2 - 3 & 4	Glass & Glass Bottles
Class 3 - 1	Industrial & Heavy Chemicals, Acids, etc.
Class 3 - 6	Mineral Oils
Class 4 - 2	Iron Foundries
Class 4 - 3	Plant Equipment & Machinery
Class 4 - 6	Electrical Machinery, Cables & Apparatus
Class 4 - 7 & 8	Tram Cars & Railway Rolling Stock
Class 4 - 10	Motor Vehicle Repairs
Class 4 - 11	Motor Bodies Construction & Repairs
Class 4 - 20	Agricultural Machinery & Implements
Class 4 - 24 & 25	Sheet Metal Working, Pressing, Stamping, Pipes, Tubes & Fittings
Class 4 - 26	Wire & Wire Making
Class 4 - 32	Wireless & Amplifying Apparatus
Class 5 - 11	Jewellery, Watches & Clocks
Class 8 - 4	Millinery
Class 8 - 5	Shirts, Collars & Underclothing
Class 8 - 6	Foundation Garments
Class 8 - 8	Hats & Caps
Class 9 - 9	Confectionery
Class 9 - 12	Bacon Curing
Class 9 - 21	Aerated Waters, Cordials, etc.
Class 10 - 4	Joinery
Class 12 - 2 & 3	General Printing & Book Binding
Class 12 - 4	Manufactured Stationery
Class 12 - 7	Cardboard Boxes, Cartons & Containers
Class 12 - 8	Paper Bags
Class 13 - 1	Rubber Goods & Tyres
Class 13 - 2	Tyre Retreading & Repairing
Class 14 - 3	Plastic Moulding & Products
Class 15 - 10	Other Miscellaneous Products

In the other 39 classes of industry, for which Census information was public, a static or decreasing trend was evident over the 1956/61 period. (See Table 4.)

I./6. Gaps in Manufacturing in Brisbane

It is obvious, that as only 41% of the possible industrial sub-classes could be dealt with in the above analysis, there are considerable gaps in manufacturing industry in Brisbane. In order to identify these gaps in a broad manner, a list of goods imported to Queensland was drawn up. Whilst it is recognised that in any region some imports are inevitable, there must be portions of the £286 million worth of imports into Queensland which could be produced locally. Appendix II sets out a table of items, imported from overseas and interstate, which amounts to more than £100,000 from either source. Amongst the largest of these imports are:-

- Milk and cream; preserved, condensed or dried.
- Other foodstuffs of animal origin
- Tea
- Confectionery
- Other foodstuffs of vegetable origin & non-alcoholic beverages
- Wine & Spirits
- Tobacco, unmanufactured
- Tobacco, manufactured
- Cigarettes
- Other vegetable substances & fibres, cork & cork manufactures
- Piece Goods
- Carpets & carpeting
- Textiles
- Footwear
- Apparel
- Kerosene
- Lubricating mineral oil
- Other petroleum & shale oils
- Prepared paints & varnishes, dryers & thinners
- Iron & steel products
- Non-ferrous metals
- Hand tools
- Hardware - builders & engineers
- Motor vehicles & parts
- Metal manufactures (except machinery & electrical apparatus)
- Electrical wire & cables
- Radios, gramophones & parts
- Heating & cooking appliances, electrical, including irons
- Other electrical apparatus & machinery

I. /6

- Internal combustion engines & parts
- Tractors & parts
- Household machines (including refrigeration machinery & fans)
- Agricultural, horticultural, dairying, etc. machinery & implements (including parts)
- Other machinery (except dynamo electrical)
- Rubber Tyres & Tubes
- Other rubber manufactures (not apparel)
- Other earthenware, cement, china, glass & stoneware
- Paper (printing & writing)
- Paper (wrapping & miscellaneous), paper board & pulp
- Paper manufactures & stationery
- Sporting material, toys & fancy goods
- Optical, surgical & scientific instruments & appliances, photographic goods n.e.i. (including films)
- Drugs & medicinal preparations
- Perfumery & toilet preparations
- Soap & soap substitutes
- Fertilizers
- Other drugs & chemicals
- Other miscellaneous goods

In addition, by an examination of available statistical data on the Principal Articles Produced, 1959/60, a further insight can be gained into the gaps in manufacturing industry in Queensland, and consequently in Brisbane. A detailed analysis of these statistics reveals over 500 individual items or types of items which are not produced in Queensland. There are, also, a large number of categories where the Queensland production appears to be inadequate to supply the probable market in existence in the State.

The items listed below have been selected from those not produced in Queensland. It is regarded as a list of products of those industries most likely to be able to establish in Queensland under existing conditions. Certain items have been omitted because developments planned in the State will fill the market gaps presently existing.

Whether or not the market is sufficient to warrant the establishment

I. /6

of any of these particular types of industry in Queensland has not been determined in detail. It can be said, however, that conditions in, at least, some of the industries listed below seem to indicate that an investigation of the regional market potential could well be rewarding.

Products not produced in Queensland, but for which a market probably exists, or which could be established under existing conditions, are as follows:-

- Abrasives
- Adhesives & Glue
- Forage Harvesters
- Post hole diggers - power driven
- Sheep shearing machinery & parts
- Wool Presses
- Air Compressors & Parts
- Air Conditioning Equipment
- Aircraft
- Aluminium extrusions
- Axes & Hatchets
- Ladies Handbags
- Cricket Balls
- Golf Balls
- Tennis Balls
- Wash Basins & Baths - cast iron
- Bathing Suits
- Battery components
- Bearings, ball & roller
- Conveyor belting
- Building Boards - made of fibre - straw
- Boot & Shoe accessories
- Bottle tops & lids - metals & plastic
- Boxes & cartons - transparent film
- Mens & Boys Braces
- Brass extrusions
- Bricks - fancy & lime silica
- Brushes
- Electric Light bulbs & tubes
- Buttons

I. /6

Cables
Canned cakes & puddings
Candles
Cans - plastic
Cards - playing
Ceiling sheets - steel
Cigarettes
Cigars
Cloths & fabrics
Clothes Pegs
Coat hangers
Coats - waterproof
Cocoa Powder & Drinking Chocolate
Combs
Confectionery, particularly chocolate
Condensing unit assemblies
Cords
Corsets
Cosmetics, Facial, Hair & other Toiletries
Curry Powder
Dog Biscuits
Earthenware tableware
Electrical Appliances - Dishwashing machines
Floor Polishers
Irons
Jugs
Mixers
Portable Tools
Toasters

Engines - Petrol
Felt for Clothing, Footwear, etc.
Fish Paste
Floor coverings & Carpets
Plastic footwear
Forks - garden, household & other
Furniture Fittings (metal)
Gloves
Gluten (wet)
Golf Clubs
Gut
Hammers

I. / 6

Handkerchiefs
Hats & caps
Inks - writing & drawing
Insecticides & vermin sprays
Irrigation equipment
Kitchenware
Knives
Labels
Lavatory seats - plastic
Lawn mowers
Lead products
Leathercloth (plastic)
Machinery - Boot & Shoe
 Construction & Earthmoving
 Laundry
 Seed cleaning
 Sugar
Matches
Mayonnaise & Salad Dressings
Meals of various grains
Medicines
Metals
Meters - Electric, Water
Milk & Cream - condensed, evaporated or concentrated
Floor mops
Motor Accessories & Parts
Mustard
Oils - of organic origin
Paper - specialty papers particularly
Paper articles
Paper & Paper Felts
Pens & Pencils
Perambulators & Parts
Phonograph Records
Pigments
Pipes of selected types & fittings
Plastics
Polishes
Racquet frames
Record changers
Recorders - tape & wire

I. /6

Ribbons, Fringes, Braids & Bindings
Saline Powder
Saws
Slide Fasteners
Soaps & detergents of selected types
Socks & stockings
Sodium compounds
Soles & soling material other than leather
Soups - canned
Spades & shovels
Spaghetti - canned
Spanners & wrenches
Spectacle Frames - plastic
Spirits
Steel wool
Stoves
Tapes
Television sets
Threads
Tiles of cork, plastic & terrazzo
Tomato products
Towels
Tools - smaller hand & cutting tools
Transformers
Trucks - fork lift
Twine
Vegetable - dehydrated & quick frozen
Washing machines
Watch cases
Water heating systems - gas fired
Wireless - car
Wireless parts
X-ray apparatus

Note:- Many of the items appearing on this list cover more than one particular product, but it is not implied that all the products so covered are not produced in Queensland. There are, however, one or more products under each general heading which are not produced in that State.

I. / 6

As well as those items not yet produced in Queensland, there is also a wide range of items where, from a cursory inspection of the available data, it would appear that the local production is insufficient to meet the demands arising from that market. A list of these items is presented below: -

a. Agricultural implements & machinery, in particular:

Feed grinders & hammer mills
Harrows (all designs)
Headers
Mowers - Agricultural
Ploughs
Tillage implements

The basis for this selection was that the value of production of these implements in Queensland represented less than 19% of the Australian total. The parameter, 19%, is the proportion of the total value of production of agricultural products in Australia, which is produced in Queensland.

b. Consumer goods, in particular: -

Handbags
School bags
Suitcases
Baking powder
Belts - mens & womens
Biscuits
Blankets
Brooms
Cake, Scone & Pastry Dry Mixes
Cardigans, Pullovers, etc.
Greeting Cards
Confectionery other than chocolate
Cordial Extract - concentrated
Crumpets
Custard Powder
Envelopes

I. / 6

Fats - edible
Boots, shoes, sandals, slippers - other than of rubber
Games
Gelatine
Ice Cream mix - powder
Icing Sugar
Jams & Jellies
Neckties
Oatmeal
Toilet Paper
Pickles
Pyjamas & nightdresses
Sauces
Shirts
Soaps
Spices
Toys
Underwear
Vegetables - preserved
Vinegar

The parameter selected here was 14%, being the percentage of the Australian population resident in Queensland.

c. Durable goods, including:-

Bath heaters
Baths
Blinds & awnings
Bassinets & stands, Moses Baskets, etc.
Cement blocks
Electrical appliances
Fibrous plaster sheets
Fibrous plaster acoustic tiles
Firebrick & blocks
Furniture
Garbage & Sanitary Cans
Motor Vehicles
Phonograms

Paint & Varnish removers
Paint
Refrigeration equipment
Sinks
Stoves
Thinners for paints

The parameter used here was again 14%, being the percentage of the total number of dwellings in Australia, in Queensland.

- d. Other goods, which appear to offer opportunities for expansion of production include:-

Bolts & Nuts
(Less than 5% of Australian Production in Queensland)
Picture & Mirror Frames
(Less than 6% of Australian Production in Queensland)
Rivets
(Less than 5% of Australian Production in Queensland)
Screws
(Less than 5% of Australian Production in Queensland)
Small boats
(Less than 3% of Australian Production in Queensland)
Steam, Gas, Water Fittings, Valves & Parts
(Less than 10% of Australian Production in Queensland)
Steel, Structural Fabricated
(only 6% of Australian Production in Queensland)
Surgical & Medical instruments and appliances
(Major part produced in other States)
Telegraph & Telephone apparatus
(Over 95% of Australian Production in N.S.W.)
Metal Washers
(Less than 5% of Australian Production in Queensland)
Weed Killers
(Less than 10% of Australian Production in Queensland)
Yarns
(Major part of the total Australian Production in the other States)

I./7. The Cost of Industrial Land in the City of Brisbane

The nearest industrially zoned lands to QUEENSFIELD are those areas associated with the Centenary Estates Project. None of this land has been developed to any extent. Much of it, as has been described earlier, is not suitable for industrial development because of rugged topography or liability to flooding.

Around Darra, a considerable amount of land is occupied by the Queensland Lime & Cement Company and other companies whose plants depend on large inputs of cement. The only sale in the area was to Dowsett Products Pty. Ltd. in 1959, the vendor being the Commonwealth of Australia. The price paid in for this 18½ acre site with rail frontage close to Wacol station was £6,900. This cannot be regarded as a fair indication of the market.

Sales of industrial land in the area lying between Oxley Creek and Stable Swamp Creek, in the vicinity of Ipswich Road, are much more frequent and informative. This is the closest industrially zoned land, with highway frontage, to QUEENSFIELD, with the exception of some land held for extractive industry. The area has seen rapid growth of industry in recent years and, coupled with the high quality of some of the factory buildings erected, is now a prestige location. The Brisbane City Council insists that sites actually fronting the highway - Ipswich Road - be of a minimum size of ten acres - the object being to reduce the possibilities of ribbon development choking traffic flows along the highway. This restriction does not apply at QUEENSFIELD, because of the provision of a service road paralleling the Highway.

The largest area at present being offered for sale to industrialists is some 80 acres in extent. It is subject to local flooding and will require filling and storm water draining by open cuts before building would be allowed. It was originally offered in ten acre lots with a token drainage system. The price asked was £4,000 per acre without the provision of any services or improvements. No land was sold in this initial offer. Currently, the owners are trying to sell smaller lots but have met with opposition from the Brisbane City Council which refuses to approve of the "less-than-ten-acre" sub-divisions on the highway frontage where all prospective buyers are desirous of locating.

I./7

Other land in the vicinity is being offered for sale by Besley & Pike, also at £4,000 per acre, once again suspect from the point of view of flooding. There is also land owned by a Mr. Collins, which has no highway frontage, at between £2,500 and £3,000 per acre. This latter land is served only by an unformed dirt road.

On the southern side of the highway, where more intensive industrial development has taken place, a 10 acre block owned by Brisbane Truck & Tractor Pty. Ltd., is available at £4,500 per acre. This is good high land with highway frontage. It is significant that it was purchased as rural land in 1957 for £420 per acre and the only alteration made to the land to date has been a rezoning to industrial.

Past sales in the area include:-

- a. In 1960 Besley & Pike paid £40,000 for 50 acres although 50% of this cannot be utilized. For another block of $3\frac{1}{4}$ acres with highway frontage, the same firm paid £15,000.
- b. In November, 1960, Freighter Industries paid £17,000 for one acre and 20 perches with highway frontage, but, prior to that, in 1959 had acquired 15 acres from the same owner, off the highway, for £2,500 per acre.
- c. In June 1960, a parcel of land containing 6 acres, 1 rood, 18 perches, on the southern side of the Ipswich Road, close to Oxley Creek, was sold for £15,500 or £2,500 per acre.
- d. Balm Paints in 1954 purchased 14 acres for £8,750.
- e. In 1956, Queensland Transport Terminal purchased ten acres for £9,000.
- f. In July 1957, Melwire (Qld) Pty. Ltd., purchased ten acres with highway frontage for £8,000.

I./7

- g. In September, 1957, Palm Sales Pty. Ltd., paid £8,000 for a 4 acre 3 rood 2 perches site on the corner of Ipswich Road and Banting Road.
- h. In March 1958, a parcel of $9\frac{1}{2}$ acres on the corner of Ipswich Road and Ashwer Street was sold for £19,000.
- i. In April 1958, International Harvesters paid £26,675 for $13\frac{1}{2}$ acres with highway frontage.
- j. In 1957, a 5 acre site next to Melwire brought £7,000, and an adjoining service station site brought £11,500.

Off Ipswich Road, land prices tend to fall. On Balham Road towards Archerfield Aerodrome, 5 acre lots are being offered for sale at £2,500 per acre. This area is poorly located in respect to services and made roads.

In other industrial areas, land values vary - there being definite signs of an increase in values towards the centre of the city.

At Rocklea, which lies a little closer to the City than the sales listed above, one $2\frac{1}{2}$ acre parcel was sold in 1957 for £2,300 and has since been resold at £15,000 in April 1960 and again in May 1961 for £30,000 or £12,000 per acre. Sites in this area are being offered for sale currently at prices from £4,000 to £8,000 per acre. The lower price is almost certainly for land badly affected by the flooding of Rocky Water Holes Creek.

At Coopers Plains, which lies off the major highway but which is served by the interstate standard gauge railway, land is being sold between £1,640 and £3,000 per acre. The lower sale was of land subject to serious flooding whilst the latter was of comparatively good industrial land without access to the rail facilities, but which adjoined the land sold in the previous sale.

At Rocklea and Salisbury there is little land available for development.

I./7, 8

Most of it is leasehold being controlled by either the State or Commonwealth Government.

The Rocklea Munitions Area has been progressively developed since the World War II and is now approaching saturation point. Sales here range between £1,000 and £4,000 per acre.

The slow filling of this estate should not be taken as an indication of industrial expansion in Brisbane as the area in the main presents a very unsatisfactory picture with industries occupying old Army huts scattered in a haphazard manner with no systematic road system, parking facilities or beautification. The general aura is rather dismal and the area has no prestige value whatsoever.

The conclusions drawn from this analysis of sales of industrial land in the Ipswich Road area is that highway frontage sites currently command up to £4,500 per acre and their value is appreciating rapidly. Off-highway locations fetch from £1,500 - £3,000 per acre depending on accessibility, location, services and liability to flooding.

Apart from the fact that the highest sales were recorded on sites some $3\frac{1}{2}$ miles closer to the city than QUEENSFIELD, none of the sites had any obvious advantage over sites in the Industrial Park. Indeed, the QUEENSFIELD sites with their provision of wide roads, services, landscaping and other facilities must be regarded as being more attractive.

8. The Availability of Industrial Land

The Brisbane City Council's New Town Plan Section conducted a survey during 1962 of some 8,200 acres of land zoned industrially in the outer suburbs of the City. The generalised results of this survey were:

- a. Land available for industrial development
(i.e., land which was for sale at the time of survey) 1272 acres

I. /8

- b. Vacant land which could possibly be available for industrial development (i.e., the owners were not known industrialists, the land was not advertised for sale and was used primarily for rural pursuits. In cases of large tracts where a dwelling or other improvement was located upon the land, a small area was deducted for this residential use). 1266 acres
- c. Vacant land owned by known industrial interests which had not established a plant in Brisbane or in that particular area of Brisbane. 630 acres
- d. Vacant land held by industrial interests adjoining their existing plants. 334 acres
- e. Land occupied by industry. 3462 acres
(Note: This acreage is based on land ownership and not on the actual area of land occupied by buildings except in certain specific cases involving very large areas of land. Generally if an industry owned 5 acres of land in one parcel but had a factory on only 2 acres, the land occupied by industry was recorded as 5 acres. Consequently, a considerable part of this area is available for the expansion of existing plants).
- f. Other uses (not industrial or residential). 286 acres
- g. Residentially developed land where the buildings were obsolescent or the ratio of land value to the value of improvements was high (e.g. a house on a $1\frac{1}{2}$ acre site) i.e. land which might be expected to be occupied by industry within a reasonably short period. 47 acres
- h. Residentially developed land where the buildings were in good condition and which was unlikely to be available to industry for a long period. 183 acres

I./8,9

- i. Land zoned for industry in the Centenary Estates project and not yet alienated from the development company. 719 acres

In addition, there is a considerable area of the Hamilton Lands scheme which will become available to industry over a long period as reclamation proceeds and which is not included in these figures. These figures include the QUEENSFIELD Industrial Park in item 2, since it had not reached any more than a preliminary investigation stage at the time of the survey.

9. Industrial Land - Detail Survey - See Map 3

Significantly large tracts of industrial land are for sale, or are lying vacant, in the following zones:-

a. Zillmere

An area of 152 acres in this vicinity, owned by J.C. Hutton Pty. Ltd., and improved with a bacon factory, has recently been subdivided and is being offered for sale. The land is gently sloping in part, with a percentage of it flat and possibly subject to infrequent flooding. The bacon factory buildings are to be vacated and the operations transferred to Oxley. The subdivided sites range from 5 to 10 acres and some have rail access. Sites have been bought by Thomas Brown & Sons Pty. Ltd. (wholesale warehousemen) and by an electrical components manufacturer.

North of this, Mauri Bros. & Thompson own 80 acres of land which is currently zoned non-urban. This land is for sale at £3,000 per acre and would be approved by the Brisbane City Council for industrial purposes. It has no made road access but adjoins a major railway marshalling yards proposal on which work has not yet commenced.

b. Geebung

There were, in 1962, approximately 117 acres of land in this general area which were vacant, for sale, or possibly available to industry. A further 180 acres was held by industrial owners but not developed. The land is very suitable for industrial development but some sites would require fairly extensive drainage to remove the liability of local flooding or ponding. Rail facilities are somewhat unsatisfactory but a goods yard is being developed at the southern extremity of the area. Some sites have their own branch rail siding. Road access is good. Development was very rapid in the early fifties but has slowed down over the past few years. The major reason appears to be its distance from the interstate road and rail terminals. It could also suffer from a lack of public transport facilities through the area - the existing facilities all touch the edges of the area but none really intersect it.

The major industries existing are:

Massey Ferguson	- agricultural machinery assembly
Olympic Tyres	- motor tyres and insulated cables
Cyclone	- tubular steel products, gates, etc.
I.S.A.S.	- agricultural equipment and tractor assembly
Evans Deakin	- light engineering shop
Brandon Timbers	- timberyard and timber impregnation works
A.R.C.	- steel mesh fabricators

From land ownership records, it would appear that the following industries may have intentions of establishing in the area:

Metal Products	- plumbers' hardware
Metters Ltd.	- heating and electrical appliances
Premier Blinds	- blind and awning manufacturers
B.C. Richards & Co.	- valve manufacturers
Bryant & May	- match manufacturers

c. Northgate

An area of about 250 acres is zoned for industrial use at Northgate and Bindha but only about 22 acres appear to be available for industrial development. This is good industrial land but many of the sites available are small.

The major plants established are:

C.O.D. Cannery	- fruit canners
Wunderlich	- tile works
Mackenzie & Holland	- railway equipment, steel fabricators
Athol Hedges	- body builders
Abrahams & Williams	- scrap metal merchants
E.J. Smith Ingots	- scrap metal merchants & smelters
Kraft-Warner	- food warehouse
Lewis Berger	- paint manufacture
Australian Plaster Industries	- plaster & fibrous plaster manufacturers
Meggitts	- linseed oil manufacturers

Other undeveloped sites are owned by:

Leyland Motors	
Simpson Halligan	- printers

d. Hendra and the Serpentine

Along the Nudgee Road in the vicinity of Schultz Canal a minor industrial area has grown up centered on a wartime warehouse area. The major plant is N.V. Appleton Pty. Ltd. - manufacturers of Naco Products.

This area can be expected to show long term growth because it is from this area that the Brisbane City Council's Serpentine

Reclamation Scheme will spread. This scheme envisages the reclamation of some thousands of acres of land for industrial usage over a long period. Reclamation is being carried out by tipping garbage onto land which is partly tidal swamp and partly adjoining low lying waste land. The garbage is then covered with powerhouse ashes.

Whether or not this scheme will ever come to fruition is a matter of some conjecture. The underlying soil offers little or nothing in the way of foundations being mainly silt and mud to a great depth. The depth of filling alone will require a considerable time for consolidation and even then the risks of underground fire will be present for many years.

In addition to these physical defects, the area is isolated and is not well served by any major road. There is not a great deal of demand for land in the area although John Lysaghts Pty. Ltd. have recently purchased a 16 acre site slightly further north for a steel plant.

At best, this area can be regarded as a reservoir of future industrial land for the period, say, 1980 - 2000.

e. Hamilton Lands & Bulwer Island

Land availability is governed by the limitations imposed by the capacity of dredges pumping the hydraulic fill. At present these are mainly concentrated on the reclamation of Bulwer Island for the Amoco Oil Refinery site. Little land is now left for immediate building. Foundations present a severe problem as does drainage and road construction. In areas where the hydraulic fill is recent, large amounts of solid filling are essential.

Of the freehold land lying to the north of Kingsford Smith Drive, the major companies presently established have secured large

areas and practically no land is now available. In addition, the Department of Civil Aviation has been acquiring a wide buffer zone around Eagle Farm Airport and this has removed large areas from the industrial land market.

The situation on Bulwer Island is indefinite. Amoco's leases are being filled but there are no known moves to fill the remaining 500 - 700 acres. Some of this land is also under option to Amoco.

Major Plants established here are:-

Oil terminals for Shell, Philips, Amoco, Ampol, Caltex, Golden Fleece, B.P. and Castrol	
Queensland Oil Refineries	- bitumen refinery
A.C.F. & Shirley	- fertilizer works
Ford Motor Co.	- motor assembly
Charles Hope (a division of A.C.I.)	- motor assembly & plastic laminates
Humes Pipes	- concrete & cast iron pipes
James Hardie & Co.	- fibro cement pipes
Oxley Plywood Co. Pty. Ltd.	- plywood & veneer manufacturers
Monsanto Chemicals	- chemicals
Claude Neon	- neon lighting
Cotton Marketing Board	- cotton ginner
Blackwood Hodge	- earthmoving equipment distributors
Butter Marketing Board	- butter factory & packers
Stirling Henry	- apparel manufacturers
Queensland Coop. Cold Stores	- cold storage
Amagraze	- meat works
Together with numerous smaller firms.	

Major Companies which appear likely to extend or to establish in the area include:-

Amoco Oil Refineries
B.H.P.

- steel fence post plant

f. The South Bank of the Brisbane River

There are considerable areas of land available for industry along the south bank of the River, mainly to the east of Hemmant. This land is very flat and could be subject to flooding if tidal conditions were such as to conflict with a flood peak. Some of the land degenerates into tidal flats towards the River. Foundations are again poor. For example, the F.D.L. fertilizer factory - now Provincial Traders bulk poultry feed storage, is constructed on a raft of some 6 - 8 feet of solid filling. Generally speaking, the further west the site is located in this area, the better are the possibilities of good foundations.

West of Bulimba Creek, foundations are comparatively good but the topography becomes rather undulating if not actually steep. This places limits on the size and type of plant which can be established.

Borthwick's Meatworks have a large area of this undulating land for sale - some 100 acres in all. Smaller areas of land are available scattered over the area so that in all some 223 acres are available. Most of the remaining land is vacant, being used as holding paddocks for the Cannon Hill Saleyards and the meatworks.

The major plants established are:

Hancock & Gore	- plywood mill
Mobil Oil Terminal	
Queensland Meat Industry Board	- abattoir
Borthwicks	- abattoir
S.E.A.Q.	- Gibson Island & Bulimba power houses (not zoned industrially)

Provincial Traders	- margarine factory, food freezers
Darling Downs Cooperative Bacon Pty. Ltd.	- bacon factory
Queensland Bacon Pty. Ltd.	- bacon factory
MacTaggarts	- hide & skin store
John Cox & Sons Pty. Ltd.	- wood turners & plastics manufacturer

Although served by a branch railway and a bus service, this area is generally regarded as being rather inaccessible for workers. The recent growth of interest in the area is primarily due to the fact that it is about the only location where the Brisbane City Council will approve of noxious or hazardous industrial plants.

Within the area there are branch railways serving the meatworks and the power houses - the latter being a private electrified line.

A further problem is the residential development at Murrarie which is surrounded by noxious zones. Currently it is zoned for light industry but if political pressure is exerted, this area could revert to residential zoning and the surrounding areas to some more innocuous zoning. Murrarie, topographically, is most unsuitable in many parts for industrial development, being very steep and broken.

g. The Zones in the Southeastern Sector

These are located at Lota Creek, Lota; Wondall Road, Wynnum; New Cleveland Road, Gumdale and Wecker and Cavendish Road, Mt. Gravatt. All comprise land topographically suitable for industry except for a small area at Mt. Gravatt. The land is largely in rural usage. The only industry of size is a timber yard at Mt. Gravatt. These zones will probably be a considerable time in developing because they have little to offer the industrialist in the way of transport, markets, or services. The Gumdale area is intended to supply industrial land for the satellite town proposed in the area. To the present, there is little sign that this project will be undertaken in the near future.

Altogether there are approximately 350 acres possibly available for industry in these zones.

h. The Zones in the Southwestern Sector

There are a number of zones in this sector. The most important is the Rocklea-Archerfield area but others are located at Sherwood and in the Centenary Estates Project.

Because of the large areas involved and the diverse nature of the development occurring, for the purposes of this analysis, the area has been broken into arbitrary segments. This division, and the greater detail in dealing with the area in general, is felt to be justified because this area is in close proximity to the QUEENSFIELD Industrial Park.

