# Economic Linkages within Auckland: Final Report

Richard Paling and John Williamson

2013

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**Client** Ministry of Business, Innovation and Employment

**Report by** Ascari Partners Ltd and Richard Paling Consulting

Ascari Partners Ltd
PO Box 5345
Wellesley Street
Auckland

**Phone** +64 9 358-0069

**Fax** +64 9 358-0066

**Authors** John Williamson and Richard Paling

**Date** 2013

**Version** Final Version 3

## Summary

Given the importance of Auckland to the New Zealand economy, the Ministry of Business, Innovation and Employment (MBIE) wishes to better understand the nature of the economic structure and economic linkages within Auckland.

This study identifies Auckland's intra-regional economic linkages and the connections between the main centres within the Auckland city-system. A key part of the study is the development of a 'spatially aware' understanding of Auckland's economic functions and structure at the sub-regional level. This includes an examination of sub-regional centres, looking to identify where and how economic development is playing out in Auckland.

The four key spatially oriented questions addressed in the study are:

- What are the economic roles and functions of different parts of the city?
- Are there complementarities (or otherwise) that exist spatially within the city?
- Where are key industries/sectors are located?
- Why might these activities choose these locations?

The study identifies a range of actions to assist in lifting the productivity of the Auckland city-system. This includes consideration of how the public sector might best support and enable economic development in Auckland including where might it be best to locate public assets and functions in order to maximise economic development opportunities.

The study finds that within the Auckland region, there exist a wide range of linkages between the different constituent areas and between the activities undertaken but with discernable patterns that are relevant to policy making.

For manufacturing, the linkages between similar firms are typically much less pronounced than other sectors. Vertical linkages with suppliers and customers are more important and much of the recent development in this sector has occurred along the motorway network facilitating the movements of inputs and outputs, although the key determinant of location is typically the availability of suitable land for development.

More expansive linkages are found in the advanced business services sector which has grown rapidly and which is likely to be at the forefront of the future growth and globalisation of the Auckland economy. This sector benefits from the agglomeration benefits arising from the linkages between concentrations of workers at key central locations who, because of the range of skills required, tend to be drawn from wide catchment areas. Supporting this growth therefore requires good accessibility to these central areas and the provision of a high quality urban environment to make working in these areas attractive. For both of these, Governments at both a central and local level have a role in providing important support.

# 1 Introduction and background to work

Given the importance of Auckland to the New Zealand economy, there is a desire by the MBIE to better understand the nature of the economic structure and economic linkages within Auckland. Accordingly, the aim of the project is to identify Auckland's intra-regional economic linkages and the connections between the main centres within the Auckland city-system. A key part of the study is the development of a more 'spatially aware' understanding of Auckland's economic functions and structure at the sub-regional level. This includes an examination of sub-regional centres, looking to identify where and how economic development is playing out in Auckland. Spatially oriented questions addressed in the study include:

- What are the economic roles and functions of different parts of the city?
- Are there complementarities (or otherwise) that exist spatially within the city?
- Where are key industries/sectors are located?
- Why might these activities choose these locations?

From our analysis the study goes on to identify a range of actions to assist in lifting the productivity of the Auckland city-system. This includes consideration of how the public sector might best to support and enable economic development in Auckland including where might it be best to locate public assets and functions in order to maximise economic development opportunities.

Our analysis of the economic linkages and structures within the region provides a comprehensive assessment of the roles of the component sub-regional areas and urban centres and their interactions. This allows us to determine the extent of economic integration within the region and therefore, the extent to which the region can be seen as a functioning city-system.

## 2 Proposed approach

We analyse the Auckland city-system by adapting the approach used in our recent study of the Auckland, Hamilton and Tauranga region.[1] This approach accounts for the particular conditions within Auckland and takes advantage of information, models and sources of data available from the authors' own resources gained through a number of studies of the movements of people and freight within the region. In addition to the analysis of published data a small number of stakeholder interviews were undertaken.

To provide a robust context we frame our analysis within a specific definition of a city system as follows:

> *"the sites of dense masses of interrelated economic activities that also typically have high levels of productivity by reason of their jointly-generated agglomeration economies and their innovative potentials."*[2]

By adopting this definition our analysis then sets out to understand whether the proximity between centres within Auckland has led to higher than expected levels of economic integration, via, labour markets, flows of goods and services and knowledge exchange, whether this has contributed to economic growth and what might happen in the future.

This process allows the study to explore in detail a number of the most important economic linkages which potentially exist between the main centres within Auckland. The main areas of potential interaction that we investigate are:

- Employment structure and composition to identify the economic characteristics of Auckland's sub-regional areas.
- Journey to work patterns which assist in understanding to what extent Auckland is a single city-system.
- Patterns of business travel to help understand business to business links.
- Freight movements looking at both origins and destinations of goods.
- Migration patterns and the role of migration.
- Other travel movements.

