

**GREATER PERTH  
ECONOMY AND EMPLOYMENT  
DISCUSSION PAPER THREE**

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## SUMMARY

The Western Australian Planning Commission has prepared a set of technical papers as part of its Plan for the Sustainable Development of Greater Perth. The plan is being prepared using the technical resources of the Department for Planning and Infrastructure.

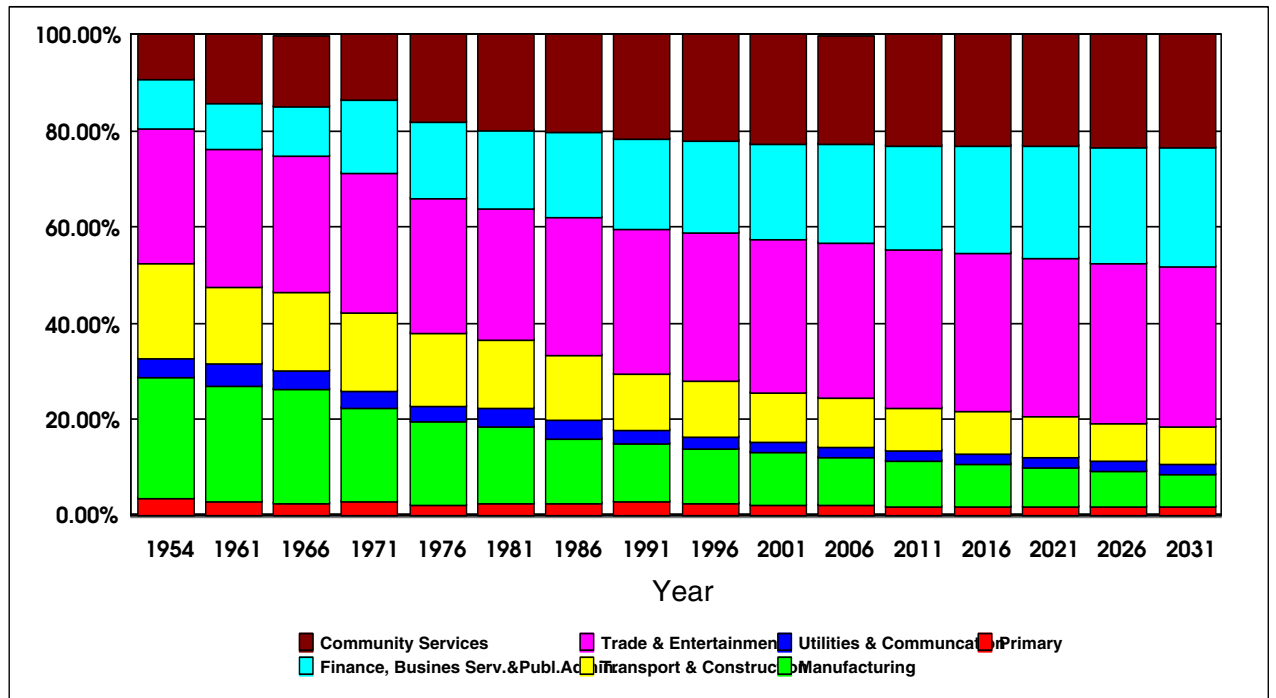
Building on earlier work, the Economy and Employment paper begins by examining the economics of modern cities. The paper argues that the economies of modern cities are not tied primarily to the national and international economies that lie beyond their borders. Instead, they are predominantly tied to the ability of people within the city to provide a wide range of services efficiently and well. The major economic base of the modern city is the myriad services that citizens and visitors buy and sell to one another. To the extent to which the economic and social infrastructure, together with the business environment, is structured to deliver these services efficiently and well, the city will be an attractive place in which to do business and to live. Further, to the extent to which the modern city can efficiently harness export industries, including traded services, manufactures and the traditional primary products of the hinterland over which it has command, it will be an efficient place from which to export to the outside world as well.

To pursue growth opportunities, modern cities adopt policies which promote a diversified industry structure and a high degree of local competition. Highly successful modern cities are characterised by low barriers to international trade in an atmosphere of openness to outside ideas. Openness to outside ideas, or “cosmopolitanism,” is a powerful force for vibrancy and progress in modern cities. A city’s standard of living and how its citizens improve living standards by improving its industries’ productivity determine its attractiveness as a place to live and do business. Its success in achieving this will then determine its international competitiveness in the 21st century.

The relationship between a changing economy, its impact on employment and the practical effect this may have on land use is also considered. Perth’s evolution in terms of changes in population and industrial structure, will affect employment outcomes today and over the next three decades in the Greater Perth region. As shown in Figure ES.1, like other modern cities, Perth’s industrial composition has been changing in favour of the service industries for over 50 years, with finance and business services, public administration, community services and trade and entertainment growing at the expense of manufacturing, transport and construction and other non-service industries. These trends are likely to continue in the future.

In addition, as shown in Table ES.1, Perth’s population and employment is shifting away from the inner city to the suburbs. Most notably, the City of Perth’s share of jobs has almost halved over the last thirty years, while the outer suburbs share has more than doubled. Jobs or industries are no longer tied to specific locations, reflecting decentralising population patterns. Where industry and jobs are located reflects increasing consumer preference for services and the desire to have these services close to where they live.

**Figure ES.1: Actual and Projected Industry Structure, Metropolitan Perth 1954 – 2031**



Source: ABS JtW 1954 - 2001, DPI Trend Extrapolation 2006 - 2031.

**Table ES.1: Population and Employment Shares in Metropolitan Perth, 1971 – 2001 (%)**

Region	1971	1981	1991	2001
<i>Population of Metropolitan Perth % shares</i>				
Inner (inc. City)	31.8	21.7	15.5	13.8
Middle	45.7	39.8	36.0	32.4
Outer	22.5	38.5	48.6	53.9
<i>Employment in Metropolitan Perth % shares</i>				
City of Perth	31.2	24.4	20.7	18.1
Inner	29.6	25.2	22.8	20.6
Middle	26.1	32.0	33.1	31.8
Outer	14.1	18.4	23.4	29.4

*Source Australian Bureau of Statistics ERP (Estimated Resident Population) and preliminary ERP for 2001 and Department for Planning and Infrastructure (DPI) medium population scenario (2011 to 2031). Note: Inner and Middle Sectors boundaries t changed between 1971 and 2001; therefore historical population figures are not 100% comparable. Note 2: preliminary figures for 2001 are used in tables to maintain consistency with other papers in this series which were completed before the release of the final ABS ERP for 2001.*

The most important long-term drivers of the Greater Perth economy are likely to be service industries requiring high levels of skills. Economic growth will be linked to the growth in business, health, educational, community, recreational and cultural services. An important component of these are the support industries servicing the mining industry. The development of these industries will increasingly depend on a highly skilled labour force. Western Australia faces worldwide competition for investment in these industries that will, in part, depend upon these skills.

China and South East Asia will become the world's dominant manufacturing centres this century, supported by populations exceeding 1.5 billion in China and India and nearly 300 million more people in Indonesia by 2050. By comparison, Western Australia's population will be between 2.7 to 3.5 million. Local markets must significantly boost their export success if Perth is to benefit from high level service provision to Asia's unfolding manufacturing boom.

The evolution of world, national and local economies is likely to have a considerable impact on land use and planning in Greater Perth. While past planning focused on a manufacturing-dominated economy, industrial employment has declined and commercial, service-based employment has increased, both absolutely and as a share of total employment. As a result, Greater Perth's planned industrial land in the inner and middle sectors now supports a large range of service industries and industrial operations have moved further away to access cheaper transport and land.

However, existing industrial areas in Perth's inner and middle sectors are not designed to function as major activity centres (street layout, infrastructure and amenity) and, therefore, cannot compete effectively as an alternative to the Central Business District or strategic centres in suburban Perth.

The concentration of most jobs in Greater Perth will continue, but most people will live in the outer sectors and jobs will increasingly move to these areas. This provides a challenge to the planning and development of strategic and regional centres in Perth's residential corridors.

However, Perth's natural resources, its economic and its geographic relationship with Asia and its other advantages – not least of which is being a very 'liveable' city - create opportunities for the future, provided the State can deliver an efficient, cost-effective and enjoyable environment for business and for the people who manage and work in business. Good planning remains crucial.

An industry case study for the challenges facing policy-makers is tourism. Tourism potential is strongly linked to the growing affluence of our Asian neighbours. Increasing visits (possibly through the development of a retirement infrastructure in Western Australia) could significantly boost economic opportunities across a wide range of industries, particularly in the South West. .

With respect to the future, focused policy effort is required in five key areas –

- **Civic leadership**
- **Infrastructure**
- **Skills**
- **Industry development**
- **Place-making.**



# 1. The Economics of Modern Cities

## 1.1 Cities and Their Economic Base

There are two seemingly paradoxical forces at work that drive the economies of modern, large cities such as Perth.<sup>1</sup> The first, the increasing importance of service industries in the economy, lessens the scope for the identification of key economic drivers that will determine the future economic capacity of the city. The rise of services creates an “abstract economy” without a clear connection between the economic activity of the city and any particular industry. This force does not provide any clear guidance to policy makers to strengthen the economic growth of cities because it leads to ever decreasing specialisation. The second force is the capacity of “external economies” or “agglomeration effects”, as economists call them, to lead to ever increasing specialisation and the narrowing of the set of economic drivers that affect the city’s economic growth, at least initially. This enables the clear identification of key areas of specialisation for policy to build upon in order to enhance a city’s strengths. These “external economies” are the physical and human capital infrastructures that promote synergies between the parts of industries that promote specialisation.

However, as we shall see in this paper, the dynamic which determines the growth of cities brings these forces together, so that the drivers of modern cities may promote both economic specialisation *and* economic diffusion. The thriving modern city is not tied primarily to the regional, national or international economies that lie beyond its borders. Instead, it is predominantly tied to the ability of people within the city to provide services efficiently and well to its citizens and visitors. To the extent to which the economic and social infrastructure, together with the business environment, is structured to deliver services efficiently and well, then the city will be an attractive place in which to do business and live. It will also be an efficient place from which to export.

In order to continue to thrive, it must have the capacity to adapt to changing economic circumstances. To pursue growth opportunities, cities should adopt policies which promote a diversified industry structure, a high degree of local competition, low barriers to international trade and an atmosphere of openness to outside ideas (“cosmopolitanism”). In the twenty first century, a city’s attractiveness both as a place to live and do business is its standard of living and its citizens’ capacity to improve living standards and amenity by improving economic productivity. This is the way to becoming an “internationally competitive city.”

Exploring these ideas in some detail sets the framework for this paper. From this framework we can better understand Perth as a modern city. It will also enable us to understand how civic planning, broadly defined, and strategic infrastructure provision can enable Perth to remain a vibrant and internationally competitive city in the decades to come.

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<sup>1</sup> In order to place Perth in context, we define “large” to mean cities whose metropolitan areas contain more than about 1,000,000 people. There are just over 400 such metropolitan agglomerations in the world (see <http://www.citypopulation.de/Country.html?E+World>). In fact, the economic forces that are discussed in this section apply to smaller agglomerations as well, perhaps to agglomerations as low as 150,000 people.

## 1.2 The Rise of Services

Over time, major economic drivers change. In 1900, about 33 per cent of all Australians (and 37 per cent of all Americans and Canadians) were employed in agriculture.<sup>2</sup> By the 1980s, less than five per cent of jobs in these countries were in agriculture. Although agriculture's contribution to Australia's GDP remained as high as 30 per cent as late as 1950, even in terms of its output share, Australian agriculture has declined in importance. The Australian economy no longer rides on the sheep's back. Together, agriculture and mining contributed only eight per cent of jobs and ten per cent of the value of output by the early 1980s. Today, these industries account for less than five per cent of jobs and about nine per cent of the value of output.

Similarly, the manufacturing industry's contribution to employment and the economy has changed. At Federation, manufacturing accounted for over a quarter of all jobs and about ten per cent of GDP. In the late 1950s, its contribution peaked at about 29 per cent of GDP and over 27 per cent of jobs. However, today, manufacturing accounts for only around 12 per cent of GDP and about 11 per cent of jobs (and these shares are continuing to fall).

So, if agriculture and manufacturing have declined in importance, what has taken their place? The answer is service industries. Service industries now account for over 70 per cent of all jobs and about the same share of the value of GDP. These trends are mirrored in all the industrial countries and have important implications for the economics of modern cities.

The economies of modern cities are increasingly service economies and, as a result, cities are increasingly not dependent on interaction with either their immediate hinterland or the rest of the world. One of the paradoxes of modern economies is that the *relative* importance of the traded goods sectors (that is export and import competing sectors) is declining, despite the remarkable growth in world trade that comprises a major part of what is now generally called globalisation. The long term trend in relatively high income countries, that is, "the developed world," is for the non-traded sectors to increase in importance in terms of their contribution to output and employment. The reason for this is twofold.

Firstly, productivity advances in the non-service sectors, and especially in both agriculture and manufacturing, mean that the output of these sectors is increasingly requiring fewer jobs. Two factors affect labour productivity. The first is increasing capital intensity. As society invests in capital – machinery, buildings and various infrastructure – output can increase with fewer people per unit of output. Capital growth in any industry tends to be labour saving and frees up labour for other activities, such as the provision of services. Secondly, technical and scientific advances through research and its application to industry increase labour productivity by finding better (meaning, ultimately, cheaper) ways to produce more and better goods and services. For example, advances in digital technology over the last 50 years, and especially the last 25 years, have revolutionised communications and the flow of information. Over the past century, travel costs have fallen 90 per cent (Glaeser and Kohlhase, 2003).

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<sup>2</sup> Data in this and the next paragraph are taken from Maddock and McLean (1987) and recent ABS data.

Advances in chemistry and biotechnology are set to revolutionise everything from food production to the metals, plastic and materials in all sorts of goods.

The second reason for the increasing importance of services is that as incomes rise, the demand for services rises more than proportionately to income. People want to spend more of their incomes on health, education, cultural, community and personal services, entertainment and leisure once basic needs for food and manufactured goods are met. And even in these basics, demand is increasingly directed at those with a high service component such as restaurants and elaborately transformed food and manufactured goods with high design and marketing components.

However, the scope for productivity advance is more limited in services than in agriculture and manufacturing. It is difficult for substantial, on-going productivity advances to be made in providing haircuts or string quartet performances, for example. Hence, the share of services in the economy rises, especially the service share of employment, as living standards increase.

The consequence of the rise of services as the major economic sector in modern economies is that relatively large cities, like Perth, are no longer obviously tied to either the international economic scene or to a *specific* set of economic drivers which reflect the comparative advantage of the surrounding hinterland. A key feature of a modern city is, in the words of U.S. economist, Paul Krugman, the “abstractness of [its] economy - the way it seems so disconnected from the physical world.”<sup>3</sup>

Krugman means that most of the economic activity in modern cities comes from what people in those cities do for one another rather than what they do for the outside world. That is, the major sources of economic activity are the non-traded goods sectors which are predominantly services. Krugman illustrates his thesis by reference to Chicago at the end of the nineteenth century and modern Los Angeles.

In old Chicago, the railroads delivered beef, pork, grains and lumber to the city from the vast mid-west and re-routed these goods, together with manufactured goods produced in Chicago such as machinery, steel and refined oil, for shipment to the domestic market and overseas. It was very connected to the outside world and its prosperity depended upon these markets. Old Chicago was acutely aware of the competition from meat from New Zealand, grain from Australia and the Ukraine and manufactured goods from Great Britain and Germany. Its very prosperity depended upon how well it connected with its hinterland and coped with the competition from outside.

However, modern Los Angeles is very different. Its export base of defence and aerospace, films and entertainment, is much narrower than old Chicago’s and hardly explain the existence of modern Los Angeles. Films can now be made just about anywhere and although the defence and aerospace industries together with the dream-makers of Hollywood are important for modern Los Angeles, they do not support a population of nearly 17 million people in the greater Los Angeles area. Modern Los Angeles is not that different from many other American city in terms of its economy, nor for that matter, very different from any Australian city. Walking down Hollywood and Vine, you will meet accountants, financiers, lawyers, café workers, doctors, dentists

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<sup>3</sup> Krugman, P. “The Localization of the World Economy,” in Krugman (1996), p. 208.

and, in fact, many others who provide a variety of services to other Los Angeles. Most workers in modern LA provide services for other people in LA.

Australia is no different. Whereas once Sydney existed to get Australia's wool clip and wheat harvest to market, it is now almost completely divorced from the outback. It is a city whose business is primarily providing services to others, from financial, legal, and business services to community, cultural, leisure and personal services.. Like Sydney, Perth is a modern city. Although one of the major sets of services it provides are related to the mining industry and, to a lesser extent, agriculture, most people in Perth are not connected to either. Most people in Perth have jobs that provide services to other people in Perth, services of all varieties.

Nor does Perth's employment base have much to do with its hinterland. Although the mining industry remains the single most important industry in the WA economy, accounting for a little over 21 per cent of the value of all State production and about 72 per cent of the State's (and 14 per cent of Australia's) exports (ABS cat. no. 1367.5, June 2002), it is not the predominant economic basis for employment in Perth.<sup>4</sup> Indeed, even to serve the mining industry (an important part of Perth's economic function), Perth does not have to be near to the mining industry. Most of the mining sector lies outside a radius of 500 kms from the Perth CBD. The export base which connects Perth to the rest of the world might be mining and agriculture, but the non-base services provide most of the employment and income to the people of Perth.

However, this begs the question: How do cities get to this state where economic progress is no longer dependent on key, specific and identifiable economic drivers? For new Chicago to develop, there had to be an old Chicago. Likewise for Perth and Sydney – what were the forces that determined the growth of small settlements into large, modern cities?

### **1.3 Geography, History and the Growth of Cities**

Recent research in economics and history has paid a lot of attention to this issue because we can understand a lot about the economic growth of nations by understanding what drives the growth of cities. The first point is that history matters. Many cities achieved prominence because they were ideally located given the methods of transportation and the major economic activity at the time of their rise to prominence. Ports, major rivers or inland lakes and their connectedness with the hinterland economy were important when the major sources of economic growth came from agriculture or manufacturing.

However, once under way, a virtuous circle of cumulative causation may lead the city to become a major hub. This is due, in part, to what are known in the economics literature as external economies or agglomeration effects. These come about through three factors operating in concert:

- (a) labour market pooling and risk-sharing,
- (b) external economies of scale, particularly in specialised and complementary infrastructure and intermediate inputs, and

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<sup>4</sup> This is not to say that the Western Australian (and so Perth's) economy is not significantly dependent on the Mining and Resources sector. It is. Rather the argument is that very little employment is directly related to the sector.

(c) technological spillovers.

Labour market pooling refers to the fact that as cities develop, and especially where the development is associated with a particular economic activity, specialised workers will be attracted to the location such that there is a critical mass for all firms in the specific industry to draw on. The great Victorian cities of Britain and their specialisations are good examples – Manchester and cotton, Leeds and wool, Sheffield and steel, Glasgow and shipbuilding. As these cities developed in the last century, they attracted specialist, skilled labour. Workers were willing to migrate to these cities in the knowledge that the number of firms and the rapid development of the cities lowered the risk of unemployment and increased the probability of high wages. At the same time, firms knew that offering expanded opportunities for employment were likely to be successful because skilled labour flowed into the cities. Similar arguments can be mounted for other specialised cities – Detroit and motor vehicles, Pittsburgh and steel, Seattle and aircraft production. Like all beneficial externality arguments, the whole becomes greater than the sum of the parts, as skill provision increases productivity growth for the whole of industry.<sup>5</sup>

Exploiting external economies of scale is a variation on this argument, applied though to non-labour inputs. As the city expands, it becomes more economic to install large, complementary infrastructure, which in turn lowers costs and increases productivity. As well, it becomes economic for complementary, specialised, input producers to locate in the city, again lowering costs to the key industry or industries.

In such an environment, a third factor emerges – technological spillovers. “Ideas of the trade” permeate industry. No one has said this better than the great English economist Alfred Marshall, at the turn of the last century:

“The mysteries of the trade become no mysteries; but are, as it were, in the air ... Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organisation of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; thus it becomes the source of further new ideas.”<sup>6</sup>

Another source of cumulative causation for growth is based on expectations. If people expect a city to be dynamic, then they will locate there – putative film stars go to Hollywood, financiers to London, all sorts of occupations to New York, and so on – and by locating there, this creates the externalities which creates the dynamism.<sup>7</sup>

Lastly, ideas don’t just come from within. They come from exposure to the outside world, especially through international trade. International trade allows countries to reap the gains from international trade. Trade has the inherent capacity to increase living standards above what they could ever be in its absence. As economists have stressed for nearly 200 years, by producing goods and services on the basis of world

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<sup>5</sup> Alas, these arguments also apply in reverse, as well. Vicious circles of urban (and rural/regional) decline can occur when some sort of shock affects the key economic activity, unless some other source of economic growth can be found, as the history of the cities mentioned above attests.

<sup>6</sup> Alfred Marshall (1961[1890])

<sup>7</sup> Paul Krugman, (1991, pp. 651-57)

prices (which international trade forces countries to do), economies will specialise in the production of those goods and services in which they have a comparative advantage. This means that goods and services are produced where relative productivity is the highest. These efficiency gains mean that through international trade, countries will be able to expand their consumption and investment possibilities beyond what would be possible without it.

However, there are further benefits from international trade. Related to trade openness, which refers to low barriers to international trade, there is another source of ideas which generate productivity growth and the growth of cities. It is what Adelaide economist, Richard Pomfret calls “cosmopolitanism.”<sup>8</sup> Cosmopolitanism is the awareness of *and receptiveness* to new ideas, new processes and new opportunities. This awareness comes from constant contact with foreigners, be they entrepreneurs, technologists, scientists, multinational corporation and trading company executives, artists or intellectuals. Such contact leads not only to trade openness, but also to a culture of ready receptiveness to ideas and methods and a willingness to experiment with new ideas and methods. In short, creativity is unleashed by cosmopolitanism.

#### **1.4. What Factors Contribute to the Ability to Exploit Externalities?**

Are there any economic factors which determine the ability of cities to capture these agglomeration effects? From the above discussion, several factors can be seen to contribute to the dynamism of cities. We have already suggested that trade openness and cosmopolitanism are two such factors. There are three broad theories about the structure of industry and markets in a city which assist in promoting agglomeration effects.

The first theory, associated with the early work of Marshall and Schumpeter (1942) and formalised by Arrow (1962) and Romer (1986), is that the concentration of an industry within a city promotes external spillovers and so leads to the growth of the city. A degree of local monopoly allows the industry externalities to be restricted to firms within the city (at least for a time) and thus allows the city a competitive advantage over other locations. As a result, innovation and growth in the city accelerates.