(i) Sherwood:- An area of some 60 acres has been zoned for industry about the intersection of Sherwood Road and the Corinda - Tennyson Branch Railway Line. All of the area is owned by established industries, the chief of which are:

Laheys Pty. Ltd.	- Timber & Plywood Millers
Carricks Ltd.	- Furniture Manufacturers
A. Sargeant & Co. P/L	- Structural Engineers
Perry Bros.	- Non Ferrous Products

All these are comparatively new industries in this location and some could be faced with land requirement shortages before many years pass.

(ii) Moorooka, Clapham Junction & Tennyson:- Between Ipswich Road and the Railway line is a comparatively old established industrial zone. It was composed of many minor industries but several major firms are now established. It is severely handicapped in its present

development by the old subdivisional and street patterns. These have resulted in an admixture of residential and industrial development fronting particularly narrow and ill-aligned streets. There is little land available for industry but small plants are gradually replacing residential uses on small lots.

To the west, along Fairfield Road and the interstate railway line, conditions are not so cramped. Here Theiss Bros. are offering their $2\frac{1}{4}$ acre site for sale.

Major industries established are:-

Theiss Bros. (Qld.) Pty. Ltd.	- Sales Division
Poultry Farmers Coop.	
Society Ltd.	- Flour Mill
Austral Plywoods	- Plywood Millers
Intercolonial Boring Co.	- Engineers
Australian Conference	
Assn. Ltd.	- Food Manufacturers
R.M. Gow & Co. Ltd.	- Food Manufacturers
D.G. Brims & Sons Pty. Ltd.	- Plywood Millers
N.F. & E.M. Perrin	- Engineering Works
Qld. Can Co. Pty. Ltd.	- Carton & Label
	Manufacturers
Qld. Electric Steel Ltd.	- Steel Founders
Macfarlane Burns	- Paper Wrapping
	Manufacturers

Dalgety Stores Pty. Ltd. - General Merchandise Stores and
G. Horsburgh & Co. Ltd. - Hardware & Builders Equipment
Warehouse - have approval to establish new plants on fairly
large sites in the area between Sherwood and Fairfield
Roads. The area is badly affected by flooding from Rocky
Water Holes Creek and Moobabin Creek..

(iii) Rocklea:- Lying roughly between Rocky Water Holes

Creek and Stable Swamp Creek, astride the interstate railway line, the next section to be considered is subject to extensive flooding.

Major plants established are:-

Crossle & Cameron	- General Engineers & Manufacturers of Farm Machinery
Metaphene (Qld) Pty. Ltd.	- Structural Engineers
Wridgeway Bros. Pty. Ltd.	- Furniture Removalists
Queensland Timbers Pty. Ltd.	- Sawmillers
Holsum Products Pty. Ltd.	- Food Manufacturers
Killrust Paints Pty. Ltd.	- Anti-corrosive Paint Manufacturers
Abrahams Paper Sacks Pty. Ltd.	- Paper Sack Manufacturers

(iv) Ipswich Road Frontages:- This area embraces the land between Stable Swamp Creek and Oxley Creek along Ipswich Road and some adjacent areas. Two thirds of the zoned area is subject to frequent flooding. The majority of industries are located on large sites, and all are of comparatively recent origin. In fact, of the 11 industries listed below, only one has been established more than 8 - 10 years.

Major plants are:-

BALM Paints Pty. Ltd.	- Paint Manufacturers
McGrath Motors Pty. Ltd.	- Motor Engineers & Trailer Manufacturers
Freighter Industries (Q) Pty. Ltd.	- Trailer Manufacturers
Besley & Pike Pty. Ltd.	- Stationery Manufacturers
C.I.G. (Qld) Pty. Ltd.	- Industrial Gases
Qld. Transport Terminals Pty. Ltd.	- Road Transport Terminal

M.C.Schrank & Co. Pty.Ltd. - Lingerie Manufacturers
Queensland Can Co.Pty.Ltd. - Open Top(Tins) Division
East Coast Timbers Pty.Ltd. - Sawmillers
Austral Motors Pty. Ltd. - Motor & Tractor
Assembly Division
Southern Electricity Authority - Depot & Stores

In addition, sites are owned by -

Ampol for a trucking terminal &
International Harvester for a new assembly plant.

(v) Rocklea Munitions Area:- This area is located about the old Rocklea Munitions Area on Evans Road. Once again parts are subject to flooding but these, in the main, lie within the sites of large plants already established. The Rocklea Munitions Area itself is not liable to flooding. The land available here is under the control of the Queensland Government.

The major industries established include:-

English Electric Co. of Australia Pty. Ltd.	- Heavy Electrical Equipment & Locomotives, etc.
Evans Deakin & Co.Ltd.	- Heavy Engineering Workshop
Commonwealth Engineering (Qld) Pty. Ltd.	- Heavy Engineering Railway Rolling Stock.
Barratts (Qld) Pty. Ltd.	- Confectioners
Paper Converting Co. (Qld) Pty. Ltd.	- Paper Products
Penn Elastic Pty. Ltd.	- Manufacturers of Clothing Elastics
Rocklea Spinning Mills Pty. Ltd.	- Cotton Spinners
Tutt Bryant	- Equipment Manufacturers
Frigrite (Qld.) Pty.Ltd.	- Industrial Refrigeration & Air Conditioning Equipment

together with numerous smaller plants.

(vi) Archerfield - Coopers Plains:- The remainder of the Rocklea - Archerfield area lies south of the areas already described. In parts, the land is liable to flooding but large sections are not. These latter areas lie off the major roads and away from railway facilities and are largely undeveloped. Local ponding of water becomes a problem. Because the black clay soil forms 'melon holes' if allowed to remain undisturbed, foundations could present problems.

The only large firm presently established is Hastings Deering Pty. Ltd. which has recently occupied an old wartime hangar on an area of land being leased or sold to industry by the Commonwealth Government near Archerfield Aerodrome.

C.S.R. Fibreboard Division and Theiss Bros. have large holdings in the area and apparently plan to locate there at a future date.

Summarising these areas from (i) to (vi), it is found that 1,600 acres of land are zoned for industrial purposes of which some 250 acres were for sale in 1962 and approximately 210 acres could be available for industry.

The only other land zoned for industry in the area, apart from site of the QUEENSFIELD Industrial Park, lies in the Centenary Estates project, and at Darra and at Inala. The Darra land is largely owned and occupied by the existing industries, which are all closely tied to the Queensland Cement & Lime Company's cement works. These firms include Monier Concrete Industries, Besser Vibrapac & Dowsett Industries.

At Inala, an area of about 110 acres has been set aside for industry. It is envisaged as serving as a service industrial area to Inala and as employing some of the

I./9, 10

resident labour force. The land zoned is suitable for industry but only a small factory producing bee-keeping equipment is established. Opposite the zoned area, Australian Electrical Industries have a medium sized plant established on a 15 acre site.

10. 'Case Study' Survey of Industrial Management

a. The Survey design.

Whilst the foregoing sections of this report describe the composition, location and deficiencies of industry in Brisbane as well as the cost, availability and suitability of industrial land, it was felt that further information should be gathered from the industrialists themselves about their industry's particular requirements in regard to location and sites. By assessing the applicable sections of these opinions, it was felt that valuable information could be gained to assist in both the marketing and planning of QUEENSFIELD Industrial Park.

To this end, an interview survey of manufacturers was carried out in the Brisbane Metropolitan Area. Its objective was to obtain the views of top management on the locational, operational and space requirements of various types of industry.

It was felt that the analysis of Brisbane's Factory Statistics had provided sufficient information to enable the expanding industries in Brisbane to be identified. Because of the diverse nature of 'industry', no attempt was made to design a mathematical sampling technique. Rather, forty manufacturing firms were selected as 'case studies'.

These firms were considered to represent the expanding industries in the City. The 'case study' approach in these circumstances offered a more reliable guide for planning than would be obtained from a survey supposedly to sample the 'universe' of manufacturing firms in Brisbane, because it enabled the requirements of those firms most likely to be seeking sites for relocation to be isolated from the generalized picture of such requirements.

The firms approached were selected by the Secondary Industries Division of the Queensland Department of Labour and Industry to be representative of organisations in the classifications of manufacturing found to have expanded in the years 1956-57 to 1960-61 (See Part I, Section 5). In addition, certain types of manufacture, such as fabrication of non-ferrous metals, which is considered by the Economist Intelligence Unit (in their report 'Economic Development Survey of the State of Queensland') to have good growth prospects in the State, and the manufacture of shoes, which are a heavy item of import into Queensland, were included.

Before approaching the nominated firms, the list was checked with representatives of the Queensland Industrial Development Advisory Council. The Secondary Industries Division first made contact with the selected organisations by telephone asking if they would be willing to co-operate in the survey. This was followed by a letter from the Urban Planning & Research Centre stating the purpose of the survey and requesting an interview. Enclosed with this letter was some background information on the latter organisation together with a photostatic copy of a letter of introduction from the Director of Secondary Industry (See Appendix III). The firms were then contacted by telephone and an appointment made to interview the senior executives nominated by the Secondary Industries Division.

Interviewing was carried out during February 1963. The interviews generally took from half to one hour and were based on a check list of points set out in the specially designed form headed 'Brisbane Industrial Research-Management Interview' - (See Appendix IV). Questions asked from this checklist covered the history of the firm, goods produced, locational requirements, site and building areas and requirements, location and types of market and sources of raw materials, size and nature of labour force, residential distribution of work force, methods of employee transport, methods of goods transport, capital requirements, prospects for growth of business, commercial and production services required and public utilities used.

I. / 10

The response to the survey was gratifying and the results, of which the relevant points are presented below, have been of considerable assistance in the designing of QUEENSFIELD.

b. The Survey results

Eight of the firms selected were engaged in the production of plant, equipment and machinery; four were engaged in chemical production; three produced joinery and three, plastics; two firms were included from each of the categories producing glass or glass products, electrical equipment, agricultural equipment, confectionery, aerated waters, printing and rubber products; together with one firm from each of the categories - general engineering, sheet metal working, wire and wire making, radio, footwear, stationery, paper bags and non-ferrous metals.

Of the structure of these 40 firms, 31 were established by local groups, 7 by Australian national companies and 2 by international groups. Since their establishment, four of the local companies had been acquired by national organisations.

Twenty-two firms reported that they had relocated from other sites in Brisbane to their present site. Most of these moves had been from the older industrial areas of the inner City, South Brisbane and The Valley. The major reason underlying the moves was the expansion of the firms beyond the capacity of the limited sites available to them in these older areas. Furthermore, seven groups reported that their present sites were becoming inadequate for their purposes.

Five firms indicated that their plants had special locational requirements. Of these, four demanded railway frontage and siding facilities and one indicated that a waterfront position was valuable. One firm indicated that both these facilities were desirable.

Fourteen firms indicated that an unskilled labour pool in the vicinity of the plant was most desirable. Generally, it was agreed that skilled labour would travel much further to work than unskilled. The majority of management interviewed felt that there was distinct advantages in attracting labour - particularly unskilled - if the plant was located in an established industrial area. Apart from the aerated waters industry, where the high cost of transporting unsaleable bottles and cases does call for a fairly central location, and apart from those firms which had specific locational requirements in regard to rail and wharf facilities, the managers felt that profit variations arising from different plant locations within the metropolitan area would be small, provided conditions at the various locations were similar. In general, any location within the metropolitan area's industrial zones would be satisfactory.

The firms in the case-studies ranged in size from one employing ten people to one with 1,318 on the payroll - the median size being 80 employees. The table below shows the distribution of firms in the survey in terms of number of employees.

<u>No. of employees on Payroll</u>	<u>No. of firms in survey</u>
Less than 20 workers	3
Between 21 and 30 workers	6
31 50	7
51 100	6
101 150	8
151 200	4
201 400	3
401 1000	2
Over 1000	1
	<u>40</u>

The proportion of female labour ranged from nil to 80% with the median value being 12%. The largest employer of female labour in the case-study survey employed 200, representing 50% of that firm's workforce.

Managerial, professional and administrative personnel generally amounted to approximately 15% of a firm's workforce.

The percentage of the workforce employed by the firms in the case-study which required apprenticeship training ranged from nil to 85%, the median value being 10%. The degree to which apprenticeship training was required varied widely with the type of industry. For instance, most firms in the engineering group reported that 60-80% of their labour force required such training.

Site areas for the plants of the firms approached ranged from $\frac{1}{4}$ acre to 65 acres (in four separate locations). The median value of all the site areas was $2\frac{1}{2}$ acres. The largest single tract reported was 30 acres. Although one firm held 50 acres, it was intending to sell 40 acres. The distribution of size of sites in the 40 firms was as shown below:

<u>Size of Site</u>	<u>No. of Firms</u>
Less than 1 acre	12
Between 1 and 2 acres	5
2 and 3	5
3 and 5	6
5 and 10	2
10 and 20	6
Over 20	2
Not stated	2
	<hr/> 40 <hr/>

The Floor area of plants ranged from 3,000 sq. ft. to 180,000 sq. ft. with 25,000 sq. ft. being the median value. Eleven plants were so structured that floor space was of little or no overall significance, but for the remaining 29 plants, the following distribution was found to exist:

I. / 10

<u>Area of Floor Space</u>	<u>No. of Plants</u>
Less than 5,000 sq. ft.	3
Between 5,000 and 10,000 sq.ft.	6
10,000 and 20,000 sq.ft.	2
20,000 and 40,000 sq.ft.	10
40,000 and 100,000 sq.ft.	6
Over 100,000 sq.ft.	<u>2</u>
	29

The calculation of worker density from the number of employees and the area of the site occupied revealed that this ratio varies from as low as 3 per acre to 800 per acre, with a median value, for the 33 plants where site area was the applicable basis for worker density calculations, of 48 workers per acre.

Distribution was as follows:

<u>Density of workers/acre</u>	<u>No. of Plants</u>
Under 10	6
11 - 20	5
21 - 40	4
41 - 60	5
61 - 80	5
Over 81	<u>8</u>
	33

It was found that the older plants had, in general, a higher worker density than the more recently established ones. In terms of floor space occupied per worker, a range of from 100 to 750 sq. ft. per worker was revealed by the survey. The median value of the firms reporting on this point was 400 sq. ft. per worker.

I. / 10

Distribution was as shown below:

<u>Square feet per worker</u>	<u>No. of Plants</u>
100 - 200 sq. ft.	8
201 - 400 sq. ft.	8
401 - 600 sq. ft.	7
Over 601 sq. ft.	<u>5</u>
	28
	—

Although information was not readily available from some firms on the number of vehicle movements associated with the delivery of goods to and from the plant, those plants where figures were available, reported these movements from as low a figure as 1 per week up to 100 per day. It would appear that the average factory surveyed would generate about 10 trucks in and out each day.

Only 15 of the forty industries interviewed had definite opinions on the desirable depth of block for their plants. A number indicated that a depth of 200 feet was adequate. These were all light processing or fabricating firms. Others suggested sites ranging from 300 to 600 feet in depth. The increase in depth could generally be associated with an increase in the bulk of the article produced.

Of the firms interviewed, 20% reported that they considered gas an economical fuel which was necessary for their production. None had abnormal requirements for water supply and sewerage although one firm quoted an adequate private water supply as one reason for its present location.

On the subjects of common facilities, e.g. medical services, common steam or compressed air generation, and on the leasing of land and buildings, the managers interviewed were divided in their opinions. With the exception of medical services, there

I. /10

seemed little likelihood that use would be made of many other common services. Sufficient interest was expressed in leasing to indicate that this facility could be popular if prejudices against it could be overcome.

PART II. FORECASTS

1. Population Growth - Queensland

In 1960, the Deputy Commonwealth Statistician in Queensland prepared a series of estimates of likely population growth in that State, given certain fixed parameters for mortality, migration and fertility. These were assumed to be:

Fertility

- Basis A - Age-specific fertility rates obtained from the years 1957-58 have been used throughout.
- Basis B - Age-specific fertility rates as for Basis A were used up until June 30, 1960 and thereafter diminishing uniformly to 1939 rates in the period 1970-75.

Mortality

Survival rates from the Australian Life Tables 1953-55 were used throughout.

Migration

A purely hypothetical figure of 10,000 persons per annum has been assumed for net migration since June 1955. This is only a convenient unit to facilitate pro-rata calculations for any other unit. The sex and age distributions were obtained by comparing 1947-1954 Census results and deducting natural increase.

These projections give the following results:

	1960	1965	1970	1975
Basis A	1,344,572	1,561,738	1,684,219	1,826,398
Basis B	1,344,572	1,547,561	1,626,602	1,700,289

II. / 1, 2

It is interesting to note that the estimate for June 30, 1961, interpolated from the above figures, was 1,474,247, which was below the actual figure revealed by the Census at that date, of 1,518,828.

2. Population Growth - Brisbane

Some 2 years previous to this projection, the Brisbane City Council published the results of an extensive 'cohort-survival' population forecast carried out by its staff to form the basis for the Town Plan for the City of Brisbane.

This gave the following quinquennial estimates for the City's population (as at the 1st January):-

1961	619,253
1966	722,999
1971	831,836
1976	937,807
1981	1,040,380

The Census of 1961 revealed that the figure estimated for that year was higher than actually occurred - the Census figure for the City's population being 593,668. Although this is a considerable difference for a short period of projection, the projection was never intended to be used as a short run estimate but was intended as a long range forecast. There seems little reason to differ from the estimated figure for 1981 at this stage.

Admittedly, recent statistics show that Queensland has not been attracting its share of migrants and for this reason, the projections prepared by the Deputy Commonwealth Statistician may overstate the population increase. It is a matter of some conjecture whether or not Brisbane's rate of increase is tied to the actual gain in Queensland population from international migration. Recent figures, as yet unpublished, from the Brisbane Origin and Destination survey tend to suggest that the drift of rural population to the metropolitan

II. / 2

area is the major source of Brisbane's growth from migration.

If these two projections are accepted as a guide, it would appear that Brisbane's growth will parallel that of Queensland - the City housing slightly less than 40% of the State's total population (See Graph 1).

If one arbitrarily defines the region of Brisbane as lying within a 150 mile radius, then the resident population is increased to almost 1, 000, 000 in Queensland and, if the relevant parts of the Northern Rivers District of New South Wales are included, the figure exceeds one million (See Map 4). This represents almost two thirds of the Queensland market. Unless there is some major intervention by the Commonwealth & State Governments in the development of northern Queensland it seems likely that the percentage of the State's population concentrated in the south-eastern corner will gradually increase.

If there is large scale intervention which rapidly increases the population of northern Australia, it will have immediate and lasting beneficial effects on the rate of development of southern Queensland and of Brisbane, in particular.

From a study of population distribution in Australia, it is evident that there is a roughly crescent shaped area of comparatively dense population along the coastline from Bundaberg to Adelaide reappearing briefly in the south western corner of Western Australia. At the moment, Brisbane is situated at one end of the crescent and obviously does not benefit from having a central position such as those occupied by Sydney and Melbourne and to a lesser extent, Adelaide. Should any development foster an increased density of population along the fertile coastal strip to the north of Brisbane, then its present out-on-a-limb situation will be altered and it will begin to feel the benefits of a central location now experienced by the southern capitals.

II. / 2, 3

The effect of this one-sided relationship to the Australian market, whether for input or output of products, can be seen from recent trends in industrial location in Brisbane. These have evidenced a marked move by industry towards the south-western sector of the city (See Map 6).

3. Developmental Projects in Queensland - See Map 5

Already some signs of an increased density of population can be seen as an outcome of developmental projects under way or scheduled to begin in the northern areas of the State.

Examining these projects briefly, commencing from the northern regions of the State and proceeding southwards, one finds that in all, over £284 million is scheduled to be spent over the next few years on developmental works. Comalco is developing Weipa as the port for its vast bauxite leases on the Gulf of Carpentaria. Near Tully, the King Ranch is expanding £1 million on converting a forest and waste land area to fat cattle production. At Townsville, the copper refinery of Mt. Isa Mines Ltd. and the general impetus to industry arising from the £30 million Mt. Isa railway project have established what appears to be the essential nucleus for an industrial city. The most recent firm to announce the establishment of facilities there will produce copper tubes and extrusions. At Mt. Isa in the far west, the Company is proceeding with plans to increase mine output.

North of the Mt. Isa railway, the beef roads projects are opening up large areas to allow more rapid turn off of beef cattle.

At Collinsville, the Queensland Government is to establish one of 3 major thermal power stations planned in Queensland over the next decade.

At Gladstone, Comalco is to develop a £35 million alumina refinery. This town will also be the terminus of a private railway from the

II. / 3

Moura coalfield where the Theiss-Peabody-Mitsui combine is developing the enormous opencut coal deposits for the Japanese trade.

West of Rockhampton, a start has been made on clearing 16 million acres of brigalow scrub to allow closer settlement resulting mainly in increased beef production. At Blair Athol and other areas, investigations are proceeding on the possibility of opening up further open cut coal deposits for the export market.

At Callide, in the same coal field area, the second of the Government's planned power stations is to be built.

Centered on Brisbane, perhaps the most significant development of all is occurring. At Moonie, 200 miles west of Brisbane, oil has been found in commercial quantities for the first time in Australia. An oil pipeline is being built from the field to Brisbane. Two companies, Amoco and Ampol, plan to have oil refineries operating in Brisbane by 1966.

Further west than Moonie, natural gas deposits around Roma are already powering that town's electricity generating plant. The possibilities of natural gas as a fuel for industry in Brisbane and the surrounding areas cannot be overlooked as a future development. At Swanbank, near Ipswich, the third of the new thermal power-stations is to be built to ensure adequate electric power for the southeastern region.

All these developments must foster the growth of Queensland's population by providing additional employment opportunities. They must also foster the growth of secondary and tertiary industry in Queensland and as Brisbane is the main centre of these activities, a large measure of this expansion should occur in that city.

II./4. Long Term Industrial Growth in Brisbane

Some indication of the likely longterm growth of industry in Brisbane can be gained from an examination of the results of a recent study of industrial employment carried out by the Brisbane Council for the Greater Brisbane Town Planning Committee and which was the subject of a recent unpublished thesis.

Admittedly it is a theoretical approach making some assumptions that may not be generally accepted. The more important of these is that there is a similarity in the employment patterns of large cities, which tends to increase with the growth of the populations. The diversion of the pattern of any particular city from the general one expected, is assumed to be a reflection of long term geographical and historical events and not to be associated with short run economic conditions.

The projections made in this study are based on the pattern of employment as it existed in Brisbane at the 1954 Census. Because of recent developments - particularly the proposed establishment of oil refineries - the picture presented by the study should be altered to incorporate these developments.

The study suggests that Brisbane, as it grows, will see an increased percentage of its total population in the workforce. In the broad general categories of employment, increased percentages of the total population can be expected to be engaged in:-

- Manufacturing Industry
- Transportation, Communications & Other Public Utilities
- Trade - Retail & Wholesale
- Finance, Insurance & Real Estate
- Business Services
- Personal Services
- Professional & Related Services
- Public Administration

II. / 4, 5

Within the field of manufacturing industry, whilst the number in employment in none of the sub-categories is expected to decrease, an increased percentage of the total employment seems likely to occur in:-

Primary Metal Industries	Blast furnaces, steelworks, Rolling Mills, other primary iron and steel industries and primary non-ferrous industries.
Fabricated Metal Industries	Fabricated steel products, Fabricated non-ferrous metal products and other metal industries.
Electrical Machinery, Equipment & Supplies	
Transportation Equipment	
Professional & Photographic Equipment & Watches	
Miscellaneous manufacturing Industries	
Apparel and other fabricated textile products	
Printing, publishing & allied industries	
Chemicals and allied products	
Petroleum and coal products	
Rubber Products	

5. Immediate Labour Reserves

The table below is an extract from the results of the 1961 Census. It shows the composition of the younger part of the population of the Brisbane Metropolitan Area in terms of sex and age.

<u>Age Group</u>	<u>Males</u>	<u>Females</u>	<u>Persons</u>
Years 0-4	31,468	29,739	61,207
5-9	30,236	28,726	58,982
10-14	31,316	30,051	61,367
15-19	25,662	26,318	51,980
20-24	19,391	19,931	39,322
25-29	16,853	17,378	34,231

II. / 5, 6

This illustrates the great increase in the number of children entering adulthood over the next few years and consequently the rapid expansion of the potential workforce that must result.

It seems likely from this that adequate supplies of labour will be available in Brisbane over the next decade. The State Education Dept. has plans well advanced for a new technical college in South Brisbane to enable it to cater to the demand for apprenticeship training.

6. Long Term Industrial Land Requirements

One of the objects of the City Council's study of industrial employment (See Part II, Section 4) was to assess the amount of land likely to be occupied by industry in the future. It was estimated that the workforce engaged in manufacturing industry in 1960 was approximately 64,700 (this figure was in fact some 9,000 high - reflecting the very slow growth of manufacturing in Brisbane). By 1980, this could be expected to increase to 113,500. The number of employees in manufacturing industry in 1960 employed in the Central Business District of Brisbane was reckoned to be 8,900 occupying about 2,834,000 sq. ft. of floor space. These figures were expected to increase by 1980 to 12,300 workers and 3,630,000 sq. ft. of floor space.

In 1960, the remaining 55,800 workers in manufacturing industry were employed on 4,348 acres of land located outside the C. B. D. i.e. in the suburbs. By 1980, 101,200 workers were expected to be engaged in manufacturing in these suburban areas and the industries employing them should occupy 7,500 acres.

That is, an additional 3,150 acres would be required for manufacturing industry in suburban locations over the next 20 years.

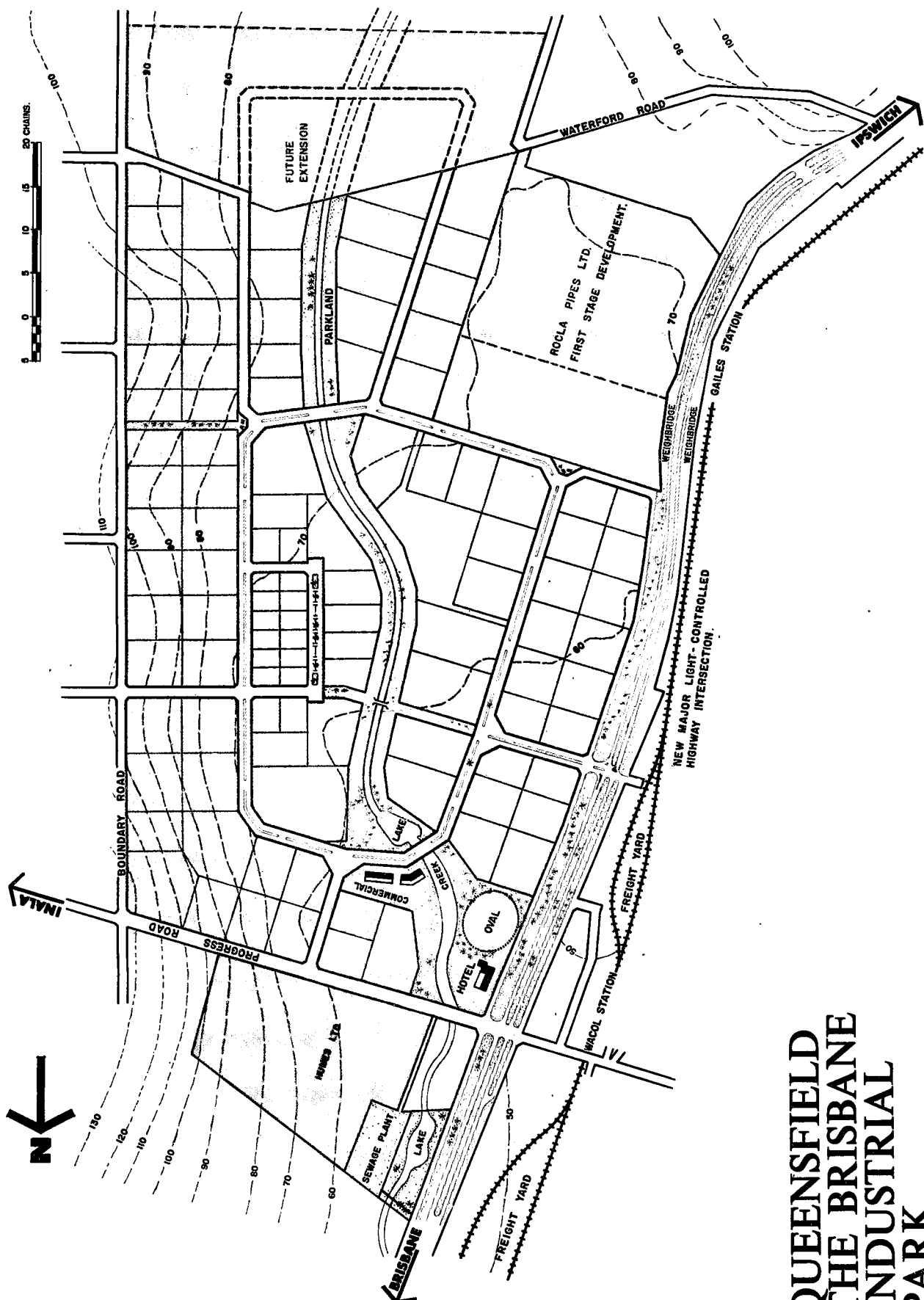
In addition to this area, it was estimated that wholesaling, warehousing, storage and associated activities would require 1,200 acres

II. / 6

more land over the same period and service industry and related uses an additional 160 acres. In all, industrial uses were expected to require 4,500 acres of additional land over the 20 year planning period and that there would be an annual demand of between 400 and 500 acres at the end of that period.