We tie the results of these analyses together to with existing information on firm location and a small number of interviews with firms in key sectors to form a comprehensive pattern of linkages within Auckland.

The reorganisation of local government in Auckland raises issues around the way in which the analysis might be conducted. For some of this analysis, the region has been divided into four sectors, North West Central and South. These areas have been largely based on an area breakdown developed by the Auckland Council which is set out in Figure 2.1.

[1] Paling, R., Sanderson, K. and Williamson, J., 2010, Economic Linkages between New Zealand Cities, report prepared for the Ministry of Economic Development.
[2] Scott, A.J. and Storper, M., 2003, 'Regions, Globalization, Development', Regional Studies, Vol. 37: 6&7, Pp 579-593. p7.

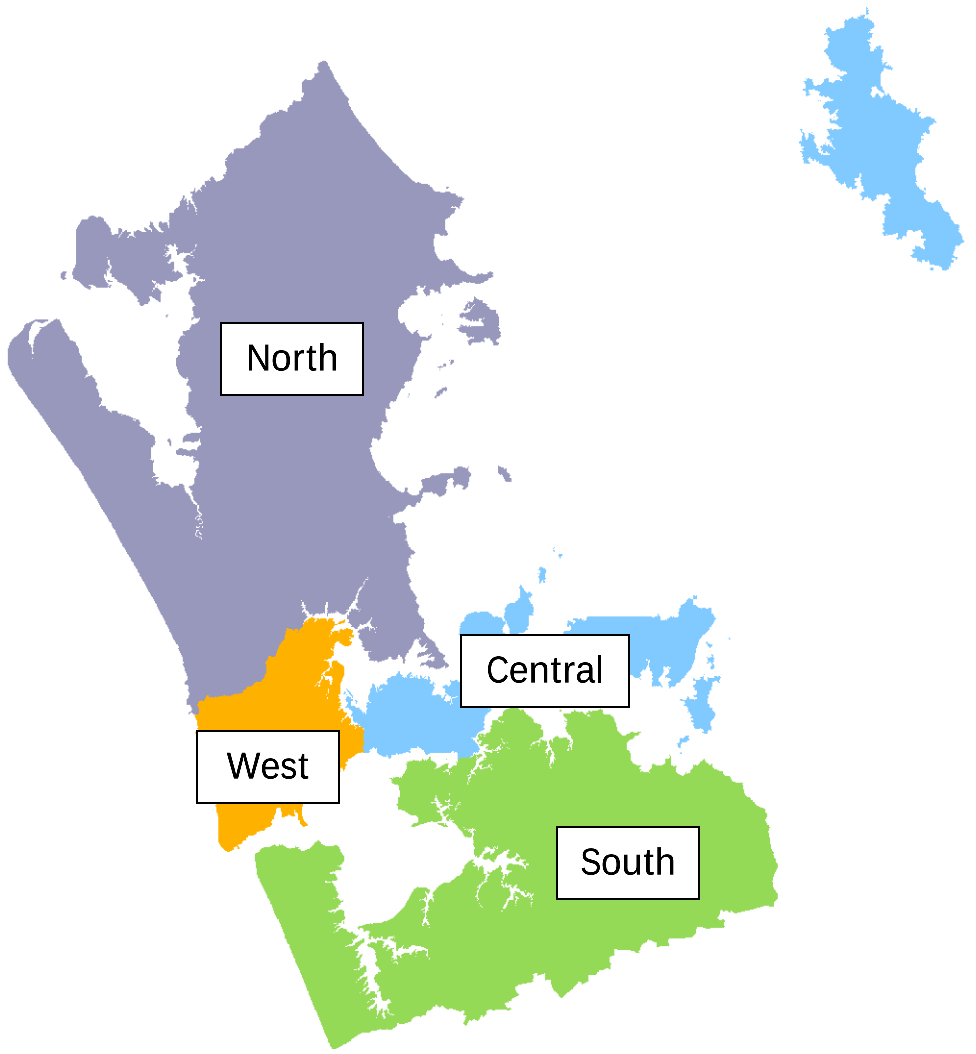


**Figure 2.1**
**"Areas" within the Auckland Region**

However for this report, to take advantage of the wealth of statistical data captured prior to the formation of the Auckland Council, we have amended these and adopted slightly different area definitions. These comprise:-

| | |
|---|---|
| North | Former areas of Rodney District and North Shore City |
| West | Former area of Waitakere City |
| Central | Former area of Auckland City |
| South | Former areas of Manukau City, Papakura District and Franklin District. |

Much of the initial work on the study was based around 2006 Census data. Subsequently however more information for 2010 has become available and this version of the report is mainly based on this data, supplemented with 2006 census data where this is useful.