Porter (1990) agrees that the concentration of a city’s specialisation promotes agglomeration effects, but believes that rather than local monopoly promoting innovation and growth, local competition is the key factor. His examples include the Italian ceramics and jewellery industry in the north of Italy where fierce competition among geographically concentrated small firms leads to rapid innovation and thus growth. For Porter, externalities are maximised in cities with geographically specialised, competitive industries.

Unlike the previous two views, Rosenberg (1963) and Jacobs (1969) argue that geographically close, diversified industries exhibiting a high degree of local competition will maximise technological externalities and knowledge spillovers. The argument is that innovation in an industry often arises from outside that industry, so that cross fertilisation of ideas will be maximised when the capacity of business people to interact

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<sup>8</sup> Richard Pomfret (1994)

with others is the greatest. This will occur, so it is argued, where industries are located in areas that are highly industrially diversified.

These theories effectively cover all possibilities. So the issue must be resolved by empirical evidence. Glaeser et al. (1992) studied 170 US metropolitan areas and believes industrial diversification and local competition, rather than specialisation, is conducive to growth. Spillovers across industries are more important than within industries and competition promotes innovation. This also complements the observation that although cities that tend to specialise in specific industries can achieve remarkable levels of economic development, they are very vulnerable to changes in tastes and technology. Examples include those great British Victorian cities or, in more recent times, Detroit or Pittsburgh. In order to continue to develop, these cities have had to reinvent themselves as their specialisation was affected by technical development and changing tastes.

For example, Hall (1966) argues that once 19th century transport networks had developed sufficiently, production could increasingly be located away from the source of raw materials. However, this spatial distribution of production is not mirrored in the services sector of the economy. Hall attributes the rise of cities to the rise of white collar employment and the need for white collar workers to co-locate in order for the various services within the sector to support each other.

This theory has been recently supported by an extensive, empirical study of US. cities by Glaeser and Kohlhase (2003). They argue that the massive reduction in transport costs in the 20th century (of over 90 per cent) has had exactly these two effects. It has caused city growth to occur in ways unrelated either to natural resources (including those which create natural transport hubs, such as harbours and waterways) or to the industries of cities' hinterlands and that, increasingly, cities exist to enable people to interact. Importantly, both these factors have implications for the growth of cities. Their growth will be increasingly determined not by industrial or transport considerations but by the attractiveness of cities as places to live. They characterise this process as "a flight from natural resources towards consumer preferences". (Glaeser and Kohlhase, 2003, p. 30)

In the 21st century, with the rise of the internet and the increasing ability of service sector businesses to conduct their networking and attain their supporting service infrastructure in cyberspace, it will be problematic whether Hall's model of continuing agglomeration of the service sector in a CBD is still relevant. Glaeser and Kohlhase think not. Congestion costs will vie with urban amenity to create cities with multiple centres rather than core CBD with periphery suburbs.

In summary, comparative advantage is rarely static. To maximise growth opportunities, cities should be diversified with a high degree of local competition and low barriers to international trade while being open to outside ideas. And they must be aware of the amenity needs of their residents.

## 1.5 World Cities

Some cities have come to tower above all others in terms of familiarity and stature. They are economically dominant in their regions, cosmopolitan and often gateways to their regions and, indeed, to the rest of the world. They are “world cities.” The great cities of the world like New York, Chicago, London, Paris, Rome, Beijing, Hong Kong, Shanghai and Tokyo all exist as regional hubs, with their economic importance often spreading beyond the nation state in which they are located. Why have these cities become the world’s city superstars in terms of their economic impact?

Hall (1966) analysed seven “world cities” that have developed to be of global importance. Although many of the predictions made (particularly those related to population growth in developed nations) have since proven false, a number of observations made by Hall are still pertinent.

- World cities are major centres of political power and headquarters of both international and national political organisations.
- Around these centres of international and national political power agglomerate major professional organisations and lobby groups whose main business is with the international and national political organisations.
- World cities are each the nexus of extensive transport networks and are generally ports. They play a crucial role in global trade.
- World cities attract the headquarters of major industrial and trading firms (often multinational), due to their role in world trade. This, in turn, attracts the major banks, finance companies and insurance agencies.
- World cities become places where information is generated and disseminated and thus the headquarters of publishers, radio and television networks.
- Given the economic size of world cities, their leading citizens become very wealthy and develop a demand for luxury goods. These include both consumer goods and “cultural goods” such as performing arts, art galleries, libraries and museums. Further, the wealth generated in world cities means that more resources are available to be devoted to these cultural pursuits.
- World cities develop a critical mass of economic diversity, so they are not dependent on a narrow range of products and can adapt and retain their prominence even when major industries die. Indeed, an interesting point made by Hall is that all the cities he studied have been world cities for centuries. Some, such as Paris and London, have held that status for more than a thousand years. Rome, arguably, has had world city status for 2,500 years.

Perth is not a world city, nor is it likely to become one in the foreseeable future. For Australia, Sydney is the most likely candidate to be (or become) a world city. However, analysis of what has enabled these cities to retain their position over the long term is important for Perth if it is to become, if not a world city, at least a major regional city within the South East Asian and the Indian Ocean regions.

## 1.6 The International Competitiveness of Cities

A city’s international attractiveness is much more complex than just building upon the changing comparative advantage of the city and the region in which it is situated. Arguably, the economic attractiveness of modern cities comes from two factors:

- Productivity



- Standards of living

These two factors are not unrelated. In fact, an increase in the second comes about because of improvements in the first. Both economic theory and empirical evidence show that the fundamental source of improved economic well being is, in general, growth in productivity, particularly labour productivity.<sup>9</sup> Increasing labour productivity is the capacity to produce more goods and services utilising fewer people per unit of output. Over the long run, say 10-20 years, a country achieves international competitiveness and a high level of economic performance relative to other countries when its labour productivity is high relative to other countries. Even if low labour productivity countries can successfully compete with high labour productivity countries, they can only do so by paying lower real wages. If such a country wishes to increase wages and living standards, it can only do so by increasing labour productivity.

We need to clarify what we mean by living standards. It is undoubtedly true that living standards rise when goods and services increase in both number and quality, despite protestations about the evils of economic growth, materialism and consumerism. If there are any doubts about this, consider, for instance, the relative standard of living in Melbourne and Manila. Or Sydney and Surabaya. The absolute level and quality of goods and services does matter! These are measured by the level of GDP per capita, and improvements in living standards are measured by economic growth.

But GDP per capita is not the only thing that matters. Standards of living also include the way we can enjoy these material things. For example, it matters to living standards whether:

- The environment is unpolluted or not;
- The traffic is frustratingly dense or not;
- There is clean, efficient public transport;
- There are public facilities to make our lives easier, healthier or more enjoyable, like public hospitals, schools, libraries, parks and gardens, symphony orchestras, art works and cultural activities;
- There is the social capital present to allow easy participation in leisure, sporting and cultural activities;
- Our cities are safe and relatively free from crime or not;
- There is a small or large gap between those at the top and bottom of the wealth scale;
- Our political system is stable and just and pays close attention to individual liberty.

This list is far from complete. However, all of these factors revolve around not only how many goods and services we have access to, but what *sort* of goods and services are included and how they are distributed. A good standard of living is about how, as a society, we ensure that public goods are provided adequately and that differences in distribution of wealth are not too great. Some features of our standard of living come about by luck, for example, Perth's much vaunted excellent climate. However, most elements of our standard of living come about from how well the fruits of our productivity are utilised.

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<sup>9</sup> Baumol, Blackman and Wolff (1989) and Haque, Irfan ul (1995).

Cities will remain, or become, attractive places in which to live if they have the capacity to continuously improve labour productivity in their economies and provide high standards of living and amenity for its citizens and visitors.

Amenity interacts with productivity advance. A feature of the technical advances of the last 50 or so years (and probably longer) is that they have been “skilled-biased.” This means that, increasingly, a greater proportion of the workforce needs to be skilled through both general and job-specific education and training in order to take advantage of scientific and technical advance. This is measured in several ways, by higher school completion rates, the increasing proportion of employees with post-school qualifications and higher economic returns to education (Borland, 2002). Over 50 per cent of working age Australians have post-school qualifications with an increasing proportion (about 30 per cent of those aged over 15) with university degrees.

To increase labour productivity and therefore the competitiveness of a city, it is necessary to retain and/or attract skilled labour. This will prove easier, the higher is the amenity of the city in terms of the factors which comprise a good standard of living.

## **1.7 Demographic Factors**

The forces determining the structure of cities are not purely economic. Demographic changes also affect the structure of cities and tend to interact with economic factors. This section briefly addresses a limited number of these factors.

In the second half of the 20th century, the role of women in society changed dramatically. In terms of the labour market, women’s participation in the labour force began to increase. Women’s share of the labour force grew from 22.8 per cent in 1954 to 36.3 per cent in 1981 and 44 per cent in 2001 (ABS Australia Year Book).

Accompanying this were social factors which led to changes in family structures and the size of families. The age of first marriage increased from the early twenties in the 1960s to the late twenties by the end of the century. Fertility rates declined to below natural replacement rates and the number of children per household declined dramatically, with an increase in the number of childless households. In addition, more marriages ended in divorce. (See Population and Housing Working Paper.) These trends have radically changed the nature of Australian households. For example, by 2002, a quarter of all households were single person households, up from less than 20 per cent in the 1980s. Only a little over 40 per cent of Australian households now contain more than three people. Single parent households with children now constitute over 23 per cent of all households, whereas even a decade earlier, they accounted for about 16 per cent of households.

A major trend that will affect social and economic outcomes is population ageing. This trend has implications for both the structure of industry, the workforce and, importantly, retirement incomes. Changes in domestic consumption patterns will affect the industrial structure of economies, especially in developed nations.

Elderly people have a different consumption pattern from younger people. They may, for example, consume fewer industrial products and more leisure and cultural services. They may require more medical and personal care. These consumption patterns will

affect the industrial composition of output, leading to an even greater share of services in GDP.

A higher dependency ratio, that is a greater proportion of people no longer working compared to those working, will also put pressure on the economy to support people in retirement (although labour force participation may increase for those of traditional retirement age). Australia and Western Australia appear to be less affected by ageing than most of Europe, where in many countries the ratio of the elderly over 65 years to the working age population will be greater than 50 per cent. Even so, for Australia as a whole, the ratio of those over 65 years to the working age group will double in the next 30 years, from just over 21 per cent in 2001 to over 42 per cent in 2035 and from around 19 per cent to over 38 per cent for Western Australia. In reality, the superannuation and social security burden imposed on the workforce will be greater than the ratio indicates, as not all people in the productive age group are in the labour force (usually less than 80 per cent) and not all in the labour force actually work. In 30 years time, Western Australia may expect fewer than two people employed per one retired.

These social changes will have an affect on the nature of residential development in cities and especially the number and size distribution of dwellings. Household formation is increasing faster than the population and dwelling growth is outstripping population growth.

## **1.8 The Argument So Far**

In summary, firstly, the economies of modern cities are not tied primarily to the national and international economies that lie beyond their borders. Instead, they are predominantly tied to the ability of people within the city to provide services efficiently and well to each other. To the extent to which the economic and social infrastructure together with the business environment is structured to deliver services efficiently and well, then the city will be an attractive place in which to do business and live. It will also be an efficient place from which to export. Secondly, to pursue growth opportunities, a city should adopt policies which promote a diversified industry structure, a high degree of local competition, ensure low barriers to international trade and an atmosphere of being open to outside ideas (“cosmopolitanism”). Thirdly, what will make a city attractive both as a place to live and to do business is our standard of living and how we improve our standard of living by improving our productivity. These are what constitute an “internationally competitive city.”

## 2. Economic and Employment Context of Greater Perth

### 2.1 Industrial Expansion in Perth

Perth is one of the most isolated cities in the world and has never had the necessary conditions to develop significant manufacturing industries other than those serving the immediate needs of its residents, mining and agriculture and some specialised areas, such as, in recent times, niche ship building and maintenance. It was simply cheaper to import all the needed manufactured goods from either the eastern states or overseas. Nevertheless, industrial employment affected the early economic geography of the city.

#### 2.1.1 The Pattern of Development

The beginnings of an industrial employment base in Perth included boot and clothing factories, brickworks, breweries, confectionery works, furniture factories, foundry, gasworks, soap factories, printing and tin ware works, tanneries and a biscuit factory (Scott Ch 21 in Gentilli, 1979).

By 1912, industry was mainly concentrated in Perth, its nearby suburbs, Subiaco, Fremantle and North Fremantle and Guildford-Midland Junction –the three nodes of early settlement. With the exception of Fremantle, there was virtually no manufacturing south of the river. The docks, river and rail transport, the location of the main shopping centre and the distribution of population appear to have been the main determinants of this pattern, with raw materials and water supplies contributing in a few cases. The outer fringe was mainly residential (Scott in Gentilli 1979).

After the end of World War II, and particularly after the mid-1950s, Perth increasingly experienced suburban expansion, a process aided by high levels of private car ownership. Decentralisation of the workforce and improvements in transport made it possible for manufacturing to establish in the suburbs. Many firms took advantage of relatively cheap land to build spacious, single-storey plants in suburban locations where parking, access problems and traffic congestion were minimal. The former close ties of manufacturing with near-central and/or rail-side locations were loosened.

Major industrial estates at Kwinana, Welshpool and Kewdale were major post-war additions which contributed to the growth of manufacturing south of the river. The first and most important was the establishment of the Kwinana industrial area on Cockburn Sound. Since the 1950s, a number of major industrial plants have been located there including an oil refinery, steel-rolling mill with a blast furnace, alumina refinery, oil/gas-fired power station and nickel refinery. This industrial development was supported by standardisation of the east-west rail gauge linking Perth with eastern Australia.

The second development affecting the south, also linked with rail standardisation, was in 1968 when the Kewdale Freight Terminal was developed adjacent to the Welshpool industrial area, replacing the former railway yards near Perth.

However, as Perth's population grew through the post-World War II era, the predominant employment growth occurred not in manufacturing but in retail and wholesale trade, business services, health, education, community and personal

services and in public administration. Increasingly it was these services sectors, concentrated around the Perth metropolitan area, that provided jobs.

A key feature of the increasingly dominant service industries is that jobs no longer need to be confined to specialist zones but can be fitted anywhere into the urban fabric, including near or in residential areas, without causing harm to urban amenity. The changing industrial composition of output towards the service sectors, therefore, provides new challenges to urban planners to recognise these changes so that development continues without damaging urban amenity.

### **2.1.2 Evolution of Retailing**

Before 1950, retailing was heavily concentrated in the Perth CBD with smaller shopping nodes and strip centres concentrated in the inner suburbs at Claremont, Subiaco, Victoria Park and Fremantle. Corner shops provided for daily needs. Urban development and the distribution of shopping facilities were heavily tied to tram and railway lines centred on the CBD, Fremantle and the Swan River (Neilson Associates, 1987).

With increasing motor vehicle ownership and major improvements to arterial roads, suburban growth was much less tied to the public transport system and areas between the public transport corridors began to fill quickly. Commensurate growth in the spread of retail facilities began to occur with the development of larger retail nodes at major intersections in the middle suburbs such as Mt Lawley, Cannington and Morley (Ratio Consultants, 2000).

Nationwide economic prosperity in the 1960s and early 1970s, reinforced by the mineral boom in WA, much higher car ownership and an annual population growth rate exceeding three per cent, lead to very rapid outward expansion to the north and south of Perth. This triggered the development of a number of department stores in the suburbs and the emergence of large, free-standing, integrated shopping centres as the dominant retail force. The free-standing centres were well suited to developing suburbs where large sites with ample car parking space were available (Ratio Consultants, 2000).

By the late 1980s, the pace of retail development had slowed with reduced population growth (Ratio Consultants, 2000). The relative position of the CBD and inner suburban shopping areas continued to decline as people shifted to the outer suburbs, congestion levels increased and the inner sectors' populations aged and declined. Retail suburbanisation continued with outward population growth.

### **2.1.3 Office Development and the Perth Central Area**

Office development, unlike retailing, has remained heavily centralised in the CBD and in adjacent suburbs such as West Perth, although this is changing as population shifts outward. The growth of two and three-storey offices lining the western approaches to the CBD and the much larger CBD office towers that dominate Perth's skyline are the obvious physical results.

While significant but much smaller-scale development occurred in suburban centres and semi-industrial areas (often in combination with showrooms and warehouses),

centralism remained a feature of dynamic office growth until the mid-1980s (Neilson Associates, 1987).

Throughout the 1990s, however, office growth in the City of Perth slowed. It experienced a notable downturn between 1990 and 1993 when almost 7,500 jobs were lost. On the other hand, strategic, regional and other centres experienced employment growth. Subsequently, from the mid 1990s to the present, office employment in the City of Perth experienced renewed growth along with other centres in the middle and outer regions and the City of Perth maintains its dominant position within the metropolitan region in terms of absolute numbers of office jobs (MfP 2000 and DPI 2003). Nevertheless, its share of office jobs is declining. Strategic and other commercial centres gained office jobs in the last intercensal period<sup>10</sup>. Moreover, since 1991 more and more office jobs have been located in selected industrial zones of the inner and middle sectors, such as Osborne Park and Balcatta, and in outer areas, such as Joondalup (MfP 1999 and DPI 2003).

#### **2.1.4 Services and Small Business Locations**

Small business and service industries are providing the bulk of job growth in Australia. And Perth is very much part of this trend. The growth of the small business and service sectors (not all of which are small or even medium sized businesses) require new thinking in terms of urban planning. Kemp (1997) discusses the need for suburban locations in regional centres and residential zones to be made available for the establishment of service industries. To some extent, the success of this concept depends on allowing for a much greater degree of mixed land uses and more flexible urban planning.

### **2.2 Emerging Industries**

Growth in new industry, encompassing high technology, information processing and research and development, was a major economic driver in many developed countries throughout the 1990s. Within metropolitan Perth, such industries are concentrated in East Perth, Coogee Biotechnology Park, Curtin-Bentley Technology Park and the City of Perth. Herdsman Business Park has accommodated new technology companies and communications industries such as newspaper offices (SGS 2000).

Although important for the Perth metropolitan economy, these modern industries do not act as a major driving force at present. Economic growth of Western Australia and Perth still depends on the prosperity of the State's traditional primary sector, its burgeoning service sectors and increasingly from export industries which are part of the service sector, such as tourism and education, with health as a major prospect.

#### **2.2.1 Tourism**

Tourism is a growing industry in the Western Australian economy. Only 17 per cent of tourists, who bring money to Western Australia and contribute to the State's economy, come from other States and overseas. The vast majority (83 per cent) of the State's tourists are intrastate visitors and because Perth accounts for most of WA's population, a large proportion of the State's tourists are from Perth. Intrastate tourists do not add to

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<sup>10</sup> Note that Commercial Survey 2001 has not yet been completed and there is no data for 2001-02 for most south of the river commercial centres. Nevertheless, ABS JtW 2001 data indicates office employment growth between 1996 and 2001 in a number of commercial centres.

the State's economy in total as the source of their expenditure originates in the State, but they make a substantial contribution to regional Western Australia. An example is the remarkable growth over the last 30 years of tourism in the South-West, particularly around Busselton and Margaret River.

The vast majority of overseas and interstate tourists visit Perth because it is the gateway to the rest of the State. Over the past 20 years, 97 per cent of international visitors to Western Australia spent time in Perth.

While the vast majority of international tourists to Western Australia visit Perth, unfortunately they tend to stay for a short period (less than seven days). Interestingly, Perth Airport handles a larger proportion of the nation's international air traffic than would be expected on the basis of WA's population. Perth's capacity to market itself as an entry or exit point for international visitors to Australia represents an important tourism market with the potential to grow in importance to the State's economy (O'Connor, 1999). Encouraging international visitors to spend time in Perth and other parts of the State will need to be reinforced if Western Australia's tourism industry is to grow further.

### **2.2.3 International Education**

International education is an example of a previously non-traded service sector that is increasingly becoming an important State export earner. It is also an example of how the comparative advantage of the nation and the State is evolving. In 1980, the number of international students in Perth was very small and most were funded by various foreign aid programmes. However, over the last 20 years, there has been a remarkable increase in the number of international students studying in Australia and Western Australia. In 2002, there were over 20,000 fee-paying, international students studying at Western Australia's universities (DEST, 2003a). In addition, many other students come to Western Australia to study in English language (ELICOS) programmes, secondary schools and university preparatory colleges. Total international students in Western Australia number about 25,000, of which about 20,000 live in the State and 5,000 study offshore (DEST, 2003b). Cabalu et al. estimated that in 1997, Curtin University alone, with an enrolment then of 5,180 international students (now, over 11,000), contributed about \$74 million to State export revenue by paying for educational services and through visits from their family and friends. Today, the value of export revenue from fee-paying students and their friends and families is estimated to be more than \$300 million per year - about ten times the contribution of the State's wine industry to exports (ABS cat. no. 5442.0).

## **2.3 Population**

### **2.3.1 Greater Perth Region**

Population trends are important in understanding employment patterns in Greater Perth. Metropolitan Perth currently (March 2003) has an estimated resident population of over 1.4 million. In recent times, Perth has been the third-fastest growing capital city in Australia (after Brisbane and Darwin), with a population increase of 7.9 per cent between 1996 and 2001, when its population reached 1,393,000 (ABS, 2003). Perth's growth rate, however, is slowing. Between 1986 and 1991, its population grew by 13.2 per cent and between 1991 and 1996 by 8.9 per cent.

The distribution of that growth has been consistent with the outward expansion of the metropolitan area. Since 1971, outer sectors have grown fastest while the inner and middle sectors have declined in terms of their shares of Perth's population. The population of the outer sectors now exceeds the combined total of the inner and middle sectors, as shown in **Table 2.1**. Most of the future growth of Perth will also occur in outer sectors while redevelopment of some parts of inner and middle sectors will bring insufficient growth to arrest the fall in their population shares.