It must be pointed out that these estimates are based on the Council's population forecast. These forecasts assume that work will be available to support the growth of population. Should this not be the case, then the demands for industrial land, being linked to population growth, could fall below those estimated.

In order to institute a simple check on the reliability of these complex assessments of the likely future situation, a series of projections of trends in manufacturing employment, number of establishments, value of plant and buildings and value of output were prepared (See Graphs 2-5). These trends confirmed the likelihood of sustained growth over the next decade.



QUEENSFIELD
THE BRISBANE
INDUSTRIAL
PARK

PART III. QUEENSFIELD AS A LOCATION

1. QUEENSFIELD as a location for Manufacturers

An analysis of established Industrial Parks overseas shows that all types and sizes of industry can locate in such developments. Obviously, in respect to size, there must be a relationship between the total area of the Park and the size of the largest industries locating there. United States experience shows that in Industrial Parks of the general size of QUEENSFIELD, the most likely types of industry to locate there range from light manufacturing and assembly plants to distribution warehouses, branch offices and purely commercial activities such as service stations, banks and retail stores. Generally, the emphasis in the United States is found to be on non-manufacturing activities with warehousing and distribution facilities predominating. What manufacturing processes are carried out in these Industrial Parks are for the most part non-basic service type industries such as printing, food processing, bottling, metal working, light chemicals and bakeries.

Because of fundamental differences in the patterns of distribution, organisation and development of industry and of the distribution of population and markets in Australia and the United States, it seems likely that the pattern of development in Industrial Parks could be different. In an Industrial Park in an Australian Capital City, it seems likely that the micro-pattern of industry will closely resemble the overall structure of industry in the metropolitan area.

There are, of course, limitations on this statement. Some firms which require large sites may find no advantage accruing from a location within an Industrial Park. They may have special site requirements and will, in all probability, have the resources necessary to develop their own land. The majority of firms locating in an Industrial Park can be expected to be medium sized with a proportion of smaller firms varying with the degree to which special facilities are provided for them: e.g. flatted factories and small sites.

III. / 1

Furthermore, there are certain classes of production which would not be desirable occupants of an Industrial Park. For instance, any firm causing offensive or hazardous dust, noise, fumes, or smell could not be considered a desirable occupant because of the nuisance or danger its presence would cause to other occupants.

Likewise, certain classes of industry have specific locational requirements, e.g. water frontage or direct rail facilities. As these are not available at QUEENSFIELD, these industries must be excluded from the list of industries which could advantageously locate in the Industrial Park.

In Sections 5 & 6 of Part I of this Report, lists have been prepared illustrating various types of industry which could be expected to be interested in expansion or establishment in Queensland.

To enable an effective sales programme for the marketing of QUEENSFIELD to be organised, it is essential to isolate those industries which could be expected to find, in QUEENSFIELD, an attractive and suitable location. Because QUEENSFIELD is an Industrial Park and because of its location and other advantages, to list every one of those industries would be a massive task.

To simplify the procedure, a list has been drawn up indicating those industries which do not seem likely to find QUEENSFIELD a suitable location.

From Part I, Section 5, the following industrial classifications are considered as unlikely to locate at QUEENSFIELD.

III. / 1

<u>Class</u>	<u>Industry</u>	<u>Reason</u>
3-6	Mineral Oils	Very extensive areas required for sites.
4-7/ 8	Tramcars and Railway Rolling Stock	Generally require rail facilities but the manufacture of components is considered an industry for which QUEENSFIELD is suited.
4-10	Motor Vehicle Repairs	Usually the smaller firms locate close to the C. B. D. or residential areas. There is no reason why motor truck repairs could not establish in QUEENSFIELD.
8-4	Millinery	This is normally associated with a central location because of the necessity of readily available female labour. This does not rule out the possibility of isolated firms locating in QUEENSFIELD to take advantage of a large resident female labour force.
8-6	Foundation Garments	ditto
8-8	Hats and Caps	ditto
9-12	Bacon Curing	These plants have specific locational requirements as well as being noxious in nature.
13-2	Tyre Retreading & Repairing	These firms may regard QUEENSFIELD as too remote a location involving excessive transport costs in taking tyres to and from their plants. A specialised service for truck tyres could be a possibility.

III. / 1

From the list in Part 1, Section 6, which sets out the Gaps in Manufacturing in Brisbane, the following have been isolated as being unlikely to find QUEENSFIELD a suitable location (duplication of items which have been noted previously has been avoided).

Milk and Cream; preserved,
condensed or dried

There is no large scale dairying in the immediate vicinity to support such production.

Tea

At present all supplies are imported. In the event of local production, processing plants would be close to the source of the raw material - in North Queensland.

Tobacco, unmanufactured

Any processing here is carried out on the farms.

Other earthenware, cement,
glass and stoneware

These are normally tied to sources of the raw materials and with the exception of cement and possibly glass, do not appear likely to establish in QUEENSFIELD.

Paper (printing & writing)
Paper (wrapping &
miscellaneous)

There are no natural resources in the vicinity to support first stage production of pulp, board or paper. Other processes, e.g. manufacture and packing of wrapping paper could be established.

Soap & Soap substitutes

The plants producing these products are usually closely associated with meatworks or oil refinery installations, and probably have locational requirements including rail and possibly water frontage.

Fertilizers

Plants definitely need water and rail facilities.

III. / 1

From the list in Part I, Section 6, which sets out products not produced in Queensland, the following items are suggested as being produced by plants unlikely to find QUEENSFIELD a suitable location.

Aircraft

Normally plants producing aircraft are located adjacent to airfields. Aircraft components could be produced at QUEENSFIELD.

Bricks - fancy & lime silica

Raw materials are not readily available. In fact all extractive industries could be considered as undesirable occupants of any Industrial Park.

Meals of various grains

For economic production of these articles, large tonnages would have to be handled and this would necessitate rail siding facilities.

Oils of organic origin

ditto

Tomato products

QUEENSFIELD is too far removed from the major local sources of supply.

Vegetable - dehydrated and quick frozen

ditto

From the list of products where expansion of Queensland production would appear possible, the following are excluded.

Fats - edible

As for oils of organic origin.

Gelatine

Production is normally associated with meat works

III. / 1

These exceptions are the only industries from those which appear to have the greatest potential for growth and expansion in Queensland, which could not locate advantageously at QUEENSFIELD. Obviously, an examination of all the other types of industries which could be envisaged as having more remote interests in establishing in the Queensland market would reveal a considerable number of further industries which could be added to this list of exceptions.

For instance, in terms of the Census classifications of industry, there are a number of sub-classes in the 57 on which no information (Part I, Section 5) was available, which would not consider QUEENSFIELD a suitable location. These include:-

Class 1-7 Portland Cement

There are a number of factors here which would influence location including size of site and accessibility to naturally occurring raw materials, rail and possibly water frontage. Also it is a noxious industry.

Class 7-2 Woolscouring & Fellmongering

A noxious industry with heavy water requirements and extensive trade effluent problems - an undesirable occupant for an Industrial Park.

Class 9-8 Sugar Refining

Demands a water front location for direct shipping access and huge water requirements.

Class 12-5 Stereotyping, Electroplating

Normally these require a central location close to the main office centre.

Class 12-6 Process & Photo Engraving

ditto

III. / 1, 2

It has been noted earlier that in American Industrial Parks, there are a large number of firms whose primary activities are in wholesaling or distribution or the associated storage facilities. Whilst it is expected that these activities will be of lesser importance in QUEENSFIELD, it is essential that these facilities should not be overlooked in planning a marketing programme for the Industrial Park.

2. QUEENSFIELD as a location for Distributors

In Part I, Section 3 of this report, reference was made to the movement of various classes of warehousing from the older central and inner suburban locations to outer suburban sites. It was also indicated that economic forces are tending to delay this movement. The consequence of this must be that, when the situation in the Central Business District is such that the demand for office space calls for expansion into warehousing areas, there will be a large scale relocation of warehousing over and above that normally taking place.

It would appear that a considerable market for sites for warehouses exists. More importantly, this demand is likely to increase year by year.

What types of warehousing would find QUEENSFIELD a suitable location?

Generally, the warehousing industry can be divided into classes in terms of the type of goods handled. For the purposes of this report only a broad division has been drawn between the various types.

a. Those firms dealing with unprocessed primary products

These products have a low value to bulk ratio and are usually transported by rail or by water. There is a wide variety of items which fall within this classification. Most of them

III. / 2

demand specialized warehouse facilities but some, for example, mineral products, can be stockpiled in the open air. Typical of the specialized warehouses used for this produce are wool stores and bulk wheat and sugar terminals. To an extent, less widely produced crops such as maize, barley, oats etc., are handled in bags and do not require specialized buildings for their storage.

On the other hand, rail siding facilities and, if possible, wharfage are desirable. It is interesting to note that the tradition of locating wool stores close to wharves has now been broken and large single storey wool stores are now being established in outer suburbs where they are entirely dependent on road transport.

In general, the space and/or locational requirements of this class is such as to rule out their location within the QUEENSFIELD Industrial Park, although some of them will probably locate within a few miles radius of QUEENSFIELD.

One class of product, closely related to those referred to above, could be attracted to QUEENSFIELD. With the eminent removal of the Roma Street Markets to Rocklea, there will be considerable relocation among firms handling various types of farm produce, e.g. hay, chaff, potatoes, pumpkins and the like. The main sources of these products in Queensland is the Lockyer and Fassifern Valleys which lie west of Brisbane. Thus a QUEENSFIELD location could be quite suitable for bulk storage facilities for this type of produce.

Also resulting from the relocation of the Roma Street Markets to Rocklea, there is a possibility of some of the associated cold storage facilities being attracted to QUEENSFIELD. These facilities have shown fairly rapid growth in Brisbane in recent years.

III. /2

b. Those firms dealing with partly processed imported goods

With the growth of the interstate trucking industry, increasing quantities of partly processed manufactured goods are entering Brisbane by road from the Southern States. At present these are consigned directly to the plant where processing is completed. However, with the growth of manufacturing, particularly of small firms, bulk distributive facilities could be demanded where shipments could be broken up into local orders. A very simple example of this would be the bulk transportation of flour from a country flour mill to a warehouse where small trucks would then deliver orders to bakeries and other users.

As the road haulage of long distance freight becomes more and more the province of the large truck, these units become less acceptable to urban traffic. The breaking up of shipments on the urban fringe becomes essential. It is hard to predict what the future of QUEENSFIELD will be in this regard.

Because QUEENSFIELD is located on the edge of the metropolitan area fronting the major trucking route, it must offer natural advantages to warehousing facilities of this type if and when they are required.

c. Those firms dealing with manufactured goods

A large quantity of the goods arriving in Brisbane by road are manufactured items. Many firms find that they can supply the Queensland market by road transport. These items usually have a high value-to-bulk ratio and often the consignments are relatively small in terms of bulk. The volume of business may not warrant the establishment of a warehouse facility dealing exclusively with a particular firm's product. Thus there must be a demand for general warehouses distributing to retailers throughout Brisbane, its immediate region and Queensland generally.

III. /2

At the same time, there is a likelihood that the discount house - dealing directly with the public - will become as strong an influence in retailing in Australia as it has in America.

To both these types of operation, QUEENSFIELD must offer an attractive location.

d. Transport Terminals

The range of services provided by the modern transport terminal probably embraces the functions of the warehouses described in (b), but they are not limited to the provision of storage facilities. A number of firms operate terminals which do consist primarily of a trans-shipment point, together with some temporary storage capacity. The true transport terminal offers in addition, servicing and repair facilities for trucks, driver accommodation, cafe and fuel sales. These terminals are not normally operated by a transport company, but more often by oil companies. They are open to all road transport operators.

The natural attraction of QUEENSFIELD to these terminals can hardly be overstated.

e. Firms dealing in specialised retailing

There are a number of firms dealing in what is, in reality, the retail trade, which require facilities very similar to those of wholesalers and warehousing. These firms include those dealing with items of equipment where there is little or no distinction between the wholesale and retail trade, e.g. farm tractors, earthmoving and agricultural machinery, irrigation equipment, and oil drilling equipment. Most of the firms in this class make use of open air display.

They are classed as industrial rather than retail uses because

III./2

they normally include repair, servicing and reconditioning of the items sold as part of their activities.

This class of business attempts to locate where it can exploit the advertising potential of its open air display and is attracted to highway frontage locations. These are now very expensive and hard to find.

QUEENSFIELD Industrial Park appears to offer an excellent highway site, where combined advertising and spacious landscaping could prove of great benefit to these firms.

From this brief survey of the warehousing, wholesaling and distributing industries, it would appear that most firms engaged in these activities could locate in QUEENSFIELD. In particular, the marketing programmes for the Industrial Park should be directed towards:

- (i) Those firms which are not manufacturing in Queensland but which are establishing a distributive centre to cater for the Brisbane, Queensland and Northern N.S.W. market for their own products.
- (ii) General warehousing, particularly of goods arriving in Queensland from the South by road.
- (iii) Firms distributing heavy equipment normally displayed in the open air, e.g. tractors, agricultural and earthmoving equipment.
- (iv) Transport terminals, providing vehicle servicing and repairs as well as facilities for the trans-shipment or storage of goods.

III. /2,3

- (v) Produce warehouses handling such products as hay, chaff, poultry feed, and the less perishable and more bulky vegetables like potatoes and pumpkins.
- (vi) Cold storage facilities, particularly those associated with the relocation of the Roma Street Fruit and Vegetable Markets to Rocklea.

3. Locational Studies for Selected Industries

In Part I, Section 5, of this report, a selection was made of those types of industry which have been expanding in Brisbane in recent years. It was decided to examine whether or not these industries are likely to be requiring new sites for expansion or relocation, or whether or not there are likely to be new firms entering the industry. Studies in greater detail were made of a selection of them. The suitability of a QUEENSFIELD location for these industries was also checked.

Information on these points was gained from the Management Interview Survey and from various other sources, including publications and statistics.

a. Glass and Glass Bottles

This group of industries is dominated by the Queensland Glass Manufacturers Company Pty Ltd, a division of Australian Consolidated Industries, the only firm producing glass from raw materials in Brisbane. It is the only manufacturer of glass of various types and qualities, and of glass bottles.

There are a number of smaller firms which are engaged in various secondary processes. These processes include bevelling, silvering, embossing and sandblasting for decorative glass and mirrors, and the cutting of glass, particularly for louvres.

III. / 3

They obtain some of their raw material from the local producer, but most of the higher qualities of glass, e.g. plate, are imported from Europe, Japan or America. Shipments are made directly from the suppliers to these processors through the Port of Brisbane.

The only other raw materials are the chemicals required for silvering. Generally, the machinery used is light and not expensive. These firms deal not only with wholesalers, but also directly with the public, builders and retailers. It is essential for their operations that they be represented close to the centre of the City, to allow customers ready accessibility. They tend to operate some form of showroom or order office on the fringes of the downtown area of the City.

It appears that the manufacturing and processing sections of these industries could be separated from the showroom or order office. The former could then be located in areas where ground rentals and charges would be lower than in their present locations. QUEENSFIELD would be a suitable location. At present, rates and land taxes probably represent a considerable part of the overhead expenses of these firms. Provided the administrative difficulties of separating the showroom and office from the factory section of their operations can be solved, some of these firms may be induced to take land in the QUEENSFIELD Industrial Park.

In an amendment to the written section of the proposed Town Plan for the City of Brisbane, the Greater Brisbane Town Planning Committee have added 'sand blasting' to the list of noxious and hazardous industries. This measure, if enforced, would prevent those industries locating at QUEENSFIELD, a General Industry Zone. Representations should be made to the Minister for Local Government to ensure that due consideration is given to this amendment because under modern plant conditions there is little or nothing about this industry which would call for its classification as noxious and hazardous.

III. / 3

Reference has been made to the fact that there is only one producer of glass in Queensland. This plant makes use of road and water transport only. A recent geological survey revealed that fairly extensive deposits of sand with up to 92% purity of silica, occur to the southeast of QUEENSFIELD within a radius of 2 - 4 miles. This could form the basis for a second glass making plant in Queensland. Soda ash would have to be imported from South Australia, but limestone could possibly be obtained from the Queensland Cement & Lime Company's works at Darra. If this source were not available or unsuitable, there are naturally occurring deposits at Gore, west of Warwick and Tamaree, north of Gympie, which are being worked. Coal or electric power would be readily available. QUEENSFIELD appears to offer a good location for such an industry but whether or not the market opportunity exists or the high capital costs of establishment would be overcome, would need careful examination.

b. Chemicals

Over the past five years there has been sustained expansion in the chemical industry in Brisbane. A good deal of this has occurred in firms supplying chemicals such as weed killers, insecticides, cattle dips, fertilizers and the like, to the agricultural and pastoral industry. Significant growth has also taken place in the detergent, liquid soap and adhesive fields.

The use of agricultural chemicals is extending rapidly in Queensland. It is a field where new developments are always in the offing and new firms with new products are always likely to enter the market. These firms often have very low capital requirements - the chief processes may be blending and packing - and they tend to employ only small staffs.

The basic chemicals required are produced in New South Wales, Victoria or overseas. The existing Brisbane firms are, in part, only engaged in mixing the chemical concentrate with solvents or dust to dilute them for their safe application. In

III./3

order to minimize costs of transport of these bulky ready-to-use compounds, blending processes are best carried on at the centre of the market region. Because of the wide range of crops produced in the Brisbane Region - from cool temperate to tropical crops - a wide variety of chemicals are in constant use, leading to greater opportunities for new firms to penetrate the market.

The simple processes involved in the production of these diluted products can be carried out by unskilled labour in practically any type of building. The same conditions apply in the packaging of fertilizers for home gardeners, an activity which has recently expanded.

There has not been much development of the more sophisticated production of chemicals in Brisbane. The establishment of oil refineries could lead to the availability of the basic ingredients upon which this type of production could expand. The first stage production processes are normally undertaken only by large organisations and the plants are likely to have very stringent and specific locational requirements. The availability of the basic chemicals in Brisbane could lead to growth in second-stage production. These plants would be less bound by locational requirements and some may be induced to select a QUEENSFIELD Industrial Park location.

The production of pharmaceuticals in Brisbane is very limited. One basic requirement for this type of production is clean surroundings. QUEENSFIELD Industrial Park has obvious benefits to offer in this respect.

The chemical industry as a whole can be expected to expand in Brisbane and the rate of expansion will to some extent be tied to the availability of refinery by-products and the possible erection of petro-chemical plants. Should the latter be established, then growth should be more rapid and diverse.

III. /3

Existing firms can be expected to expand and new firms will be establishing continually. Land requirements for the industry are therefore likely to be high. QUEENSFIELD Industrial Park would certainly be a suitable location for a large number of the types of plants likely to be established.

Once again, the effect of the proposed Town Plan for the City of Brisbane, if implemented, could have serious effects on the location of these industries in QUEENSFIELD. 'Chemical Works' and 'Disinfectant, Pest Destroyers and Germicide Manufacturing' are classified as noxious and hazardous industries and as such, could not be established in the General Industry Zone of QUEENSFIELD. 'Poison Manufacturing' and 'Soap Works' fall in the same category.

The hazardous industries listed in the Town Plan include most of the basic chemical operations. Whilst these are not likely to locate in QUEENSFIELD, consideration should be given to the possible effects of this classification because these industries would not be permitted in a General Industry Zone. Items appearing on the list are:-

Acetylene Manufacturing and Storage		
Acid	"	"
Ammonia	"	"
Bottled Gas	"	"
Carbide	"	"
Caustic Soda	"	"
Celluloid	"	"
Cosmetics	"	"
Inflammable		
Liquid	"	"
Oxygen Production and Storage		
Photographic Film Manufacturing		
Tar or Tar Products Manufacturing and Storage		
Varnish Manufacturing and Storage		

It is recognised that any or all of these industries would be

III./3

hazardous on a large scale of operations. Exception must be taken on three grounds to this listing. Firstly, the generalities of such items as Poison Manufacturing or Acid Storage can be extended to include practically every form of chemical process - even the simplest preparation of agricultural and pastoral chemicals. Secondly, no definition is given of the words 'manufacturing' and 'storage'. Does 'manufacturing' embrace 'packing', e.g. the bottling of cosmetic or toilet preparations? Does 'storage' imply that, if acid is required for a process of manufacturing, e.g. etching on glass, and is stored on the premises in sizable quantities, the industry must be located in the noxious and hazardous zone? Thirdly, the items listed where specifically referred to, are not defined clearly enough. Would 'cosmetic manufacture' extend to the preparation of hair oil from coconut, castor or olive oils? Would 'celluloid manufacture' embrace more than the production of celluloids and include the production of celluloid products?

It is essential that these and similar uncertainties in the Town Plan should be clarified. Obviously, the scale of operations is important as well as the actual processes involved. Representations should be made to the Minister for Local Government seeking the imposition of performance standards on processes and on materials used in them, as the means of defining noxious, offensive and hazardous industries, rather than the blanket inclusion or exclusion of particular broad types of industry.

A feature which makes this classification of more importance is the distribution of the zoning for noxious, offensive and hazardous industry. The major zone is along the South Bank of the Brisbane River - a rather inaccessible area for goods and workers. Whilst suitable for large undertakings, it appears most unattractive to smaller firms. The remaining areas are already in the ownership of existing industries in these classifications, e.g. the oil terminals, C.I.G. and so on. There is likely to be a shortage of land for these purposes in areas where the industrialists would prefer to establish.

III. /3

A further point is that the planning standards adopted for QUEENSFIELD ensure that factories are relatively removed from each other in comparison with normal industrial zone conditions. This isolation of individual factories may well be sufficient to overcome objections to the industry on such grounds as the high fire risk from its products, or the emission of noxious fumes - provided the scale of operations is small or the site large.

It is known that the Greater Brisbane Town Planning Committee made certain recommendations regarding a further subdivision of types of industry in these categories in the Town Plan. Whether or not this has been done, and what are its implications, is not known.

It should also be noted that the State Government has ignored the proposals put forward by the Committee in this regard. In the Hamilton Lands area, Esso Standard Oil have approval from the Hamilton Lands Committee and the Government to establish an oil terminal - a hazardous industry - on 30 acres of land zoned for general industry in the Plan proposals. This is not an isolated case in this particular area. It would appear therefore, if the Plan is to have the force of law and be binding on the Crown, the State Government may well be sympathetic to representations on this point.

It is to be noted that the four chemical companies, whose managers were interviewed during the Management Survey, appeared in no way to require isolation from other uses, and in fact, appeared suitable occupants for a high-standard Industrial Park.

c. Engineering

The term, engineering, is used here in the broadest sense. The group of firms engaged in these activities manufacture a diversity of products ranging from structural steel to complex capital machinery and equipment. As a group it provides much employment and brings considerable outside wealth into Brisbane.

III. / 3

All the firms in this class that were interviewed in the Management Survey reported that they had interstate and, in some cases, international markets. Over two thirds indicated that over 50% of their production was sold outside Queensland and one third placed this figure as high as 75% of output.

Excluding very large scale operations and the production of heavy and bulky items, engineering workshops do not have very specific requirements about the class of building they occupy. There is the likelihood that overhead travelling cranes may be required, so that, for limited areas of the building, a strong structural frame could be essential.

The capital costs of machinery are high, particularly where precision work is involved. Profits from an engineering firm are often closely related to the ability of management to use general purpose machinery for a wide range of applications. Design of products and of production processes also has an important bearing on the success of the enterprise.

Labour costs represent quite a high proportion of the total costs of production of engineering firms. Queensland has a wage structure below the Australian average. Because of this, engineering industries find Queensland offers advantages as a location. Whilst this economic advantage does not apply in those industries where mass production can be arranged, in the special custom-built products and in products produced only in small batches, Queensland's advantages are evident. It is not surprising therefore to find many of Brisbane's engineering establishments specialize in jobbing rather than in the long run production of a specific range of products.

Engineering is undergoing considerable changes as the result of technological advances. There are always new firms being established to handle new products or to compete with existing firms for existing products using new processes. In this respect, light engineering differs from almost all other industries - no

III. / 3

large scale research lies behind the majority of product innovations.

The size of the firms engaged in engineering varies widely, but there are more small firms than large ones. Some small firms do not have high capital costs for machinery, e.g. welding works producing wrought iron products. Many of these smaller firms have established 'backyard' factories. From there the tendency seems to be for them to move to old, dilapidated and consequently, cheap rented buildings in the inner suburbs or around major shopping areas. Often these buildings have been previously vacated by medium sized firms which have found them insufficient in space or prestige and have relocated to more suitable premises.

Engineering firms appear to have little need for commercial or business services. They often make use of subcontractors or obtain special castings from other manufacturers, but, as transport presents no difficulties in Brisbane, separation from these services would not be detrimental to their operations.

The engineering industry generally is not tied to resources or markets. Its workers, a large percentage being skilled, are prepared to travel greater distances to work than those in most other industries. Electricity supply is sufficient for power requirements and, providing road access is good, any site would serve as a location. One of the advantages of QUEENSFIELD Industrial Park to firms in this class would lie in the possibilities of leasing land and buildings thereby freeing capital for the purchase or lease of machinery.

It is suggested that engineering firms occupying premises in the older industrial sections of the City be approached and the disadvantages of their present sites be brought to their notice in an effort to induce them to make an early move to QUEENSFIELD.

III. /3

d. Electrical Products

The electrical manufacturers have similar requirements to the engineering group except that they used more unskilled or semi-skilled labour in their activities. Because of this, they are restricted in their choice of locations by the necessity for being close to a source of unskilled labour.

The majority of their raw materials are imported from the Southern States or overseas, usually in the form of components, which are assembled in Brisbane.

As in the engineering field, the main local production can be described as heavy electrical equipment which tends to consist of custom-built items. Most of this manufacture is controlled by international organisations like English Electric, and it seems unlikely that, should growth occur in this sector, it will result in the market of lots in the QUEENSFIELD Industrial Park.

In the manufacture of light electrical equipment, e.g. light electric motors and electrical fittings such as transformers, chokes and ballasts, there is very little output at present in Queensland. The next few years could see increases in the manufacture, in Brisbane, of smaller electrical apparatus and of components with the consequent demand for additional industrial land. QUEENSFIELD would meet all the operational requirements of these groups and there should be no difficulty in interesting such firms in a QUEENSFIELD location.

e. Articles Allied to Engineering Output

Other manufacturing closely allied to the engineering group is the production of items such as wire, pipes and tubes and consumer items such as hardware and metal windows.

Large organisations have grown up in Brisbane manufacturing

III. /3

some of these lines. Some of these have built up considerable out-of-State markets and some have an active export trade. Appleton Industries Ltd. (NACO) are outstanding in this respect.

They employ, in the main, process workers using raw materials of steel, brass, aluminium, plastic, etc., which are imported from overseas or from the other States. Most firms depend entirely upon road transport for the conveyance of goods to and from their factories.