# 3 Background literature review

- Population and productivity growth in Auckland is higher than other parts of New Zealand.
- The city and region are transforming from a manufacturing base into a 'knowledge economy'.
- On a global scale, Auckland is relatively small, isolated from potential markets and lacks economic diversity.
- Auckland mirrors a global trend towards polycentric regions.
- This offers greater external economies and efficiencies but city centres still matter.

In our recent study of Auckland, Hamilton and Tauranga we conducted a detailed literature review encompassing research covering the relationship between economics and geography, the process of urbanisation and the growth of cities, the concept of agglomeration and its role in driving the observed growth of cities and finally, the nature of urbanisation including the economic characteristics of city-regions. The main findings from this review are also relevant to our more in depth analysis of Auckland and are briefly summarised below. Additionally, in this study we place more emphasis on the nature of the internal development patterns of cities and consequently expand our review of the literature to address this. We also look a little at existing research examining the functions, structures and linkages within the Auckland economy, to provide some context to our empirical analysis.

## 3.1 Structural transformation and the growth of cities

Auckland is notable for its historically high levels of population growth, relative to other New Zealand cities and it's relatively high levels of productivity. This pattern is likely to continue in the future with over 50 per cent of New Zealand's population growth over the next 30 years likely to occur in Auckland. This pattern is also consistent with trends observed overseas, where dominant cities within countries are tending to consolidate their scale advantage over adjacent cities, rather than seeing population growth stagnating as the costs of growth (such as congestion) rise.

Consequently, two of the most striking trends of recent history have been the rapid rise in the rate of urbanisation overall, accompanied by an increasing concentration of economic activity in relatively small geographical areas.

A reason for this is that cities (and city-regions) are at the forefront of the what some term the knowledge[3] or information revolution,[4] that has seen cities transformed from manufacturing centres to business service hubs at the heart of the 'knowledge economy'.

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[3] Stewart, T.A., 2001, Wealth of Knowledge: Intellectual Capital and the Twenty-first Century Organisation.

[4] Grinin L. 2007, Production Revolutions and Periodization of History: A Comparative and Theoretic-mathematical Approach. Social Evolution & History. Vol. 6, num, 2.

An important aspect of this transformation is connectivity; the development of networks of economic and social linkages, both within and between cities. Evidence indicates that larger, better connected cities are typified as having different workforce compositions to less connected places, with more highly skilled knowledge workers and more specialisation of tasks, a greater range, size and type of firms and are likely to be more productive.

## 3.2 Key themes of economic geography

Accordingly, the economic framework used in this study is grounded in the field of economic geography and will rely heavily on the concepts underpinning agglomeration. Our previous study identified the three main themes within economic geography of scale, location and economic diversity. Here we briefly summarise these;

- **Scale**: Larger domestic markets can provide greater economies of scale. A small, isolated country such as New Zealand is disadvantaged here.[5] Scale also matters at the city or regional level. McCann (2009) points out that although no simple direct relationship exists between urban scale and productivity, "all of the world's most productive cities are at least twice the size of Auckland", and most are between three and five times the size of Auckland."[6]

- **Location**. The OECD and World Bank note that at the country level New Zealand and Australia suffer the greatest adverse effects of geographical isolation on productivity of any advanced economy in the world.[7] The IMF found this isolation reduces labour productivity in Australia and New Zealand by just over 10 per cent.[8] However, whereas the negative effect of Australia's relative isolation on labour productivity is compensated for by the size of its own markets, this is not so for New Zealand. Here the small country effect adds to the productivity gap.[9] Location is equally important for cities in the global economy, where, apart from Perth, NZ's cities are ranked the world's most isolated advanced urban economies.

- **Economic diversity** in production and trade supports a more productive economy. At the country level New Zealand is characterised by a noticeably high reliance on land based exports and the lowest level of export diversity for any developed economy.[10]

New Zealand now forms an economic region of Australasia with Auckland at the centre.[11] However, Auckland is a relatively small and isolated city by OECD standards and is also relatively distant from the core of the Australasian economic region. The central tenets of economic geography strongly suggest that Auckland's small scale and isolation, combined with a relatively undiversified economy are likely to pose significant barriers to economic growth. Essentially, Auckland needs to plan to mitigate against these forces.

[5] NZIER 2006, McCann, 2009, Ibid. p287.
[6] OECD 2006 in McCann, 2009, Ibid. p297.
[7] OECD 2008 (b,c) World Bank 2009b in McCann 2009 p287.
[8] IMF 2004 in McCann 2009, Ibid. p287.
[9] McCann 2009, Ibid. p287.
[10] OECD 2008 (a,b), in McCann 2009, Ibid. p287.
[11] Maré (2008) confirms this result, demonstrating that the size distribution of New Zealand's cities reasonably reflects the results that would be expected if Australia and New Zealand were treated as one economic region. Maré, David C. (2008). "Labour Productivity in Auckland Firms," MED Occasional Paper 08/09, Ministry of Economic Development, Wellington.