**Table 2.1: Actual and Projected Population Changes in the Inner, Middle and Outer Sectors of Metropolitan Perth, 000s (with % shares), 1971 - 2031**

Region	1971	1981	1991	2001	2011	2021	2031
Inner	223.3	200.3	183.9	192.6	245.6	264.5	279.4
(% share)	(31.8)	(21.7)	(15.5)	(13.8)	(15.0)	(14.1)	(13.4)
Middle	321.7	367.1	427.6	452.1	490.0	517.0	553.5
(% share)	(45.7)	(39.8)	(36.0)	(32.4)	(29.9)	(27.6)	(26.6)
Outer	158.2	354.6	577.3	752.3	904.5	1,088.5	1,245.1
(% share)	(22.5)	(38.5)	(48.6)	(53.9)	(55.1)	(58.2)	(59.9)
Total	703.2	922.0	1,188.8	1,397.0	1,640.1	1,870.0	2,078.0
Growth ('000s)	228.1	218.8	266.8	208.2	243.1	229.9	208.0
Growth in %	48.0	31.1	29.0	17.5	17.4	14.0	11.1

*Source ABS ERP (Estimated Resident Population) and preliminary ERP for 2001 and DPI medium population scenario (2011 to 2031). Note: Inner and Middle Sectors boundaries somewhat changed between 1971 and 2001; therefore historical population figures are not 100% comparable. Note 2: preliminary figures for 2001 are used in tables to maintain consistency with other papers in this series which were completed before the release of the final ABS ERP for 2001.*

The four sub-regions of the Greater Perth area (**Table 2.2**) contain over 80 per cent of Western Australia's population. Metropolitan Perth has just over 73 per cent, while Peel and Greater Bunbury each has close to 3.5 per cent and Avon Arc 1.4 per cent of the State's population. The combined population of Peel, Greater Bunbury and Avon Arc (note that all of Gingin Shire is included in Greater Perth) represent almost one third of WA's non-metropolitan population (ABS, 2001). Metropolitan Perth, Peel and Greater Bunbury create the South-West Urban System (SWUS).

**Table 2.2: Study Area Population in 2001 and its Share of Western Australia**

Region	Population	% of WA
Metropolitan Perth	1,397,050	73.3
Peel	63,560	3.3
Greater Bunbury	65,260	3.4
Avon Arc	27,410	1.4
Total Study Area	1,553,280	81.5
Total WA	1,906,110	100.0

*Source: ABS ERP 2001p (cat.3218.0). Note: Final ABS ERP 2001 for metropolitan Perth is 1,393,000.*

The dominance of Greater Perth as WA's primary population agglomeration is expected to increase. The Western Australian Planning Commission anticipates most of the



State's population growth for the next 30 years, based on current trends, will occur along the Perth-Bunbury axis (WAPC, 1999).

**Table 2.3** shows the historical and projected population of Greater Perth by its sub-regions. The dominance of metropolitan Perth is obvious and if present trends continue that dominance will further increase with Peel becoming the extension of Perth's South-West Corridor.

**Table 2.3: Historical and Projected Population of Greater Perth Regions in '000s.**

Region	1971	1981	1991	2001p	2011	2021	2031
Metro Perth	703.2	922.0	1188.8	1397.0	1640.1	1869.9	2078.0
(% share)	(92.3)	(92.1)	(91.2)	(89.9)	(88.9)	(87.8)	(87.1)
Peel	12.0	22.6	41.0	63.6	91.3	118.1	141.0
(% share)	(1.6)	(2.3)	(3.1)	(4.1)	(4.9)	(5.5)	(5.9)
Greater Bunbury	28.5	37.3	51.3	65.3	77.9	90.4	101.6
(% share)	(3.7)	(3.7)	(3.9)	(4.2)	(4.2)	(4.2)	(4.3)
Avon Arc	20.1	19.0	22.9	27.4	36.2	50.3	66.0
(% share)	(2.6)	(1.9)	(1.8)	(1.8)	(2.0)	(2.4)	(2.8)
Greater Perth	762.2	1000.9	1304.0	1553.3	1845.5	2128.7	2386.6
WA	1030.0	1300.6	1636.1	1906.1	2264.8	2602.2	2907.7

Source: ABS ERP 1971 to 2001 and DPI Medium population scenario. Note: p = preliminary.

**Peel**, with the City of Mandurah and its eastern suburbs in the Shire of Murray, is a natural extension of the South-West Corridor of metropolitan Perth. It has the second highest population growth rate in Western Australia after Vasse in the South-West. The Shire of Waroona, the third and southernmost in the region, is a rural gap between the urban conglomeration of metropolitan Perth-Mandurah and Greater Bunbury to the south.

Peel's rapid population growth has largely been determined by immigration, with Mandurah a major retirement destination. Natural increase in the region accounted for only 10.6 per cent of overall growth in 1996 and 15.7 per cent in 2001.

Metropolitan Perth is the primary source of migrants to the Peel Region. The 1999 Department of Commerce and Trade survey found that 41 per cent of people who had moved to Peel came from Perth, 21 per cent were from other parts of Western Australia and 29 per cent from interstate and overseas. There was also movement within the region, with nine per cent of respondents indicating they relocated within Peel (DCT, 1999).

The survey results suggest that the primary reasons for moving to Peel are:

- Employment 28%
- Family/Marriage 25%
- Lifestyle 16%
- Other (mainly cheap housing in coastal locations) 31%

**Greater Bunbury** comprises four local government areas, Bunbury City, Harvey, Dardanup and Capel. Most of Bunbury's urban growth occurs outside its city

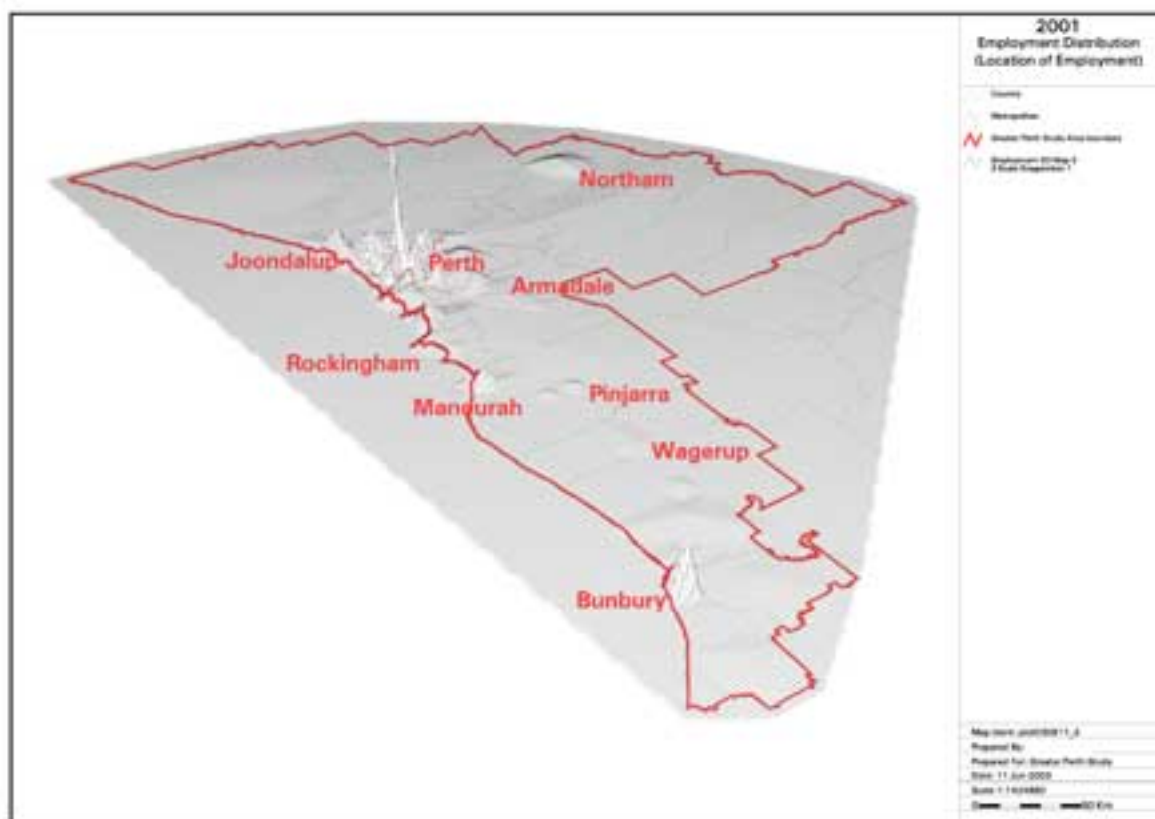
boundaries in the Shires of Harvey (Australind), Dardanup (Eaton) and Capel (Gelorup and Stratton). In these larger boundaries, urban Bunbury is the second largest urban centre in Western Australia with a population of just over 50,000.

The Department of Commerce and Trade's survey found that most people who migrate to the South-West are motivated by for three key reasons: employment, family/marriage or lifestyle (DCT, 1999).

**Avon Arc** comprises shires surrounding metropolitan Perth to the north and east. It is the smallest of the four Greater Perth regions and has a number of small urban centres with Northam the largest. Its population growth rates are the lowest in Greater Perth. The coastal part of the Shire of Gingin can be considered an extension of the North-West Corridor of Perth but, unlike Peel, it consists of only a few small holiday and retirement settlements, with Lancelin and Guilderton the largest.

## 2.4 Employment Distribution and the Labour Force

Current distribution of employment in Greater Perth (based on ABS-DPI Journey to Work 2001) is shown on **Map 1**. Job distribution is very uneven. The highest concentration is, as expected, in the City of Perth and the inner sector. Employment density gradually falls towards the outer sectors with some notable pockets of employment in the corridors, especially in the north and the south. Outside the metropolitan region, the only major employment concentrations occur in Bunbury City and surrounding areas and Mandurah City.



**Map 1 – 2001 Employment Distribution**

### 2.4.1 Metropolitan Perth

Distribution of the resident labour force tends to follow the distribution of Perth's population, but varies with age and family structure. Newer areas have higher labour force participation rates than areas where older people tend to be more densely located. Newer areas also tend to have more households with dependent children (ABS cat. no 2030.5)

Economic activities may be divided into four major groups in relation to location:

- Higher order services, such as finance and key business services, which usually favour central area locations
- Other services, such as retail, education and health, community and leisure services, which largely follow population distribution
- Industries which have specific infrastructure and land use requirements, such as manufacturing, storage and transport. These industries require direct access to various infrastructure such as main roads, railway, ports, major utilities, industrial sewerage and often larger areas of land. They may also adversely affect residential amenity.

Employment distribution is shown in **Table 2.4** and follows the described previously population growth pattern of Perth. Importantly, the pattern of employment is changing away from the City and inner regions towards the middle and outer regions. The City of Perth's share of jobs has more than halved and the inner regions' share has dropped by a third since the early 1960s. The share of jobs has shifted to the middle and outer regions, with the former doubling its share and the latter nearly tripling its share over the same period.

**Table 2.4: Employment Distribution in Metropolitan Perth, Numbers (000s) and shares 1961 – 2001**

Region	1961	1971	1981	1991	2001
City of Perth	66.3 (39.9)	88.8 (31.2)	91.4 (24.4)	97.3 (20.7)	104.4 (18.1)
Inner North	43.5 (26.1)	61.8 (21.7)	71.5 (19.1)	77.9 (16.6)	88.7 (15.3)
Inner South	9.1 (5.5)	19.8 (6.9)	23.0 (6.1)	29.3 (6.2)	30.8 (5.3)
Middle North	13.5 (8.1)	36.1 (12.7)	56.5 (15.1)	73.3 (15.6)	85.2 (14.7)
Middle South	13.4 (8.1)	38.3 (13.4)	63.3 (16.9)	82.2 (17.5)	99.1 (17.1)
Eastern	12.0 (7.2)	17.6 (6.2)	23.8 (6.4)	32.8 (7.0)	47.8 (8.3)
North-West	0.5 (0.3)	1.5 (0.5)	10.6 (2.8)	25.7 (5.5)	48.1 (8.3)
South-East	3.2 (1.9)	6.8 (2.4)	13.9 (3.7)	22.5 (4.8)	28.2 (4.9)
South-West	4.7 (2.8)	14.2 (5.0)	20.6 (5.5)	28.6 (6.1)	46.0 (7.9)
<b>Total</b>	<b>166,181</b>	<b>284,872</b>	<b>374,547</b>	<b>469,587</b>	<b>578,341</b>

*Source: ABS-DPI Journey to Work 2001 preliminary. Note: No Fixed Workplace excluded (shares may not add to 100 per cent due to rounding.)*

This pattern follows the rise in the economic importance of the service industries, many of which do not require central city locations, but tend to follow consumers and population distribution trends. As the industrial composition of output continues to change in favour of service industries, the distribution of jobs is likely to become more

and more decentralised. This will provide challenges to urban planning in terms of the mix of land use to incorporate these changing employment patterns with residential development in the middle and outer regions while maintaining urban amenity. Cafes and restaurants, entertainment, health, recreation or leisure services do not, for example, necessarily conflict with residential amenity and, indeed, may even improve it. Consumer preferences both for housing and employment will interact to provide these challenges to urban planners as service industries locate in Perth's middle and outer regions.

Metropolitan Perth has a more diverse economy than regional Western Australia (**Table 2.5**) and other Greater Perth regions, as shown by the distribution of employment by industry sector. Compared with country regions, metropolitan Perth has substantially larger proportions of people employed in:

- Finance, insurance, property and business services
- Education, health and other community services
- Communication
- Manufacturing
- Retail and wholesale trade.

**Table 2.5: Industrial Structure of Metropolitan Perth and Country WA (%)**

Industry	Metropolitan Perth	Country WA
Primary	3.14	21.00
Manufacturing	11.63	8.70
Utility	0.86	0.86
Construction	5.74	7.54
Trade & Entertainment	31.71	27.56
Transport	4.08	4.24
Communications	1.38	0.78
Finance, Business Services.	14.52	6.97
Public Administration & Defence	4.43	4.73
Community Services	22.52	17.62
Employment total	578,150	240,280

*Source: ABS-DPI Journey to Work 2001 preliminary. Note: No Fixed Workplace excluded.*

Education levels in the Western Australian labour force have improved considerably during the past 20 years. In 1986, only 15 per cent of the population (15+ years) with a qualification had a bachelor degree or higher. By 2001, this figure had more than doubled to over 33 per cent. Similarly, the proportion of qualified people with undergraduate or associate diplomas increased from 11.5 per cent in 1986 to over 20 per cent in 2001. The proportion of people with only basic vocational qualifications dropped from 25.5 per cent to 10 per cent (WAPC, 1999 and ABS Census 2001). Nevertheless, in 2001 over 45 per cent of Western Australian residents aged 15 plus did not have post-school qualifications (ABS Census 2001). These figures reflect the general skill bias of technical change, especially over the last thirty or so years. The skill intensity of industry is increasing.

Educational levels in metropolitan Perth are higher than country averages (ABS Census 2001). This reflects the nature of jobs available within Perth, while country regions have

relatively fewer jobs requiring tertiary degrees and more requiring vocational qualifications.

#### 2.4.2 Non-Metropolitan Greater Perth

**Table 2.6** shows current employment distribution in Greater Perth and its industrial structure. As expected, metropolitan Perth is the major employer for Perth residents. But it is also the major employer of many Peel and Avon Arc residents as well. Greater Bunbury appears to be the most self-contained country region of Greater Perth. About 1,500 Greater Bunbury residents work outside Greater Bunbury, mainly in Worsley and Muja (1,180) and Wagerup (270), located in the adjacent Shires of Collie and Waroona (ABS-DPI Journey to Work 2001).

The industrial structure of employment clearly shows that Avon Arc's economy is agriculture-based while Peel's and Greater Bunbury's economies are more diversified and similar to Perth.

Over 50 per cent of Peel's employment is in trade, entertainment and manufacturing industries, emphasising the region as a major retirement and recreation centre as well as having a significant industrial base developed around its mineral resources.

Greater Bunbury has an equally strong industrial base developed around its mineral and energy resources, although most of it is located outside the region in Collie. Most Worsley alumina refinery and Muja power station employees live in Greater Bunbury with greater proximity to a diversified service base and the coast, rather than in Collie. The same is true of the employees of inland Pinjarra and Wagerup alumina refineries - many employees of these refineries live in coastal Mandurah.

Analysis of data in **Table 2.6** shows some important differences in the industrial structures of Perth and country regions. Country regions have significantly less employment in higher order services such as finance, property and business services, public administration and defence and even community services and less employment in communications. Also, the structure of manufacturing employment in Perth is much more diversified than the country regions where almost all of it is related to processing primary products.

Mining and mineral processing is by far the most important industry in the **Peel** region<sup>11</sup>. Mining accounts for approximately 77 per cent of the total value of the regional economy and its output was approximately \$2.4 billion in the 1997-98 financial year (PDC, 1999b).

Bauxite extraction and alumina production at two Alcoa refineries in Pinjarra and Wagerup are Peel's main mining-industrial activities. It is estimated that the region

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<sup>11</sup> All figures relating to resources and activities in the Peel Region are for the Peel Development Commission jurisdiction (also includes Boddington Shire) not just the Peel sub-region of the SWUS.

Table 2.6: Industrial Structure of Employment in Greater Perth in 2001

Industry / Region	Peel		Greater Bunbury		Avon Arc		Perth		Greater Perth	
	('000s)	(%)	('000s)	(%)	('000s)	(%)	('000s)	(%)	('000s)	(%)
Primary	1.2	6.7	2.3	8.8	2.1	23.7	15.2	2.5	20.8	3.1
Manufacturing	2.4	13.5	3.2	12.5	0.6	6.9	70.4	11.6	76.6	11.6
Utilities	0.1	0.4	0.3	1.1	0.1	1.2	5.2	0.9	5.6	0.9
Construction	1.2	6.8	1.9	7.3	0.6	6.6	34.1	5.6	37.8	5.7
Trade & Entertainment	6.5	36.8	8.4	32.5	2.2	24.6	191.8	31.6	208.9	31.7
Transport	0.4	2.1	1.0	3.9	0.4	4.2	25.0	4.1	26.8	4.1
Communications	0.1	0.7	0.2	0.8	0.1	1.3	8.7	1.4	9.1	1.4
Finance, Business Services	1.5	8.5	2.3	9.0	0.5	6.0	91.1	15.0	95.5	14.5
Public Admin. & Defence	0.6	3.2	1.0	3.9	0.5	5.8	27.0	4.5	29.1	4.4
Community Services	3.8	21.2	5.2	20.2	1.8	19.8	137.6	22.7	148.3	22.5
Total employment	17.7	100.0	25.8	100.0	8.9	100.0	606.1	100.0	658.5	100.0
Residents in employment	21.1		27.8		10.4		612.5		671.7	

Source: ABS-DPI Journey to Work 2001 preliminary.

produces 20 per cent of the world's alumina, representing around \$2.3 billion in 1997-98. Around 90 per cent of the alumina produced is exported overseas.

Mineral sands extraction and processing is Peel's other significant mining activity. A mineral sands mine operates near the township of Waroona and a processing plant is expected to be built near Pinjarra in the next couple of years. In 1997-98, mineral sands production was valued at around \$28 million (PDC, 1999a).

Nevertheless, given its close relationship to Perth, trade and entertainment, community services and finance and business services, account for about two-thirds of all jobs in Peel, with manufacturing contributing another 13.5 per cent of employment.

**Greater Bunbury** has the most developed economic base of the three country regions of Greater Perth, with mining and mineral processing the most important industry in the region. However, as in the rest of Greater Perth, the largest employer of residents is trade and entertainment and the service industries, together contributing about two-thirds of all jobs.

Most of the mineral production and power generation occurs outside Greater Bunbury in the adjacent Shire of Collie. Nevertheless, 90 per cent of Worsley Alumina refinery employees live in Greater Bunbury.

The Shire of Capel (which forms part of Greater Bunbury) has been the centre of the region's mineral sands mining and processing activity since the 1950s. The value of mineral sands production in the region has grown rapidly during the past ten years and now contributes more than \$300 million per year to the Gross Regional Product (SWDC, 1999b).

Some basic processing of mineral sands occurs in Bunbury itself and a titanium dioxide manufacturing plant is located at the Kemerton Industrial Park, 17 kilometres north-east of the city. The plant produces around 79,000 tonnes of titanium dioxide pigment from mineral sands products. This is valued at around \$200 million, illustrating the significance of downstream processing of mineral sands to the region.

Furthermore, a proposal to develop an \$18.5 million pig iron plant in Capel and process iron oxide waste from other mineral sands processing operations (SWDC, 1999b) appears to indicate some lateral expansion of the industry.

Bunbury also has a number of manufacturing plants. These include wood product manufacturing, food and beverage production, metal products, silicon metal, particleboard and medium density fibreboard, machinery and equipment, printed/recorded media, petroleum/chemicals, textiles, clothing and footwear (SWDC).

Country regions of Greater Perth have a diverse agricultural sector which makes an important contribution to the regional economy. It consists of crop production, fruit and vegetable production mainly for the Perth market, viticulture and wine production, dairy and beef cattle grazing.

Forestry is a major industry in Peel, Greater Bunbury and Avon Arc. The majority of revenue comes from harvesting native hardwood species such as jarrah and karri. Logs are processed for solid timber products and woodchips. The timber products are largely consumed by the domestic market but woodchips are primarily exported via the Port of Bunbury to the paper production industry in Japan (SWDC, 1999b).

Tourism is another important industry of country regions of Greater Perth. The wide variety of attractions and activities available in the region, combined with its proximity to Perth compared with other regional areas of the State, make the South-West a key destination for local, interstate and overseas visitors.

In 1998, 1.33 million tourists visited the South-West Region (SWDC) alone and the industry generated well over \$600 million in domestic tourism expenditure in all three country regions of Greater Perth. The tourism industry is expected to grow considerably in the future. In particular, the development of facilities for niche tourism markets is expected to be a key factor in the development of the industry and enhance its contribution to the regional economy. Peel and Avon Arc also attract many weekend tourists from Perth, many of whom do not stay overnight but make day trips.

Inadequate provision of services - especially in post-secondary education, health, other public sector industries as well as finance, has often been emphasised by country residents as a disadvantage. It is also one of the main reasons why country residents move to Perth for employment opportunities, especially if children intend to obtain tertiary education (SGS 2000).

Education levels in the country regions of Greater Perth are notably lower than metropolitan Perth. For example, over 60 per cent of persons aged 15 plus living in the South West region have no post-school qualifications (just under 50 per cent in metropolitan Perth) while only 24 per cent of those having qualifications have a bachelor degree or higher, compared with over 37 per cent for Perth. The proportions are worse in Peel and Avon Arc. Country areas, especially Greater Bunbury, have a relatively high proportion of people with vocational qualifications.

This qualification structure reflects the nature of jobs available within the metropolitan region compared with country regions, which have significantly fewer jobs requiring tertiary degrees and more requiring vocational qualifications. With the growing importance of modern industries for future growth, industrial and qualification structure indicate a strong disadvantage in country regions.