Their only locational requirement appears to be that they should be close to a semi-skilled labour pool. Generally, wage costs constitute an appreciable part of the cost of the finished product and so these firms find that Queensland's low wage structure is an advantage.

With the establishment of copper refining facilities at Townsville and the location there of plants producing copper wire, tubes, etc., Brisbane manufacturers will probably benefit from their proximity to this source of supply. Copper in billet form is sold under a uniform capital city price agreement so that there are no benefits accruing to Brisbane manufacturers on copper in an unprocessed condition.

It seems likely that there will be expansion in this section of industry - in particular, in industries handling non-ferrous metals - and arising from this, a demand for land. There should be opportunity to dispose of some QUEENSFIELD lots to the smaller and medium sized industries in this group.

f. Soft Drinks, Printing and Packaging

These industries have what appear to be rather strong locational requirements and although producing diverse products, can be considered as a group.

III. / 3

As mentioned earlier, the soft drink or aerated waters manufacturers have to cope with the problems of having to convey bottles and boxes to and from retailers. By weight, these comprise the main part of the goods transported. The location chosen must be such that it reduces the distance that products have to be transported to a minimum. To a cursory examination, this indicates a central location. However, 3 of 6 major producers in Brisbane operate from outer suburban sites. In addition, there are numerous smaller factories located in the suburbs which have limited markets in the adjacent suburbs. Points that must be borne in mind when considering location in this industry are (1) that traffic conditions in the central area are quite likely to cause sufficient delays to equalize additional costs in travelling from an outer location, (2) larger trucks being used for retail deliveries reduce the need for frequent return trips to the factory and so cut operating expenses, (3) trucks engaged in retail deliveries are constantly stopping and starting and using low gears - factors which increase operating expenses far more than actual mileage travelled, and (4) trucks are being used to distribute the products over a much wider area than Brisbane which, whilst being the major market, is not the only one to be considered.

QUEENSFIELD could offer an ideal location for a smaller factory serving the immediate area. It could also be suitable for a larger plant supplying say, the southern suburbs of Brisbane, Ipswich and other country areas. With the introduction of alternative methods of packaging - disposable tins and plastic containers - the problem of transportation costs is solved and QUEENSFIELD becomes an ideal location. This is particularly so, because these plants are known for their desire to have pleasant surroundings - apparently it has a psychological advertising value.

The printing industry generally needs a central location. This is chiefly due to a need for face to face contacts with clients and most of these clients are businesses in the central area. There are a few specialized exceptions to this rule. For example, one firm concentrates on school-book production and

III. /3

combines these activities with carton and stationery manufacture. Other smaller operators are established throughout the suburbs and whilst they cater primarily for local needs, they can often offer lower prices than their inner city competitors. Lower charges for rates and less elaborate buildings could be one reason for this but more importantly, there are definite signs that many of the larger firms have an agreement on price fixing which maintains high charges.

Many of the larger firms engage in envelope making, and the manufacture of boxes and cartons. At present the demand for packaging is not sufficient to support printeries engaged on a full time basis producing labels and packets. Thus firms which are primarily manufacturers of cartons and packaging also handle printing jobs.

QUEENSFIELD could well be a satisfactory location for a small printery. In fact, it would be a desirable ancillary service industry obtaining custom from the occupants of the Park. If there is enough development in Brisbane's industry to make the establishment of a labelling plant using lithographic equipment an economic proposition, then QUEENSFIELD should offer a suitable location.

Packaging is to a certain extent closely connected to printing because of the use of its label printing equipment in the general printing trade in times of slack production. It is, however, a very diversified industry producing a variety of products from paper bags to tins and plastic containers.

The production of paper bags for use in retailing involves the distribution of a high weight/value ratio product. As the central business area is still the main single market area for these bags, production tends to cluster about it. However, the production of paper bags for other purposes, e.g. as a replacement for cartons for packing certain food lines, is not tied to a central location. The production of cartons has recently been undertaken in the

III. / 3

outer suburban areas. Tins and plastic containers are also manufactured in these outer suburbs. All these plants are dependent on road transport for the carriage of goods. The labour force is mainly semi-skilled and so it is desirable that factories be located close to suitable reserves of labour.

It would appear that although for some classes of production QUEENSFIELD Industrial Park would not offer a suitable location, to the remainder of the plants in the packaging group, it would be quite satisfactory.

g. Rubber

The rubber and rubber product group also has a special locational requirement - it needs large quantities of cooling water for its various processes. This has led to majority of firms to locate near existing agricultural dams or along creeks. There are a number of smaller firms operating in specialized production, e.g. foam rubber products, which do not appear to have this demand for cooling water.

One significant development in Brisbane in this field is a recent approval given to Dunlop Rubber for a rubberworks on a 200 acre site at Boondall. This plant could well supply most of Queensland's basic rubber needs for some time to come.

Retreading works for truck tyres could be a possible occupant of the QUEENSFIELD Industrial Park as this process calls for specialized moulds not generally available in smaller retreading works. The development of Sandy Creek as part of the QUEENSFIELD Project, will result in ponds which would supply any excessive cooling water requirements of these industries.

In so far as other locational factors are concerned, QUEENSFIELD Industrial Park should be able to provide conditions satisfactory in every way.

III./3

The marketing of QUEENSFIELD to industries in this group should be concentrated upon those firms producing specialized products and specialized retreading works, e.g. truck and tractor tyres. Because of Dunlop's recent move, it seems unlikely that further facilities for large scale rubber and rubber product production will be warranted in Queensland in the near future.

h. Confectionery, Joinery, Radio & Footwear Manufacturing

All these industries seem to have requirements which could be readily satisfied by a QUEENSFIELD Industrial Park location.

Confectionery manufacturers draw their labour force from young unskilled females and must be located close to reserves of this labour. Because the workforce is largely drawn from this group, public transport is essential. Distribution costs are important but the weight/value ratio is low so that a central location is not necessary. Also considerable use is made of wholesalers. Factories tend to be small because of the wide variety of products and the competitive nature of the market. Most of Brisbane's present producers are located in outer suburbs - some even in the adjoining rural shires. One very significant omission from Queensland's output of confectionery is chocolate. Some chocolates and chocolate coated sweets are produced by individual retailers, but there is no manufacture of chocolate from raw materials.

It is doubtful if Queensland's climatic conditions would permit this manufacturing, although air conditioning could overcome this. As QUEENSFIELD is not at the centre of a large dairying area, it seems unlikely that this form of production could be undertaken there.

With this exception, confectionery production should find QUEENSFIELD a very satisfactory location.

III./3

Joinery and cabinet making are industries very closely allied to the building industry and suffer its fluctuations. The industry has no specific location requirements. In fact, out-of-Brisbane firms often successfully compete for contracts with builders in Brisbane. Proximity to the Centenary Estates project and other expanding residential areas, could favour QUEENSFIELD as a location for these industries.

Cabinet making is largely carried out by individuals but there is an increasing tendency for the larger joinery firms to offer standard lines as part of their production. QUEENSFIELD should be a satisfactory location.

Radio manufacture is not well established in Brisbane at present. The main activities seem to be in custom-built two-way radio transmitters and receivers. Mass production of domestic radios is not undertaken. Some of the existing firms export a sizeable proportion of their output to interstate and overseas markets. Practically no manufacturing of radio components is undertaken in Brisbane and all components for assembly are imported - mainly from interstate. Due to their high value/weight ratio, the cost of transportation of components is more than offset by the lower wage structure available in Queensland.

This latter feature should be impressed upon manufacturers of components and assemblers of equipment to induce them to consider QUEENSFIELD as a site for a Queensland factory.

The industry uses large quantities of unskilled labour and consequently must have ready access to a labour pool. One other feature of lesser importance is the site must be free from radio interference to allow the testing of equipment.

Buildings to house the industry exhibit no special requirements and the transport of raw materials and finished products can easily be handled by road.

III. /3,4

In all, QUEENSFIELD offers every attraction to this type of industry.

Footwear manufacture has not shown any expansion in Brisbane in recent years but it remains one of the States major items of import. This appears strange since Queensland is Australia's largest single source of cowhide, its meatworks processing more animals than any other States. Traditionally, boot and shoe manufacture has concentrated in Victoria, but Queensland produces a significant part of the Australian production of rubber footwear.

It appears unreasonable that Brisbane has not developed a larger share of the leather shoe industry. There are, however, a number of plants presently established, making men's shoes, and these have built up export markets both interstate and overseas. The industry has no specific locational requirements other than a need to locate near an adequate supply of labour. The labour force is comprised of semi-skilled and skilled operators - the latter requiring apprenticeship training.

QUEENSFIELD Industrial Park would appear to offer a satisfactory location to these firms.

4. Recommendations to the QUEENSFIELD Management

The studies which make up this Report have yielded the following recommendations concerning the planning, management and marketing of the QUEENSFIELD Industrial Park.

a. Planning Recommendations

(i) Number of Employees

The proposed design of QUEENSFIELD, as prepared by Messrs. Clarke Gazzard Yeomans, and as printed in the

III. /4

first Brochure, shows the total Park area as 420 acres excluding the possible future extension to the South. Approximately 25% of the total area will be in roads and parklands, and about 315 acres should therefore remain for actual industrial lots.

From figures given in Part II, Section 6, worker density in manufacturing in suburban Brisbane is, at present, about 12 workers per acre. In QUEENSFIELD, because it is a planned development, higher densities might be expected, i.e. in the range 18-25 workers per acre.

From this, it is recommended that planning be based on there being 6,000 to 8,000 workers employed in QUEENSFIELD when it is fully developed.

(ii) Lot Size

To ensure a high standard of development in QUEENSFIELD it is recommended that not more than 40% of any lot be covered by buildings. This provision, coupled with a desire by the occupants to have land available within their site for expansion, will create a demand for lots of generous size. As the Industrial Park appears most likely to attract medium to smaller firms, it is recommended that the major part of QUEENSFIELD be planned to allow subdivision into lots of from $2\frac{1}{2}$ to 5 acres.

There will be demands for much larger lots but these can best be obtained by amalgamation of smaller lots.

The demand for smaller lots will depend on facilities such as flatted factories or rental space, offered in the Industrial Park, but in no case should lots of under 1 acre be provided.

III. /4

(iii) Shape of Lots

In general, all lots should be subdivided so that the depth is greater than the breadth or frontage. Corner lots may be exceptions to this rule. It is suggested that the depth of a normal lot should be, at least, 1.5 times the frontage, i.e. depth to frontage should be in the ratio 3:2.

Where, because of unavoidable problems of plant layout, an occupant of QUEENSFIELD requires a lot with a depth of less than 1.5 times the frontage, the QUEENSFIELD Management should take this fact into consideration when pricing the lot. This latter form of subdivision is more expensive in terms of the length of roads required.

(iv) Dimensions of the Lots

From the Management Interview Survey, it is evident that lots shallower than 200 feet limit the flexibility of plant development on the site. Furthermore, if one acre is to be minimum lot size and the ratio of 3:2 of depth to frontage is accepted, a minimum sized, normal shaped lot will be approximately 170 feet by 255 feet. It is therefore recommended that 200 feet be made the absolute minimum depth of any lot.

Also from the Management Interview Survey, it is evident that the depth of the lot required is related to the weight and bulk of the article produced. The upper limit to the depth of the desirable lot for most industries is in the range 600-800 feet.

Because of this, it is recommended that the subdivisional layout be arranged to allow blocks ranging in depth from 200 to 800 feet to be obtained.

III. /4

(v) Road Pattern

From (iv) above, it is recommended that the roads within the major part of QUEENSFIELD be planned at intervals of 800 feet measured between alignments, to enable lots of 200 feet to 800 feet depths to be obtained.

It is desirable that smaller industries be segregated to some extent from the larger ones within the Industrial Park. Where it is considered that a number of smaller concerns should be grouped, the roads could be planned at intervals of 400 feet, allowing blocks of 200 feet depth to be clustered. It is noted that an area of this type has been included in the plan.

Because a large part of the traffic moving within the Industrial Park will be composed of heavy commercial vehicles, roads should be designed with sufficient width and carrying capacity to accommodate this traffic. The widths nominated in the preliminary plan are ample.

To facilitate the movement of traffic to and from lots and to enable individual firms to be easily located, the road pattern should be simple and provide clearly defined lines of movement. This requirement seems to have been met by the preliminary plan.

(vi) Traffic Generation

A large proportion of workers in industry in Brisbane use private motor vehicles to travel to work. As a result, when QUEENSFIELD is fully developed, heavy peak hour traffic flows can be expected to and from the area. It is estimated that unless staggering of working hours occurs, employees travelling to and from work could generate traffic flows of up to 2,500 vehicles per hour on the roads leading from QUEENSFIELD at peak hours.

III. /4

The Management Interview Survey indicated that the number of delivery vehicles to and from an average plant per day, was ten. In addition, each plant will generate a certain number of trips from customers, visitors and representatives calling at the plant.

From these figures, a total vehicle flow of some 7,000 - 8,000 vehicles per day could be expected when QUEENSFIELD is fully developed.

(vii) Traffic Planning

From (vi) above, it becomes obvious that emphasis must be laid on the design of traffic facilities in the Industrial Park and particularly at the junctions of roads leading from it and the New England Highway, along which traffic flows already are heavy.

To this end, it is recommended that all intersections within QUEENSFIELD be designed to high standards and that provisions be made, at the junctions of roads with the New England Highway, for grade separation at a future date. It is noted that design is proceeding along these lines.

(viii) Car Parking

Those plants included in the Management Interview Survey which provided adequate employee carparking facilities within their present sites, reported that one space for every three employees was desirable. This endorses the standards set down for QUEENSFIELD. The additional requirements for spaces for managerial staff and visitors in the QUEENSFIELD Planning Standards are considered most desirable. Allowing any more than casual use of kerb-side parking within the Industrial Park would destroy many of the advantages gained from its park-like setting. Attention should be paid to access to carparking facilities for

III. /4

visitors at each plant, to ensure that it is visible or clearly indicated from the entrance to the plant.

(ix) Provision of Services

The provision of water supply, electricity and sewerage and their reticulation are dealt with in the Agreement between Industrial Estates (Qld) Pty. Ltd. and the Queensland Government. Investigation of the possibilities of gas reticulation should be made and provision allowed, in the layout of services in footpaths and conduits, for its future installation.

There seems to be little demand for the provision of other common services such as steam and compressed air.

The QUEENSFIELD Management should be prepared to allow firms which have heavy water demands, for cooling, to use water from Sandy Creek or the ponds formed in it. The quantities removed should not be sufficient to stop flow in the Creek, or to impair the efficient removal of waste from the sewerage treatment plant which will discharge into Sandy Creek, downstream of QUEENSFIELD.

(x) Other facilities

As approximately 25% of the total area will be set aside for roads and other public purposes, attention should be paid to developing these areas with landscaping and tree planting. The banks of Sandy Creek should be kept free of building development and developed as a green strip through the Industrial Park. Detail design should be commissioned as soon as possible, so that planting can be established at an early stage.

Recreation facilities should be developed, particularly for

III. /4

those forms of sport and pastimes which can be played in short periods, e.g. tennis, squash, table tennis. In addition, an informal sporting area or oval where football practice and other more active sports could be played, would be desirable. In the future, individual factories, or the Park as a whole, could field competitive teams in cricket, baseball and/or football.

It is essential that workers and management in QUEENSFIELD be able to do business and shopping within the area. To this end, shopping facilities must be provided. These could include cafes, lunch bars, a chemist, grocery, butcher, news-agency, hardware and other specialty shops.

Service shopping facilities should include a post office, doctor, dentist and a number of business offices, e.g. banks and insurance agencies.

The establishment of a doctor, dentist and, possibly, some kind of casualty nursing station, as a clinic, could form a medical centre which could be a common facility, with each occupant of QUEENSFIELD contributing towards the cost of upkeep.

These facilities should be appropriately grouped and planned to provide a more urban atmosphere than the remainder of the Industrial Park. The grouping should be such as to create a psychologically exciting setting. To women working in the area, it must provide some of the atmosphere of the larger central City shopping area. This is important, and should materially assist in the retention of female labour in QUEENSFIELD.

It would be desirable to establish a hotel, or hotel-motel close to the shopping area. Motel facilities could be provided immediately.

III. /4

Service industry facilities are legitimate occupants of an Industrial Park but the QUEENSFIELD Management should ensure that a concentration of these facilities occurs near the shopping centre. In particular, car repairs and service stations could be considered essential.

Other facilities which could be provided would include club and meeting rooms for the use of organizations such as Rotary, Apex, Lions as well as unions; showrooms where exhibitions of the products of QUEENSFIELD based industries could be displayed and a lecture hall for visiting speakers and meetings of tenants.

(vi) Leasing of facilities to smaller establishments

To accommodate and to 'nurse' small or new industries, rather than provide small sites, it seems desirable that 'flatted' factory space be provided. The QUEENSFIELD Management should provide these facilities itself, or encourage their erection by other entrepreneurs.

b. Management Recommendations

(i) Staff

All staff engaged in the promotion of QUEENSFIELD should carefully study this Report. They should make themselves familiar with the patterns of industrial growth and location in Brisbane, so as to be of the best possible service to manufacturers and distributors. In addition, before approaching any particular industry, those making the approach should be familiar with the processes and materials involved in that industry and with any particular locational problems it may have.

III. /4

(ii) Rail Facilities

The Commissioner of Railways should be approached to ensure that adequate land is set aside in the curtilage of the Wacol Railway Station to provide sufficient rail and goods yard facilities for all QUEENSFIELD's occupants when the Park is fully developed. Sufficient land is in his ownership at Wacol Station, to accommodate these facilities but it is not yet set aside for goods yard development.

(iii) Access to rail facilities

The Commissioner of Main Roads should be approached to ensure that traffic from QUEENSFIELD to the Wacol Railway Yards can obtain easy access across the New England Highway, preferably through the Progress Road intersection.

(iv) Road Transport deliveries

The Commissioner of Transport should be approached to ensure that there are no legal barriers which prevent QUEENSFIELD from being in the free daily delivery zone of wholesalers, retailers, and service facilities operating within the City of Brisbane.

The Management should approach major organisations operating free delivery services in Brisbane, and ensure that they are prepared to provide deliveries by road, free of charge, to QUEENSFIELD. This service should also be discussed with all airline operators. In addition, the Management should be prepared to assist the approach of any possible occupant of the Park, to any desired wholesaler or service facility which does not yet serve the Park with free deliveries.

III. /4

(v) Public Transport System

An efficient public transport system is essential to the development of QUEENSFIELD. A regular bus service should be commenced between Inala and Wacol Stations as soon as sufficient employment opportunities are created in the Park to support such a service. This service would, probably, be best operated by the Inala Bus Service which at present services the Inala-Darra area, close to QUEENSFIELD. The route should connect Darra, Oxley and Inala to QUEENSFIELD. It should also circulate within QUEENSFIELD because it has been found elsewhere that workers - particularly female - will not willingly walk more than 200 yards from public transport to work.

An approach should be made to the Commissioner of Transport to arrange for the issuing of permits to establish these bus services.

The Brisbane City Council should also be approached to open and prepare any roads on the proposed route to enable them to withstand bus traffic. It may be in the interests of QUEENSFIELD if the Management agrees to subsidise this work.

A close watch should be kept on public transport services to ensure their adequate frequency and to ensure that firms engaged in shift work, or in working overtime regularly, are not hampered by a lack of off-peak services. Once again, some subsidy may be necessary in the initial stages.

The quality of service provided on the adjacent railway line should also be watched.

(vi) Gas Service

The South Brisbane Gas Co., in whose franchise

III. /4

QUEENSFIELD lies, should be approached to ascertain its attitude to the extension of its mains and to the reticulation of gas in QUEENSFIELD. The Management should be able to give information on this point to any possible occupant, should the firm be a significant user of gas.

The reticulation of gas from liquified gas storage tanks within QUEENSFIELD, without the extension of mains to the Park, could be feasible and may make gas reticulation a much more attractive proposition.

(vii) Water Supply

To ensure adequate water for all industrial purposes at QUEENSFIELD, the Brisbane City Council will have to duplicate its reservoir facilities at Inala and amplify some mains in the area. The QUEENSFIELD Management should lose no opportunities to stress to the Council the vital necessity of, and the urgency for, this work to be completed at an early date.

(viii) Electricity Supply

The QUEENSFIELD Management should consult with the Electricity Authorities in Brisbane - the Southern Electricity Authority of Queensland as the generating authority, and the Brisbane City Council as the distributing authority - about the supply of electricity to the Park. In particular, land required for substation and transformer sites should be determined at an early stage of development and reserved for these purposes.

At the same time negotiations should be conducted on the possibility of having the mains for the reticulation of power supply, placed underground. Overhead wiring in the Industrial Park would greatly reduce its aesthetic appeal. Alternatively, power reticulation could be by overhead cables

III. /4

along the rear of the lots. The main disadvantage of this system would be that it would reduce the flexibility of lot design.

Street lighting should also be implemented at an early stage and again, special attention should be given to its design.

(ix) Car Parking facilities off the site

Fifty percent of Brisbane's population at present, lives north of Brisbane River and consequently a considerable number of skilled workers at QUEENSFIELD are likely to come from that part of the City. If they drive to work, this would entail excessive driving which could impair their efficiency. It may be desirable, should the numbers warrant, to establish car parking facilities for QUEENSFIELD employees at railway stations in the northern suburbs and implement a "park and ride" system with the Department of Railways. The Commissioner's opinions on this matter should be ascertained so that any enquiries from prospective occupants can be answered.

(x) Offices and Showroom facilities in the Central Business District

If firms which depend on ready accessibility to customers in the downtown areas are to be attracted to QUEENSFIELD, they will require some space near the Central Business District where they can maintain an office or showroom. It would be desirable for these facilities to be combined in one building as this would assist in promoting the 'image' of QUEENSFIELD. It is recommended that the QUEENSFIELD Management obtain space in a suitable location on the edge of the Central Business District where occupants of the Park could establish their City offices. This facility could possibly take the form of an arcade of office showrooms. Individual showrooms could be leased to non-QUEENSFIELD occupants until they were required by firms from

III. /4

QUEENSFIELD. It is suggested that South Brisbane would be the best area for these inner City offices.

(xi) Leasing of facilities in QUEENSFIELD

At present, in Brisbane, there is a small market for 'rented' factory space. This space is partly supplied by the Queensland Government at the Rocklea Munitions Area and partly by private enterprise. Many firms, with high capital costs in the establishment of their industries, appear to have difficulty in raising sufficient finance from Queensland sources to cover all aspects of their initial establishment. If they could lease suitable land and buildings, they would be able to concentrate much more of their resources in the purchasing of equipment.

It is recommended that the QUEENSFIELD Management offer facilities for the leasing of buildings and land or of land only in its marketing program.

In addition, staff engaged in marketing should be fully conversant with the taxation concessions to be gained by industries through leasing these facilities. These can be very considerable - particularly to proprietary companies or companies controlled by a single individual or family. Very often, it appears that industrialists have never investigated the possibilities of leasing - having had a strong emotional bias towards the concept of holding a freehold title to their factory site.

The QUEENSFIELD Management should also consider linking with an organisation which could arrange the leasing of equipment to industry. In this way, the industrialist could be presented with the factory ready for full scale production when he first occupied it.

III. /4

(xii) Apprenticeship Training

When fully developed, the occupants of QUEENSFIELD will employ a large number of apprentices. The only facilities for apprenticeship training in Brisbane, at present, are located in the Central Business District. This could mean that QUEENSFIELD's apprentices would be obliged to travel excessive distances to attend their classes. It seems desirable that the QUEENSFIELD Management approach the Minister for Education and suggest that technical college facilities be established either at QUEENSFIELD or at Inala.

(xiii) Balanced Development

The marketing program for QUEENSFIELD should be aimed at all sizes of industrial enterprise. Care should be taken to ensure that the industries attracted to the Park are financially sound. Many smaller industries fail because of insufficient capital, inability to cope with product changes, competition or other reasons. It would be most advisable, therefore, to ensure that a sizable proportion of the firms attracted were of the medium to larger size because these are more likely to be financially stable.

(xiv) Balanced Workforce

It would be desirable to attract to QUEENSFIELD, firms who could offer varied employment opportunities, i.e. for skilled, semi-skilled and unskilled labour of both sexes. This would enable the locally available labour to be better absorbed and would foster the growth of the surrounding residential areas, thereby ensuring an increasing labour reserve. It would also help to foster a better balanced society in these suburbs and so improve the general quality of the labour pool.

III. /4

(xv) Labour Reserves

Labour reserves in the districts around QUEENSFIELD should be adequate to meet all demands, but care should be taken to ensure that the development of QUEENSFIELD does not create a demand for unskilled labour which cannot be satisfied locally. It is recommended that QUEENSFIELD Management study the unskilled labour market in the district, as defined by the sources of unskilled labour employed in the Park, so that, where possible, labour shortages can be avoided by continuing sound planning.

(xvi) Town Planning

As pointed out in Part III, Section 3 (a) and (b), the QUEENSFIELD Management should take action to ensure that the relevant sections of the proposed town plan which effect the Industrial Park, are thoroughly studied by the Authorities before it becomes statutory. To this end, immediate representations should be made to the Minister for Local Government.

(xvii) Site Approvals

Before any industry can be established or buildings erected for an industry in Brisbane, site approval must be obtained from the City Council. Industrialists have, in the past, complained of excessive delays or of the imposition of unacceptable conditions upon the approval. The QUEENSFIELD Management should, as part of its service to clients, arrange the necessary site approval from the City Council because it will be better able to deal with the Council than individual industrialists.

(xviii) Combined Advertising

QUEENSFIELD is a new concept and should be promoted as a 'prestige' location. The firms established in it should be

III. /4

encouraged to indicate in their advertising that they are located in QUEENSFIELD. The management should also organise combined advertising by firms in the Park under a common banner - making use of the QUEENSFIELD symbol. The advertising and joint promotion techniques of the typical regional shopping centre should be emulated.

(xix) Market Penetration

Long range estimates of the land requirements of industry in Brisbane indicate that an additional 4,500 acres will be required in the next twenty years. QUEENSFIELD should be able to compete, on equal or better terms, with all other outer suburban industrial lands in the City for this market. On this basis, if QUEENSFIELD could obtain 10% of the market which would be approximately 200 acres per year, it should be filled in 15 years. This is not an unreasonable span of time for the full development of an Industrial Park. With active and effective marketing, QUEENSFIELD should obtain more than 10% of the market and this will consequently hasten the successful completion of the venture.

(xx) The Reputation of QUEENSFIELD

QUEENSFIELD will be the first promoted industrial park development in Queensland. As such, it will be watched with keen interest, not only by industrial interests in that State, but by those all over Australia. It is essential that the reputation of the Industrial Park be maintained. Should any firm established in QUEENSFIELD fail in the early stages of its development, there will be a tendency amongst industrialists to place the blame on the Industrial Park. Therefore, firms relocated or established in QUEENSFIELD should be carefully chosen to ensure that they are suitable and are likely to succeed. It would be better to pass up doubtful propositions than to have QUEENSFIELD's reputation placed in jeopardy.

III. /4

c. Marketing Recommendations

(i) Identification of the best potential market

In Part I, Sections 5 and 6, lists have been drawn up which indicate the industries (or the products of industries) which appear most likely to be able to develop in Queensland under present conditions. With the exceptions noted in Part III, Section 1, these manufacturers are to be regarded as the ones most likely to be induced to select QUEENSFIELD as a location.

In Part III, Section 2, a description is given of the distributors who are likely to be interested in a QUEENSFIELD location.

In addition, an examination of Appendix II - Imports to Queensland - will show other items which could possibly be sold in sufficient quantities to warrant local manufacture. The industries manufacturing these items should also be included amongst those approached early in the marketing campaign.

(ii) Identification of the local market

Many industries in Brisbane have relocated in the course of their growth. These relocations usually involve a move from an inner suburban to an outer suburban site. From Table 5, it is obvious that a great deal of manufacturing in Brisbane is still carried on in the inner suburbs. The same situation applies in distributing.

Because of this, there exists a large potential market for QUEENSFIELD lots amongst those firms which are beginning to find that an inner city location is detrimental to their operations and which are considering relocation.