## 3.3 Patterns of urbanisation and the economics of city-regions

Earlier (monocentric) economic models of cities assumed that economic activity within the city would be concentrated within the urban core, with a city having one centre and a clear declining density gradient from the city centre outwards.[12] Many studies within the agglomeration literature remain tied to definitions of urban areas which appear to correspond closely to the monocentric form.[13]

However, observed patterns of urbanisation indicate that the growth of cities is being accompanied by the increasing presence of city-regions characterised by new centres emerging in, or, at the edges of cities, or, the fusion of relatively independent and distinct cities into wider metropolitan areas forming what are termed 'polycentric' cities or city regions.[14]

Thus, in contrast to the earlier cities literature, a common theme amongst more recent authors within spatial economics is that the "emerging spatial form of post-industrial urban regions is quintessentially polycentric."[15] Or, as in the view of Meijers and Burger (2010) "the 'city' is becoming a regional phenomenon."[16]

A polycentric region is characterized as having co-located, multiple centres or cities, which interact and provide multiple sources of agglomeration economies.[17] Given the diverse nature of cities, the literature does not provide one universal definition of the concept but instead identifies a number of types of polycentrism.[18] For example Bontje and Burdack (2005) consider edge cities; recently formed, large multifunctional concentrations of offices, retail, leisure and housing areas at a considerable distance of the 'historic' central city, to fit within the definition and demonstrate that development tendencies in the US and also some European metropolitan regions bear resemblance to edge city. [19]

[12] See Alonso, W. 1964, Location and Land Use: Toward a General Theory of Land Rent; Mills, E. S. (1972). Studies in the Structure of the Urban Economy. Baltimore. Harvard University Press; Muth, R. F. (1969). Cities and Housing: The Spatial Pattern of Urban Residential Land Use. Chicago: University of Chicago Press; and Ahlfeldt, G. M. and Wendlan, N. 2008, Spatial Determinants of CBD Emergence: A Micro-level Case Study on Berlin, ETH, Zurich.

[13] Meijers and Burger, 2010, Ibid. p1398.

[14] Meijers E J, and Burger M J, 2010, "Spatial structure and productivity in US metropolitan areas" Environment and Planning A 42(6) 1383 – 1402. p1383.

[15] See Meijers and Burger, 2010, Ibid. p1383; Alonso, W. (1973) Urban Zero Population Growth, Daedalus, 109, pp. 191-206, in Meijers and Burger, 2010, Ibid. p1384; Phelps, N.A. and T. Ozawa (2003) Contrasts in agglomeration: proto-industrial, industrial and post-industrial forms compared, Progress in Human Geography, 27, pp. 583–604. p594; and Sassen, S. (2007) Megaregions: Benefits Beyond Sharing Trains and Parking Lots? In: K.S. Goldfeld (ed.) The Economic Geography of Mega-Regions. Princeton, NJ: The Policy Research Institute for the Region.

[16] Meijers and Burger, 2010, Ibid. p1398.

[17] Meijers and Burger, 2010, Ibid. p1384.

[18] See Riguelle, F., Thomas, I. and Ann Verhetsel, A. (2007) Measuring urban polycentrism: a European case study and its implications, Journal of Economic Geography, Volume7, Issue2, Pp. 193-215; Hall, P. and Pain, K. (2006), The Polycentric Metropolis: Learning From Mega-City Regions In Europe. p3; and Florida, R, Gulden, T. and Mellander, C. (2008) 'The Rise of the Mega-Region', Cambridge Journal of Regions, Economy and Society, Vol. 1, Issue 3, pp. 459-476, 2008. p459

[19] Bontje, M. and Burdack' J. 2005, 'Edge Cities, European-style: Examples from Paris and the Randstad', Cities, Volume 22, Issue 4, August 2005, Pages 317-330.

Ahlfeldt and Wendlan (2008) examine Berlin in order to illustrate the nature of growth of a polycentric city. They find that as population and congestion increase within a city, sub-centres can be expected to emerge in places with good overall accessibility.[20] This is consistent with the results of Anas and Kim (1996) who use a general equilibrium model of urban land use to demonstrate how stronger agglomeration benefits relative to cost leads to fewer and bigger urban cores while increasing costs (such as congestion) relative to the benefits of agglomeration leads to the creation of multiple centres.[21] Ahlfeldt and Wendlan reach the view that from a transport perspective, the planned creation of duo-centric spatial structure (or at least the generation of very strong sub-centres) may represent a pragmatic approach for the optimisation of residents' trip patterns."[22] They also note research showing that, as in the case of Los Angeles, proximity to the urban core may even become an inferior indicator for attractiveness of location compared to smaller sub-centres.[23]