## **3. Evolution of Planning for Perth**

### **3.1 Evolution of Planning Policy**

The South West Urban System Economic Study (SGS 2000) presented a detailed review of the evolution of planning in metropolitan Perth. This paper, however, reviews and analyses only the most important developments in planning in response to socio-economic changes.

#### **3.1.1 Stephenson-Hepburn Plan (1955)**

The Stephenson-Hepburn Plan (1955) was the first and most comprehensive attempt to plan the distribution of activities within the Perth Metropolitan Region. It has shaped metropolitan Perth for the past 50 years and, as a consequence of its adoption (in broad sweep, if not in detail), it is likely to do so for many decades to come.

Stephenson and Hepburn recognised that planning measures could influence the creation of employment opportunities in terms of distribution, location and scale (Industrial Land Use Survey 1997, MfP 1999). They allocated land for industry in relation to projected residential population in geographical sectors. Industrial zones and associated transport infrastructure were planned accordingly.

Manufacturing, it was assumed, would be a major driver of Perth's economy and employment for the next few decades. A central feature of the plan was to identify and zone land for future manufacturing. About 4,500ha of industrial land was allocated, including a tract in Kwinana, to allow for large-scale industry with extensive land requirements.

In addition to supplying industrial land, the plan chose a corridor concept for the future urban form of metropolitan Perth. Green areas between urban corridors would cater for the recreational needs of residents and supply adequate land for a horticulture industry producing for the local market. Corridors were to function as self-contained urban areas with manufacturing-based zones as major employment centres. Multi-purpose centres were recommended, integrating retail, business and community facilities, to cater for the future needs of the local population. Perth's Central Area was to provide higher order services and concentrate on State capital functions.

#### **3.1.2 Metropolitan Region Scheme (1963)**

Recommendations in the Stephenson-Hepburn Plan gained statutory force in 1963 under the Metropolitan Region Scheme (MRS). Only two major changes from the 1955 recommendations were made - the northern industrial area was reduced because a proposed northern suburbs railway was deleted and the area designated as Kwinana was substantially increased.

The MRS provided for the establishment of the Industrial Lands Development Agency (ILDA) and acquisition of land for the Kewdale and Welshpool industrial areas.

By 1963, contrary to Stephenson's expectations, it was clear that Perth's economy was not likely to be based on manufacturing. Suburban shopping centres were established. Service sector employment was rapidly increasing, but remained concentrated in the CBD and, to a lesser extent, in Fremantle and West Perth, where lower rents and ample parking attracted some office developments.

### **3.1.3 Corridor Plan (1970)**

Strategic metropolitan planning policy underwent a major review culminating in the Corridor Plan for Perth (MRDA 1970). The plan recognised that manufacturing would not provide the level of employment previously expected and that future growth would come from the tertiary sector.

Strengthening the Perth Central Area became a key planning element. The growth of sub-regional centres at Fremantle, Joondalup, Midland, Rockingham and Armadale was promoted to create "cities in the suburbs". Corridors of urban development were to be reinforced north-west, south-east and south-west of the existing urban area, still separated by wedges of rural land for agricultural, rural, institutional or other special uses.

### **3.1.4 Review of the Corridor Plan, 1987**

In 1987, a review of the Corridor Plan was undertaken and resulted in the Preferred Strategy. The review findings were presented in Planning for the Future of the Perth Metropolitan Region (SPC, 1987) and supporting technical papers. Of particular note was Working Paper No. 13, entitled Perth Commercial Sector Study and a Commercial Centres Policy (Neilson Associates, 1987).

This noted that a number of industrial areas had become sites for trade centres, showrooms, warehouses and business parks, pointing to a trend of greater mixed uses in industrial zones. This trend was reflected in large urban centres elsewhere in Australia and other developed countries.

Consequently, a new approach to zoning was proposed. It was more performance-oriented and placed less emphasis on segregation between light industrial, commercial and business uses. It also saw a need for outer fringe locations to accommodate larger-scale enterprises needing good access and minimum conflict with adjoining land uses. Seven key sites with a total of 2,700 acres were identified for industrial expansion.

This was the first critical review of the Corridor Plan. It noted that sub-regional centres had not developed in the manner expected. The central area had continued to attract the bulk of tertiary sector growth, with office development spilling over to areas like West Perth and retail development moving to middle suburbs. As a result, population flowed to an intermediate group of unplanned centres that were not well-served by public transport or retailing. There was a growing intrusion of retail and commercial development into industrial and residential zones, pushing industry further out. The Corridor Plan forecasts for growth in secondary industry had failed to materialise.

In addition, the growth in the tertiary industry workforce had not been anticipated and therefore was not properly planned for. There was a continuing decline in

manufacturing and expansion of the services sector, with sustained employment growth in the inner and middle suburbs as a result of the dispersal of office and service functions from the central area to adjoining suburbs.

Employment growth in the outer suburbs had not kept pace with overall population growth, with especially large disparities in the South-East and North-West Corridors.

The solution proposed in the 1987 Review was to pursue the following principles:

1. Locate new employment opportunities in the middle suburbs and then progressively to the outer suburbs
2. Maintain the central area as the region's major employment centre but acknowledge its declining share of the region's employment
3. Encourage office and service sector employment growth in an expanded range of major regional centres. Restrict such growth on the periphery of the central area
4. Promote mixed use employment zones in association with centres or in freestanding locations
5. Allocate additional industrial zones

### **3.1.5 Metroplan (1990)**

Work undertaken for the 1987 review led to the publication of Metroplan (DPUD 1990) in 1990, which became the current planning policy guiding the overall development of the Perth Metropolitan Region. The rapidly expanding services sector was recognised. In regard to land for employment, Metroplan's main thrust was to create a hierarchy of centres for commercial and business activities. The hierarchy was expected to function as a series of interconnected nodes of employment which would also act as a focus for recreation and cultural activities.

In general terms and with minor exceptions, Metroplan translated and replaced the Corridor Plan through the 1987 review recommendations. Employment was provided for in strategic industrial areas, mixed business areas, an expanded range of centres, the central area and office and technology parks.

The established metropolitan structure based on corridors would remain, with urban expansion accommodated by widening the three established urban corridors to the north-west, south-west and south-east and the development of a new North-East Corridor, north of Midland. A key principle was to achieve a balanced distribution of employment locations, particularly the encouragement of service employment in the middle suburbs where accessibility could be maintained to the suburban core and urban growth corridors (MfP, 2000a).

A key initiative of Metroplan was to establish the Metropolitan Development Programme. This programme provides a mechanism for co-ordinating the provision of services to new residential developments.

An extension of this initiative to include employment planning has been discussed in policy circles, with a suggestion that an industrial development programme will

result. In the past, there has been no formal co-ordination between housing and employment growth. In the assessment of new residential subdivisions on the urban fringe, there has been recent discussion in the context of the Liveable Neighbourhoods (WAPC 2000c) initiative about introducing requirements for employment targets to be met.

### **3.2 Unfulfilled Expectations - Market Response to Planning Policy**

Almost 50 years after the first plan for metropolitan Perth was presented by Stephenson and Hepburn, the important question is whether the corridor concept was the best planning option for the city and whether mistakes, such as the expectation of manufacturing becoming a main economic driver and employer, could have been avoided.

Firstly, technological trends were indicating as early as the 1930s that the importance of manufacturing to employment was likely to decline over time due to technical change and mechanisation of manufacturing production processes. Secondly, Perth and Western Australia never had, and were unlikely to have, a sufficient population and market base to support manufacturing growth of the magnitude assumed without Australian manufacturing being internationally competitive in export markets. Given the high levels of protection that persisted into the 1970s and even the 1980s, this was increasingly unlikely.

With the benefit of hindsight, it can now be seen that not recognising that manufacturing would not be a major driver of Perth's economy until the 1987 Review of the Corridor Plan resulted in some unfortunate decisions. Too much land continued to be zoned for industrial purposes while the provision of commercial land in strategic locations was neglected. This became apparent as early as the 1970s when commercial activities were beginning to fill industrial zones of the inner and middle sectors and is now obvious when analysing the location pattern of industrial employment in relation to the current zoning.

Nevertheless, the Corridor Plan had some merit. One of the factors supporting the creation of coastal corridors, for example, was their attractiveness to people. It appears that one of the main mistakes of the early plans was the allocation of so much premium coastal land to heavy manufacturing in the South-West Corridor. The Kwinana industrial strip could have been designed to run east-west with a maximum 2km access to the coast and an industrial port. Most of the industrial site could have been located a few kilometres inland, somewhere between the South-East and South-West Corridors and well buffered from neighbouring residential areas.

If this had occurred, the South-West Corridor would have been open to urban development. Urban growth of metropolitan Perth could have been more balanced with skilled employment more evenly distributed. A south metropolitan strategic centre could have been located much closer to the CBD and freeway, central to its

catchment area and not far from the heavy industrial site. With location costs lower than the CBD, this could potentially attract some business headquarters currently located in the central area<sup>12</sup>.

### 3.2.1 Sub-Regional Structure Plans, Metroplan and Current Planning Concepts

Strategic and regional centres were created under the Corridor Plan as an alternative to the failed concept of manufacturing as a major employer. It was expected that service employment would flow to the chosen regional centres at such levels that corridors would achieve satisfactory levels of self-containment. Time showed, however, that implementation of this approach was flawed. Self-containment of corridors is still elusive. A number of factors contributed to expectations not being fulfilled.

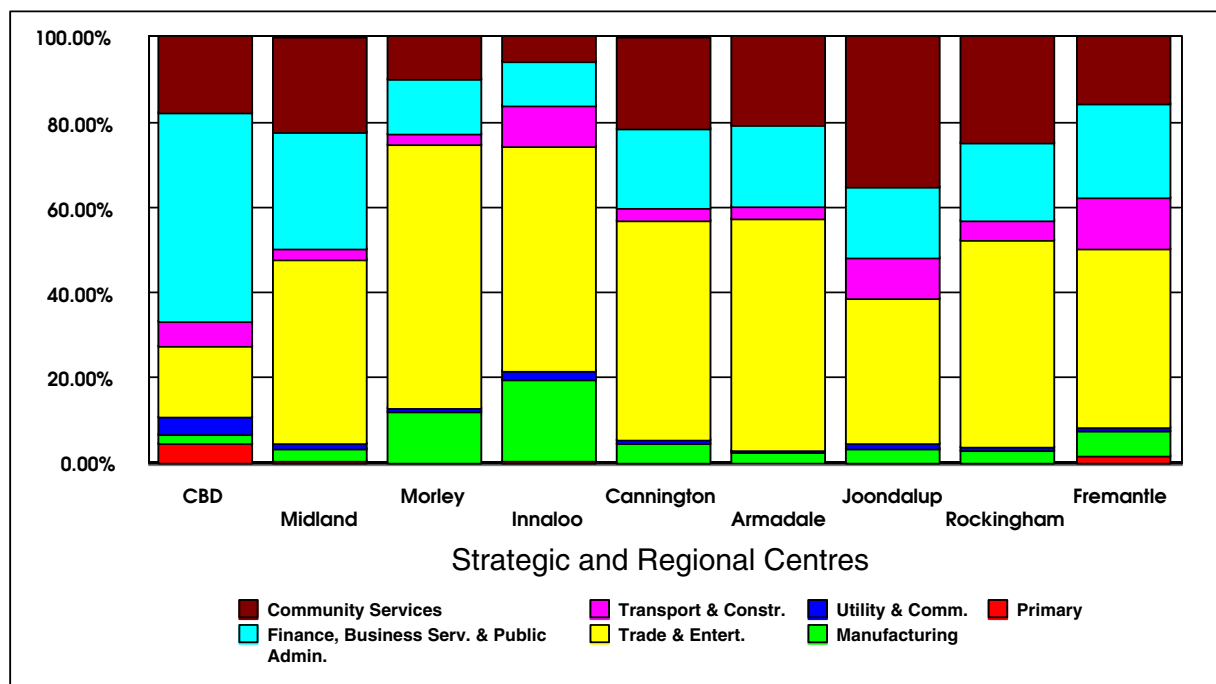
Firstly, the choice of strategic centres may not have been the most desirable from an economic perspective. The strategic regional centres of Joondalup and Rockingham are quite distant from the CBD and not centrally located within their catchment areas. Moreover, their catchment areas are rather small compared with those of major regional centres in the middle sector.

Secondly, strategic and regional centres were to be employment centres but in practice they turned out to be no more than shopping centres. **Figure 3.1** shows the employment structure of these centres in metropolitan Perth and the central area. The employment structure of strategic and regional centres is dominated by trade and some entertainment. The central area has a completely different employment structure, dominated by higher order service industries and relatively small retail employment.

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<sup>12</sup> Although this reasoning is speculative note that WA Alcoa headquarters are located in Booragoon. The proposed survey of business location criteria may provide some clarification of likely alternatives to Central Area location choices.

**Figure 3.1: Employment Structure of the CBD and Strategic and Major Regional Centres in 2001**



Source: ABS-DPI Journey to Work 2001 preliminary.

It may be assumed there was a flaw in the economic assumptions that were made in the design of strategic and regional centres. These centres should offer clear locational advantages to the central area and inner sector through their design and location costs. Shopping should only be one of the activities located there. However, there is little evidence of the regional centres competing with the CBD in terms of employment. (Commercial Reports 1990 to 1997 – MfP 1992, 1993, 1999 and 2000b). Lease costs for offices are also not much different from those in Central Area (Future Perth Indicators, WAPC 1999).

Thirdly, strategic policy and the Metropolitan Region Scheme (MRS) have not been fully reflected in local government legislation. This is most clearly visible in the case of Joondalup where a local government imposed a building height limitation of six storeys on all developments. It might be more appropriate if land uses in strategic centres were covered entirely by metropolitan legislation with local government schemes subject to full compliance with metropolitan policy and legislation.

### 3.2.2 Metroplan and its Future Employment Viability

Corridor Plan and Metroplan endorsed the concept of employment self-containment in the urban corridors. Perth central area was to provide only higher order services. So far, the plan has not met its expectations and it is unclear whether the plan and employment self-containment of corridors is still a viable option.

The evolution of the planning system, its policies and location choices shows that many decisions of strategic importance were made without adequate information. This emphasises the need for more research into the link between the economy, the location of economic activities and residential activities. The Business Location

Criteria Survey proposed by the Department for Planning and Infrastructure is the first step in this direction.

This survey would investigate the location criteria of economic enterprises in relation to economic, geographic and social factors. It would help to explain the current location pattern of employment distribution and identify further research needs, design planning policies and legislation so that economic, social and environmental preferences could be optimised for all land users.

## 4. Implications for Planning

### 4.1 Globalisation

In many ways, the forces unleashed by the digital revolution assist and stimulate global integration. That is, digital innovations create pressure for the global integration of tertiary industries in the same way that transport innovations put pressure on agriculture and mining and mechanisation/automation put pressure on manufacturing.

The digital revolution means that the metropolitan economy of Western Australia could, to the extent that services become part of the internationally traded commodities sectors, lose its competitive advantages in the supply of business, technical, financial and research services. This could be extended to many other community (including some health and education) and entertainment services as telecommunication infrastructure improves (SGS 2000). Maintaining and extending Western Australia's competitive advantage and market share in these areas depends on sustaining its competitive advantages, such as high-level skills and relatively low production costs. (*SWUS Economic Study*, SGS 2000)

Western Australia, along with other Australian states, is currently experiencing a fundamental shift in the core drivers of economic development. The shift is away from the traditional base model of economic development and towards a model where development is driven by a high skill base. This is particularly so in the major cities. The next decades will see a sustained rise in the importance of the digital or knowledge economy.

### 4.2 Perth's 'World City' Segments

Section 1.5 above, introduced the idea of world or global cities. These cities are capturing more of the world's capital, skills, income, knowledge and technology in their boundaries. In part, this concentration is at the expense of cities/regions that have failed to reach global city status (SGS 2000).

With the possible exception of Sydney, no Australian cities have achieved genuine global city status. However, all other major cities (Brisbane, Melbourne, Adelaide and Perth) have developed global city segments where the highly skilled work and live. Over the past decade, these segments have captured a disproportionate share of income and employment growth, partly at the expense of other Australian cities and regions.

According to the SWUS Economic Study (SGS 2000), Perth's global city segment is around the Swan River. The heaviest concentration of people with university qualifications in Perth is in the central and western suburbs, north of the Swan River. These suburbs also had high percentages of managers, administrators and professionals, high incomes and low unemployment (ABS cat. no. 2030.5). In general, the density of what the SWUS study terms C21 workers (i.e. highly skilled workers favoured by technical change and the digital revolution) is significantly smaller in Perth's global city segments than in, say, Sydney's (SGS 2000). It may be



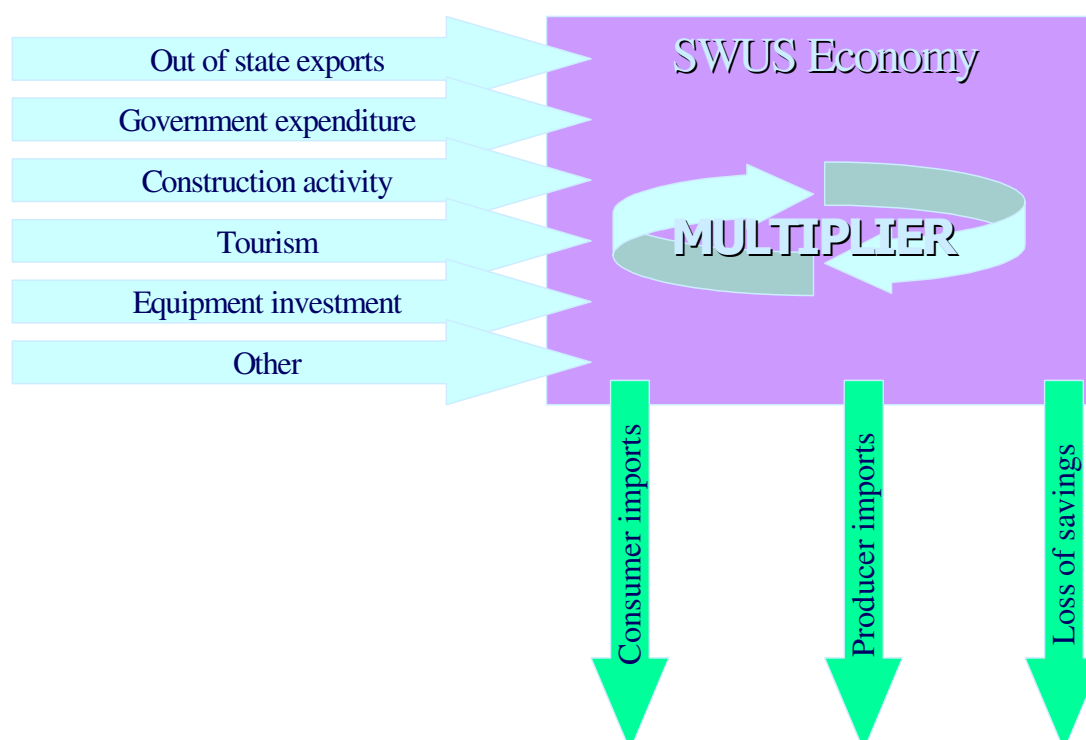
that Perth is losing competitiveness to Sydney, with Sydney-based enterprises winning increased market share in the supply of finance and technical services to Western Australian based firms.

Strengthening the fledgling global city segments of Perth and extending this status to the new regions may be among the major challenges for Perth planners and State government over the next decades (SGS 2000).

#### 4.3 Regional Interdependence and Key Drivers

Under the input-output modelling framework applied in the SWUS Economic Study (SGS 2000), job creation in a region will, in the short-term, depend on its capacity to draw new demand from outside and fund demand over and above normal household consumption, construction, business investment and government expenditure. Job multiplier effects from these boosts to demand will be dampened by leakages of income from a community, for example, from the import of business inputs and consumer goods and services or the investment of household savings elsewhere (Figure 4.1).

Figure 4.1: Input-Output Structure of the South-West Urban System Economy.



Source: South-West Urban System Economic Study, SGS 2000

**Table 4.1** refers to the percentage of jobs in each of the sub-regions which are directly or indirectly attributable to the drivers listed above. **Table 4.1** also identifies the region within which the demand drivers originate. For example, 21.7 per cent of jobs in the Perth metropolitan region are generated by out-of-state export activity in Perth. An estimated 10.9 per cent of jobs in Perth are attributable to out-of-state exports originating in the rest of WA.

**Table 4.1: Percentage of Jobs Attributable to Demand Drivers in the SWUS sub-regions.**

PERTH Sub-Region	Origin of expenditure / demand					Total
	Perth	Peel	Greater Bunbury	Rest of WA	Other	
Exports	21.7	1.6	1.7	10.9		35.9
Government expend.	12.9	2.3	1.6	6.3		23.1
Construction	8.6	1.5	1.6	4.3		16.0
Tourism	2.6	0.9	1.0	1.3		5.8
Investment	3.0	1.0	1.0	2.2		7.2
Other					11.8	11.8
<b>Total PERTH</b>	<b>48.8</b>	<b>7.3</b>	<b>6.9</b>	<b>25.0</b>	<b>11.8</b>	<b>100.0</b>
<b>PEEL Sub-Region</b>						
Exports	14.8	13.8	1.4	6.7		36.7
Government expend.	6.6	8.1	1.1	3.6		19.4
Construction	5.9	4.9	1.2	3.0		15.0
Tourism	1.7	1.1	0.7	1.0		4.5
Investment	1.6	1.5	0.8	1.4		5.3
Other					19.3	19.3
<b>Total PEEL</b>	<b>30.6</b>	<b>29.4</b>	<b>5.2</b>	<b>15.7</b>	<b>19.3</b>	<b>100.0</b>
<b>GREATER BUNBURY Sub-Region</b>						
Exports	8.3	2.1	23.6	8.6		42.6
Government expend.	5.7	1.7	10.1	3.9		21.4
Construction	5.9	1.4	8.2	3.5		19.0
Tourism	1.6	1.0	2.0	1.2		5.8
Investment	1.6	1.0	2.6	1.7		6.9
Other					4.3	4.3
<b>Total GR. BUNBURY</b>	<b>23.1</b>	<b>7.2</b>	<b>46.5</b>	<b>18.9</b>	<b>4.3</b>	<b>100.0</b>

Source: SWUS Economic Study, SGS 2000.

**Metropolitan Perth (Table 4.2)** is the most self-contained economic region within Greater Perth, with 606,000 jobs in 2001 and almost 50 per cent of its employment generated by demand drivers originating within the region. About 19,500 Perth residents worked outside metropolitan Perth in 2001 while 10,900 non-Perth residents worked in it.