III. /4

(iii) Further possible local markets

The oil industry is, at present, concentrating a great deal of investment into Queensland in exploration, exploitation and refining. The marketing of QUEENSFIELD should be directed towards industries engaged in these fields. In particular, QUEENSFIELD lots should be excellent locations for maintenance or storage depots for oil drilling equipment, and for its manufacture, if this is undertaken in Queensland. Ancillary services attracted by the oil refineries or engaged in pipeline maintenance could also be induced to locate at QUEENSFIELD. The marketing program for QUEENSFIELD should be directed at firms engaged in other developmental works in other parts of Queensland. Any one of these might give rise to direct or indirect demands for industrial land in Brisbane, and QUEENSFIELD should be actively promoted in these cases.

In the marketing of QUEENSFIELD, emphasis should be placed on the following points:-

(iv) Queensland's low wages structure

Queensland has the lowest wage structure of all the Australian States. The basic wage paid under the State award is higher than the Commonwealth basic wage and covers a much larger number of workers. However, most semi-skilled workers are paid under Commonwealth awards. In addition, the State basic wage is lower than the basic wages fixed in most of the other Australian States. Furthermore, there is much less payment of incentives of one type and other in Queensland than in other States.

Consequently, Queensland offers a good location to any industry whose products have a high labour cost component in the final product. The existing industrial structure tends to reflect this point and many large firms engaged in custom-built or jobbing production have been very successful in Queensland.

III. /4

(v) The Queensland market

Queensland's population is now in excess of 1.5 million or approximately 14% of the Australian total. Personal income in Queensland is about 13% of the Australian total. Per capita income is higher than in Western Australia and Tasmania and personal savings are comparatively high.

This market is growing steadily and with the emphasis now being placed on the development of Northern Australia, the rate of growth should increase over the years to come.

Consequently, Queensland must be considered as a large and potentially important and expanding market.

(vi) The local regional market of Brisbane

The population of Brisbane is now over 600,000, and the population resident within 150 miles of Brisbane already exceeds 1,000,000. The percentage of the Queensland population resident in the Brisbane region is increasing. Brisbane, itself, is expected to have a population of over 1,000,000 within 17 years.

The resident population of the immediate region of Brisbane - i. e. within 100 miles radius - is already larger than that of South Australia, Western Australia or Tasmania. It is the third largest consumer market in Australia and is likely to maintain that position.

(vii) Brisbane - the distributive centre of Queensland

The Port of Brisbane handles the major part of the goods shipped to and from Queensland. The major rail services in Queensland operate from Brisbane, and it is the main terminal for interstate and intrastate road transport services.

III. /4

Thus Brisbane is the hub of the distributive services in Queensland and its influence extends into Northern New South Wales.

While overseas shipping freight rates continue to be fixed on the present system, where the rate to all Australian capital cities is identical, Brisbane suffers no disadvantages in overseas trade. The Port of Brisbane, while hampered by being a river port, can handle all the freighters at present serving Australia. It has the equipment to handle all types of cargo.

In the interstate trade, freight rates by sea transport to north Queensland ports are lower than from Sydney and Melbourne and rates to the southern ports are the same as those in the opposite direction.

On the standard gauge railway, freight rates from Brisbane to Sydney are, currently, lower than those in the opposite direction.

Road transport, on interstate services, is more intensely used in Brisbane than in any other capital city with the possible exception of Sydney.

Thus any industry locating in Brisbane would not be restricted by a lack of transport services with which to distribute its products, particularly in Queensland and Northern New South Wales.

(viii) Road transport

Manufacturers and distributors in Brisbane make intensive use of road transport. Almost all new plants depend on road transport for the carriage of raw materials to, and goods

III. /4

from their plants to or from, railway goods yards, wharves or the airport. The lack of dependence on other modes of transport is illustrated by the pattern of industrial relocations. Almost all the plants in the south-western Sector of the City have no direct access to rail facilities.

Many plants use road transport for 'long-haul' delivery or distribution, e.g. raw materials from other States. One example of this is the Ford Motor Company's motor assembly works, which is supplied, from Melbourne, exclusively by road transport. Consequently, QUEENSFIELD's lack of rail facilities is no valid reason why it should not be a good location for most industries.

In addition, since it fronts the New England Highway - the main route for interstate road transports - QUEENSFIELD is an excellent location for industries dependent on this mode of transport for their raw materials or for their product distribution.

Marketing of QUEENSFIELD should be aimed at firms making extensive use of road transport.

(ix) Long term industrial growth

If the development of Brisbane follows that of other metropolitan areas throughout the world, there should be an increase in the percentage of the total population engaged in manufacturing. With the development of Queensland, Brisbane must benefit because it will then begin to occupy a more central location in respect to the Australian market, instead of its present out-on-a-limb situation.

Thus Brisbane and consequently QUEENSFIELD will become more and more sought after as a location for industry as time progresses. The scope for capital gains on QUEENSFIELD land seems considerable.

III. /4

(x) Relocation of Industry

Industry in Brisbane is continually relocating and has shown a marked preference for new sites in the south-western Sector of the City. Features which have played an important part in these relocations were interstate road transport and highway frontage sites. QUEENSFIELD lies in this sector of the City and offers highway frontage sites. That is, it can offer the facilities which are currently popular with industrialists in Brisbane.

(xi) QUEENSFIELD's Position in relation to the Local Markets

Brisbane represents approximately 60% of the market for consumer goods in South East Queensland and the Northern Rivers District of New South Wales. Hypothetically, for consumer products, the distribution of goods will be roughly 60% in Brisbane, and 40% in the provincial areas. Over 80% of the population in these provincial areas can be reached by road from QUEENSFIELD, without trucks having to traverse the built-up urban area of Brisbane.

In the future, with the implementation of the Brisbane Town Plan, the road system should allow easy access from QUEENSFIELD, by arterial roads, to all of the provincial areas as well as all sections of the City.

The present road system allows easy access from QUEENSFIELD to a large part of the City. To the far northern and northeastern suburbs, the road system, at present, leads through the more congested central part of the City. However, these suburbs will not expand, in population, to the extent of the other suburbs.

The local market can be reached quite effectively by road transport. The presence of rail facilities in QUEENSFIELD

III. /4

would not allow any increase in the efficiency with which this market could be reached.

(xii) Highway frontage locations

In (x) above, reference was made to the apparent desire of industrialists for highway frontage locations.

QUEENSFIELD offers effective highway frontage locations.

In fact, it will be the only new area on Ipswich Road - the New England Highway - where subdivisions with highway frontage, and of less than 10 acres, will be permitted.

Additionally, highway frontage sites on this Road are becoming very scarce, and many of those remaining in industrial zones are liable to flooding. They are also highly priced - up to £4,500 per acre.

Sites fronting QUEENSFIELD's internal Ring Boulevard will offer many of the benefits of highway frontage. Sites in the interior of QUEENSFIELD will most definitely be better than off-highway sites in other areas.

(xiii) The Space available in QUEENSFIELD

Many industries in Brisbane's inner suburbs, have been plagued by the rapid changes in transportation caused by increasing motor-vehicle ownership and usage. They lack space to provide parking for employees' cars - a situation aggravated by the recent introduction of the 'Parkatarea System'. Their loading bays and internal laneways are completely inadequate for the large trucks and semi-trailers now being used in the distribution of industrial products. Emphasis should, therefore, be placed on the fact that these facilities must be provided in plants located at QUEENSFIELD.

III./4

(xiv) Past plant location policies in Brisbane

Industries in Brisbane have not shown a great regard to the location of their plants in the past. Governing factors in many cases were the availability of the site and the price asked. This attitude must be to the benefit of QUEENSFIELD. Alternatively, those industrialists who do pay regard to location, should be attracted to QUEENSFIELD because it will be the only land available where they can obtain definite facts about services available, costs, labour and transport facilities.

(xv) Labour

Experience with labour in Brisbane, tends to indicate that when a plant relocates, its skilled labour is likely to transfer with the plant, rather than seek another job near the original location. It is to be expected that plants moving to QUEENSFIELD will not lose many of their skilled workers.

Unskilled labour is less likely to move with the plant during relocation. Consequently, losses of unskilled labour can be expected with relocation to QUEENSFIELD. The local labour reserves should be able to make up this loss of unskilled labour.

(xvi) Future labour supply

There is an assured supply of labour to QUEENSFIELD from Inala, Goodna and other suburbs - all developing residential suburbs housing working class families. (See Management Recommendations (xiv) and (xv)). QUEENSFIELD's development should accelerate the growth of these and other suburbs in the area, and so the labour reserves should increase.

III. /4

(xvii) Proximity to Centenary Estate

The suburbs surrounding QUEENSFIELD are mainly working class areas but high income residential areas will be developed close to it when the Centenary Estates project is properly underway. In addition, the new Centenary Estates Bridge over the Brisbane River will eventually place Kenmore in easy driving distance of QUEENSFIELD. Kenmore is currently the suburb where high income families are building their homes.

The Centenary Estates project, with an expected population of 40 - 50,000, beside providing high quality home sites, will be so structured that low cost home sites will be available closer to Darra. That is, working class families living in Centenary Estates will be in close proximity to QUEENSFIELD.

(xviii) Governmental Assistance

Under the 'Industries Assistance Acts (1929 to 1933)', the State is empowered to make advances or guarantee loans to foster and stimulate the construction of works, the development of industries and to promote employment. Industries locating at QUEENSFIELD could be eligible for assistance under this Act.

(xix) QUEENSFIELD - a centre of employment

Because QUEENSFIELD will ultimately employ between 6,000 and 8,000 workers, industrialists will be able to replace staff losses readily. Workers seeking employment will visit QUEENSFIELD because of its size, more frequently than they would other isolated sites. ...

The large number of employees will allow the Management to provide facilities which are generally not available, e.g.

III. / 4

shopping and recreation facilities, and these will help in retaining labour.

(xx) QUEENSFIELD - a setting and a symbol

The concept of QUEENSFIELD will be promoted so that it becomes synonymous with 'good' industrial development - its hallmarks will be attractive and well designed plants, set in landscaped surroundings. This setting has advertising value and firms located there will benefit from it, even if they do not directly make use of it in their own advertising. This point applies particularly to non-durable consumer goods, e.g. food and drugs.

(xxi) QUEENSFIELD - a site for linked industries

Integrated industrial development and inter-industry linkages have not yet developed to any appreciable extent in Brisbane. QUEENSFIELD could offer an excellent opportunity for these types of development to become established. The large range of sizes of sites available in close proximity to each other, the ready accessibility from one site to another within the Park, and the fact that sites will be available over a period of time, should all help this most desirable development in industry.

It appears that the principles of successful development of an Industrial Estate can most usefully be compared to the principles of successful Regional Shopping Centre development. A Regional Shopping Centre operates as a balanced group or unit. It possesses central shared facilities and gains powers of cumulative attraction and economies of scale for its grouped establishments. It exhibits one or two major tenants, whose powers of attraction set the pace for the other, smaller tenants.

A successful Industrial Estate therefore requires to be

III. /4

conceived on a large scale, as a new industrial centre. It must, of course, offer full public utility services, good transportation facilities and so on. It should first try to attract one or two major plants, a major industrial supply warehouse and/or a major plant requiring some sub-contracting establishments nearby. The major tenants should preferably be glamor companies of high reputation. As with a Regional Shopping Centre, a low rent or price would assist in securing such major tenant or tenants at an early stage. The choice of later, smaller tenants should be guided by the principle of obtaining a balanced grouping of linked industries together with industrial and business services. When a basic nucleus has been created, there should be no difficulty in attracting and accommodating large numbers of small manufacturers who will be extremely varied in their type of industry and size and nature of plant.

(xxii) QUEENSFIELD - a planned and protected development

An industrialist who expends considerable capital in establishing a well designed, attractive plant in good surroundings in an ordinary industrial zone has no protection against a car wrecking yard, an ugly building, or other unsightly uses or structures, being erected on adjoining land. He has no guarantee that he will get any support from his neighbours if he presses the authorities for improvements to roads or services. He is, in fact, on his own to fight his own battles.

If he locates in QUEENSFIELD, he knows that he will not get unsightly neighbours because of the protective covenants on the QUEENSFIELD leases or titles. He will not have to fight his battles on his own - the QUEENSFIELD Management will be there to support any reasonable demands he may have - and most of his problems will have been solved in the design of the Industrial Park.

This is one of the major advantages accruing to industrialists locating in QUEENSFIELD - a planned and protected development.

III. /4

d. Index of Recommendations

The following index of the foregoing recommendations has been compiled for the convenience of readers.

Part III, Section 4 - Recommendations to the QUEENSFIELD Management.

Sub-Section (a) - Planning Recommendations:

- (i) Number of Employees
- (ii) Lot Sizes
- (iii) Shape of Lots
- (iv) Dimensions of the Lots
- (v) Road Pattern
- (vi) Traffic Generation
- (vii) Traffic Planning
- (viii) Car Parking
- (ix) Provision of Services
- (x) Other facilities
- (xi) Leasing of facilities to smaller establishments

Sub-Section (b) - Management Recommendations

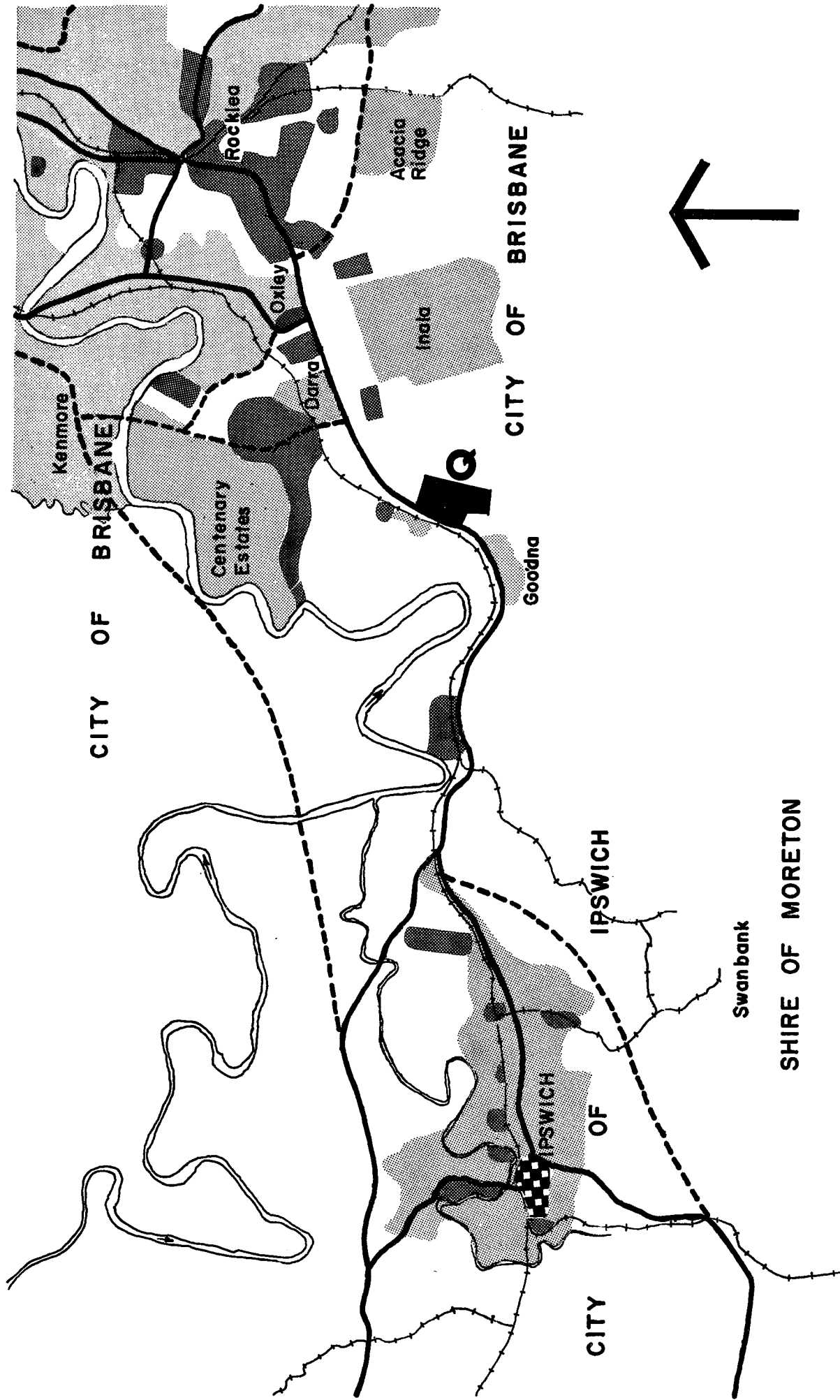
- (i) Staff
- (ii) Rail Facilities
- (iii) Access to rail facilities
- (iv) Road Transport deliveries
- (v) Public Transport System
- (vi) Gas Service
- (vii) Water Supply
- (viii) Electricity Supply
- (ix) Car Parking facilities off the site
- (x) Offices and Showroom facilities in the C.B.D.
- (xi) Leasing of facilities in QUEENSFIELD
- (xii) Apprenticeship Training
- (xiii) Balanced Development
- (xiv) Balanced Workforce

III. /4

- (xv) Labour Reserves
- (xvi) Town Planning
- (xvii) Site Approvals
- (xviii) Combined Advertising
- (xix) Market Penetration
- (xx) The Reputation of QUEENSFIELD

Sub-Section (c) - Marketing Recommendations

- (i) Identification of the best potential market
- (ii) Identification of the local market
- (iii) Further possible local markets
- (iv) Queensland's low wage structure
- (v) The Queensland market
- (vi) The local regional market of Brisbane
- (vii) Brisbane - the distributive centre of Queensland
- (viii) Road transport
- (ix) Long term industrial growth
- (x) Relocation of Industry
- (xi) QUEENSFIELD's Position in relation to Local Markets
- (xii) Highway frontage locations
- (xiii) The Space available in QUEENSFIELD
- (xiv) Past plant location policies in Brisbane
- (xv) Labour
- (xvi) Future labour supply
- (xvii) Proximity to Centenary Estates
- (xviii) Governmental Assistance
- (xix) QUEENSFIELD - a centre of employment
- (xx) QUEENSFIELD - a setting and a symbol
- (xxi) QUEENSFIELD - a site for linked industries
- (xxii) QUEENSFIELD - a planned and protected development



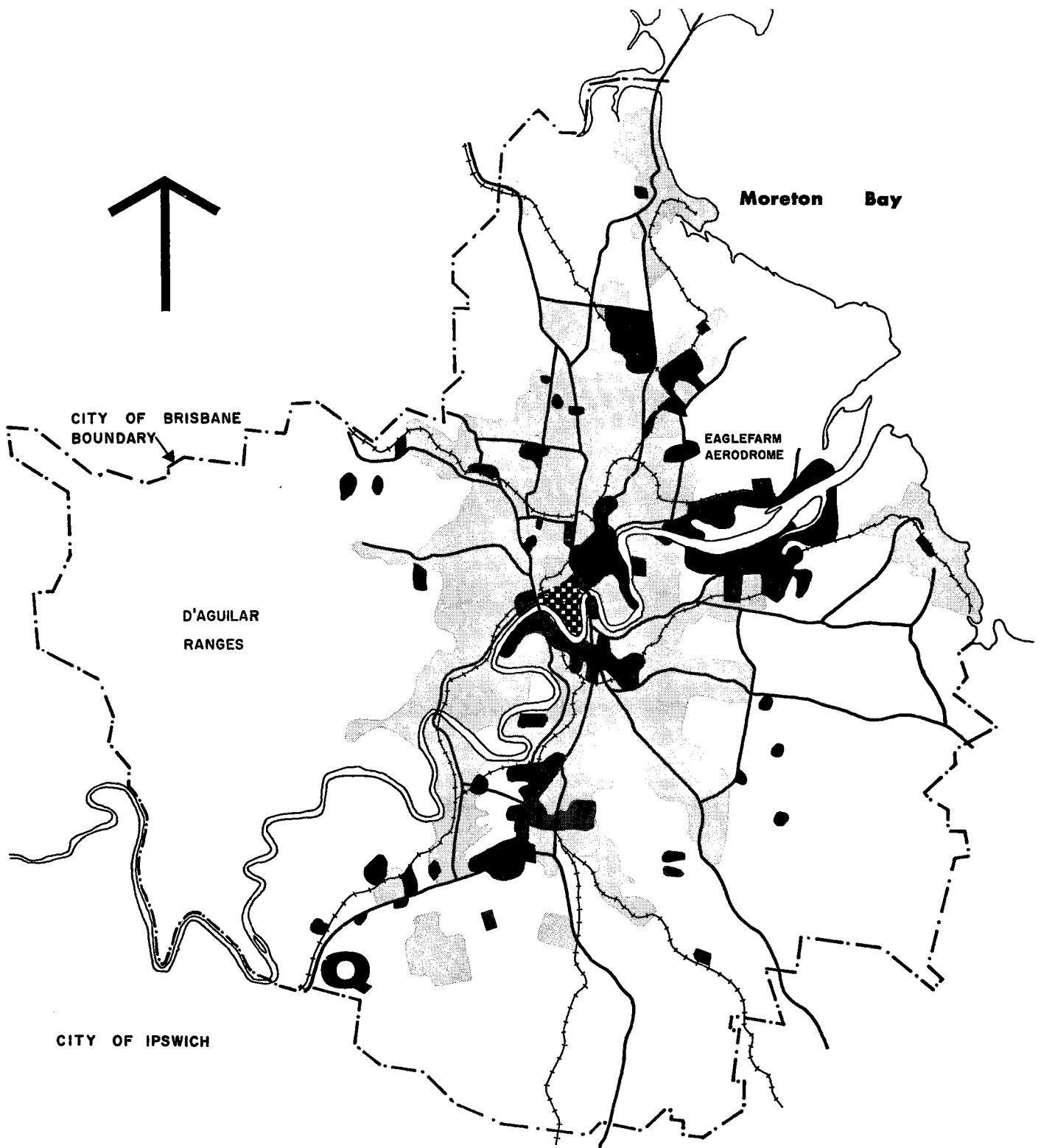
QUEENSFIELD ENVIRONMENTS

LEGEND

- INDUSTRIAL
- URBAN
- EXISTING ROADS
- PROPOSED ROADS

PREPARED BY THE URBAN PLANNING
AND RESEARCH CENTRE . JUNE 1963

Map 1



DISTRIBUTION OF INDUSTRIAL AND URBAN DEVELOPMENT: BRISBANE: 1961

LEGEND

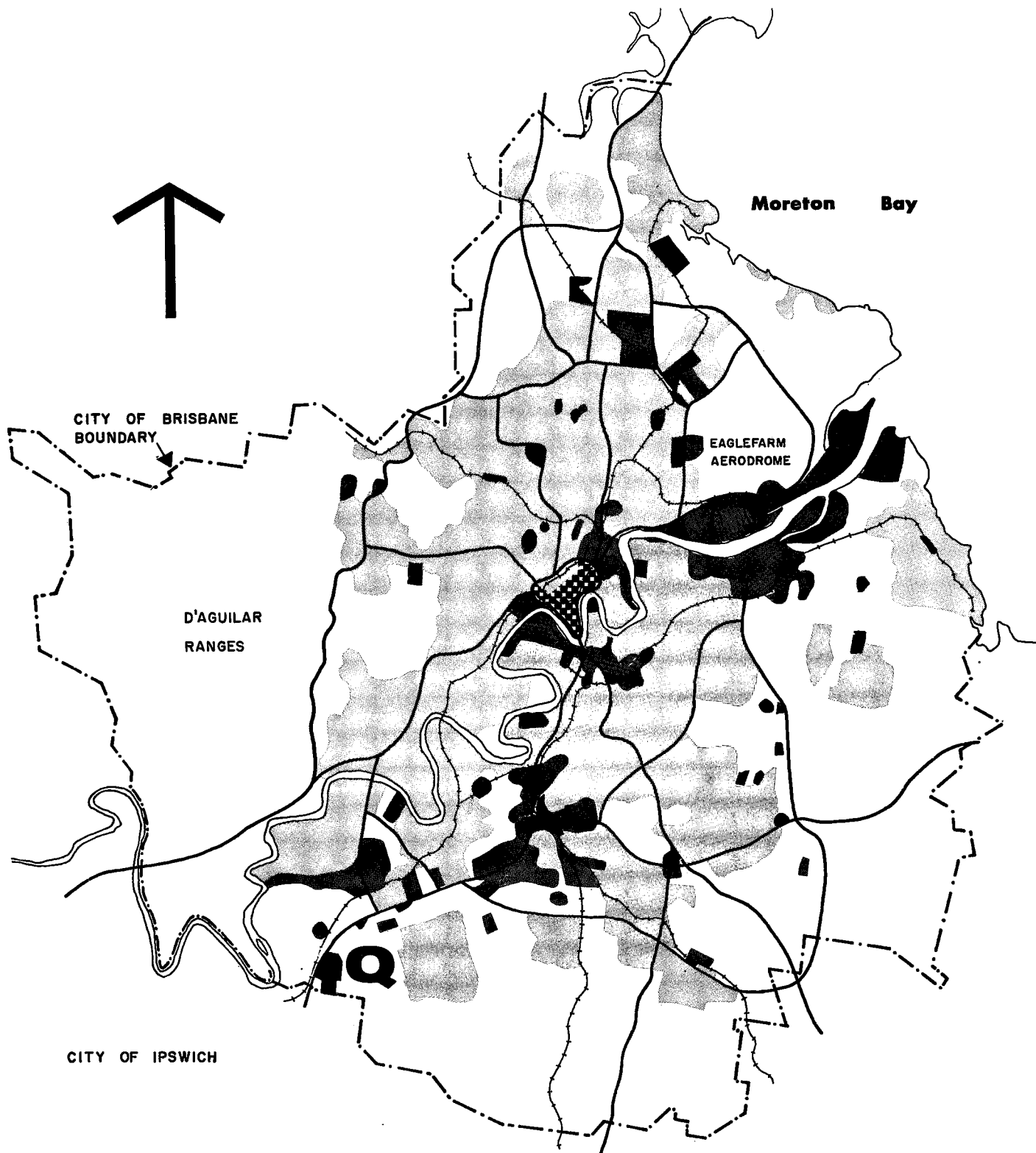
- INDUSTRIAL
- URBAN
- ROADS

STUDIES IN THE LOCATION AND GROWTH OF MANUFACTURING AND DISTRIBUTION INDUSTRIES IN BRISBANE

PREPARED FOR
INDUSTRIAL ESTATES (Q'LD) PTY. LTD.
A SUBSIDIARY OF THE SAVOY CORPORATION LTD.

BY
THE URBAN PLANNING AND RESEARCH
CENTRE PTY. LTD. JUNE 1963

2 1 0 2 4 6 miles.