The key observation is that although definitions may vary between authors, the concept of polycentric cities emphasises that external (positive) economies are not confined to a single urban core, but are shared among a collection of nearby and linked centre.[24]

The potential benefits of different spatial patterns in urban areas have been examined in some depth by a number of authors. A study of agglomeration effects in Montreal found a dispersal of 'high-order service employment' to growth nodes outside the CBD and that many high-order service firms left the CBD, to relocate in other centres within the metropolitan region.[25] The study found this pattern of dispersion to be more favourable in terms of the attainment of agglomeration benefits as opposed to a general distribution of these activities across the metropolitan area.[26]

More broadly, Meijens and Burger considered whether different spatial patterns affected the economic performance of US metropolitan areas by examining labour productivity. The analysis revealed that polycentricity in cities is associated with higher labour productivity, relative to a monocentric city form.[27] The analysis of Meijers and Burger (2010) provides an important clue that may assist us to understand the economic implications of polycentrism within cities. Their finding was interpreted as confirming "ideas that agglomeration externalities spread over larger distances, and may interact in regions where multiple urban places, and hence, multiple sources of agglomeration externalities, are co-located."[28] This aligns with the view of Phelps and Ozawa (2003), that external economies are not confined to a single urban core, but instead, can be shared among a group of functionally linked settlements.[29]

[20] Ahlfeldt and Wendlan, 2008, Ibid. p8.
[21] Anas, A. and Kim, I. 1996, General Equilibrium Models of Polycentric Urban Land Use with Endogenous Congestion and Job Agglomeration, Journal of Urban Economics, 40(2), 232-256.
[22] Ahlfeldt and Wendlan, 2008, Ibid. p8.
[23] Heikkila, E., Gordon, P., Kim, J. I., Pesier, R. B., Richardson, H. W., & Dale-Johnson-D., 1989, What Happened to the Cbd-Distance Gradient?: Land Values in a Polycentric City, Environment and Planning, 21(2), 221–232.
[24] Meijers and Burger, 2010, Ibid. p1383.
[25] Coffey, W.J. & Shearmur, R.G. (2002). Agglomeration and dispersion of high-order service employment in the Montreal metropolitan region, 1981-1996. Journal of Planning, Literature 17, 1: 85-168.
[26] Coffey and Shearmur (2002) Ibid. p159.
[27] Meijers and Burger, 2010, Ibid. p1398.
[28] Meijers and Burger, 2010, Ibid. p1399.
[29] Meijers and Burger, 2010, Ibid. p1399.

Nevertheless, as Kloosterman & Musterd observed "central city locations still matter." This holds especially in the case of innovative activities based on the exchange of richly layered information demanding a high frequency of face-to-face contacts."[30]

Therefore, an important question for us to consider within this study is the extent to which Auckland might be becoming an identifiably polycentric city and how beneficial this may be?

[30] Kloosterman, R.C, & Musterd, S. (2001), 'Polycentric urban region as a research concept', Urban Studies, Vol. 38(4): 623-633. p630.

# 4 Previous research in Auckland

- Auckland is New Zealand's only international city.
- Domestically dominant, Auckland is increasingly dominated by business services and its role as a distribution hub.
- The Auckland premium means value-add per employee and average earnings are greater than the average for NZ and are highest in the CBD.
- Auckland will to continue to benefit from initiatives which support its increasing scale, density and economic diversity.

## 4.1 Auckland's Economic Structure and Functions

The familiar picture which emerges from the many studies and reports examining the structure and functions within Auckland's economy is one of a city which dominates New Zealand in terms of population, employment, output and economic diversity.

Auckland's relative economic strengths lie in business services, finance and insurance and distribution. [31] In the broad Business Service sector Auckland employed 39 per cent of the national total in 2006 (122,000 people out of a national total of 309,000). Auckland displays the characteristics of a specialised financial centre with a concentration in finance and insurance sector representing 42 per cent of total national employment. This enables Auckland to provide advanced business and financial services over large areas of New Zealand.

Auckland is also a key distribution centre for New Zealand with a notably high proportion of workers in the distribution sector representing 9 per cent of the total workforce. A high proportion of freight movements out of the region are associated with retail distribution (3.5 million tonnes per year to areas away from Auckland in 2006-07 out of total of total interregional movements of about 5.3 million tonnes).[32]

## 4.2 Auckland's Economic Performance

Auckland is generally considered to be New Zealand's only 'international' city and is expected to continue to benefit from initiatives which support its increasing scale, density and economic diversity.[33]

[31] ARC, 2009a, Business and economy 2009: The Auckland region.
[32] National Freight Demands Study, Richard Paling Consulting et al for Ministry of Transport, Ministry of Economic Development and NZTA, 2008.
[33] Paling, R., Sanderson, S. and Williamson, J., 2011, Linkages between New Zealand Cities, report prepared for the Ministry of Economic Development.