Government expenditure is an important generator of employment, accounting for around one in five jobs in each of the three sub-regions. It is especially important in Perth, reflecting the capital city's role in delivering public sector services to the rest of the State.

**Peel** has a relatively low level of self-containment. In 2001, there were 17,750 jobs in the region with 4,100 residents working in metropolitan Perth. Demand drivers within its boundaries account for only 29.4 per cent of its jobs. Perth-originated drivers are more important, accounting for over 30 per cent of Peel's jobs.

The "other" category is a significant job generator in Peel, responsible for almost 20 per cent of jobs. This is most likely related to expenditure of retirement incomes and social security receipts.

**Table 4.2: Geography of Employment, Western Australia 2001.**

Origin zone	Destination zone					Total
	Perth	Peel	Greater Bunbury	Avon Arc	Other WA	
Perth	595,184	2,621	484	1,172	13,064	612,526
Peel	4,195	14,634	231	17	1,964	21,041
Gr.Bunbury	383	319	23,569	10	3,471	27,752
Avon Arc	1,737	6	66	7,361	1,197	10,367
Other WA	3,083	146	1,381	300	148,818	153,728
Other Aust	1,464	26	48	20	2,083	3,641
Total	606,047	17,752	25,779	8,880	170,598	829,055

Source: ABS Journey to Work 2001 preliminary.

**Greater Bunbury** has a strong export orientation with almost half its jobs coming from out-of- state exports and tourism. In 2001, it had 25,780 jobs with over 1,500 of its residents working outside, mainly in Worsley (Shire of Collie) and Wagerup (Shire of Waroona) alumina refineries.

Connections between Perth and Peel and Perth and Bunbury are strong but links between Peel and Bunbury do not appear to be well developed at this stage.

**Avon Arc** is the least endowed sub-region of Greater Perth in employment growth potential. Its economy is dominated by agriculture and associated industries while its inland location makes it less attractive for tourism and retirement migration. Only the Shire of Gingin attracts holiday and retirement settlers to its coastal locations, while York and Toodyay attract people working in Perth but opting for a country lifestyle. In 2001, there were 8,800 jobs in this region while 1,740 residents had jobs in Perth.

#### 4.4 Job Creation Potential

Over the next three decades, Greater Perth needs to generate about 15,000 jobs per year to sustain the Department for Planning and Infrastructure (DPI) medium scenario for population growth (SGS 2000). Key influences on its capacity to meet this requirement will include:

- **The rate of demand formation.** Growth in the population will, by itself, generate expenditure and jobs.
- **The strength of inter-regional linkages.** Inter-regional trade flows between Greater Perth sub-regions and sub-regions and the rest of the State may be weakened as a result of the digital revolution. Exporters may source more of their inputs from suppliers outside Greater Perth or the rest of WA, effectively exporting jobs.
- **Productivity changes.** To remain viable in the increasingly competitive economy, firms will face relentless pressure to improve labour productivity. A demand injection into a regional economy can be expected to yield fewer and fewer jobs (SGS 2000).

National Economics modelled job-generation rates in the three sub-regions using a range of scenarios linked to the above forces. **Table 4.3** shows modelled annual job creation in each sub-region versus the annual requirement (SGS 2000).

The **demand formation** scenario assumes continuation of current production technologies and trade patterns within the regions but accounts for the extra demand created by the projected population increase.

This scenario is the only one under which Perth generates more than the required number of jobs. Both the Peel and the Greater Bunbury regions fail to generate sufficient local jobs, even under these favourable assumptions.

The **inter-regional weakening** scenario reflects the erosion of current backward and forward linkages in the regional economies under the influence of e-commerce. Exports from Perth are assumed to grow at 2.7 per cent per year rather than 3.1 per cent per year under the demand formation scenario. More significant slow-downs in export growth are factored into the scenario for the other sub-regions: from 3.7 per cent per annum (p.a.) to 2.6 per cent p.a. for Peel and from 2.8 per cent p.a. to 2.0 per cent p.a. for Greater Bunbury.

**Table 4.3: Job Creation Scenarios, SWUS 1996 - 2031.**  
**Scenario 1 Demand Formation**

Region	Job generation surplus or deficit to meet medium population scenario				
	Annual	2001	2011	2021	2031
Perth	1,485	7,420	22,300	37,100	52,000
Peel	-671	-3,350	-10,100	-16,800	-23,500
Gr.Bunbury	-145	-725	-2,200	-3,600	-5,100
Total SWUS	669	3,345	10,000	16,700	23,415

**Scenario 2 Inter-Regional Weakening**

Region	Job generation surplus or deficit to meet medium population scenario				
	Annual	2001	2011	2021	2031
Perth	-156	-780	-2,300	-3,900	-5,500
Peel	-696	-3,480	-10,400	-17,400	-24,400
Gr. Bunbury	-231	-1,155	-3,500	-5,800	-8,100
Total SWUS	-1,083	-5,415	-16,200	-27,100	-37,000

**Scenario 3 Productivity Acceleration**

Region	Job generation surplus or deficit to meet medium population scenario				
	Annual	2001	2011	2021	2031
Perth	4,926	-24,630	-73,900	-123,100	-172,400
Peel	-834	-4,170	-12,500	-20,900	-29,200
Gr. Bunbury	-406	-2,030	-6,100	-10,200	-14,200
Total SWUS	-6,166	-30,830	-92,500	-154,200	-215,800

Source: Calculations based on South West Urban System Economic Study, SGS 2000

Under this scenario, all regions have some job deficiency, supporting DPI's medium population projection scenario, but the deficiency, except in Peel, is not large and for Perth, it is well within a decade of average unemployment level variations. In other words, job deficiency is not critical to reduce the forecast population growth of the city. The situation looks worse if figures for Peel and metropolitan Perth are combined as many Peel residents depend on Perth jobs. Still, the overall deficiency of 30,000 jobs by 2031 is not very large and could translate to forecast population for both regions being only about 20,000 smaller under the assumption of unemployment levels being 50 per cent larger than in 2001.

The **productivity acceleration** scenario adds a reduction in labour requirements per unit of output to the above assumed changes in trade flows and income distribution. A 0.5 per cent p.a. increase in labour productivity is assumed across all sectors.

With the successive application of plausible assumptions regarding reduced inter-regional trade and exports, increased income inequality and accelerating productivity, it would appear that the South-West Urban System would fall well short of its annual job creation target. This implies a reversal of long-term migration into the regions, leading to a negative multiplier.

Implications for population growth under this scenario are grim. Job deficiency indicates an economy capable of supporting a population almost half a million smaller than the DPI's medium population growth scenario for the whole South-West Urban System.

## 5. Implications for Metropolitan Perth

### 5.1 Main Functions of Metropolitan Perth and its Growth Potential

By virtue of its population and role as the administrative centre for business and government, Greater Perth dominates the Western Australian economy, despite the major mining and agriculture export industries in its hinterland.

These important primary industries would have existed in WA irrespective of Perth. Nevertheless, Perth's services and skills market has captured most of the economic benefits from primary and related industries located elsewhere in the State.

Perth's function as the State's capital city, its economic base and population size have also created development opportunities for many other businesses oriented to the local or more diversified markets. The critical mass of the metropolitan market for business services diminishes the risks associated with specialisation.

Specialisation, in turn, requires a strong network of brokerage agents operating both formally and informally. Again, the metropolitan area is more likely to feature such networks than country urban centres. It also requires an advanced knowledge platform, including exchanges with key research institutions, such as universities which require ready access to a rich base of researchers and research infrastructure to remain competitive (SGS 2000).

For these reasons, Australia's metropolitan areas are increasing their share of higher order business services. O'Connor (1999) showed that while metropolitan Australia maintained a steady 65 per cent share of all national employment from 1986 to 1998, its share of *producer services* (i.e. services to business, finance and property, media and publishing) was significantly greater in 1998 at over 78 per cent. Perth's dominance in Western Australia is even more prominent with employment in producer services reaching 85 per cent in 2001. That service imbalance between country centres and the metropolitan area does not encourage businesses to locate in country urban centres, reduces country growth potential and facilitates faster growth of the metropolitan area.

Further evidence of the comparative advantage of metropolitan areas in producing advanced business services is their growing share of knowledge workers, as measured by persons employed in professional and associate professional occupations (SGS 2000). In 1991, metropolitan Australia accounted for 57 per cent of the country's knowledge workers. By 2001, this proportion had climbed to over 70 per cent.

Job stock changes in Perth between 1986 and 2001 point to the growing importance of the metropolitan area as a source of advanced business services for the WA economy. ABS journey to work data shows that, aside from population-driven employment, a significant proportion of the new jobs created in Perth over this decade were in information or knowledge-intensive sectors. The key information economy jobs being generated include:

- Business services

- Marketing and business management services
- Legal and accounting services
- Technical services
- Post-school education
- Computer services.

But, as noted before, the same forces which led to a concentration of business services in Perth render the city and the State economy more open to competition from service providers in other Australian cities and around the world. Distance is no longer a bulwark against competition (SGS 2000).

Analysis conducted by O'Connor (1999) showed that Perth's share of national business services jobs increased from 7.75 per cent in 1986 to 8.79 per cent in 1998 but this share has remained largely static since the mid-1990s. By comparison, Brisbane's share of business services jobs grew at a faster rate, from 7.59 per cent in 1986 to 9 per cent, in 1998. Perth also has smaller business services sectors in proportion to population than either Sydney or Melbourne.

In order for WA to maintain and improve its standard of living and achieve the rates of productivity growth to remain an internationally competitive city, it is necessary that it continues to increase its capacity in skill-intensive services, especially in areas subject to international competition.

Education and acquisition of skills are essential for enhancing competitive advantage in the post-industrial, globalised economy. Local economic development strategies in metropolitan areas must look for opportunities to encourage the flow of resources into training and R&D and, as far as possible, link institutions to improve access to scale and scope economies.

Although substantial increases in immigration levels are theoretically possible in the future and there is potential to develop its skill base further and attract more research and high-tech investment, at best, the magnitude of that growth will remain a challenge for WA, especially retention of its comparative advantage in skill-intensive traded services. Fortunately, Perth provides a compelling liveability package to attract such skills.

Two future important drivers of Perth's economy are tourism and education that attracts overseas students as well as building the local skill base and university-based research. It is important that catering for growth in education and tourism is made a primary objective of future governments, planning institutions and relevant private sector businesses.

The importance of overseas tourism for Perth and WA will grow because GDP per person in much of Asia, and especially China, will at least quadruple within the next two decades. As a result, more and more residents of these countries will be able to afford overseas holidays and Western Australia is an attractive destination. Even if one per cent of Chinese and South-East Asian residents (over 20 million tourists) were to spend a fortnight overseas, they would spend US\$50 billion or more at current prices.

## 5.2 Implications for Urban Planning

In many ways, the pressure of globalisation calls for a back-to-basics approach to town planning in metropolitan areas. This means a renewed emphasis on urban design, amenity and environmental management. Achieving quality in these areas and, equally as important, a distinctive urban character, can play a major part in the role of the metropolitan area as an internationally competitive skills development centre (SGS 2000).

Sound forward planning is also required for gateway infrastructure, especially airports, though the concept needs to be extended to connectivity generally. This means monitoring the adequacy of telecommunications infrastructure and ensuring there are no unwarranted urban development impediments to its efficient roll-out (SGS 2000).

There are, however, some areas where it is necessary to radically rethink traditional approaches to formulating planning schemes and enforcing development control. Management of industrial land uses is one such area. With the rise of the service sector as the major provider of jobs, distributed production systems, e-commerce and the continuous need to improve and reinvent products and services, the traditional distinctions between production, commercial administration and R&D are rapidly becoming obsolete.<sup>13</sup> There is a need to move towards generic employment zones, allowing mixed uses where compatibility is based on performance standards rather than the class of activity proposed.

This is where the development of amenity and improvement in living standards interact with consumer preferences for the location of dwellings, employment and services. As noted earlier, cafes and restaurants, entertainment, health, recreation or leisure services do not necessarily conflict with residential amenity. Indeed, the sensitive location of these services within predominantly residential areas may significantly improve urban amenity through innovative planning zoning and land use regulation. As a consequence, Perth's attractiveness as a desirable location for highly skilled and creative people would increase and thereby increase its international competitiveness as a city.

## 5.3 Industrial Structure of Future Jobs in Metropolitan Perth

**Figure 5.1** shows the evolving industrial structure of metropolitan jobs since 1954. By extrapolating historical trends a future industrial job structure has been derived. If the current trends continue into the future, there will be relatively fewer jobs in the primary sector, manufacturing, transport, utilities and construction. Employment in trade will roughly preserve its current share of jobs while service sector jobs will increase both absolutely and in terms of their share of all jobs. Entertainment and

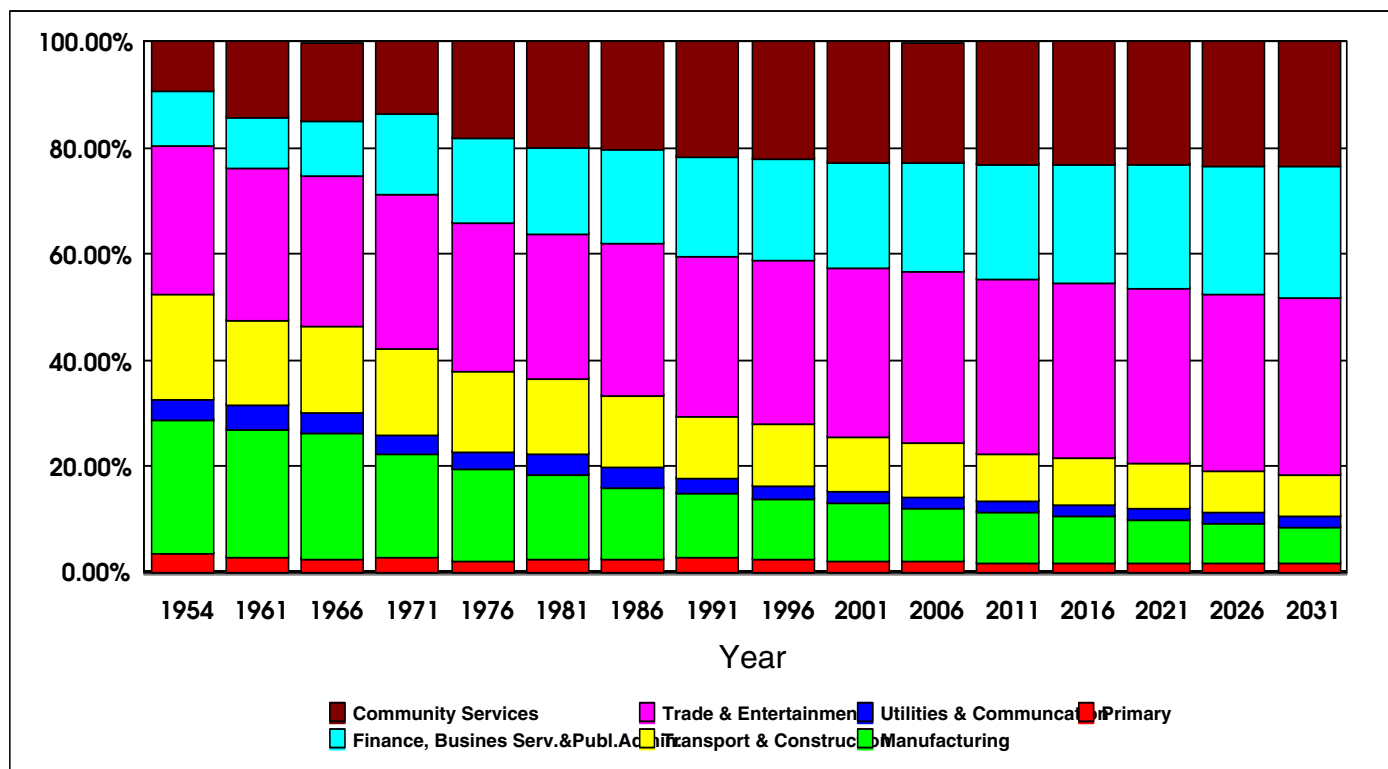
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<sup>13</sup> There is a prestigious high-tech industrial estate in the eastern suburbs of Melbourne which would represent the epitome of what many councils would see as clean, green and smart creators of local employment. However, if the rules of the planning scheme were strictly enforced, the estate would be shut down, because a very large proportion of the resident businesses have dedicated an illegal proportion of floor space to "office-type" functions (SGS 2000).



recreation will become increasingly important job creators. Most future jobs, however, will be in business services (the fastest expanding industry since the 1960s), finance, insurance and community services (DPI Employment Location - Trend Scenario 2001).

**Figure 5.1 Projected Industry Structure, Metropolitan Perth 1954 - 2031**



Source: ABS JtW 1954 - 2001, DPI Trend Extrapolation 2006 - 2031.

The nature of jobs will also continue to change. If trends in the past few decades continue, there will be fewer full-time jobs and more part-time and casual jobs. The employment share of women will continue to increase, possibly to male levels. Due to the ageing population, labour participation rates and employment retention rates may increase for people over 55, while retirement age may be postponed beyond 65 as is already happening in some European countries.

Current job distribution within metropolitan Perth by industry and planning sectors is shown in **Table 5.1a** and **5.1b**, while **Maps 2, 3, 4 and 5** show distribution spatially for the following industry sectors:

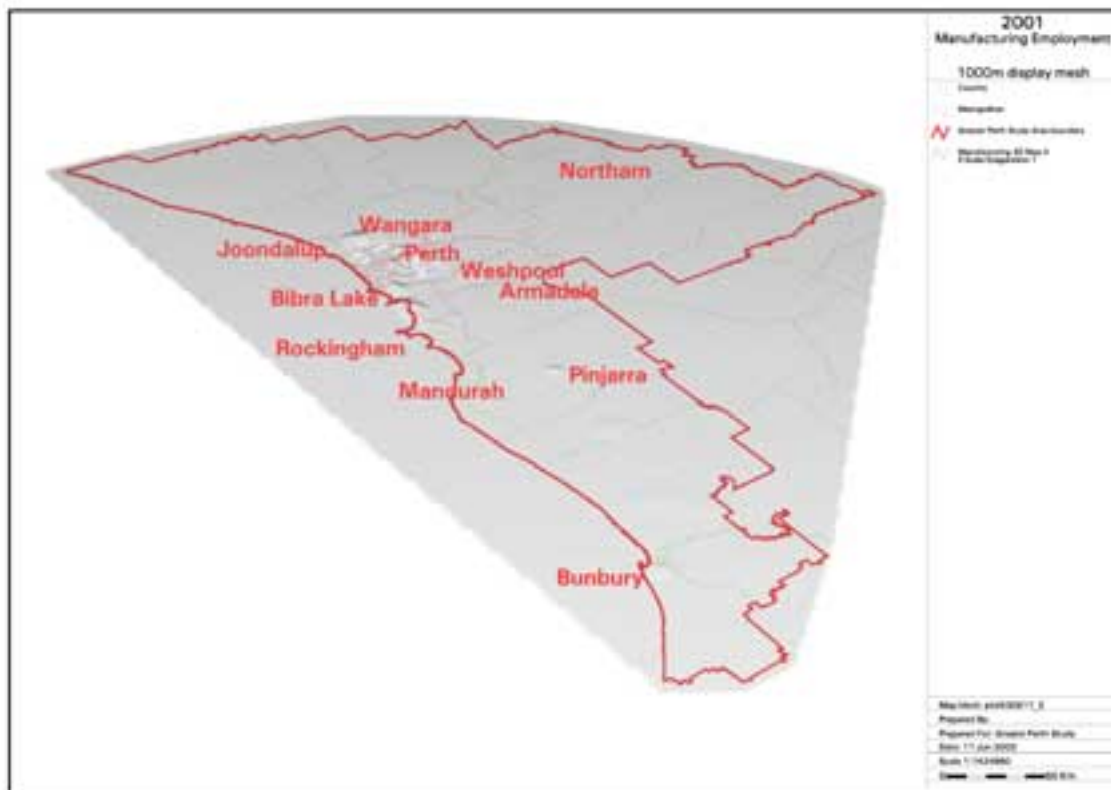
1. Manufacturing (**Map 2**)
2. Trade and entertainment/recreation (**Map 3**)
3. Finances, property, business services and public administration/defence (**Map 4**)
4. Community services (**Map 5**).

The maps show clearly that employment is not distributed evenly but concentrated in selected areas. Although most industrial zones are still concentrated in the inner and middle sectors of Perth, more manufacturing jobs are being located in corridors (**Map 2, Table 5.1a and 5.1b**) while inner sector industrial zones lose manufacturing

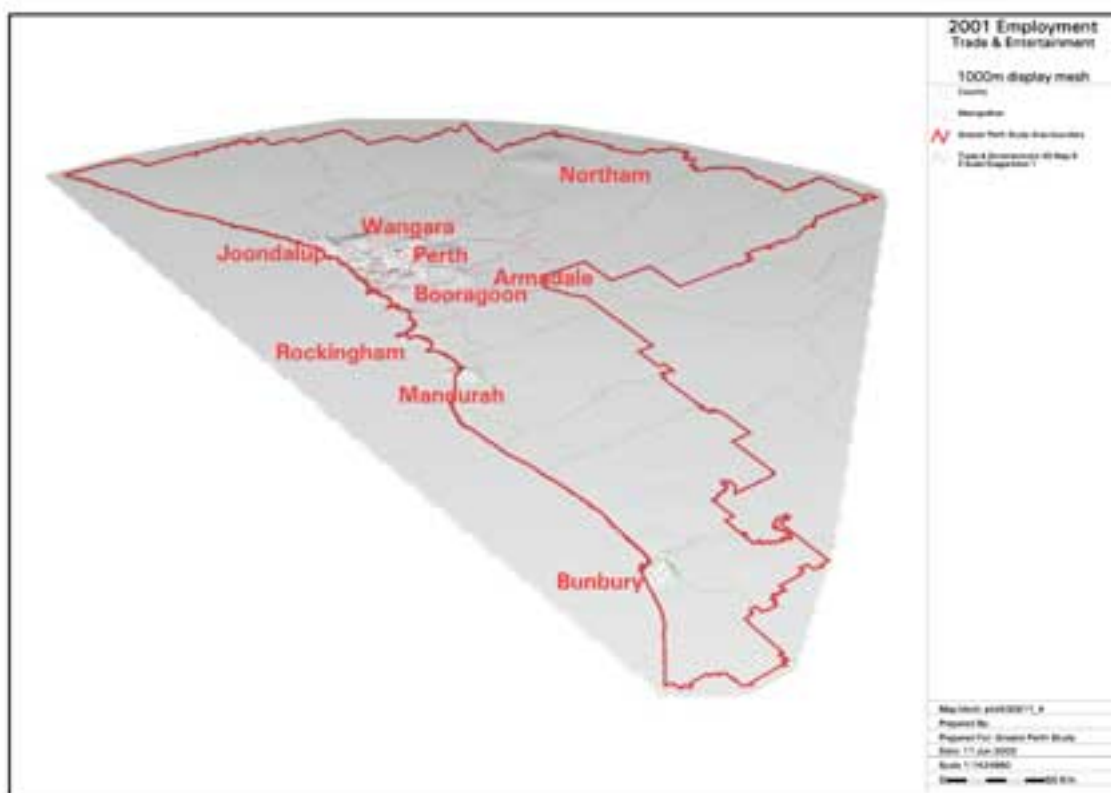
employment but gain substantial employment in trade and other commercial activities. Employment in trade and entertainment (**Map 3**) is more evenly distributed than that of other industries but still a substantial part it is concentrated in the middle sector.