EXPECTED DISTRIBUTION OF INDUSTRIAL AND URBAN DEVELOPMENT: BRISBANE: 1981

LEGEND

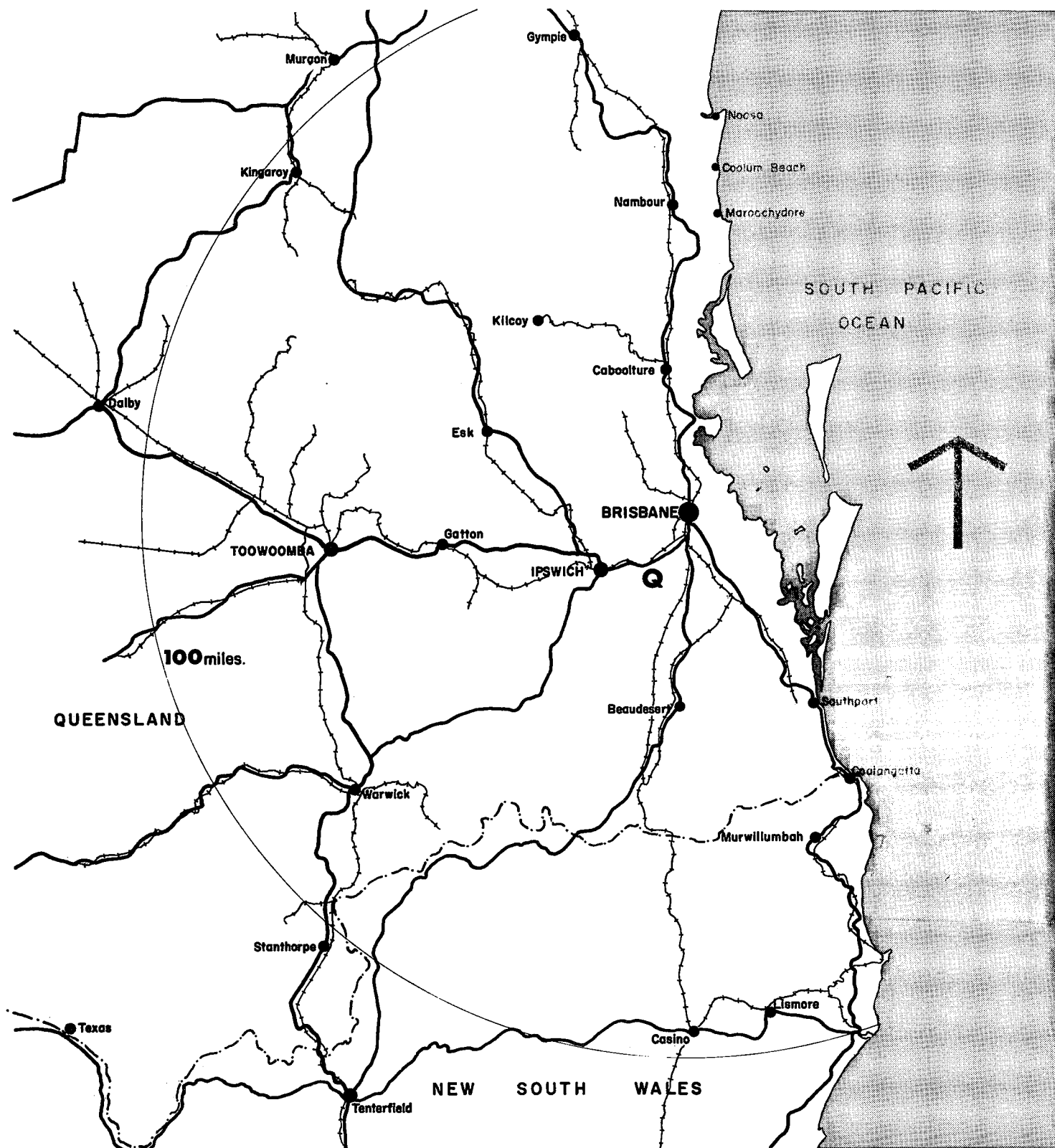
- INDUSTRIAL**
- URBAN**
- ROADS**

**STUDIES IN THE LOCATION AND
GROWTH OF MANUFACTURING AND
DISTRIBUTION INDUSTRIES IN BRISBANE**

**PREPARED FOR
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BRISBANE: IMMEDIATE REGION

STUDIES IN THE LOCATION AND
GROWTH OF MANUFACTURING AND
DISTRIBUTION INDUSTRIES IN BRISBANE

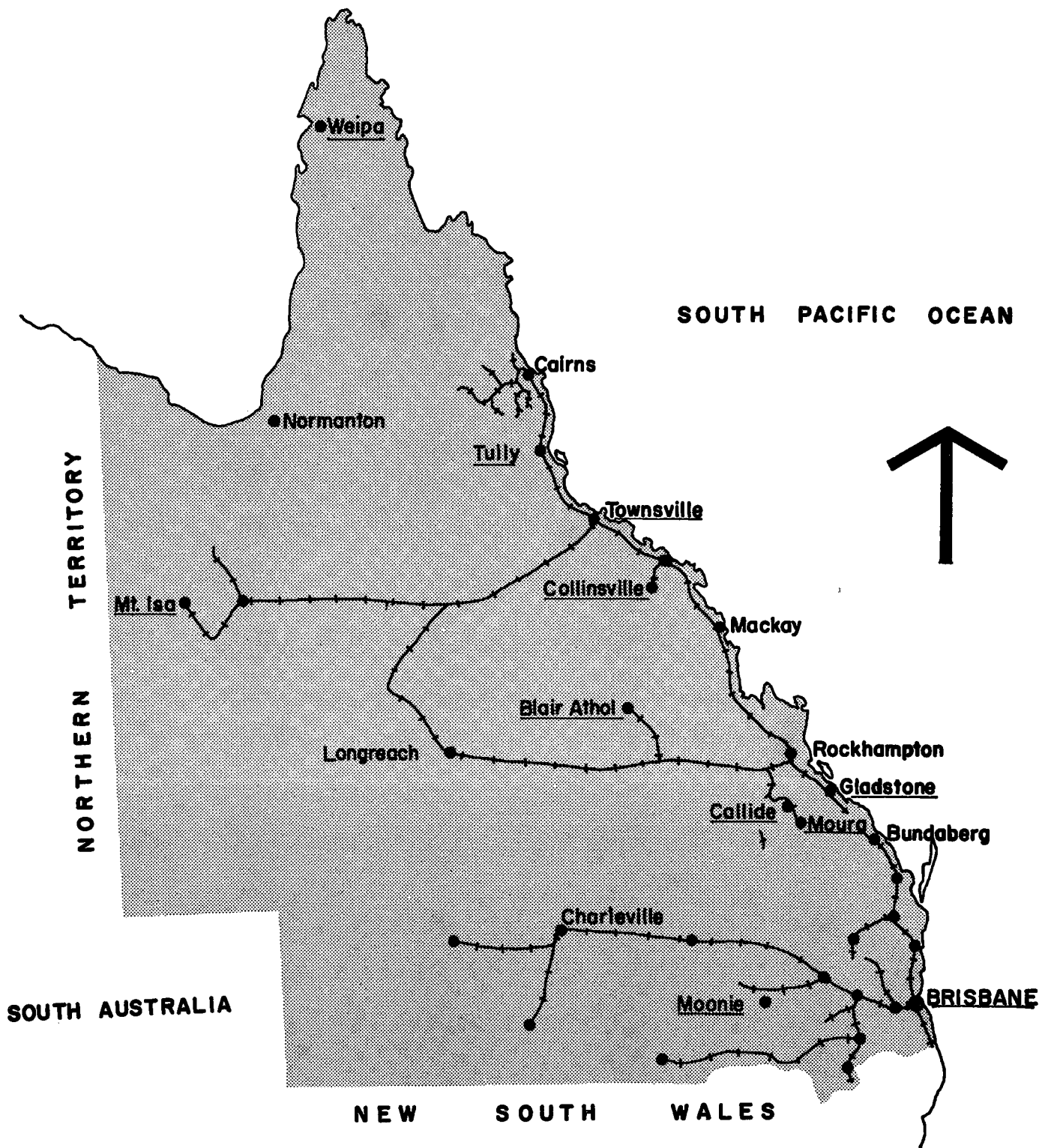
LEGEND

- ROADS
- +—+— RAILWAYS

20 15 10 5 0 20 40 miles

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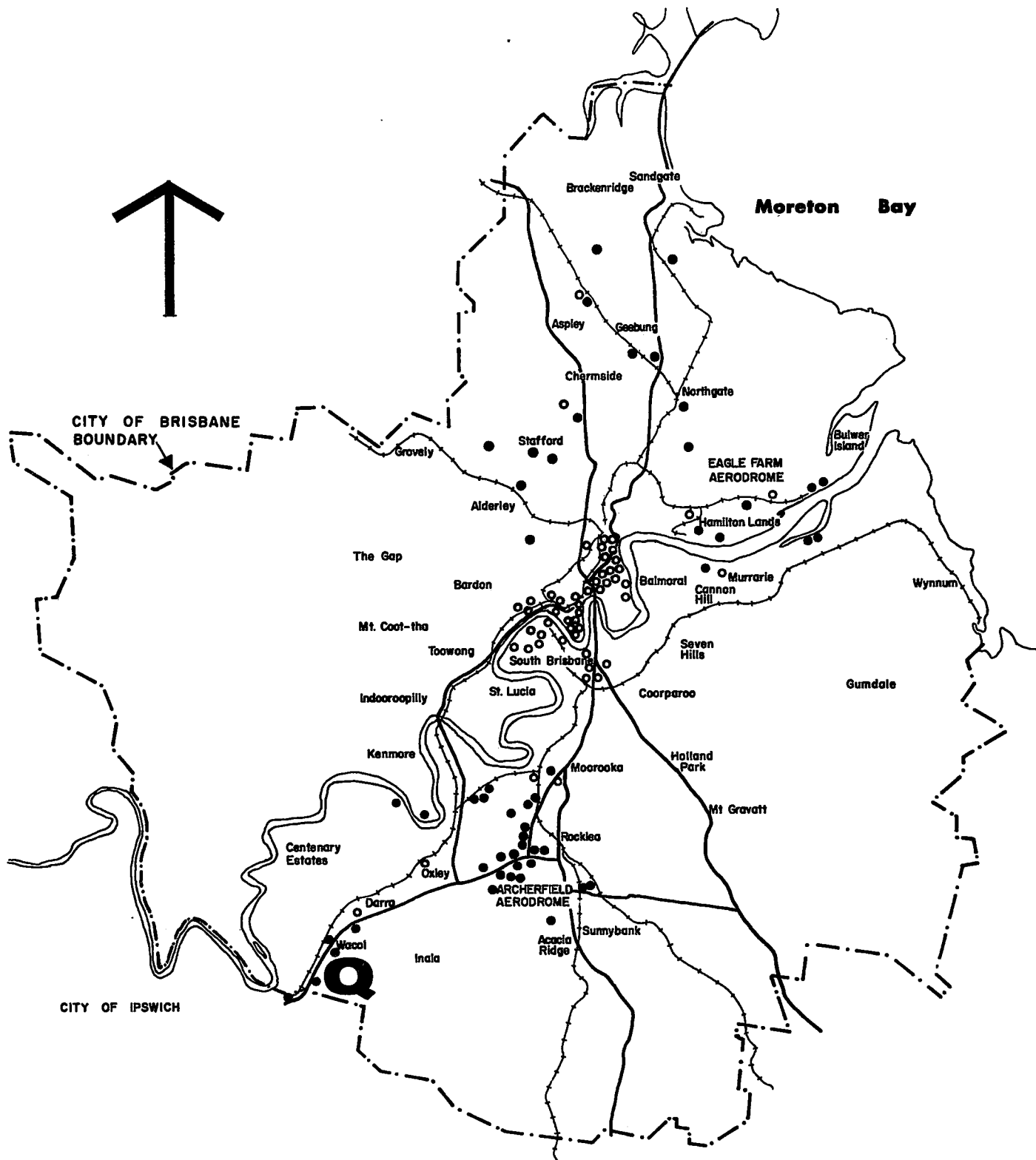
DEVELOPMENT PROJECTS QUEENSLAND 1963

STUDIES IN THE LOCATION AND
GROWTH OF MANUFACTURING AND
DISTRIBUTION INDUSTRIES IN BRISBANE

PREPARED FOR
INDUSTRIAL ESTATES (Q'LD) PTY. LTD.
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CENTRE PTY. LTD. JUNE 1963

100 0 100 200 300 miles



RELOCATIONS, PAST AND PLANNED: BRISBANE 1963

LEGEND

- NEW SITE
- PREVIOUS SITE

RELOCATIONS INDICATED HAVE EITHER BEEN COMPLETED OR ARE BEING PLANNED.

STUDIES IN THE LOCATION AND GROWTH OF MANUFACTURING AND DISTRIBUTION INDUSTRIES IN BRISBANE

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2 1 0 2 4 6 miles.

BRISBANE

METROPOLITAN AREA

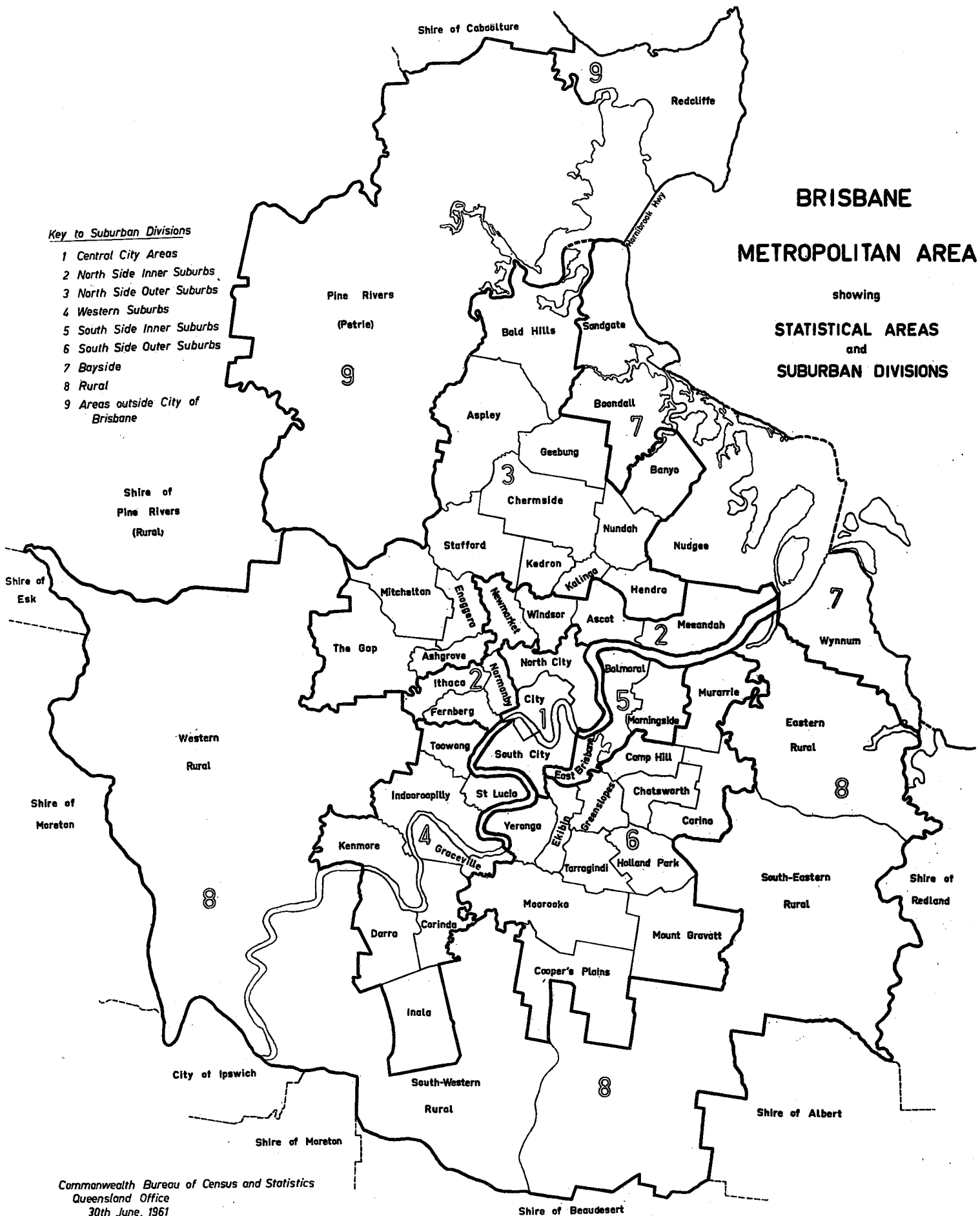
showing

STATISTICAL AREAS

and

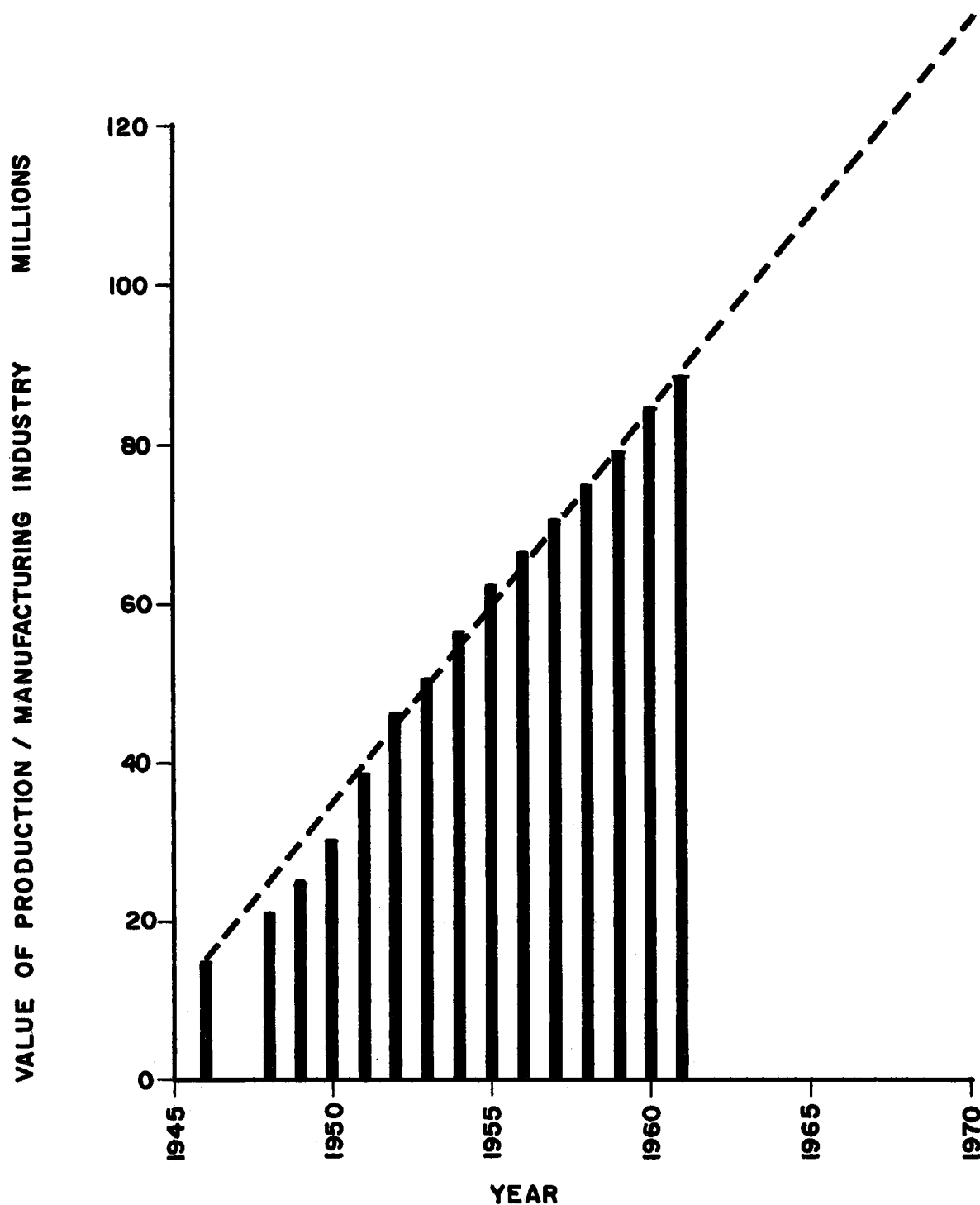
SUBURBAN DIVISIONS

- Key to Suburban Divisions**
- 1 Central City Areas
 - 2 North Side Inner Suburbs
 - 3 North Side Outer Suburbs
 - 4 Western Suburbs
 - 5 South Side Inner Suburbs
 - 6 South Side Outer Suburbs
 - 7 Bayside
 - 8 Rural
 - 9 Areas outside City of Brisbane



Graph 2

TREND IN:
VALUE OF MANUFACTURING PRODUCTION
BRISBANE METROPOLITAN AREA



SOURCE: COMMONWEALTH BUREAU OF CENSUS

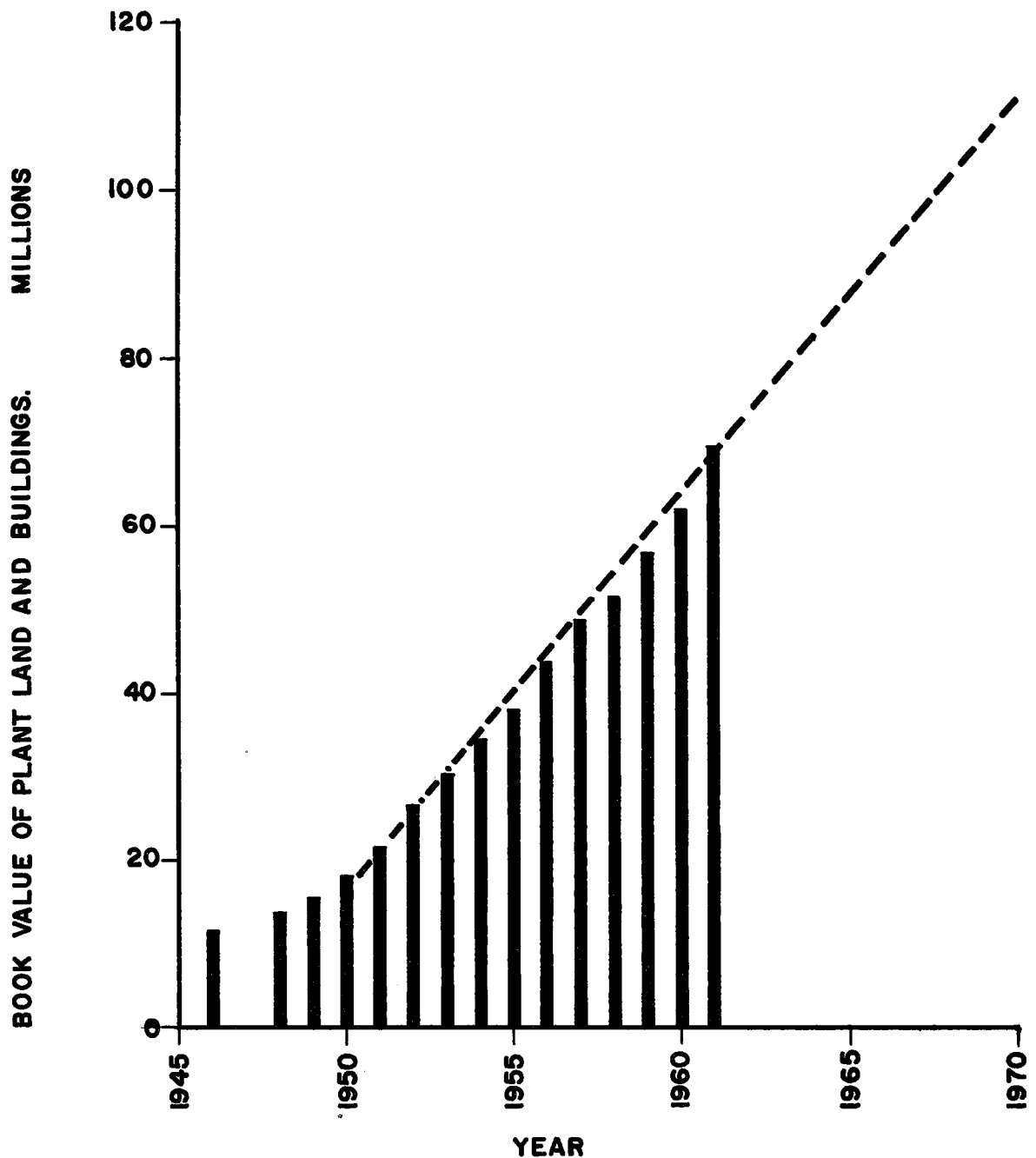
THE URBAN PLANNING AND RESEARCH CENTRE. 117 HARRINGTON ST. SYDNEY. 273633

Graph 3

TREND IN:

BOOK VALUE OF CAPITAL INVESTED IN MANUFACTURING

BRISBANE METROPOLITAN AREA

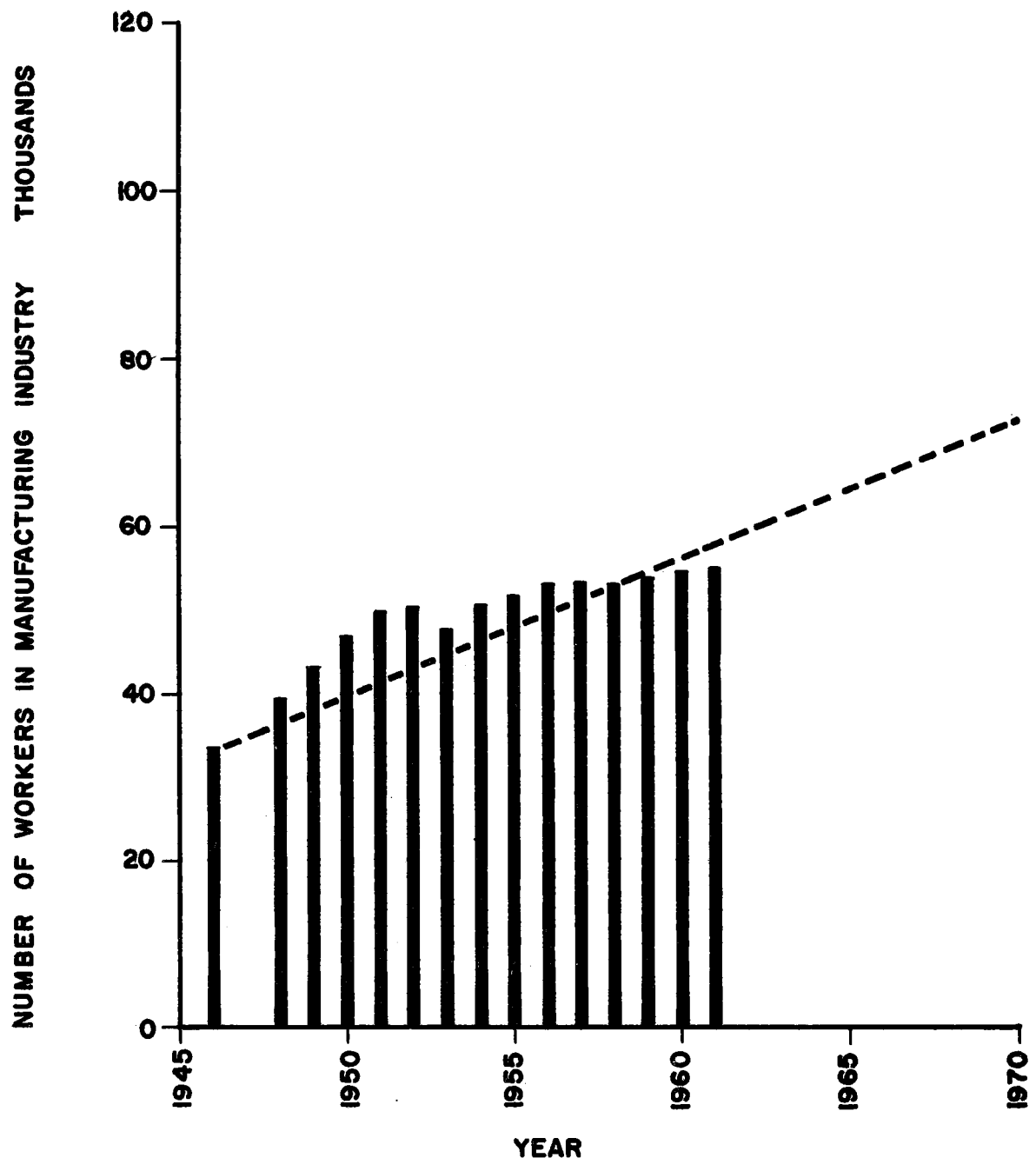


SOURCE: COMMONWEALTH BUREAU OF CENSUS

THE URBAN PLANNING AND RESEARCH CENTRE. 117 HARRINGTON ST. SYDNEY. 27-3633.