The region is characterised by high levels of earnings and productivity and this is positively related to employment density. Williamson et al (2008a) using data from the 2001 Census identified that the average earnings for all workers in the Auckland CBD is $47,100. This was approximately 15 per cent higher than the average for Auckland City ($41,000), and 27 per cent higher than the average for the Region ($37,000). The major finding was that while sectoral composition (more productive sectors locate in the CBD) and educational attainment (educational qualifications are higher in the CBD) would appear to contribute to the CBD's observed productivity advantages, employment density and the co-location of economic activity (or, in other words, "pure agglomeration benefits") were found to be the primary drivers.[34]

Using a different methodology Maré (2008) examined the relationship in Auckland between employment density and labour productivity. He found that industries are positively selected into Auckland – the industries that are most concentrated in Auckland are the ones that show the highest Auckland premium.[35]

Maré concluded that "the net result of this is that value added per worker in Auckland region is 30 to 50 per cent higher than that of regions outside Auckland and for Auckland CBD the premium is even higher (120 to 150 per cent)." [36] While appearing to be large, this is similar to findings for London, which has GDP per capita that is 50 per cent above the rest of the UK, and Inner London has a premium of 140 per cent.[37] The table below highlights the key research relating to Auckland's economic performance.

**Table 4.1 Relevant Auckland Research**

| Title | Authors | Year |
|---|---|---|
| **General Auckland Literature** | | |
| Business and economy 2009: The Auckland region | Auckland Regional Council; | 2009 |
| Auckland's regional economic futures: Stocktake of information on business sectors | Capital Strategy; | 2007 |
| The composition and scale of Auckland's economy | Covec; | 2008 |
| Assessing agglomeration impacts in Auckland: Linkages with regional strategies | Ascari; Richard Paling Consulting | 2007 |
| Auckland – An internationally competitive city | Ministry of Economic Development; | 2007 |
| Economic futures for the Auckland region. Part 1: Knowledge base for scenarios development | Auckland Regional Council; | 2008 |
| Performance Indicators for Economic Transformation - Auckland | GUEDO; | 2007 |
| Auckland's economic geography: Trends and drivers of business growth in the Auckland region | Capital Strategy; | 2007 |
| **Productivity** | | |
| Labour productivity in Auckland firms | Maré, D C; | 2008 |
| Assessing agglomeration impacts in Auckland: Phase 1 | Williamson, John; Paling, Richard; Waite, David; | 2008 |
| Assessing agglomeration impacts in Auckland: Phase 2 | Williamson, John; Paling, Richard; Waite, David; Staheli, Ramon; | 2008 |

[34] Williamson, Paling and Waite 2008a. Note: The analysis indicated that within sector productivity differentials account for approximately two-thirds of the difference between average earnings in the CBD and the Region as a whole, with sectoral composition accounting for only a third.
[35] Maré (2008), Ibid.
[36] Maré (2008), Ibid.
[37] ONS (2007), Ibid.

| | | |
|---|---|---|
| Regional economic performance in New Zealand: How does Auckland compare? | Lewis, G; Stillman, S; | 2005 |

### 4.3 Sectoral Studies – Key sectors relating to key centres

At a sectoral level a range of detailed studies and industry snapshots have been undertaken within Auckland over recent years, with a sample of these identified in the table below:

**Table 4.2 Auckland Sectoral Studies**

| Title | Author | Year |
|---|---|---|
| Industry snapshot for the Auckland region: The food and beverage sector | ARC | 2010 |
| Industry sector report: Food and beverage sector competitiveness | Ascari, BERL and Strateg.Ease; | 2009 |
| Industry snapshot for the Auckland region: The construction sector | ARC | 2009 |
| Industry snapshot for the Auckland region: The manufacturing sector | ARC | 2009 |
| Industry snapshot for the Auckland region: The marine sector | ARC | 2009 |
| Industry snapshot for the Auckland region: The tourism sector | ARC | 2009 |
| Jobs Futures in Auckland 2006-2016 | ARC | 2009 |
| Auckland's Creative Industries: the numbers 2009 | Auckland City | 2009 |
| Snapshot: Auckland's creative industries | Auckland City | 2005 |
| Auckland's Creative Industries: the numbers 2009 | Auckland City | 2009 |
| Understanding Business Services in the Auckland city region | Ascari | 2007 |
| Manufacturing in Auckland City | Ascari | 2007 |

These studies provide a wealth of information and analysis of specific sectors and also of relationships within and between sectors. In order to avoid a degree of repetition to a large extent the conclusions and issues raised by these study are considered below as part of the general assessment of the sectors and form part of the material used to develop our analysis.