The City of Perth and the inner sector absorb over 60 per cent of all metropolitan employment in finance, insurance, property and business services (see also **Map 4**), over 50 per cent of utilities (office) and communications, over 45 per cent of community services (see **Map 5**) and over 40 per cent of employment in primary industries that is predominantly office in nature. These industries comprise most of the 'new economy' employment, except for high-tech manufacturing, which is only marginally represented in Perth.

This is complemented by the middle sector's 20- 40 per cent employment share of the seven industry sectors. Corridors with well over 50 per cent of the metropolitan population employ about a quarter of the metropolitan workforce, predominantly in population-servicing industries such as trade and community services (see **Maps 3 and Map 5**) and over one third of manufacturing production. So far, they have very little employment in global industries.



Map 2 – 2001 Manufacturing Employment



Map 3 – 2001 Trade and Entertainment

Future distribution of employment by industry for the year 2031 is shown in **Figure 5.2** while **Map 10** shows the spatial distribution of employment growth between 2001 and 2031. It is clear that if the current trends continue in the next three decades most of the finance, insurance and business service jobs will continue to be predominantly located in the City of Perth and inner sector and very few in corridors - especially south of the river.

Jobs in community services (see **Map 5**) are more evenly distributed but still the inner and middle sectors clearly stand out. Corridors appear to be dominated by trade, manufacturing, transport, storage, construction and some community services - mainly primary and secondary education and medical, serving the local population.

Table 5.1a: Location Pattern of Industry Sectors in Metropolitan Perth in 2001 and Trend-Based Estimates for 2031. Employment numbers in '000s

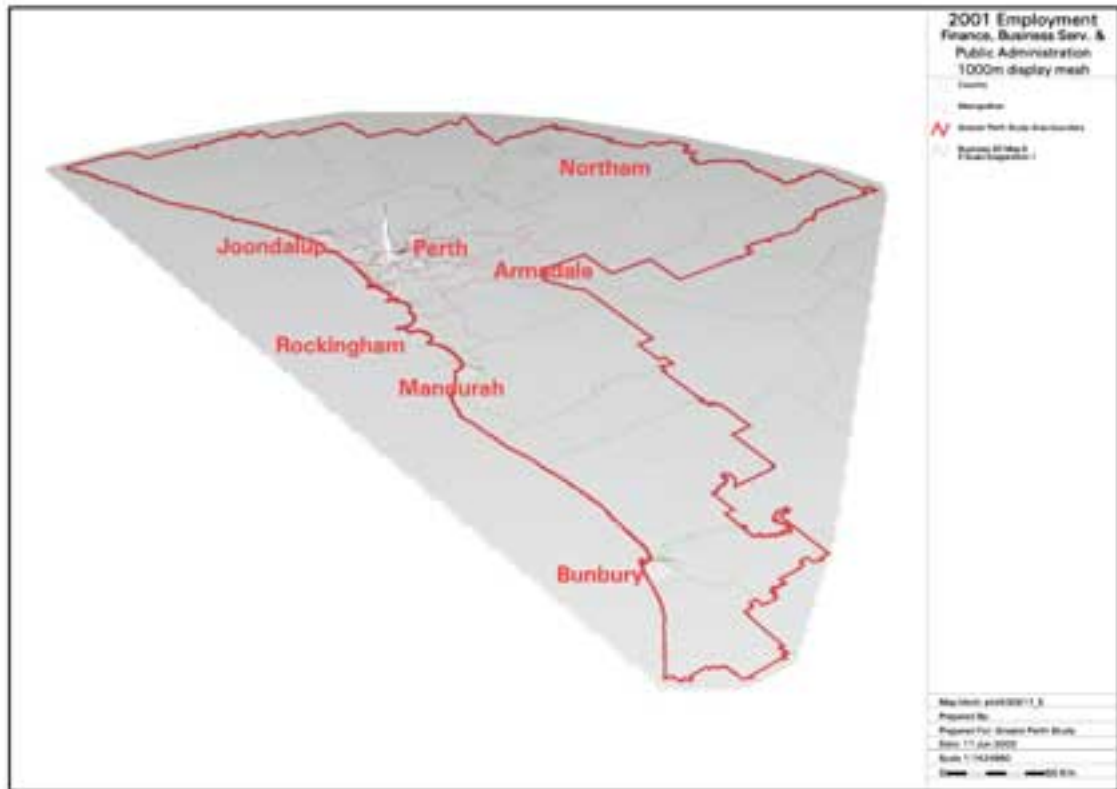
Industry sector:	Primary		Manufacturing		Utilities and Communications		Trade and Entertainment		Transport and Construction		Finance, Insurance, Business Services and Public Admin		Community Services		Total employment	
	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031
City of Perth	5.1	5.3	3.1	4.2	4.5	6.1	17.6	27.9	6.1	5.6	47.7	86.1	19.9	37.7	104.1	172.9
Inner North	0.5	0.5	2.7	2.5	1.5	2.3	18.6	25.6	3.3	3.6	12.9	23.1	25.1	40.6	64.7	98.2
Inner South	0.8	1.2	5.3	4.6	0.4	0.6	19.1	28.0	4.9	3.6	9.2	18.6	15.2	21.8	55.0	78.2
Middle North	0.5	0.9	14.0	10.8	1.7	2.5	32.5	45.5	7.9	6.3	11.1	21.9	17.6	22.8	85.3	110.7
Middle South	1.7	2.6	15.8	12.0	2.6	2.6	38.0	57.0	13.5	10.0	10.9	24.7	16.5	21.7	99.0	130.5
North-East	1.7	2.0	7.8	9.3	0.6	0.8	15.7	31.8	5.9	9.4	6.0	16.0	10.0	17.7	47.7	87.0
North-West	1.3	1.6	3.9	3.8	0.5	0.7	18.6	38.4	5.4	9.0	6.2	15.3	12.4	22.3	48.2	91.2
South-East	1.1	1.6	3.2	3.5	0.3	0.3	9.7	19.2	3.8	4.3	3.0	7.3	7.1	15.1	28.2	51.2
South-West	1.6	1.0	11.3	13.8	1.0	2.1	13.2	28.8	5.7	6.7	5.7	13.0	7.5	14.4	46.0	79.9
No fixed workplace.	0.9	0.6	3.3	0.6	0.7	0.2	8.8	8.4	2.7	13.2	5.5	6.1	6.3	2.3	27.9	31.5
<b>Total</b>	<b>15.2</b>	<b>17.3</b>	<b>70.4</b>	<b>65.1</b>	<b>13.8</b>	<b>18.2</b>	<b>191.8</b>	<b>310.6</b>	<b>59.2</b>	<b>71.7</b>	<b>118.2</b>	<b>232.1</b>	<b>137.6</b>	<b>216.4</b>	<b>606.0</b>	<b>931.3</b>

Source: ABS and DPI JtW 2001 preliminary. Note: employment estimates for 2031 are based on trend extrapolation and limited data availability and should be treated as indicative only. For similar reasons City of Perth employment in 2031 is likely to be exaggerated – especially for Finance, Insurance and Business Services Industry for reasons described in text.

**Table 5.1b: Location Pattern of Industry Sectors in Metropolitan Perth in 2001 and Trend-Based Estimates for 2031. Employment structure in percentages.**

Industry sector:	Primary		Manufacturing		Utilities and Communications		Trade and Entertainment		Transport and Construction		Finance, Insurance, Business Services and Public Admin		Community Services		Total employment	
	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031
Planning Sector:	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031	2001	2031
City of Perth	33.6	30.6	4.4	6.5	32.6	33.5	9.2	9.0	10.3	7.8	40.4	37.1	14.5	17.4	17.2	18.6
Inner North	3.3	2.9	3.8	3.8	10.9	12.6	9.7	8.2	5.6	5.0	10.9	9.9	18.2	18.8	10.7	10.5
Inner South	5.3	6.9	7.5	7.1	2.9	3.3	10.0	9.0	8.3	5.0	7.8	8.0	11.1	10.1	9.1	8.4
Middle North	3.3	5.2	19.9	16.6	12.3	13.7	16.9	14.7	13.3	8.8	9.4	9.4	12.8	10.5	14.1	11.9
Middle South	11.2	15.0	22.4	18.4	18.8	14.3	19.8	18.4	22.8	13.9	9.2	10.6	12.0	10.0	16.3	14.0
North-East	11.2	11.6	11.1	14.3	4.3	4.4	8.2	10.2	9.8	13.1	5.1	6.9	7.3	8.2	7.9	9.3
North-West	8.6	9.3	5.5	5.8	3.6	3.9	9.7	12.4	9.1	12.6	5.3	6.6	9.0	10.3	8.0	9.8
South-East	7.2	9.3	4.6	5.4	2.2	1.7	5.1	6.2	6.4	6.0	2.5	3.2	5.2	7.0	4.7	5.5
South-West	10.5	5.8	16.1	21.2	7.3	11.5	6.9	9.3	9.6	9.3	4.8	5.6	5.5	6.6	7.6	8.6
No fixed workplace.	5.9	3.5	4.7	0.9	5.1	1.1	4.6	2.7	4.6	18.4	4.7	2.6	4.6	1.1	4.6	3.4
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

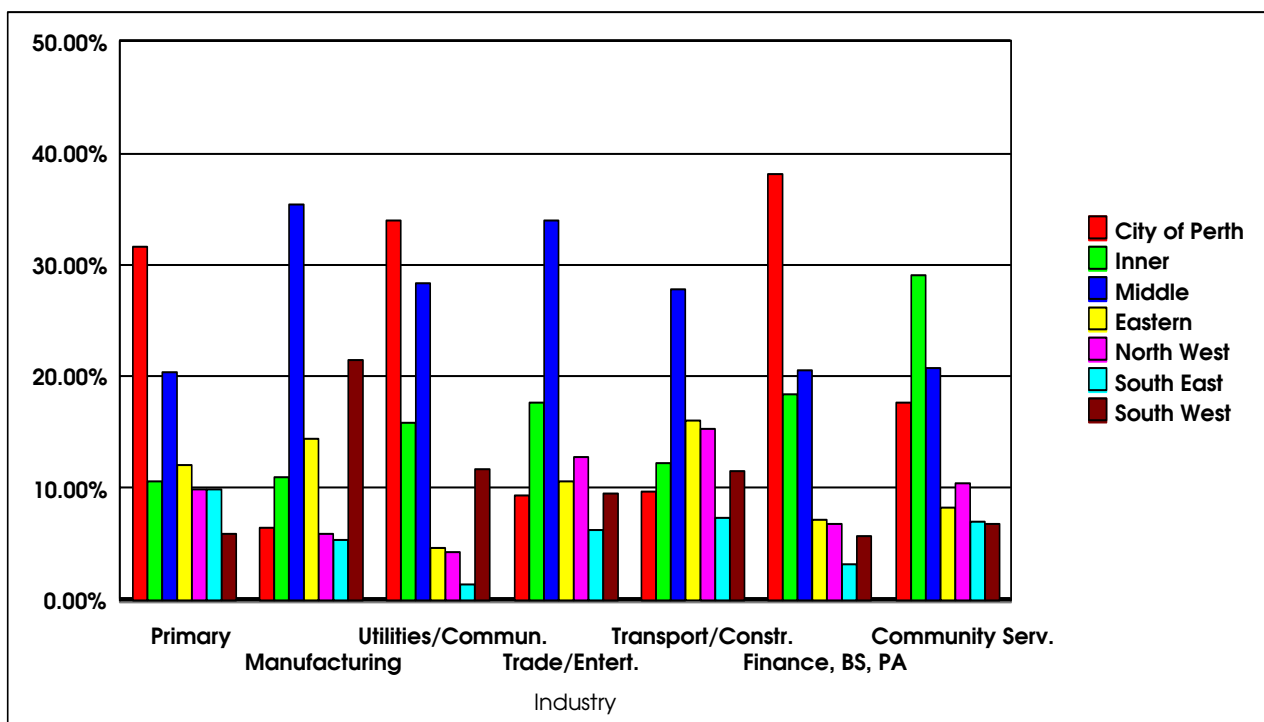
Source: ABS / DPI Journey to Work 2001 preliminary and DPI trend estimates for 2031.



**Map 4 – 2001 Employment, Finance, Business Services and Public Administration**

**Figure 5.2: Trend-Based Distribution of Projected Employment in Metropolitan Perth in 2003**

Source: DPI Trend-Based Employment Scenario, 2002. **Note:** Each industry sector is 100%; BS =



Business and Property Services; PA = Public Administration and Defence.

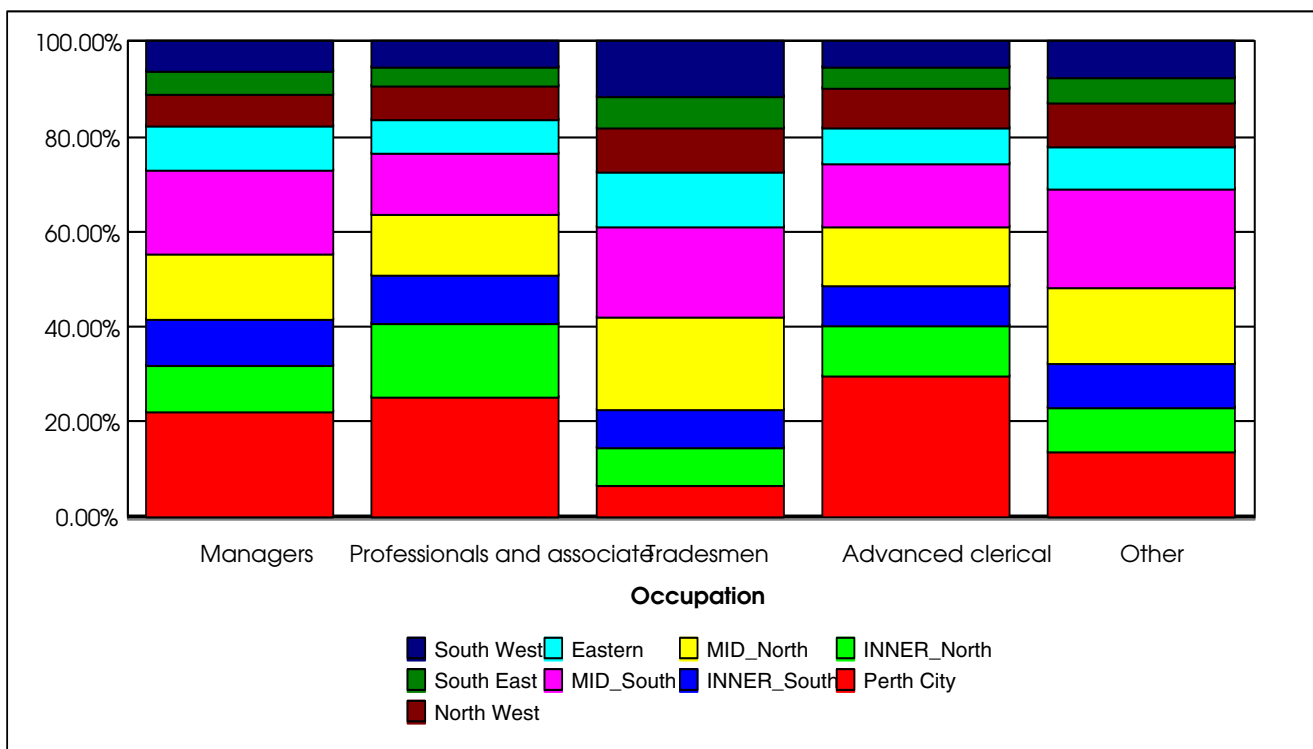
Caution is necessary when extrapolating trends into the future. **Figure 5.2** shows significant and growing dominance of the City of Perth in finance, insurance and business services. The degree of this dominance is likely to be exaggerated as historical trends have been extrapolated from the location-specific growth and density pattern of this industry and the limited availability of primary commercial land in corridor strategic centres. In particular, this applies to Joondalup City, which has little land (20ha) still available in its service centre. Over time, new land pockets may become available, especially in the inner and middle sectors and even coastal corridors, which could prove to be attractive to these and other higher order services. Moreover, location cost differences might increase in the future in favour of locations away from the City of Perth, increasing their attractiveness.

**5.4 Occupation Structure and its Distribution in Metropolitan Perth**

**Figure 5.3** shows occupation structure and location pattern within metropolitan Perth. Again, industries located in the City of Perth and the inner sector employed about 50 per cent of professionals, associate professionals (**Map 6**) and advanced clerical and service workers. Middle sector industries employed between 25–30 per cent of these highly skilled workers (**Map 6**) but also had a high concentration of tradesmen and intermediate transport and clerical workers. Outer sector industries, on the other hand, had a higher proportion of lower skilled workers and few professionals and associate professionals (**Map 6**) with the exception of the southern part of the North-West Corridor.



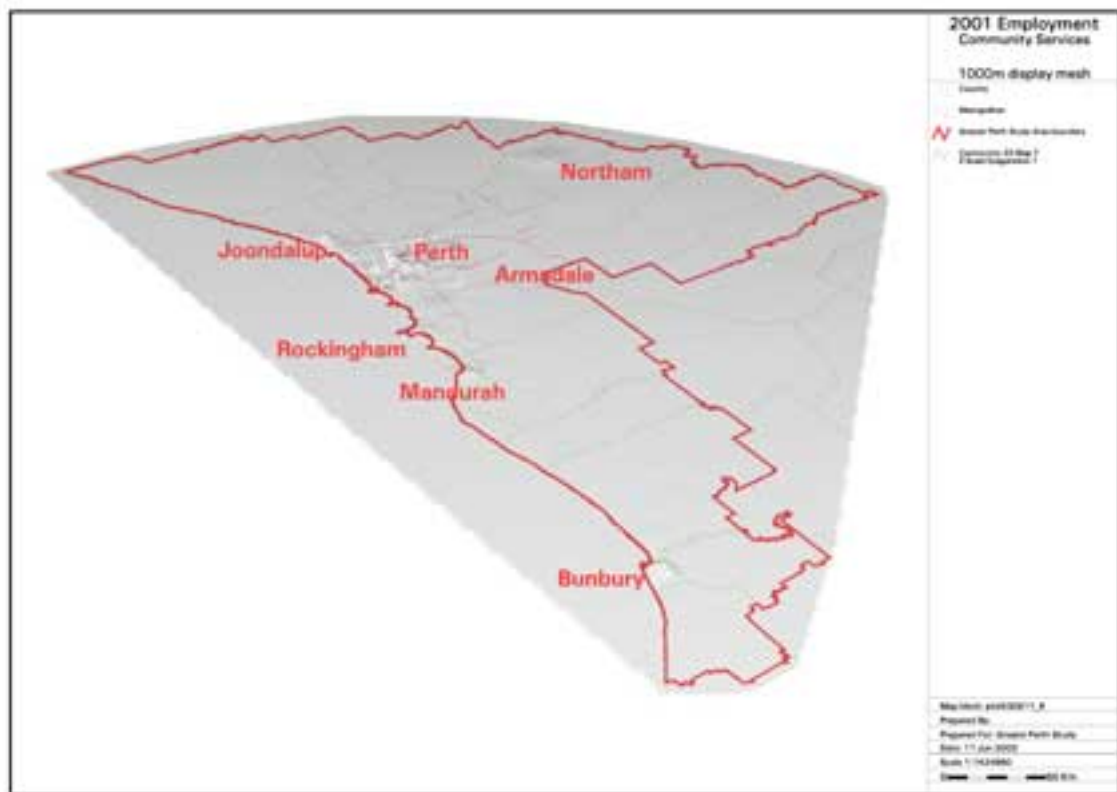
**Figure 5.3 Occupation Structure and Location Pattern, Metropolitan Perth 2001**



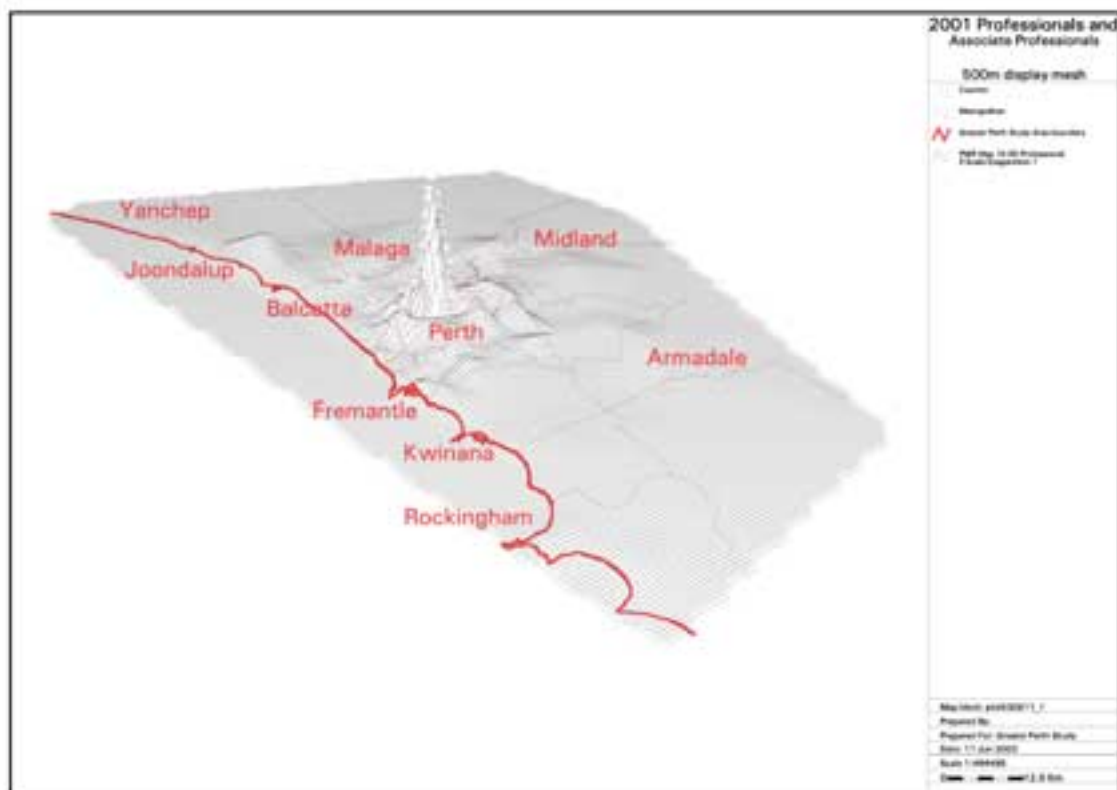
Source: Preliminary ABS-DPI Journey to Work 2001.