Graph 4

TREND IN :
TOTAL EMPLOYMENT IN MANUFACTURING INDUSTRY
BRISBANE METROPOLITAN AREA



SOURCE: COMMONWEALTH BUREAU OF CENSUS

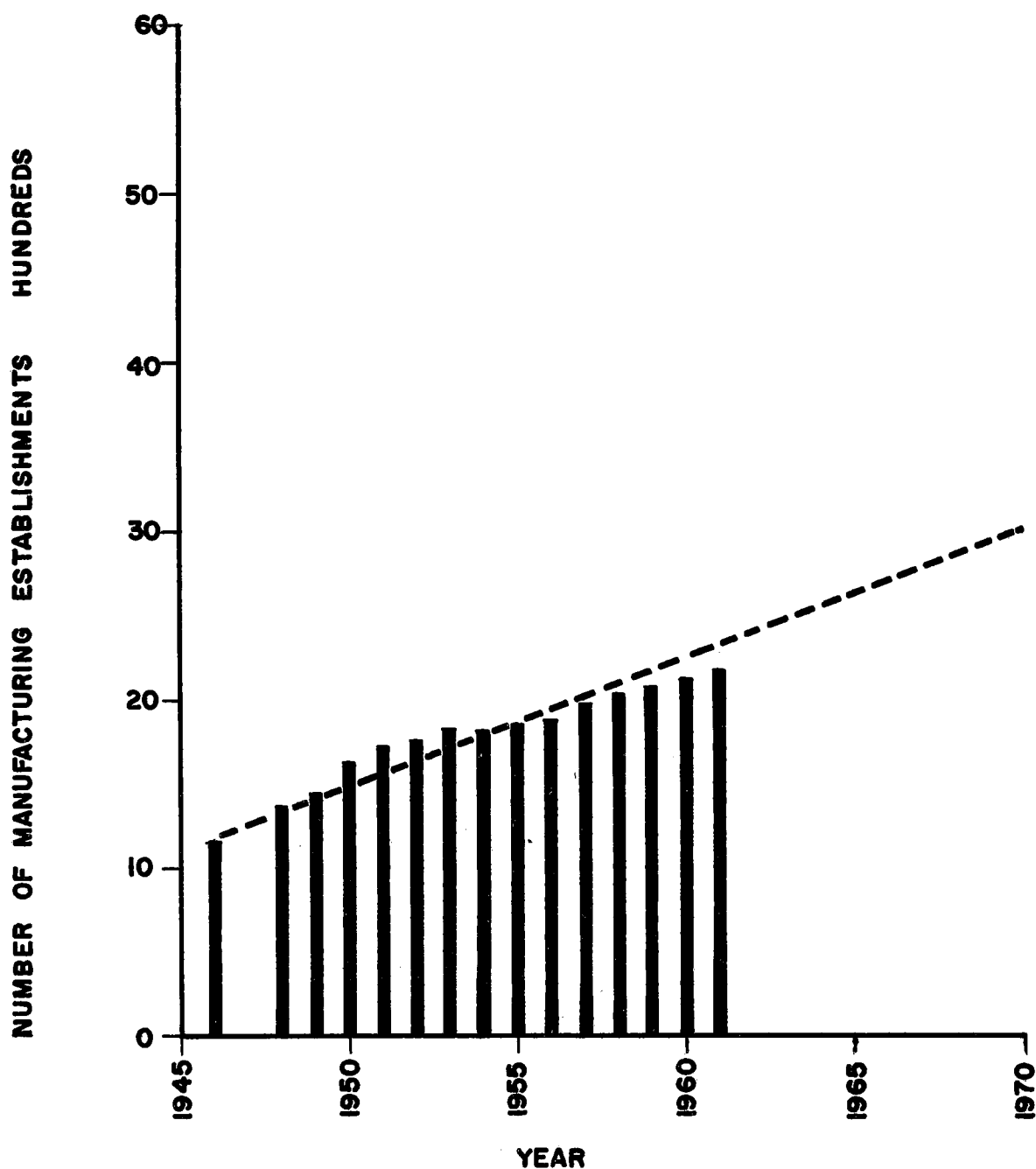
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Graph 5

TREND IN:

TOTAL NUMBER OF MANUFACTURING ESTABLISHMENTS

BRISBANE METROPOLITAN AREA



SOURCE: COMMONWEALTH BUREAU OF CENSUS

THE URBAN PLANNING AND RESEARCH CENTRE. 117 HARRINGTON ST. SYDNEY. 27-3633

TABLE I

**COMPOSITION OF THE TOTAL WORK FORCE IN
FIVE AUSTRALIAN CAPITAL CITIES - JUNE, 1954**

Category of Industry	<u>Percentage of the Total Population Employed</u>				
	Sydney	Melbourne	Adelaide	Perth	Brisbane
Mining	0.06	0.08	0.11	0.10	0.11
Construction	3.11	3.24	3.48	4.79	3.88
Manufacturing	15.68	17.47	14.10	9.80	10.81
Transportation, Communication & Other Public Utilities	5.22	4.73	4.70	4.90	5.19
Trade - Wholesale & Retail	7.66	7.63	8.07	8.66	7.99
Finance - Insurance & Real Estate	1.61	1.51	1.33	1.43	1.46
Business & Repair Services	0.69	0.65	0.67	0.71	0.67
Personal Services	2.18	2.28	2.03	2.36	2.14
Entertainment & Recreational Services	0.61	0.49	0.47	0.56	0.61
Professional & Related Services	3.36	3.35	3.28	3.81	3.57
Public Administration	1.35	1.43	1.49	1.73	1.99
Other	1.60	1.66	1.20	1.79	2.09
Total Work Force	43.20	44.50	40.94	40.64	40.51

Note: Classifications are based on those of the U.S. Census of 1950

Source: Census of Australia, June 30, 1954

Table Extracted from "A Study of Industrial Employment for Town Planning Purposes" -
an unpublished thesis by G.W. Smith.

TABLE 2

COMPOSITION OF THE MANUFACTURING WORKFORCE
- BRISBANE - JUNE, 1954

No.	Class of Manufacturing	No. of Workers Engaged	% Age of total Manufacturing industry Workforce
1.	Lumber & Wood Products except furniture	3,041	5.59
2.	Furniture & Fixtures	3,161	5.82
3.	Stone, Clay & Glass Products	2,362	4.35
4.	Primary Metal Industries	919	1.69
5.	Fabricated Metal Industries	5,476	10.07
6.	Machinery (except electrical)	2,929	5.39
7.	Electrical Machinery, Equipment & Supplies	1,317	2.42
8.	Transportation Equipment	5,852	10.77
9.	Professional & Photographic Equipment & Watches	476	0.88
10.	Miscellaneous Manufacturing Industries	588	1.08
11.	Food & Kindred Products	10,550	19.40
12.	Tobacco Manufacturing	90	0.17
13.	Textile Mill Products	1,149	2.11
14.	Apparel & Other Fabricated Textile Products	5,667	10.42
15.	Paper and Allied Products	882	1.62
16.	Printing, publishing & allied industries	3,881	7.13
17.	Chemicals and Allied Products	1,622	2.98
18.	Petroleum & Coal Products	49	0.09
19.	Rubber Products	1,465	2.70
20.	Leather & Leather Products	2,839	5.22
21.	Other and not stated	49	0.09
Total:		54,364	99.99

Note: Classifications are based on those used in the U.S. Census of 1950

Source: Census of Australia, June 30, 1954

Extracted from "A Study of Industrial Employment for Town Planning Purposes" -
an unpublished thesis by G.W. Smith.

TABLE 3

CLASSIFICATION OF FACTORIES IN THE METROPOLITAN STATISTICAL DIVISION OF QUEENSLAND,
1961-1962, SHOWING NUMBER OF ESTABLISHMENTS, NUMBER OF WORKERS, SALARIES & WAGES &
VALUE OF PRODUCTION

Class	Nature of Industry	Establishments	Workers	Salaries and Wages in £000	Value of Production in £000
1.	Treatment of Non-Metalliferous Mine & Quarry Products	60	1,632	1,795	4,073
2.	Bricks, Pottery, Glass etc.	25	865	864	1,583
3.	Chemicals, Dyes, Paints, Oils etc.	66	1,534	1,487	5,080
4.	Industrial Metals, Machines & Conveyances	905	19,746	18,933	32,326
5.	Precious Metals, Jewellery Plate	30	n. a.	n. a.	n. a.
6.	Textiles & Textile Goods (not dress)	21	1,012	748	1,286
7.	Skins & Leather (not clothing or footwear)	43	1,171	1,113	1,920
8.	Clothing (except knitted)	267	6,053	3,702	5,845
9.	Food, Drink & Tobacco X	223	10,067	9,477	22,113
10.	Sawmills, Joinery, Boxes etc. Woodturning & Carving	157	2,554	2,224	3,977
11.	Furniture of Wood, Bedding etc.	155	2,098	1,771	2,981
12.	Paper, Stationery, Printing, Bookbinding etc.	118	4,705	4,861	9,186
13.	Rubber	41	1,402	1,255	2,564
14.	Musical Instruments	5	n. a.	n. a.	n. a.
15.	Miscellaneous Products	55	614	494	797
Sub total		2,171	53,743	48,955	94,103
16.	Heat, Light & Power	9	1,098	1,251	5,690
Grand Total		2,180	54,841	50,206	99,793

Source: Bureau of Census & Statistics, Brisbane.

TABLE 4

EXPANSION IN INDIVIDUAL CLASSIFICATIONS OF INDUSTRY
- BRISBANE - 1956-1962

Census Sub Class of Industry *	Number of Employees						%age change in the No. of employees from 56/57 to 60/61	No. of Employees	Number of Establishments					
	56/57	57/58	58/59	59/60	60/61	61/62			56/57	57/58	58/59	59/60	60/61	61/62
1-4	62	61	63	56	33	35	-	46.8	5	5	5	6	5	5
5	97	97	85	94	90	74	-	7.2	13	13	12	13	12	13
6	212	243	213	202	212	195	-	-	7	8	7	7	8	8
7	n	n	n	n	n	n	-	-	1	1	1	1	1	1
8	n	n	n	n	n	n	-	-	2	2	4	4	5	5
9	307	331	342	417	534	506	73.7	-	22	20	21	20	25	24
10	n	n	n	n	n	n	-	-	3	3	2	2	3	3
Total Class 1	1,341	1,448	1,436	1,584	1,726	1,626	28.7	-	53	52	52	53	59	59
2-1	375	365	375	363	379	360	-	1.0	10	10	10	10	9	9
2	189	172	173	159	149	133	-	21.2	8	6	6	6	5	5
3-4	257	272	312	324	374	330	45.5	-	10	10	10	9	9	9
Total Class 2	821	809	860	846	902	823	9.8	-	28	26	26	25	23	23
3-1	293	281	313	350	346	392	18.0	-	15	15	14	18	20	20
2	118	114	126	113	111	100	-	6.0	5	6	7	7	6	6
4	n	n	n	n	n	n	-	-	15	15	16	15	16	16
5	n	n	n	n	n	n	-	-	2	2	2	2	2	2
6	n	61	62	66	102	93	67.2*	-	2	3	3	3	5	5
8	n	84	78	73	75	n	-	10.7*	2	3	3	3	3	3
9	255	247	232	229	223	227	-	12.6	6	6	6	6	6	7
10	n	n	n	n	n	n	-	-	2	2	2	2	1	1
11	51	55	69	69	63	58	23.5	-	7	7	8	8	7	5
Total Class 3	1,431	1,429	1,450	1,484	1,480	1,530	3.4	-	56	59	61	64	66	65

* For description of industries in each Sub Class, see footnote at the end of this table.

TABLE 4

4-2	476	506	527	596	613	28.8	-	624	12	12	13	13	15	15
3	4,984	5,027	4,625	4,901	5,312	6.6	-	4,710	123	130	131	151	166	153
4	1,097	1,201	1,221	983	999	-	8.9	1,017	70	75	79	61	64	59
5	n	n	n	n	n	-	-	n	3	3	2	2	2	2
6	1,587	1,684	1,963	1,863	1,900	19.6	-	2,077	44	45	46	46	46	48
7-8	1,627	1,618	1,722	1,744	1,658	1.9	-	1,614	5	5	11	11	11	11
9	1,163	972	857	791	855	-	26.5	624	12	10	8	8	6	5
10	2,694	2,511	2,503	2,697	2,896	7.5	-	2,755	223	238	256	270	297	289
11	613	707	799	863	922	50.4	-	936	69	74	84	91	102	108
12	n	n	n	n	n	-	-	n	1	1	1	1	1	1
13	n	n	n	n	n	-	-	n	23	20	20	21	22	25
14	n	n	n	n	n	-	-	n	3	3	3	3	4	5
15	49	54	45	51	47	-	4.1	30	6	6	6	9	8	5
16	n	n	-	-	-	-	-	-	1	1	-	-	-	-
17-18	1,353	1,477	1,329	1,131	1,048	-	22.6	1,031	19	21	23	19	18	16
19	n	n	n	n	n	-	-	n	9	9	8	7	7	7
20	160	130	156	245	255	59.4	-	310	5	4	6	8	8	9
22	n	n	n	n	n	-	-	n	26	25	26	27	26	25
24-25	1,119	1,041	1,126	1,300	1,367	22.1	-	1,327	30	29	29	34	35	37
26	432	453	501	526	452	4.6	-	460	19	20	24	24	24	26
27	473	448	441	421	373	-	21.2	427	4	4	4	4	4	4
28	47	49	51	51	44	-	6.3	42	3	3	3	3	3	3
30	n	n	n	-	-	-	-	-	3	3	3	-	-	-
31	n	n	n	n	n	-	-	n	2	2	2	2	2	2
32	69	57	75	90	86	39.1	-	128	6	5	10	9	10	11
33	497	461	438	374	308	-	38.1	332	17	17	18	21	21	21
Total														
Class 4	19,632	19,558	19,537	19,900	20,319	3.5	-	19,609	738	765	816	845	902	887
5-1 & 2	127	125	125	125	130	2.4	-	138	16	15	16	15	17	18
3	143	132	121	123	124	-	14.0	124	14	13	13	12	12	12
Total														
Class 5	270	257	246	248	254	-	6.0	262	30	28	29	27	29	30
6-1	n	n	n	n	n	-	-	n	1	1	1	1	1	1
2	n	n	n	n	n	-	-	n	2	2	2	2	1	1
3	n	n	n	n	n	-	-	n	1	1	1	1	1	1
4	584	609	588	607	551	-	5.7	529	6	5	4	5	4	4
8	n	n	n	n	n	-	-	n	2	2	2	2	2	2
9	119	137	127	132	130	9.2	-	112	6	8	8	7	7	7

TABLE 4

10	n	n	n	n	n	114	-	-	-	110	2	2	1	2	3	3
11	-	n	n	n	n	n	-	-	-	n	-	1	1	1	1	1
12	-	-	-	-	-	n	-	-	-	n	-	-	-	-	1	1
Total Class 6	1,168	1,187	1,169	1,219	1,152		-	1.4	-	1,012	20	22	20	21	21	21
7-1	36	33	28	26	27		-	25.0	-	25	3	3	4	4	4	4
2	n	n	n	n	n	n	-	-	-	n	6	6	6	7	7	6
3	n	n	n	n	n	n	-	-	-	n	12	12	12	12	11	11
4	120	120	107	102	97		-	19.2	-	93	8	8	7	6	6	6
5	n	n	n	n	n	n	-	-	-	n	2	2	2	2	2	1
6	n	n	n	n	n	n	-	-	-	n	14	16	15	15	14	13
Total Class 7	1,250	1,195	1,100	1,106	1,178		-	9.8	-	1,130	45	47	46	46	44	41
8-1	1,428	1,406	1,376	1,482	1,436		0.5	-	-	1,344	50	50	49	45	47	45
2	n	n	n	n	n	n	-	-	-	n	1	1	1	1	1	1
3	1,262	1,277	1,120	1,149	1,104		-	12.8	-	1,034	55	54	53	55	52	50
4	326	317	314	356	378		15.9	-	-	391	15	14	13	13	14	15
5	n	n	1,091	1,113	1,099		0.7*	-	-	996	18	18	23	21	21	21
6	177	175	174	173	249		40.6	-	-	n	3	3	3	3	3	3
8	37	40	44	54	56		51.2	-	-	58	3	3	3	3	3	3
9	-	-	-	-	n		-	-	-	n	-	-	-	-	1	1
10	n	n	1,074	1,046	983		-	8.5*	-	922	27	26	24	25	22	21
11	176	179	181	163	170		-	3.4	-	155	37	40	37	39	46	45
12	n	n	n	n	n		-	-	-	n	1	1	1	1	2	2
13	n	n	n	n	n		-	-	-	n	3	3	3	3	3	3
14	715	703	647	601	623		-	12.9	-	638	43	44	48	47	52	53
Total Class 8	6,666	6,401	6,102	6,233	6,225		-	6.7	-	5,976	256	257	258	256	267	263
9-1	296	277	286	302	298		0.6	-	-	297	4	4	4	4	4	4
2	n	n	n	n	n		-	-	-	n	9	9	9	8	7	6
3	n	n	n	n	123		-	-	-	120	1	1	2	2	4	4
5	828	850	848	910	891		7.6	-	-	886	95	97	95	87	86	80
6	864	847	854	807	766		-	11.4	-	703	4	4	4	4	4	4
8	n	n	n	n	n		-	-	-	n	1	1	1	1	1	1
9	132	167	148	147	141		6.7	-	-	143	14	15	17	15	13	14
10	1,450	1,216	1,417	1,292	1,272		-	12.3	-	1,392	10	10	12	11	11	10
11	n	n	n	n	n		-	-	-	n	3	5	4	5	5	4

TABLE 4

	640	699	896	902	1,028	91.8	-	1,075	4	4	4	4	4	4	4	4	4	4	4
9-12	n	n	n	n	n	-	-	n	1	1	1	1	1	1	1	1	1	1	4
13	96	96	71	n	n	-	26.1*	n	4	4	3	2	2	2	2	2	2	2	1
14	n	n	n	n	n	-	-	n	1	1	1	1	1	1	1	1	1	1	2
15	n	n	n	n	n	-	-	n	2	2	2	2	2	2	2	2	2	2	1
16	n	n	n	n	n	-	-	n	14	13	14	13	13	11	11	11	11	11	2
17	2,621	2,666	2,964	2,575	2,429	-	7.8	2,565	15	13	12	12	12	13	13	13	13	13	12
18	379	346	351	354	370	-	2.4	379	23	21	21	18	18	18	18	18	18	18	15
19	235	248	310	269	258	9.7	-	263	15	15	16	16	16	15	15	15	15	15	14
21	261	298	301	295	291	11.4	-	270	2	2	2	2	2	2	2	2	2	2	2
22	n	n	n	n	n	-	-	n	3	2	2	2	2	2	2	2	2	2	3
28	n	n	n	n	n	-	-	n	-	-	-	-	-	-	-	-	-	-	5
29	-	-	-	-	n	-	-	n	3	2	2	3	3	3	3	3	3	3	3
30	n	n	n	n	n	-	-	n	1	1	1	1	1	1	1	1	1	1	2
31	n	n	n	n	n	-	-	n	5	5	7	8	8	5	5	5	5	5	5
33	n	n	n	n	n	-	-	n											
Total	9,609	9,618	10,377	9,781	9,818	2.1	-	9,981	234	232	236	222	222	222	222	222	222	222	209
Class 9																			
10-1	997	943	892	947	883	-	11.5	768	55	53	50	51	51	54	54	54	54	54	52
2	776	806	825	824	763	-	1.6	660	8	8	8	10	10	10	10	10	10	10	10
4	562	559	577	656	724	28.8	-	683	37	37	39	42	42	44	44	44	44	44	44
5&6	351	314	299	248	212	-	39.6	186	19	19	18	16	16	16	16	16	16	16	14
7	129	127	125	108	102	-	20.9	110	25	23	23	20	20	20	20	20	20	20	20
8	n	n	n	n	n	-	-	n	4	4	4	5	5	3	3	3	3	3	3
9	n	n	n	n	n	-	-	n	1	1	1	1	1	1	1	1	1	1	1
10	-	-	-	-	-	-	-	n	-	-	-	-	-	-	-	-	-	-	1
11	n	n	n	n	n	-	-	n	3	2	2	3	3	2	2	2	2	2	3
Total	2,850	2,778	2,746	2,817	2,705	-	5.1	2,430	152	147	145	148	148	150	150	150	150	150	148
Class 10																			
11-1	1,652	1,730	1,790	1,821	1,691	2.3	-	1,520	127	134	130	132	132	123	123	123	123	123	118
2	358	352	345	367	374	4.3	-	337	21	22	21	20	20	19	19	19	19	19	18
3	50	51	54	57	55	10.0	-	58	8	7	7	7	7	6	6	6	6	6	6
4	n	n	n	n	n	-	-	n	2	2	2	2	2	2	2	2	2	2	2
5	n	n	n	n	n	-	-	n	11	10	10	9	9	10	10	10	10	10	10
Total	2,240	2,283	2,370	2,441	2,331	4.0	-	2,093	169	175	170	170	170	160	160	160	160	160	154
Class 11																			

TABLE 4

12-1	1,429	1,470	1,508	1,475	1,445	1.1	-	1,339	12	12	12	9	9	9
2&3	1,921	1,936	1,968	2,000	1,975	2.7	-	1,913	69	70	70	75	74	73
4	222	219	223	248	259	16.6	-	229	5	5	5	6	7	7
5	28	30	37	n	n	32.1*	-	n	3	3	3	2	2	2
6	n	n	n	78	88	-	-	n	5	5	5	4	4	4
7	346	365	427	424	435	25.7	-	n	6	6	6	7	7	8
8	103	115	129	128	140	35.9	-	157	5	6	8	7	7	6
9	n	n	n	n	n	-	-	n	1	1	1	1	1	1
11	n	n	n	n	n	-	-	n	3	4	4	6	6	4
Total Class 12	4,221	4,316	4,473	4,524	4,514	6.9	-	4,397	109	112	114	117	117	114
13-1	1,152	1,096	1,136	1,189	1,221	5.9	-	1,131	12	12	14	14	15	13
2	236	215	305	263	249	5.5	-	267	20	21	25	26	26	27
Total Class 13	1,388	1,311	1,441	1,452	1,470	5.9	-	1,398	32	33	39	40	41	40
14-2	n	n	n	n	n	-	-	n	3	3	4	3	3	3
3	n	n	n	n	n	-	-	n	2	2	2	2	2	2
Total Class 14	44	51	51	45	35	-	20.5	28	5	5	6	5	5	5
15-3	66	73	75	n	n	13.6*	-	260)	7	8	6	11	11	11
4	n	n	n	n	n	-	-	114	8	8	8	8	8	7
5	140	147	148	138	136	-	2.9	n	12	12	12	12	11	9
6	105	96	90	n	n	-	14.3*	n	14	14	14	14	14	13
7	n	n	n	n	n	-	-	n	1	1	1	2	2	2
8	63	50	53	56	50	-	20.7	47	7	5	6	7	7	5
10	26	44	40	62	47	80.7	-	48	5	8	8	10	7	8
Total Class 15	588	595	588	646	639	8.6	-	614	54	56	55	64	60	55
16-2	842	878	841	844	860	2.1	-	904	5	5	5	5	5	5
6	232	203	202	192	186	-	19.9	194	4	4	4	4	4	4
Total Class 16	1,074	1,081	1,043	1,036	1,046	-	2.7	1,098	9	9	9	9	9	9
Total All Classes	54,593	54,317	54,989	55,362	55,794	2.2	-	54,007	1,990	2,025	2,082	2,112	2,175	2,123

Notes: "n" indicates that the information is not available

* indicates that the value has been calculated from available information only.

Source: Bureau of Census & Statistics, Brisbane.

* Footnote to Table 4.

FACTORY STATISTICSClassification of Establishments1. Treatment of Non-Metalliferous Mine and Quarry Products

- 1 Coke Works
- 2 Briquetting and Pulverised Coal
- 3 Carbide
- 4 Lime, Plaster of Paris, Asphalt
- 5 Fibrous Plaster and Products
- 6 Marble, Slate etc.
- 7 Cement, Portland
- 8 Asbestos Cement Sheets & Mouldings
- 9 Other Cement Goods
- 10 Other

2. Bricks, Pottery, Glass etc.

- 1 Bricks and Tiles
- 2 Earthenware, China, Porcelain, Terra-cotta
- 3 Glass (other than Bottles)
- 4 Glass Bottles
- 5 Other

3. Chemicals, Dyes, Explosives, Paints, Oils, Grease

- 1 Industrial and Heavy Chemicals & Acids
- 2 Pharmaceutical & Toilet Preparations
- 3 Explosives (including Fireworks)
- 4 White Lead, Paints and Varnish
- 5 Oils, Vegetable
- 6 Oils, Mineral
- 7 Oils, Animal
- 8 Boiling-down, Tallow-refining
- 9 Soap and Candles
- 10 Chemical Fertilisers
- 11 Inks, Polishes etc.
- 12 Matches
- 13 Other

4. Industrial Metals, Machines, Conveyances

- 1 Smelting, Converting, Refining, Rolling of Iron and Steel
- 2 Foundries (Ferrous)
- 3 Plant, Equipment & Machinery, including Machine Tools
- 4 Other Engineering
- 5 Extracting and Refining of other Metals: Alloys
- 6 Electrical Machinery, Cables and Apparatus

Construction and Repair of Vehicles - Trams and Railway Rolling Stock -

- 7 Government and Municipal
- 8 Other

Motor Vehicles -

- 9 Construction and Assembly
- 10 Repairs
- 11 Motor Bodies
- 12 Horse-drawn vehicles
- 13 Motor Accessories
- 14 Aircraft
- 15 Cycles (Foot and Hand-driven) and Accessories
- 16 Other

Ship and Boat Building and Repairing, Marine Engineering -

- 17 Government
- 18 Municipal and Other
- 19 Cutlery and Small Hand Tools
- 20 Agricultural Machines and Implements
- Non-ferrous Metals -
- 21 Rolling and Extrusion
- 22 Founding, Casting etc.
- Galvanised Ironworking, Tinsmithing -
- 23 Iron & Steel sheets
- 24 Sheet Metal Working, Pressing and Stamping
- 25 Pipes, Tubes and Fittings - Ferrous
- 26 Wire and Wireworking (inc. Nails)
- 27 Stoves, Ovens, and Ranges

4.	<u>Industrial Metals, Machines, Conveyances (Contd.)</u>	8.	<u>Clothing (Except Knitted) -</u>
28	Gas Fittings and Meters	1	Tailoring and Ready-made Clothing
29	Lead Mills	2	Waterproof and Oilskin Clothing
30	Sewing Machines	3	Dressmaking, Hemstitching
31	Arms, Ammunition (exc. Explosives)	4	Millinery
32	Wireless and Amplifying Apparatus	5	Shirts, Collars, Underclothing
33	Other Metal Works	6	Foundation Garments
5.	<u>Precious Metals, Jewellery, Plate -</u>	7	Handkerchiefs, Ties, Scarves
1	Jewellery	8	Hats and Caps
2	Watches and Clocks (inc. Repairs)	9	Gloves
3	Electroplating (Gold, Silver, Chromium etc.)	10	Boots and Shoes (Not Rubber)
6.	<u>Textiles and Textile Goods (Not Dress)</u>	11	Boot and Shoe Repairing
1	Cotton Ginning	12	Boot and Shoe Accessories
2	Cotton Spinning and Weaving	13	Umbrellas and Walking Sticks
3	Wool - Carding, Spinning, Weaving	14	Dyeworks and Cleaning (including Renovating and Repairing).
4	Hosiery and Other Knitted Goods	15	Other
5	Silk, Natural	9.	<u>Food, Drink, and Tobacco</u>
6	Rayon, Nylon and other Synthetic Fibres	1	Flour-milling
7	Flax Mills	2	Cereal Foods and Starch
8	Rope and Cordage	3	Animal and Bird Foods
9	Canvas Goods, Tents, Tarpaulins etc.	4	Chaff-cutting and Corncrushing
10	Bags and Sacks	5	Bakeries (including Cakes and Pastry)
11	Textile Bleaching, Dyeing, Printing and Finishing	6	Biscuits
12	Other	7	Sugar Mills
7.	<u>Skins and Leather (Not Clothing or Footwear)</u>	8	Sugar-refining
	<u>Furs, Skins, and Leather -</u>	9	Confectionery (including Chocolate and Icing Sugar)
1	Furriers and Fur-dressing	10	Jam, Fruit and Vegetable Canning
2	Wool-scouring and Fellmongery	11	Pickles, Sauces, Vinegar
3	Tanning, Currying and Leatherdressing	12	Bacon Curing
	Saddlery, Harness, Bags, Trunks, and Other Goods of Leather Substitutes (Not clothing or footwear)	13	Butter Factories
4	Saddlery, Harness, and Whips	14	Cheese Factories
5	Machine Belting (Leather or Other)	15	Condensed and Dried Milk Products
6	Bags, Trunks, and Other Goods of Leather and Leather Substitutes	16	Margarine
		17	Meat and Fish Preserving
		18	Condiments, Coffee, Spices
		19	Ice and Refrigerating
		20	Salt