# 5 Determinants of Firm Location in Auckland

- Auckland offers businesses scale: bigger labour pool (including access to skilled migrants), larger customer base and better regional and international connectivity
- Specific locations within Auckland are chosen because of good local facilities, telecommunications and access, because they offer a profile location and are close to the owner's home
- Firms leave Auckland because of the high cost of local government compliance, traffic congestion and a relatively higher cost of doing business

At the regional level, the findings of a study carried out for the then Ministry of Economic Development (MED) in 2009 confirmed that there are business-related drivers for firms to be located in Auckland, as opposed to other locations within New Zealand.[38] Interview results indicated that Auckland was judged to provide locational advantages which included for firms which included:

- Access to a larger pool of highly qualified specialists, as well as skilled, unskilled, and casual labour;
- Better connectivity to regional and international markets and supply chains;
- Access to a larger local customer base;
- Stronger potential to attract international corporate visitors; and
- Easier to attract and retain skilled labour from overseas.

Negative factors that might lead to a firm leaving Auckland included costs involved in dealing with local authority regulations (e.g. zoning and consents), traffic congestion, and the higher costs of doing business in Auckland compared with other parts of New Zealand.

The study also examined, through interviews, why firms chose to locate in specific parts of Auckland. The eight factors that survey respondents said were most important (where over 50 percent of responses were 'very important' or 'somewhat important') when they considered where to locate their firm were:

- Being geographically close to customers;
- Access to plentiful and free/affordable car parking;
- Being geographically close to workers;
- Access to quality internal transport infrastructure or services (e.g. road, rail, etc);
- Access to quality telecommunications infrastructure or services;
- Being geographically close to built amenities (e.g. cafes, shops, banks, medical services, childcare facilities etc);

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[38] Miller, R., So, N. and Williamson, J., 2011, Drivers of Firm Location, Firm Success and Industry Success in the Auckland Region, report prepared for the Ministry of Economic Development.

- Location provides good exposure/profile for the business; and
- Being geographically close to the owner's residence.

The three least important factors are:

- Being geographically close to natural amenities (e.g. beach, forests, parks etc);
- Favourable natural climate; and
- Being geographically close to research and development facilities.

From in depth interviews with a wider range of firms the following key factors emerged as being important determinants of firm location in Auckland: [39]

- Being located close to customers is particularly important for service-based firms.
- Being located in a convenient place for most of the firm's employees is important for nearly all firms.
- Being located close to the owner's residence was important for most privately owned and managed firms, but this factor is less important for other types of firms.
- Being located close to the motorway system was important for firms where the transport of goods and people is an essential part of business operations.
- Being located close to the airport was important for firms that use air travel frequently or rely heavily on air freight.
- Being located close to suppliers was only important for firms that source raw or semi-processed materials locally.
- Being in a location that provides good exposure and profile for the business was more important for firms whose target market are household consumers.
- Being located in a CBD-type location was more important for large firms, including multinationals, and business head offices.
- The availability of suitable land/premises at the time of setting up or relocating the business was more important for large firms than smaller ones.
- Few firms observed that it is important to be close to supporting industries.
- Firms felt that proximity to research and development facilities was by being in a region that had a strong university. It was not important to be located close to a university or other research and development facilities.

Overall, the study found that the locational advantage of Auckland for firms would appear to be related to scale; most notably deep and specialised labour markets, product market size, complementary suppliers, infrastructure investments, access to universities and international connectivity. These are all of the advantages that one would expect to be associated with a large city. However, the study did not provide a great deal of direct information relating to the motives driving firms to choose specific geographical locations within the region.

[39] Miller et al. 2011. Ibid.

# 6 Economic Structure within the Auckland Region

- The Auckland region accounts for 34% of employment and 37% of national GDP[40].
- Central and south Auckland account for 75% of all regional employment.
- Highest employment comes from Advanced Business Services (23%), Government, health and education (23%) and Manufacturing (12%).
- Accounting for 28% (Advanced Business Services), 16% (Manufacturing) and 14% (Government etc) of regional output.
- Regional output was $47 Billion in 2006. $25 Billion or 53% of Auckland's output comes from Auckland central.
- Wages are higher in central Auckland and lowest in west Auckland.
- Advanced business services and financial and insurance services are most likely to be located in Auckland central, manufacturing and transport logistics are more prominent in south Auckland.
- Distribution and wholesaling has shifted out from the centre, reflecting a trend towards a need for larger sites and a transformation of core areas to business services.
- There is significant pan-regional growth in the government, health and education sector.
- In manufacturing sectors the choice of location is driven by the availability of suitable land and access for goods inwards and outwards.

## 6.1 Introduction

The Auckland regional economy is pre-eminent in New Zealand accounting for 34 per cent of total employment and 37 per cent of national GDP. This section considers the key components of the regional economy and the ways in which these have developed over recent years to help provide a broad understanding of how these contribute to the economic linkages within the region.