Analysing each sector’s occupation structure shows a similar pattern (**Figure 5.4**). The City of Perth and the inner north sector had well over 50 per cent of employment in highly educated occupations such as professionals, associate professionals, managers and administrators but inner south had a lower proportion of such jobs (just over 40 per cent). Middle north had an even lower proportion of these occupations than inner south, while middle south had the lowest proportion of highly educated occupations of all sectors.

Industries in corridors have occupation structures similar to middle south, dominated by low-skilled jobs and tradesmen. This emphasises the inability of corridors to attract industries other than those serving local populations, while heavy manufacturing industries located in the south-west sector, with the exception of Henderson Industrial Park, do not require many highly skilled professionals.

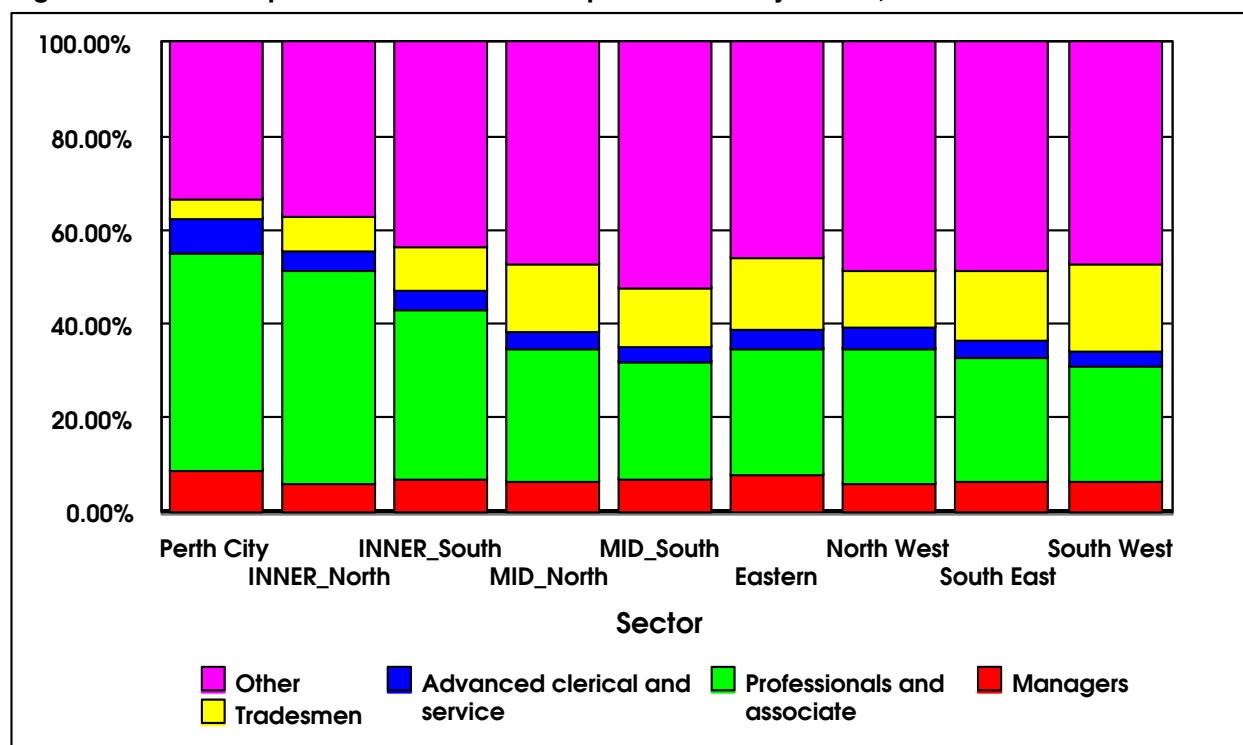


**Map 5 – 2001 Employment, Community Services**



**Map 6 – 2001 Professionals and Associate Professionals**

**Figure 5.4 Occupation Structure of Metropolitan Perth by Sector, 2001**



Source: Preliminary ABS-DPI Journey to Work 2001.

Trends over the past decades indicate that job growth in offices will be higher than growth in non-office jobs. This is consistent with trends in occupation structure towards more skilled professional and clerical jobs and the gradual growth in average education levels in Perth and Western Australia. **Table 5.2** shows employment and floor space growth between 1990 and 2001-02 in metropolitan Perth by planning sector for office and non-office activities.

Between 1990 and 2001-02, employment in office business grew by only 1.7 per cent while employment in non-office business grew by 4.8 per cent. Most office employment growth occurred in the inner south, north-west, middle south and the City of Perth, while growth in other sectors was small or even fell. Office floor space more than doubled in the north-west and grew by over 40 per cent in the north-east and middle south sectors. Altogether, about half a million square metres of floor space were added to offices within metropolitan Perth in that time, with over 60 per cent of that growth in the City of Perth.

In the same period, non-office employment was located mainly in corridors and the middle south sector, with most growth in the latter concentrated in Canning. **Table 5.2** shows that floor space has been growing faster than employment, with non-office floor space growing much faster (by 81 per cent) than office floor area (only 18 per cent). The fastest growth in non-office employment and floor area was in the north-west, where employment almost tripled and floor space grew fourfold, and middle sectors.. Middle south sector doubled its non-office employment and tripled its non-office floor area. All other sectors grew significantly more slowly. It must be noted that the available 2001-02 survey data has not been validated and employment

growth in corridors, although faster than the inner and middle sectors, was quite modest .

**Table 5.2: Office and Non-Office Employment and Floor Area Growth in Commercial and Industrial Zones, Metropolitan Perth 1990 to 2001-02**

Region	Office				Non-Office			
	Employment		Floor Area ‘000s m <sup>2</sup>		Employment		Floor Area ‘000s m <sup>2</sup>	
	1990	2001	1990	2001	1990	2001	1990	2001
City of Perth	62,033	67,018	1,406	1,738	31,345	30,267	1,473	1,991
Inner-North	13,495	10,418	285	295	16,921	24,756	827	1,014
Inner-South	9,949	11,434	298	280	23,523	28,551	1,394	1,759
Middle North	12,834	9,527	392	314	53,223	55,854	3,244	3,435
Middle South	9,327	10,165	247	385	28,804	65,320	1,931	6,094
North-West	2,944	3,357	50	128	9,220	27,164	471	2,017
Eastern	3,555	4,192	78	111	12,869	24,157	728	1,291
South-East	2,429	2,296	70	78	8,905	14,768	584	1,089
South-West	2,858	2,990	113	139	14,996	25,533	1,220	2,825
Total	119,424	113,704	2,939	3,145	199,806	336,581	11,873	22,105

Source: DPI Research, PLUS data base.

Note: data for 2001-02 is preliminary only. Final figures may be somewhat different

This data indicates that more commercially zoned land suiting office development in attractive locations may be needed in future. This is consistent with findings associated with trend-based modelling of future employment distribution. Growth in non-office businesses shows that employment densities per floor space are also declining so, in future, more space will be needed to accommodate employment.

The same applies even more to manufacturing. Between 1990 and 1997 (2002 survey data for manufacturing was not available at time of writing), employment in office manufacturing grew by 24 per cent but floor space requirements increased by over 40 per cent. In non-office manufacturing (production), employment actually declined by 1,000 but floor space use increased by over 400,000m<sup>2</sup> from 3.31 million m<sup>2</sup> to 3.74 million m<sup>2</sup>.

Over a longer period, due to rising land prices, floor space to land area ratios are likely to increase substantially. At the same time, considerable growth in total employment numbers in the inner and middle sectors indicates that more incentives will be needed to make corridors more attractive.

## 5.5 Liveable neighbourhoods

Liveable Neighbourhoods Community Design Code (WAPC 1998) proposed integrating the activity-generating capacity of on-street shopping precincts more closely into the urban fabric. This would improve amenity, aesthetics and chances for social discourse and more opportunities for local employment.

New ideas of town and village centres embody on-street principles, diversity and multiple ownership. The proposed new design of shopping centres, however, may have two disadvantages when compared with traditional “big box” centres. Firstly, it may appear to be more expensive to shop in new centres. Secondly, box shopping centres are more convenient for weekly shopping than those proposed under new design, as shopping is under one roof. Non-box shopping centres require moving along streets and that often means moving vehicles from one spot to another.

The main advantage of a new town or village centre may be mixed land uses, rather than the on-street principle, as long as residential amenity is maintained. The new design could be successful in reducing work trips if it allowed small businesses to include workshops or business premises on the same lot as their residence. In this way, long-term location costs would be minimised, provided that land and premise packages were offered at substantially lower costs than lease costs.

## **5.6 Work at Home and from Home**

The number of people working at home, however, is not likely to be large enough to have a significant impact on work trips. In 2001, only 4.37 per cent of the metropolitan Perth workforce worked at home on Census day - an increase of 0.1 per cent from 4.27 per cent in 1996. Evolution of Internet and communication technologies is not likely to dramatically increase working at home opportunities. There is a growing consensus that face-to-face contact remains the essential ingredient in the development of knowledge-based skills and enterprises (SGS 2000).

For most home-based businesses, work is not done at home. According to ABS data, there were 114,300 home-based businesses in Western Australia but only 37,100 (or just less than five per cent of workforce) operated at home (ABS, Characteristics of Small Businesses, 2002). If new mixed zones were to be a success and offered home-linked business premises, then doubling of the current proportion of working at premises/homes by 2031 should be considered a success, as many small businesses are either not compatible with residential land uses or have no fixed workplace. According to Journey to Work 2001, there were about 27,700 such no fixed workplace jobs in metropolitan Perth alone.

Although their employment share is rising, most small businesses cannot be seen as drivers of the economy. Most provide services either to households or big businesses and that is reflected in their industry structure. Over 70 per cent worked in property, business services, finance/insurance, trade, community services and construction. Only if a substantial proportion of small businesses were to be research, high-tech and export-oriented would they also become drivers of the economy.

The same image is presented by the occupational structure of work at home. In the work at home category, professionals comprised 24 per cent and associated professionals 14 per cent, but only 3.1 per cent of professionals and 1.7 per cent of associate professionals had engineering or scientific qualifications. There were also 8.5 per cent of professionals in the business and information category. Over two-

thirds of professionals and associate professionals worked from home in the inner sector of Perth with 25 per cent concentrating in three statistical local areas, namely Melville, Joondalup South and Stirling Coastal.

If any conclusions can be drawn from such a location pattern, it may be that working-at-home professionals favour proximity to the CBD and north of the river coastal locations. They can afford and appear to choose living in these high status locations. It appears that outer corridors, especially south of the river, have not been attractive to most professionals. It may change in the future when the Mandurah to Perth railway is completed and attractive new subdivisions appear.

Growth of small and medium sized businesses and breeding of new businesses, apart from some planning incentives in the form of mixed zoning in attractive and affordable locations, requires that obstacles must be removed and development incentives introduced. The most common complaints of small businesses include lack of finance and long approval processes.

## 5.7 Job Distribution and Transport Considerations

**Table 5.3** shows a matrix of work trips for the Perth Metropolitan Region in 2001. Almost 20 per cent of metropolitan jobs were concentrated in the City of Perth, with 60 per cent taken by inner and middle Sector residents and 40 per cent by residents of corridors, with almost half taken by north-west corridor residents. Although most inner and middle sector jobs were taken by residents of these sectors, about one-third went to corridor residents.

There were not many jobs in corridors in 2001 and most of the residents worked in the City of Perth, inner and middle sectors. About 27,000 metropolitan jobs did not have a specific location. Most were in construction, transport, trade and finance, insurance and business services. About 10,000 metropolitan jobs were filled by country residents while about 20,000 Perth residents worked outside metropolitan boundaries - most in the mining regions of Western Australia and about 2,500 in other States.

**Table 5.3**  
**Work Trip Pattern within Metropolitan Perth, 2001**

Origin:	Destination:										Total WA
	Perth City	Inner - remainder	Middle	Eastern	North-West	South-East	South-West	No Fixed workplace	Total Perth	Other WA	
Perth City	1,712	495	594	72	54	15	33	54	3,027	99	3,126
Inner - remainder	22,306	33,397	20,945	1,711	1,418	1,025	2,833	2,394	86,030	1,981	88,011
Middle	40,917	35,574	92,423	8,824	6,573	3,660	6,049	8,470	202,491	4,413	206,904
Eastern	9,092	5,990	21,564	27,726	1,926	1,696	638	3,368	71,999	2,429	74,428
North-West	17,470	10,695	29,707	5,534	37,111	454	887	6,340	108,198	2,880	111,078
South-East	6,590	6,479	20,087	2,294	304	19,646	2,960	3,318	61,677	1,641	63,318
South-West	4,672	10,614	11,400	605	244	1,320	29,877	3,030	61,762	3,899	65,661
Other WA	1,234	1,210	2,095	1,008	359	374	2,567	552	9,399	203,516	212,915
Other States	414	261	346	62	64	17	121	180	1,464	2,151	3,615
<b>Total</b>	<b>104,406</b>	<b>104,715</b>	<b>199,160</b>	<b>47,836</b>	<b>48,052</b>	<b>28,206</b>	<b>45,966</b>	<b>27,706</b>	<b>606,047</b>	<b>223,008</b>	<b>829,055</b>

Source: ABS-DPI Journey to Work 2001 preliminary.

**Table 5.4** shows current and future trend-based (degree of self-sufficiency and self-containment for 2001 only) of metropolitan Perth sectors. Degree of self-sufficiency is defined as a ratio of jobs within a sector to the number of its residents in employment. It may be larger than 100 per cent. Degree of self-containment is defined as a number of jobs in a sector taken by its residents to the total number of employed residents in the sector. This ratio is always lower than 100 per cent.

**Table 5.4: Degree of Self-Containment and Degree of Self-Sufficiency in Percentages, Metropolitan Perth**

Sector	Degree of Self-containment	Degree of Self-Sufficiency			
	2001	2001	2011	2021	2031
City of Perth	54.8	3340.3	3715.1	4011.5	4139.8
Inner	37.9	119.0	149.5	153.5	158.2
<i>North incl. Perth City</i>	60.3	324.6	<i>na</i>	<i>na</i>	299.9
<i>South</i>	30.3	126.0	<i>na</i>	<i>na</i>	125.9
Middle	44.7	96.3	90.9	94.0	94.4
<i>North</i>	36.1	85.3	<i>na</i>	<i>na</i>	73.3
<i>South</i>	39.2	110.6	<i>na</i>	<i>na</i>	111.4
Eastern	37.3	64.3	69.3	67.2	67.4
North-West	33.4	43.3	47.0	49.9	49.5
South-East	31.0	44.6	53.6	54.6	56.3
South-West	45.1	70.0	62.3	61.7	63.1

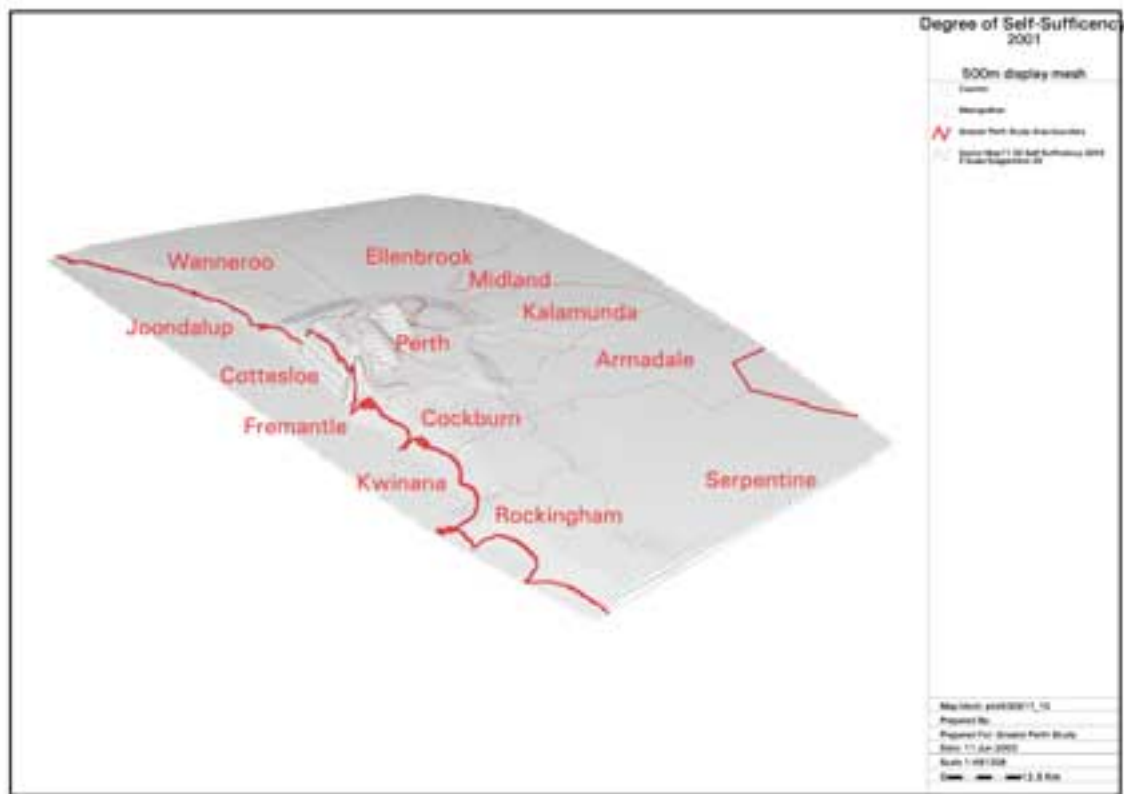
*Source: ABS-DPI Journey to Work 2001 preliminary; DPI Employment Trend Scenario 2002. Note: Self-containment is given for 2001 only as estimates of future changes are very difficult to make.*

The same is shown on **Map 7** (degree of self-sufficiency in 2001 by planning sectors) and **Map 8** (degree of self-sufficiency in 2031). If current trends continue, degree of self-sufficiency will remain highest for the City of Perth and the remainder of the inner sector, which will continue to have excess jobs. The middle sector will remain almost self-sufficient. The corridors' self-sufficiency will remain well below the middle sector, although it will improve over time. The least self-sufficient sector will be the north-west with five jobs for each ten residents in employment by 2031. The eastern sector will have the second largest job deficiency while the southern corridors will be more self-sufficient, with about six jobs for every ten of its resident workforce.

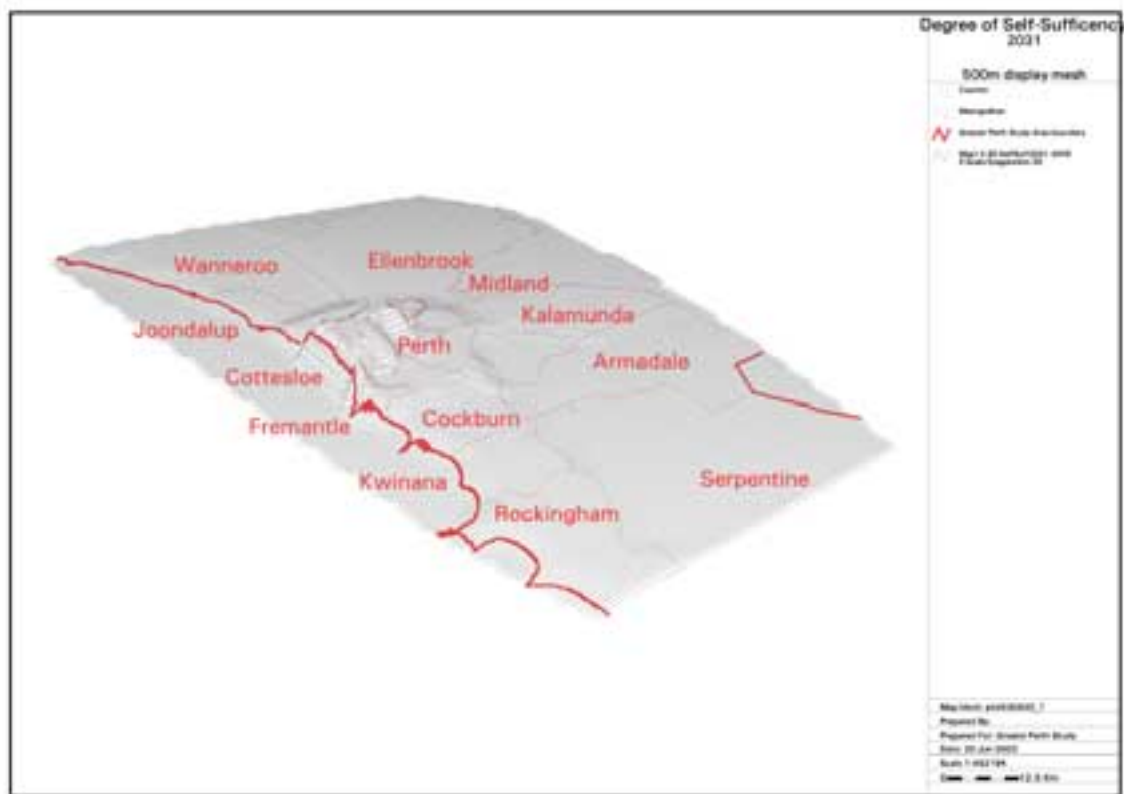
Preliminary figures for 2001 indicate the degree of self-containment will remain notably lower than self-sufficiency. It will improve over time with a more balanced pattern of work trips. The main problem with moderate self-sufficiency rates in corridors lies in the magnitude of future work trips to the middle and inner areas of metropolitan Perth. Work trips will at least double by 2031 as most of the population and resident employment growth will occur in corridors. That will put additional pressure on the road network and transport system.