TABLE 4

9.	<u>Food, Drink, and Tobacco (Contd.)</u>	12.	<u>Paper, Stationery, Printing, Bookbinding etc. (Contd.)</u>
21	Aerated Waters, Cordials, etc.	5	Stereotyping, Electrotyping
22	Breweries	6	Process and Photo-engraving
23	Distilleries	7	Cardboard Boxes, Cartons & Containers
24	Wine-making	8	Paper Bags
25	Cider and Perry	9	Paper-making
26	Malting	10	Pencils, Penholders, Chalks, Crayons
27	Bottling	11	Other
28	Tobacco, Cigars, Cigarettes, Snuff	13.	<u>Rubber -</u>
29	Dehydrated Fruit and Vegetables	1	Rubber Goods (inc. Tyres Made)
30	Ice Cream	2	Tyre Retreading and Repairing
31	Sausage Skins	14.	<u>Musical Instruments -</u>
32	Arrowroot	1	Gramophones and Gramophone Records
33	Other	2	Pianos, Piano-players, Organs
		3	Other
10.	<u>Sawmills, Joinery, Boxes etc., Wood Turning and Carving</u>	15.	<u>Miscellaneous Products -</u>
1	Sawmills	1	Linoleum, Leathercloth, Oilcloth etc.
2	Plywood Mills (including veneers)	2	Bone, Horn, Ivory, and Shell
3	Bark Mills	3	Plastic Moulding and Products
4	Joinery	4	Brooms and Brushes
5	Cooperage	5	Optical Instruments and Appliances
6	Boxes and Cases	6	Surgical and Other Scientific Instruments and appliances
7	Woodturning, Woodcarving etc.	7	Photographic Material (inc. Developing and Printing)
8	Basketware and Wickerware (including Seagrass and Bamboo furniture)	8	Toys, Games, and Sports Requisites
9	Perambulators (including Pushers and Strollers)	9	Artificial Flowers
10	Wall and Ceiling Boards (not Plaster or Cement)	10	Other
11	Other	16.	<u>Heat, Light, and Power -</u>
11.	<u>Furniture of Wood, Bedding etc.</u>		Electric Light and Power -
1	Cabinet and Furniture Making (incl. Billiard Tables and upholstery)	1	Government
2	Bedding and Mattresses (not Wire)	2	Local Authority
3	Furnishing Drapery	3	Other
4	Picture Frames		Gas Works -
5	Blinds	4	Government
12.	<u>Paper, Stationery, Printing, Bookbinding etc.</u>	5	Local Authority
1	Newspapers and Periodicals	6	Other
2	Printing - Government		
3	Printing - General (inc. Bookbinding)		
4	Manufactured Stationery		

TABLE 5

DISTRIBUTION OF INDUSTRY BY STATISTICAL DIVISIONS - BRISBANE METROPOLITAN AREA 1961/62

(Note: In this table Heat, Light and Power Works (Class 16) are excluded)

Local Authority Area	Fact- ories	Workers	Salaries and Wages Paid	Value of			
				Output	Production	Land and Buildings	Plant and Machinery
	No.	No.	£1,000	£1,000	£1,000	£1,000	£1,000
<u>Central City Areas</u>	<u>866</u>	<u>23,354</u>	<u>20,707</u>	<u>81,553</u>	<u>38,984</u>	<u>16,897</u>	<u>10,903</u>
City	404	11,136	9,813	34,028	17,303	8,541	4,667
North City	214	5,744	5,219	24,832	11,903	4,110	2,896
South City	248	6,474	5,675	22,693	9,778	4,246	3,340
<u>North Side Inner Suburbs</u>	<u>285</u>	<u>5,763</u>	<u>5,521</u>	<u>27,159</u>	<u>11,652</u>	<u>6,569</u>	<u>4,846</u>
Ascot	49	820	730	4,505	1,563	794	354
Fernberg	28	487	504	4,041	1,783	1,503	1,196
Ithaca	13	68	41	179	88	35	21
Meeandah	64	2,795	2,830	13,322	5,708	3,261	2,694
Newmarket	34	345	300	1,016	482	229	127
Normanby	46	445	376	1,568	683	341	208
Windsor	51	803	740	2,528	1,345	406	246
<u>North Side Outer Suburbs</u>	<u>283</u>	<u>6,685</u>	<u>6,202</u>	<u>31,114</u>	<u>11,991</u>	<u>5,301</u>	<u>3,192</u>
Ashgrove & The Gap	14	82	50	167	94	54	10
Aspley	6	81	58	289	94	22	20
Banyo	28	1,281	1,198	8,577	2,445	781	606
Chermside & Bald Hills	39	1,012	846	3,828	1,454	601	342
Enoggera	30	439	428	1,832	946	287	302
Geebung	30	1,291	1,276	7,268	2,664	1,320	466
Hendra	16	670	635	2,199	1,210	321	249
Kalinga	4	10	5	30	17	9	3
Kedron	13	69	67	213	120	47	22
Mitchelton	9	113	127	333	194	37	57
Nundah	64	1,261	1,165	4,709	2,134	1,371	692
Stafford	30	376	347	1,669	619	451	423
<u>Western Suburbs</u>	<u>101</u>	<u>1,930</u>	<u>1,845</u>	<u>7,837</u>	<u>4,008</u>	<u>1,384</u>	<u>3,225</u>
Corinda	16	391	326	1,216	700	233	258
Darra	17	688	782	3,863	1,922	505	2,488
Graceville	9	132	104	376	203	129	77
Inala	6	179	183	668	277	165	177
Indooroopilly & Kenmore	23	176	140	509	247	114	84
St. Lucia	3	30	28	81	48	23	8
Toowong	27	334	282	1,124	611	215	133
<u>South Side Inner Suburbs</u>	<u>140</u>	<u>2,484</u>	<u>2,216</u>	<u>9,812</u>	<u>4,453</u>	<u>2,676</u>	<u>1,445</u>
Balmoral	48	809	773	3,148	1,529	1,408	728
East Brisbane	81	1,567	1,346	5,480	2,372	1,152	607
Morningside	11	108	97	1,184	552	116	110

TABLE 5

2

Local Authority Area	Fact- ories	Workers	Salaries and Wages Paid	Value of			
				Output	Production	Land and Buildings	Plant and Machinery
<u>South Side Outer Suburbs</u>	<u>318</u>	<u>10,775</u>	<u>10,069</u>	<u>61,630</u>	<u>18,753</u>	<u>7,841</u>	<u>5,521</u>
Camp Hill	43	317	245	978	435	235	71
Carina	6	36	40	207	65	40	90
Chatsworth	3	91	75	261	123	44	53
Cooper's Plains	12	163	139	523	300	234	226
Ekibin & Tarragindi	20	722	518	2,399	931	227	158
Greenslopes	43	385	297	813	506	231	96
Holland Park	15	66	39	195	89	97	19
Moorooka	133	5,190	4,853	20,502	7,814	3,915	3,194
Mount Gravatt	16	224	190	687	337	140	137
Murarrie	9	3,056	3,211	32,007	6,900	1,988	1,259
Yeronga	18	525	462	3,058	1,253	690	218
<u>Bayside</u>	<u>79</u>	<u>776</u>	<u>585</u>	<u>2,157</u>	<u>951</u>	<u>446</u>	<u>275</u>
Boondall & Nudgee	9	79	73	246	123	86	38
Sandgate	25	162	122	367	203	85	73
Wynnum	45	535	390	1,544	625	275	164
<u>Rural</u>	<u>42</u>	<u>1,142</u>	<u>1,031</u>	<u>6,093</u>	<u>1,877</u>	<u>1,240</u>	<u>1,336</u>
Rural Eastern	14	191	157	669	225	83	101
Rural South-Eastern	15	291	269	1,275	542	257	545
Rural South-Western & Rural Western	13	660	605	4,149	1,110	900	690
<u>Outside City of Brisbane</u>	<u>57</u>	<u>834</u>	<u>779</u>	<u>4,024</u>	<u>1,434</u>	<u>1,781</u>	<u>4,674</u>
Redcliffe	37	308	215	724	357	153	121
Pine Rivers	20	526	564	3,300	1,077	1,628	4,553
<u>Total Metropolitan</u>	<u>2,171</u>	<u>53,743</u>	<u>48,955</u>	<u>231,379</u>	<u>94,103</u>	<u>44,135</u>	<u>35,417</u>

Source: Bureau of Census & Statistics, Brisbane.

Note: For location of areas see Map 7.

APPENDIX I

Air services, originating from or passing through Brisbane's Eagle Farm Airport, connect it directly with the following places.

International

Athens
Auckland
Bangkok
Bombay
Cairo
Calcutta
Colombo
Karachi
London
Rome
Singapore
Teheran
Tel Aviv
Zurich

Interstate

Armidale
Broken Hill
Darwin
Glen Innes
Grafton
Gunnedah
Inverell
Lae
Melbourne
Moree
Mungindi
Newcastle
Port Moresby
Quirindi
Sydney
Tamworth

Intrastate

Alpha
Aramac
Ayr
Barcaldine
Blackall
Bollon
Bowen
Bundaberg
Cairns
Camoweal
Charleville
Clermont
Cloncurry
Condamine
Coolangatta
Cunnamulla

Dalby
Dirrinbandi
Emerald
Eromanga
Gayndah
Gladstone
Goondiwindi
Ingham
Innisfail
Isisford
Kingaroy
Longreach
Mackay
Maroochy
Maryborough
Mitchell

Monto
Mount Isa
Muttaborra
Oakey
Proserpine
Quilpie
Rockhampton
Roma
St. George
Tara
Taroom
Thangool
Tharg'mindah
Townsville
Winton
Wondai

APPENDIX II

IMPORTS TO QUEENSLAND 1960/61

Imports to Queensland from overseas for the year 1960/61. Summary showing items imported with a value greater than £100,000 and which could presumably be produced in part, at least, locally.

		£A
7	Fish, preserved in tins or airtight vessels	670,238
34	Other foodstuffs of vegetable origin and non alcoholic beverages	404,541
36	Wines and spirits	139,120
49	Yarns	140,103
50	Sewing and embroidering silks and cottons	229,937
52	Bags and sacks - corn and flour	664,535
56	Towels and towelling	161,821
57	Piece goods	4,423,660
58	Linoleum	521,259
59	Carpets and carpeting	403,956
63	Apparel	568,763
71	Pigments	172,032
75	Iron and steel - bar, rod, hoop strips	581,317
76	Iron and steel - structural sections	378,049
78	Iron and steel - plate and sheet - tinned or terne	575,636
79	Iron and steel - plate and sheet - other	922,087
80	Iron and steel - pipes and tubes	206,772
86	Iron and steel - other	258,449
87	Non-ferrous metals	169,659
89	Heating and cooking appliances (not electric)	103,504
90	Hand tools	476,452
92	Hardware - builders' and engineering	167,040
93	Cycles and motor cycles and parts	247,505
95	Motor vehicles and parts	3,576,430
96	Metal manufactures (except machinery and electrical apparatus)	1,752,386
98	Radio and gramophones	154,951
99	Telegraph and telephone instruments and appliances	273,766
101	Other electrical apparatus and machinery	1,212,079
102	Internal combustion engines and parts	1,055,973
103	Tractors and parts	3,730,284
104	Locomotives and parts	123,745
105	Household machines (incl. all refrigeration machinery and electric fans)	442,685
106	Agricultural, horticultural, dairying etc. machinery and implements, incl. parts	577,234
107	Machine tools	218,333
108	Other machinery (except dynamo equipment)	5,956,378
110	Rubber tyres and tubes	333,694

APPENDIX II

£A

111	Other rubber manufactures (not apparel)	237,951
115	Furniture, wood and wicker manufactures	254,607
117	Glass	532,125
118	Glassware and bottles	241,993
119	Crockery and householdware	518,629
120	Other earthenware, cement, china, glass and stoneware	286,893
123	Paper manufactures and stationery	1,338,477
124	Jewellery and timepieces (incl. parts)	271,843
125	Sporting material, toys and fancy goods	535,981
126	Optical, surgical and scientific instruments and appliances and photographic goods incl. films	545,700
127	Drugs and medicinal preparations	255,953
132	Other drugs and chemicals	2,092,520
134	Other miscellaneous goods	3,700,767

Total value of Imports from overseas 61,277,254

Source:- Bureau of Census & Statistics, Brisbane.

APPENDIX II

Imports to Queensland from Interstate for the year 1960/61. Summary showing items imported with a value greater than £100,000 and which could presumably be made in part, at least, locally.

	£A
2 Meat, poultry, game and soups - preserved in tins and airtight vessels	456,666
3 Milk and cream, preserved, condensed or dried	1,079,947
4 Infants' and invalids' foods	443,831
7 Fish, preserved in tins or airtight vessels	251,307
8 Other foodstuffs of animal origin	843,874
12 Breakfast cereals and the like	284,726
13 Other grains simply manufactured, prepared etc.	591,432
14 Biscuits	262,172
18 Vegetables, preserved in liquid or in pulped	895,619
26 Jams and jellies	188,622
30 Confectionery	2,748,988
35 Ale, beer, porter	720,662
36 Wines and spirits	476,927
38 Tobacco manufactures	2,917,539
39 Cigarettes	7,871,223
40 Cigars	152,926
49 Yarns	434,255
50 Sewing and embroidery silks and cottons	273,477
51 Cordage and twines and manufactures thereof	535,790
55 Blankets and blanketing	536,351
56 Towels and towelling	4,847,793
57 Piece goods	477,063
58 Linoleum	685,713
61 Textiles	2,258,590
62 Footwear	4,226,469
63 Apparel	15,458,086
69 Oils, fats and waxes	823,256
70 Prepared paint and varnishes, dryers and thinners	1,956,435
71 Pigments	543,517
73 Iron and steel - pig iron	190,132
74 Iron and steel - rails	1,120,728
75 Iron and steel - bar, rod, hoop and strips	4,128,866
76 Iron and steel - structural sections	908,231
77 Iron and steel - plate and sheet - galvanised and zinc anneal	4,055,357
78 Iron and steel - plate and sheet - tinned orterne	2,346,420
79 Iron and steel - other	3,654,255
80 Iron and steel - pipes and tubes	2,439,058
81 Iron and steel - spun cast iron pipes	379,054
82 Iron and steel - wire ropes	539,875
83 Iron and steel - fencing wire and barbed wire	1,420,522
84 Iron and steel - wirenetting	443,300
85 Iron and steel - fence posts	880,419

APPENDIX II

£A

86	Iron and steel - other	2,433,734
88	Kitchenware	723,630
89	Heating and cooking appliances (not electric)	548,497
90	Hand tools	741,604
91	Hardware - haberdashery	602,136
92	Hardware - builders' and engineering	3,027,859
93	Cycles and motor cycles and parts	194,757
94	Railway and tramway vehicles	151,591
95	Motor vehicles and parts	22,016,586
96	Metal manufactures (except machinery and electrical apparatus)	4,478,477
97	Electrical wire and cables	1,342,871
98	Radio and gramophones and parts	1,591,190
100	Heating and cooking appliances, electrical including irons	1,028,587
101	Other electrical apparatus and machinery	9,688,125
102	Internal combustion engines	732,992
103	Tractors and parts	6,654,892
104	Locomotives and parts	242,746
105	Household machines (incl. all refrigeration machinery and electric fans)	4,813,630
106	Agricultural, horticultural, dairying and machinery and implements incl. parts	3,856,832
107	Machine tools	515,207
108	Other machinery (except dynamo electrical)	5,895,250
110	Rubber tyres and tubes	3,533,125
111	Other rubber manufactures (not apparel)	1,384,318
112	Leather and leather manufactures and substitutes (not apparel)	359,851
115	Furniture, wood and wicker manufactures	280,812
117	Glass	262,955
118	Glassware and bottles	351,062
119	Crockery and household ware	329,682
120	Other earthenware, cement, china, glass and stoneware	646,168
121	Paper (writing and printing)	1,879,026
122	Paper (wrapping and miscellaneous), paperboard and pulp	2,127,636
123	Paper manufactures and stationery	3,640,306
124	Jewellery and timepieces	606,306
125	Sporting material, toys and fancy goods	1,862,020
126	Optical, surgical and scientific instruments and appliances, photographic goods incl. films	2,007,364
127	Drugs and medicinal preparations	4,775,451
128	Perfumery and toilet preparations	1,614,756
130	Soap and soap substitutes	2,345,742
132	Other drugs and chemicals	3,300,221
133	Matches and vestas	383,011
134	Other miscellaneous goods	6,588,373
Total Interstate Imports		225,075,365

Source: Bureau of Census & Statistics, Brisbane.



Please Address all Correspondence
to Box 27, Brisbane, North Quay.
In Reply Please Quote :

Department of Labour and Industry
Secondary Industries Division
Treasury Buildings

Brisbane, 23rd January, 19 63.

TO WHOM IT MAY CONCERN.

The Queensland Government is finalising arrangements with the Savoy Corporation Limited for the development of an area of Crown land at Wacol as an Industrial Estate.

This is the first serious proposal in Australia in which an effort is being made to design an estate to meet the known requirements and conditions of industry as they have been experienced since establishment.

So that plans may be made to overcome problems which may have been associated with the establishment and operation of industry in Queensland the Savoy Corporation Limited is making a survey and is submitting to selected industries a questionnaire covering many matters in connection with existing industries.

It is appreciated that some of the questions included in the survey may be of a confidential nature to the respective organisation, and the Queensland Government would be pleased if you would co-operate with the Savoy Corporation Limited in the survey by the provision of as much of the desired information as can be made available. Please be assured that the object of the survey is not to obtain information in respect of a particular firm or company but information which may apply to that type of industry as a whole and it is only on this basis that the information will be used.


(W. Young)
Director of Secondary Industries.

APPENDIX IV

BRISBANE INDUSTRIAL RESEARCH - MANAGEMENT INTERVIEW CHECK LIST

1. Type of industry:
Census class:
2. Name of organisation:
Address of organisation:
Executive interviewed:
3. Organisation established by
 - (a) Local group
 - (b) National group
 - (c) International group
4. Location of other plants and sales offices
 - (a) Brisbane
 - (b) Rest of State
 - (c) N. S. W.
Vic.
S. A.
W. A.
Tas.
N. T.
 - (d) Other countries
5. Goods produced and functions performed:
 - (a) Brisbane plant
 - (b) Other Australian plants
 - (c) International plants
6. Date of establishment in Brisbane:
7. History of Brisbane plant:
 - (a) Previous locations
 - (b) Reasons for moving
 - (c) Reasons for choosing present site
 - (d) Satisfaction with present site
8. Locational requirements of organisation:
 - (a) Special Sites
 - (i) Waterfront
 - (ii) Rail frontage
 - (iii) Adjacent to raw materials
 - (iv) Adjacent to markets
 - (v) Suitable for disposal of wastes
 - (b) Need for convenience to sources of supply and markets:
 - (c) Importance of convenience to labour
 - (i) Unskilled
 - (ii) Skilled
 - (d) Optimum location for this type of plant
 - (e) Effect of location on profit rate
9. Functions of plant:
 - (a) % of work force manufacturing or processing items which result in finished products at plant:
 - (b) % of work force manufacturing or processing items which result in semi-finished products at plant:
 - (c) % of work force in production of items which on leaving plant represent only an assembly of parts produced or manufactured elsewhere:
 - (d) % of people employed on design or research:
 - (e) % of people employed on other activities:
 - (f) Types of activities listed as other
10. Names of principal products or categories of products and relative importance in terms of monetary value of output.

APPENDIX IV

- | | |
|---|--|
| 11. Site area of local plant: | (c) N.S.W.
Vic.
S.A.
W.A.
Tas.
N.T. |
| 12. Percentage of site built up: | (d) Other Countries |
| 13. Total floor area in buildings:
No. of buildings:
No. of floors in each building: | |
| 14. Site area required for open storage: | 23. Changes in markets served: |
| 15. Site area reserved for expansion of plant: | 24. The ten most important customer locations in terms of value of output sold last year and percentage of total value of output going to these locations: |
| 16. Buildings:
(a) Satisfaction with present building:
(b) Suitability of present building for modern machinery and operational methods:
(c) Effect of production technique on shape and layout of buildings:
(d) Special building requirements
(i) Air conditioning
(ii) High level of daylight
(iii) Other | 25. Type of market served and importance in terms of value of output:
(a) other industries
(b) wholesalers for sale to other producers
(c) wholesalers for sale to consumers
(d) retailers
(e) general public |
| 17. Ideal site for operation of this plant: | 26. Percentage of value of output on production for special orders.
Percentage of value of output on stock production. |
| 18. Nature of machinery and plant used in production: | 27. Storage of finished products: |
| 19. Capital requirements in this type of Industry: | |
| 20. Likely economics of leasing factory sites or factory buildings: | <u>INPUT</u> |
| 21. Likely problems and costs if plant was to relocate: | 28. Nature of raw materials and processed materials used in plant: |
| <u>OUTPUT</u> | 29. Sources of raw materials and proportion of total value of materials obtained from each source:
(a) Brisbane -
(i) adjacent processors and manufacturers
(ii) other areas
(b) Rest of State |
| 22. Location of markets served by plant and importance in terms of proportion of value of output absorbed:
(a) Brisbane
(b) Rest of State | |

APPENDIX IV

- (c) N.S.W.
Vic.
S.A.
W.A.
Tas.
N.T.
- (d) Other countries
30. Changes in sources of raw materials:
31. Ten most important places from which raw materials were obtained last year in terms of value of materials purchased:
32. Raw materials purchased on:
(a) Term contract %
(b) Immediate needs %
33. Storage of raw materials:
(a) types of materials stored
(b) number of weeks supply generally stocked

LABOUR

34. Average number of employees:
(a) Male
(b) Female
(c) Total
(d) % New Australians
35. Proportion or number of employees:
- | | | | |
|--|---|---|--|
| (a) Professional | M | F | |
| (b) Managerial & Supervisory | M | F | |
| (c) Office, Sales | M | F | |
| (d) Skilled labour (apprentice training) | M | F | |
| (e) Semi-skilled labour (reasonable on job training) | M | F | |
| (f) Unskilled labour (short period on job training) | M | F | |

36. Ages of employees:
(a) Professional, Managerial, Supervisory, Sales
-20 20-30 30-50 50+
M
F
(b) Office
-20 20-30 30-50 50+
M
F
(c) Skilled labour
-20 20-30 30-50 50+
M
F
(d) Semi skilled labour
-20 20-30 30-50 50+
M
F
(e) Unskilled labour
-20 20-30 30-50 50+
M
F
37. Number of shifts worked:
Number of employees per shift:
38. Extent of employee absenteeism:
M F
(a) Professional, Managerial etc.
(b) Office
(c) Skilled
(d) Semi-skilled
(e) Unskilled
39. Extent of employee turnover:
M F
(a) Professional, Managerial etc.
(b) Office
(c) Skilled
(d) Semi-skilled
(e) Unskilled

APPENDIX IV

40. Seasonal fluctuations in labour requirements:
 - (a) Causes of fluctuation
 - (b) Type of employee affected and proportion

	M	F
--	---	---

 - (i) Professional, Managerial etc.
 - (ii) Office
 - (iii) Skilled
 - (iv) Semi-skilled
 - (v) Unskilled
 - (c) Months affected
 41. Method of engaging labour:
 - (a) By foreman or section heads
 - (b) Employment office
 - (c) Special provisions for testing etc.
 42. Names of suburbs from which labour is drawn:
 - (a) Professional, Managerial etc.
 - (b) Office
 - (c) Other workers
 43. Proportion of employees coming from:
 - (a) up to 1 mile radius
 - (b) 1 to 3 mile radius
 - (c) 3 to 5 mile radius
 - (d) over 5 mile radius
 44. Employees method of travel to plant:

	Public	Private
		Car

 - (a) Professional, Managerial etc.
 - (b) Office
 - (c) Other workers
 45. Importance of public transport in selecting industrial location
 46. Provision made for car parking at plant:
 47. Difficulty of obtaining suitable employees:
 48. Advantages in obtaining employees found by industries located in an industrial zone:
 49. Any experience with loss of staff during factory relocation:
 50. Part played by social and recreational facilities in obtaining and retaining suitable labour:
 51. History of strikers and other labour problems at plant:
 52. Productivity of labour

	M	F
--	---	---

 - (a) Above Average
 - (b) Average
 - (c) Below Average
- TRANSPORT**
53. Method used to transport:
 - (a) Products
 - (i) % Rail
 - (ii) % Road
 - (iii) % Sea
 - (iv) % Air
 - (b) Raw materials
 - (i) % Rail
 - (ii) % Road
 - (iii) % Sea
 - (iv) % Air
 54. Size of loads average and range:
 - (a) Products
 - (b) Raw materials
 55. Frequency of loads:
 - (a) Products
 - (b) Raw materials

APPENDIX IV

56. Size of Trucks and number used in transport:
 - (a) Products
 - (b) Raw materials
57. Proportion of production costs absorbed by:
 - (a) Raw materials
 - (b) Wages and salaries
 - (c) Transportation costs
 - (d) Rates and Taxes
58. Degree of autonomy allowed in operation of local plant:
59. Prospects for growth in this industry over next five years:
 - (a) Field presently competitive and adequately capitalized
 - (b) Expansion possible but not under active study
 - (c) Considering expansion of plant
 - (d) Concrete Plans for expansion
 - (e) Expansion of competitors likely
 - (f) Opportunity for small enterprises to form in this industry
60. Brisbane industries considered to have best expansion possibilities:
61. Business services required:
 - (a) Contact with professional consultants and advisers
 - (b) Contact with commercial services and advisers e.g. advertising, plan printing
 - (c) Need for maintenance and building services
 - (d) Frequency of contact
 - (e) Need for proximity
62. Production Services required:
 - (a) Need for sub-contractors
 - (b) Types of sub-contractors
 - (c) Frequency of use
 - (d) Need for proximity
63. Commercial relationships required:
 - (a) Frequency and use of banking facilities
 - (b) Type of Services required from banks and other commercial enterprises
 - (c) Executive membership of clubs, e.g. Rotary etc.
 - (d) Inter-industry meetings
64. Employee health services:
 - (a) Plant has first aid service only
 - (b) Employee medical clinic:
 - (i) Doctor
 - (ii) Nursing Sister
 - (iii) Service offered
 - (c) Practicability of medical centre among a group of adjacent factories
65. General operating difficulties experienced by plant in operating in Brisbane.
66. Public Utility and Service Requirements:
 - (a) Water
 - (i) Required in process
 - (ii) Required for cooling
 - (iii) Required only for sanitary purposes
 - (iv) Volumes required for (i) and (ii)
 - (b) Sewer
 - (i) Required for disposal of noxious wastes
 - (ii) Required for disposal of other wastes
 - (iii) Required only for sanitary purposes
 - (iv) Volumes of wastes in (i) and (ii)
 - (c) Gas
 - (i) Used in manufacture
 - (ii) General economics of gas as fuel

APPENDIX IV

- (d) Electricity
 - (i) Extent of power demand
 - (ii) Any special voltages required
 - (iii) Economics of generating own power
 - (e) Telephone
 - (i) Importance of telephone in daily production and sales
 - (ii) Demand for telephone lines
67. Power used in production:
- (a) Steam
 - (b) Compressed air
 - (c) Hydraulic
 - (d) Practicability of drawing these from mains in similar manner to other services
68. Advantages expected from a location in an Industrial Park or Estate.

REPRODUCED BY:

M.J. SEYMOUR & ASSOCIATES,
30 GROSVENOR STREET,
SYDNEY, N.S.W., AUSTRALIA.