To alleviate this problem, it will be necessary to alter the current location pattern of employment and double corridors' employment self-containment. This task is not





Map 7 – Degree of Self-Sufficiency in 2001



Map 8 – Degree of Self-Sufficiency in 2031

easy. Metropolitan strategy policies since 1970 have tried with little success. It will require legislative enforcement rather than a policy approach and must be based on co-operation between State and local planning. More research is required on location decision-making of private sector enterprises complemented by location requirements of the main public sector employers.

However, the situation may not be so critical if population growth is slower than expected under the medium scenario.

## 5.8 Land Use Implications of Future Economic Growth

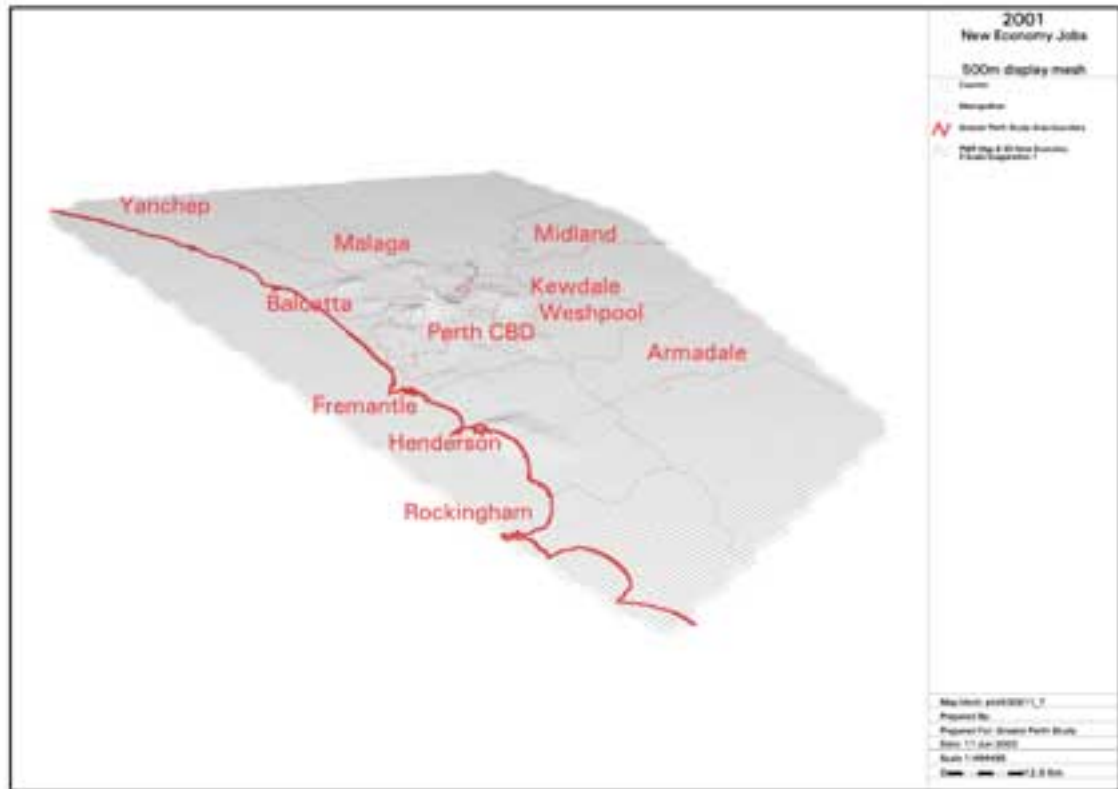
In 2001, there were 606,000 jobs in metropolitan Perth. By 2031, assuming a medium population growth scenario, employment will exceed 930,000 (**Table 5.1a**). About 330,000 new jobs will be created.

**Table 5.5** shows occupied and vacant land in metropolitan Perth in 2001-02 by zoning type and planning sector. In 2002, there were 305,000 people employed on 3,015ha of occupied commercial-zoned land in metropolitan Perth, including the City of Perth and CBD. The Central Business District employed 107,000 people in 2002 (DPI Commercial Survey 2002) on 187ha. Industrial zones had 145,300 employed on 6,007ha. That was complemented by 7,900ha of occupied public purpose land largely taken by transport (mainly airports), utilities, community services, public administration and defence.

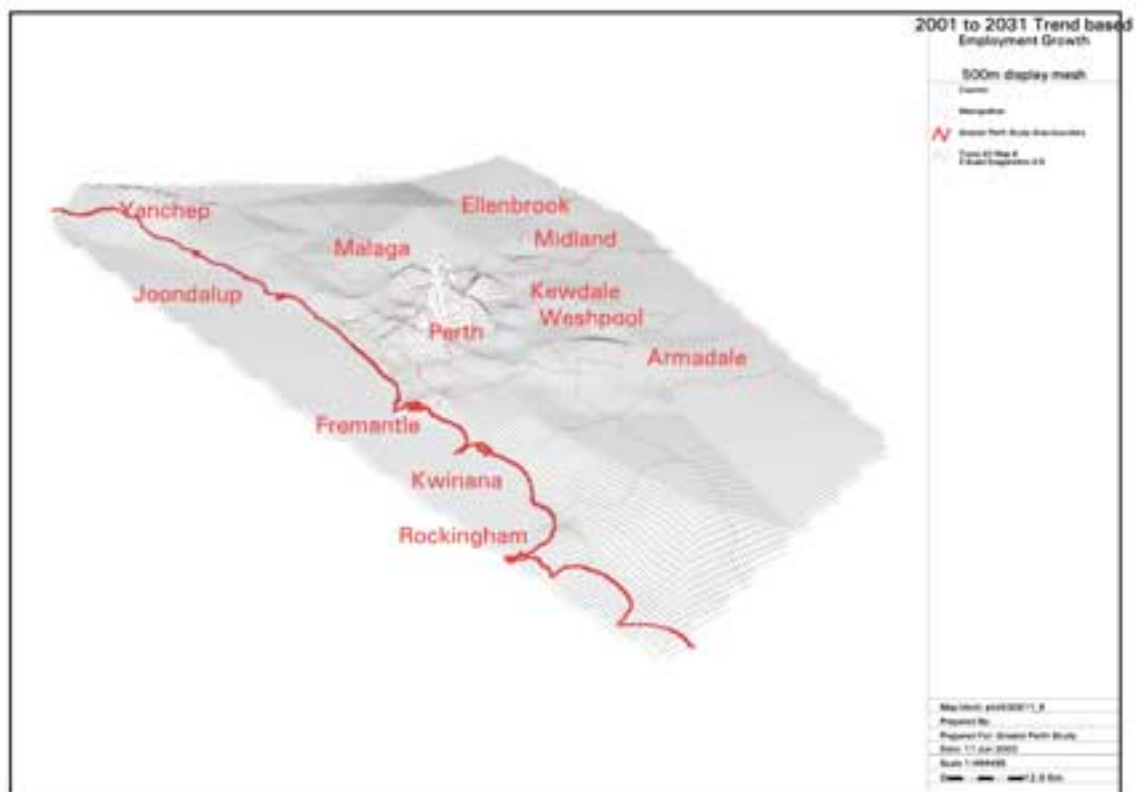
**Table 5.5: Occupied and Vacant Land in Metropolitan Perth 2001-02 in Hectares**

Sector	Commercial zoned land		Industrial land			Total vacant
	Occupied	Vacant	Occupied	Vacant zoned	Vacant proposed	
City of Perth	652	20	13	4	0	4
Inner North	186	8	80	15	0	15
Inner South	251	8	7	0	0	0
Middle North	392	42	645	47	0	47
Middle South	452	71	2,339	523	0	523
Eastern	255	37	728	342	560	902
North-West	504	445	95	917	0	917
South-East	167	25	982	265	15	280
South-West	156	170	1,120	938	1,481	2,419
Total	3,015	826	6,008	3,051	2,055	5,107

*Source: DPI Commercial and Industrial Survey 2002 preliminary. Note: data for Mandurah and Murray not yet available.*



Map 9 - New Economy Jobs



Map 10 – 2001 to 2031 Trend Based Employment Growth

In 2002, there were 826ha of vacant land in commercial zones and 3,050ha vacant in industrial zones. A further 2,000ha of rural land is proposed to be zoned industrial by 2031. Most vacant land, both commercial and industrial, is in outer sectors. Only 145ha of vacant commercial land remains undeveloped in the inner and middle sectors and less than 600ha of vacant industrial land. Some of that land, however, is not readily available for development as it is owned by commercial companies in reserve for potential future expansion.

**Table 5.6** shows expected employment change between 2001 and 2031 under the trend scenario and associated commercial and industrial land requirements. Perth CBD and the remainder of the City of Perth currently have 7ha and 13ha of vacant land respectively. That is not enough to accommodate expected future employment growth in the CBD at current densities. Over 70ha of land is lacking, assuming that all vacant land in the City of Perth is developed at current CBD densities. Some of the land needed may be released by redevelopment but the shortage of land creates an opportunity for attracting part of the growth from the CBD to other strategic and regional centres.

There appears to be a significant oversupply of industrial land (zoned and proposed) - about 3,700ha altogether – but a deficiency of over 600ha zoned commercial at current employment densities.<sup>14</sup> If some of the future growth of the CBD and City of Perth were redirected to commercial zones, the commercial land deficiency would be substantial. Assuming that only 50 per cent of future City of Perth growth is redirected to commercial zones, another 200ha of commercial land would be needed. Average employment densities would have to double by 2031 in order to accommodate such employment growth in commercial zones.

There may also be some land deficiency for the “Other” land use category. This category contains activities such as education, health, communications, some utilities that locate in public purpose zones (in 2001, almost 500ha were vacant in public purpose zones), parks and recreation or activities, including home businesses, which are dispersed within urban zones.

Significant employment growth in the “Other” category, however, may require more attention by planners. Some future land needs may be covered by allowing for more mixed land use in residential zones and most by rezoning to local commercial as urban development progresses. Some future activities, however, may prefer typical commercial zones. Nevertheless, total land requirements of industries classified as “Other” need over 1,600ha at current commercial zoning densities. Assuming half of that growth will be on land zoned for public purposes, the remaining commercial activities will still need about 800ha of commercial land.

Deficiency in commercial land availability will be partly compensated as typical industrial uses move from inner and middle sectors to outer sector industrial zones, freeing inner and middle sector land for commercial activities. Between 1990 and

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<sup>14</sup> Calculations have been made assuming 2002 zone and industry type specific employment densities typical for locations other than City of Perth. The other assumption made was that 2002 employment split between commercial, industrial, City of Perth and other would not change by 2031.

2002, industrial employment fell from 52,000 to 39,000 in industrial zones in inner and middle planning sectors while commercial employment increased from 31,000 to 37,000. This has led to industrial operations moving further away because commercial users have increased the price and competition for space. From 1990 to 2002, industrial employment in outer sectors grew from 17,000 to over 23,000.

A potential surplus of land in some industrial zones, however, may not be adequate to meet the growing needs of commercial activities as some industrial sites are not attractive to commercial users. Moreover, some potential future employment growth in commercial activities preferring high quality amenity may be lost to competition from the eastern States and possibly overseas as globalisation trends become more strongly embedded in the economy.

**Table 5.7** shows distribution of retail employment within metropolitan Perth split into food and non-food categories by planning sectors. This industry deserves some attention as it employs over 20 per cent of the workforce and its employment share is not likely to decline in the next three decades. About 40 per cent of retail employment is in the food category and 60 per cent in non-food. Location criteria for both categories, however, are different. Almost all food retail locates in commercial zones while non-food retail locates in both commercial and industrial zones.

Floor and land space consumption is higher for non-food retail, which consumes almost four times as much floor space and three times as much land as food retail. The location patterns within the metropolitan region also differ considerably. Food retailing roughly follows population distribution. The only exception is the CBD but its food retail is oriented towards servicing the CBD workforce.

Non-food retail, however, appears to maximise accessibility and minimise location costs. Consequently, almost three-quarters of its employment and floor space are located in the inner and middle sectors with 40 per cent of its activities in the latter. About 60 per cent of its employment and floor space is located in industrial zones. Its land consumption per employee is two-and-a-half times greater than food retail.

Although this location pattern is not likely to change much by 2031, corridors may increase their share of non-food retail as urbanisation of Perth expands towards its fringes and land in the inner and middle sectors becomes much more expensive.

Another industry group whose location requirements require attention is finances, insurance, property and business services, the latter being of significant importance. This is the fastest growing industry and if current trends continue, it will employ over 20 per cent of the workforce by 2031.

Location criteria of activities bundled together by ABS under this heading vary considerably, depending on the exact nature of operations. More research is needed to identify the location requirements of these activities. Alternatives to the CBD and inner sector may be offered that would satisfy their economic needs as well as those of society. The proposed business location criteria survey could be a first step in this direction.

**Table 5.6**  
**Trend Estimated Employment Growth within Metropolitan Perth 2001 - 2031 and Associated Land Requirements**

Zoning	Agric.	Mining	Manuf.	Utils	Cons- truct..	Retail	Whole- sale	Transp. & storage	Commu- nication	Finance, Bus. Services	Public Admin	Educ	Health	Welfare & other	Ent. & Rec.	Total
Employment Growth in '000s; <b>Note</b> that 2/3 of Trend estimated future employment growth in CBD in Finance-Business Services has been allocated to Commercial zoning.																
Commercial	0.0	0.4	-0.4	0.0	0.5	32.3	3.1	0.4	0.6	53.0	0.8	2.5	6.3	5.3	19.6	124.3
Industrial	0.0	0.2	-3.3	0.0	2.5	10.9	16.2	2.7	0.9	11.6	0.1	0.9	0.5	1.6	3.1	47.8
CBD	0.0	1.0	-0.1	0.0	0.1	3.1	0.6	0.3	1.4	10.8	0.5	1.9	4.4	4.3	6.3	34.4
Other	0.4	0.1	-1.5	0.1	5.5	3.1	9.0	0.5	1.5	7.0	0.5	24.2	19.7	7.5	11.6	89.2
Total	0.4	1.7	-5.2	0.1	8.6	49.4	28.8	3.9	4.3	82.3	1.9	29.3	30.9	18.7	40.6	295.7
Employment densities in 2002 - persons per Ha																
Commercial	37	149	57	1	151	67	102	75	55	281	141	30	89	77	41	74.8
Industrial	14	2	16	5	55	27	31	23	77	63	34	25	73	22	32	22.8
CBD	4,197	1,515	320	984	691	269	243	176	551	2,257	770	165	727	443	152	572.2
Land requirements in Ha based on 2002 densities; <b>Note:</b> Land requirements for Other category estimated using 2002 commercial zoning densities																
Commercial	1	3	-6	1	3	479	30	5	10	190	5	83	71	69	482	1,425
Industrial	2	78	-203	2	45	398	527	116	11	185	4	28	7	73	100	1,373
CBD	0	1	-1	0	0	11	2	2	3	5	1	11	6	10	41	92
Other	na	na	-26	56	37	47	88	6	27	na	3	814	221	98	285	1,666

**Source:** DPI preliminary commercial and industrial 2002 survey data, MRS, PLUS 2002 preliminary data, Trend based employment extrapolation. **Note:** Employment data is indicative only and does not include no-fixed workplace category. Data for Mandurah and Murray not yet available.

Table 5.7: Food and Non-Food Retail in Metropolitan Perth in 2002

Sector	Food		Other		Total		Retail land in ha.			Employment per Ha			
	Floor '000s m2	Empl.	Floor '000s m2	Empl.	Floor '000s m2	Empl.	Commercial	Industrial	Food	Non-food	Total	Food	Other
CBD	19.1	1,300	192.8	5,240	211.9	6,550	24.3	0.0	2.2	22.1	24.3	594.9	237.2
Perth City remainder	3.1	140	46.5	910	49.6	1,050	64.1	3.9	4.3	63.8	68.1	33.0	14.3
Inner North	93.9	4,250	260.5	4,450	354.3	8,690	66.8	19.5	22.9	63.5	86.3	185.6	70.1
Inner South	78.6	3,210	398.8	5,730	477.4	8,940	79.8	1.9	13.4	68.3	81.7	238.9	84.0
Middle North	188.2	7,250	813.6	12,230	1,001.8	19,480	197.1	140.2	63.4	274.0	337.3	114.4	44.7
Middle South	204.9	7,150	798.9	11,970	1,003.8	19,110	223.1	268.1	100.3	390.9	491.1	71.4	30.6
North-East	88.7	3,530	412.1	5,240	500.8	8,770	110.2	113.9	39.7	184.4	224.1	88.9	28.4
North-West	131.7	6,260	337.2	5,090	468.9	11,340	187.0	71.7	72.7	186.1	258.7	86.1	27.3
South-East	101.2	3,450	262.5	3,390	363.6	6,840	90.7	167.0	71.7	186.1	257.8	48.1	18.2
South-West	99.9	3,830	308.1	3,860	408.0	7,690	60.1	59.5	29.3	90.4	119.7	130.7	42.7
Total	1,009.2	40,360	3,831.0	58,120	4,840.2	98,470	1,103.4	845.8	419.8	1,529.2	1,949.2	96.1	38.0

Source: DPI preliminary PLUS data 2002.

## 6. Ideas for Future Planning

### 6.1 Greater Perth

Planning decisions within Metropolitan Perth need to include the larger context of global, national, State, metropolitan and regional issues. At the same time, proper consideration should be given to the needs and expectations of State residents and businesses.

Ideas to support this include:

- Western Australia, and Greater Perth, should try to attract and support investment to assist it in developing its skill base. In so doing, Perth and its regions would be able to develop a 'virtuous circle' of high living standards and increased productivity that will enable it to remain internationally competitive in attracting skill-intensive service industries which can increasingly be the basis of an evolving competitive advantage.
- In order to facilitate future growth, it is necessary that planning understands and responds to the urban amenity needs of industries, businesses and enterprise households. That knowledge can be gained by carrying out extensive research at least once a decade. This research should be aimed at businesses of all sizes and their employees with special attention to innovative, export oriented or import substitute businesses. Without that knowledge, specific location and other planning related needs of industries and economic activities cannot be adequately addressed. Equally, planning needs to be cognisant of people's preferences in respect of land use and urban amenity.
- Timely provision of both physical and social infrastructure is of considerable importance for the growth and development of Greater Perth and its country regions. Infrastructure provision should also pay attention to the amenity needs of highly skilled workers, so that leisure, cultural and community services are suitably attractive and complement the 'liveability' of Perth and regional Western Australia.
- More localised planning approaches may be required for the zoning system and allow for more flexibility. Incentive and overlay (or floating) zoning are good examples and have been successful in some cases. The former approach is based on providing developers/industries with flexibility in how to use land, especially, in relation to densities. Overlay zoning relaxes static traditional zoning which assigns specific uses to particular land tracts. An example of a successful overlay zone is Gastonia in North Carolina where the historic district residential character and design were protected, while the overlay zoning allowed for the development of a corridor in which professional offices, banks, specialty shops and small restaurants were allowed to locate (Blakely 1994). Similar conceptual approaches are taken in the United Kingdom. This is in line with the growth of the service economy as the dominant economic form of the modern city.



- In order to facilitate the growth and development of Greater Perth, it may be necessary to redefine the planning role of government, its legislative powers and its objectives. Redefining planning will require broad public participation and support in the process as well as the cooperation of various public sector agencies, governments of all levels, businesses, community groups and individuals.
- Future job distribution within metropolitan Perth is likely to be more evenly distributed than it has been in the past, with work trip distances and times reduced as jobs move towards the outer regions. This may be assisted by well chosen strategic and regional centres within urban corridors. This strategy should be complemented by the creation of properly designed mixed land use zones (as proposed in *Liveable Neighbourhoods*) where many small businesses could locate.
- Other planning incentives in cooperation with Federal and State governments can include the creation of enterprise zones where planning controls are minimized and financial incentives are provided (tax rebates, duty free operations etc) to both newcomers as well as occupants. To make these zones successful, the emphasis must be placed on designing, aiming and offering incentives at skill intensive industries with the capacity for high productivity growth.
- The State and its regions, including Greater Perth, should seek to maximise employment growth from its natural environmental assets. Not only will this assist in attracting high-skilled immigrants and temporary residents to fill specialised job needs, but it will also assist in tourism development.
- Support for tourism can involve development of designated tourist attractions, including a good road network, accommodation, cuisine and clearly marked roadways and guiding signs. Attractions must be chosen carefully and be competitive with similar attractions in other locations, both nationally and internationally.
- Much of the future long term employment and population growth of Greater Perth does not necessarily have to concentrate within metropolitan Perth. Developing new urban alternatives to the city may be a better option. Such a new city (or cities) can be planned to achieve functional integration with their country hinterland, thus removing social and economic disparities.
- Greater Perth country regions could take a lead from countries such as Portugal, Spain, France, Italy and Greece and seriously explore the opportunity of attracting retired people from overseas. This might include the development of appealing retirement locations with high amenity that is attractive to older people. It will almost certainly require the cooperation of the Commonwealth government.

## 6.2 Implications for Regional Planning

### 6.2.1 Overcoming Growth Constraints of Country Regions

There are at least three requirements if country regions are to experience faster economic and population growth rates and be capable of attracting at least some part of the future growth of metropolitan Perth.

- Local economic development strategies in metro-linked regions need to put aside parochial attitudes and focus on closer commercial integration with the metropolitan area at the early stages of growth, while not only maintaining the distinctive and independent character of local towns and landscapes but also allowing for fast urban growth of selected centres.
- To facilitate economic growth of country regions, significant expansion of regional infrastructure is needed. That involves improved fast highway and possibly freeway links, fast train links and regional airports directly and conveniently connected to Perth international and domestic airports. A standard gauge rail link between Bunbury and Kemerton to East Perth could be needed to attract more downstream processing and heavy manufacturing. The region will also need a deepwater port with better services than Bunbury port can presently provide. Options include a new deep water port in Rockingham-Kwinana or even Albany. The latter location is the cheapest alternative for port development but may be too distant from South West industries. Provision of technical infrastructure should be complemented by cheap telecommunication and transport services (DPUD 1991 and 1992).

Substantial expansion of social infrastructure is also needed. It should increase the quality and availability of medical services, with particular attention to the needs of retired people, and at least one teaching hospital. Expansion of post-secondary education is also of primary importance as many families leave country regions once their children approach that stage.

Such infrastructure improvements would allow for a transfer of city-generated consumption expenditure into these communities. Such investments need to be reinforced by planning strategies and marketing campaigns, which identify, preserve and enhance the different brands of lifestyle offered.

- Decentralisation of some government services and their location in properly selected country locations would also assist regional development and enhance growth potential. There should be a clear and fast legislative development approval process.

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