## 6.2 Data Sources

Data on employment is available in a number of forms from Statistics NZ. Data from the Census provides a rich form of information since the employment data can be linked with other variables such as journey to work patterns, earnings and education levels and is also readily available at a Census Area Unit (CAU) level. It is however only produced at 5 yearly intervals and relies on personal responses and the most recent data for 2006 is becoming increasingly out dated since it precedes the current economic downturn. Alternative more continuous data is also available from the Business Demography statistics although these do not provide the same level of information about the workforce. They do provide alternative and possibly more accurate data on the scale of employment and are available up to 2010.

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[40] See Business Demography Database (BDD) (2011) for employment; GDP estimate based on Linked Employer-Employee (LEED) data (2011) and Statistics New Zealand regional GDP estimates.

In the material which follows in this section we have primarily used the most up to date data from the Business Demography database although we have used some Census statistics to cover information not easily available elsewhere particularly related to wages and the value of output. Earlier studies that we have quoted may also use different sources of data and so the numbers from these may not coincide directly with those we have developed and used elsewhere in this report.

## 6.3 Employment Structure by Broad Industry Category

### *6.3.1 Introduction*

The employment structure in the different areas within the Auckland region both in terms of the position in 2010 and the changes that have occurred over the preceding 5 and 10 years have been assessed to identify the possible linkages within the region. While the basic data underlying this analysis has been undertaken over 53 employment sectors for the main presentation of the results we have combined these into 12 main sectors. The information for these tables is mainly derived from data from Statistics New Zealand using the Business Demographics database (BDD) so the numbers may differ slightly from those derived using alternative sources of data. The sector definitions are typically based on ANZSIC06.

### *6.3.2 Position in 2010*

**Table 6.1**
**Employment by Sector in the Auckland Region 2010**

| | Ag and Mining | Manu-fact | Utils and Consr | Whole-saling | Retail-ing | Accom, Cafes & Rest | Tspt & Stge | Fin & Ins | Other Adv Bus Svices | Govt, Health & Educ | Other S'vices | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANZSOC06 definitions | | | | | | | | | | | | |
| North | 1836 | 9650 | 8070 | 9950 | 14880 | 6220 | 2840 | 3150 | 16770 | 28980 | 5780 | 108126 |
| West | 443 | 7890 | 3360 | 2080 | 6970 | 2370 | 1300 | 630 | 4470 | 13790 | 2730 | 46033 |
| Central | 570 | 25960 | 15490 | 26910 | 22810 | 21540 | 10700 | 18160 | 80520 | 62480 | 16080 | 301220 |
| South | 2823 | 28981 | 8994 | 12470 | 16167 | 7524 | 15910 | 2049 | 18376 | 36015 | 6868 | 156177 |
| Total | 5672 | 72481 | 35914 | 51410 | 60827 | 37654 | 30750 | 23989 | 120136 | 141265 | 31458 | 611556 |

Source: Consultants estimates based on Statistics New Zealand BDD.

The breakdown of total employment by area is set out in Figure 6.1 and the breakdown by type of activity is set out in Figure 6.2.

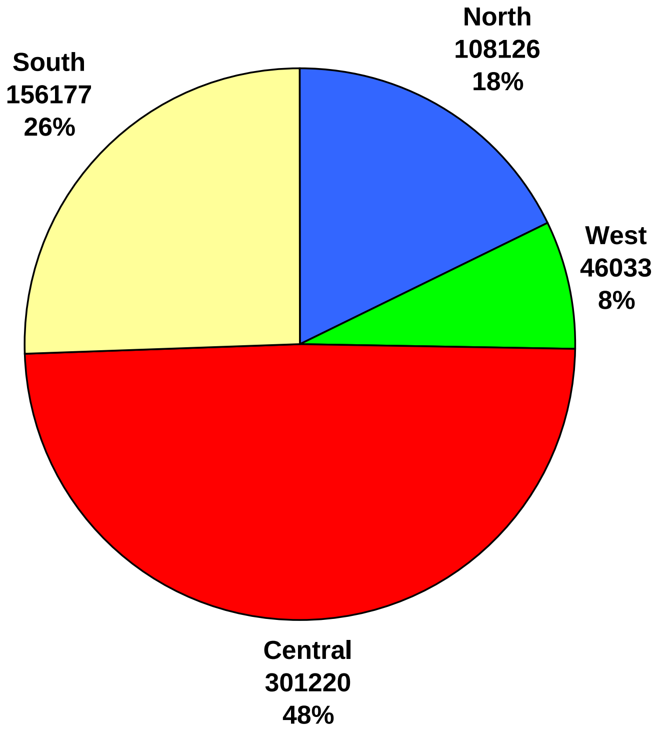



**Figure 6.1**
**Employment in the Auckland Region by Area 2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

Employment in the region is dominated by the activities in the Central area. This area accounts for almost half the total, followed by the South area with just over 25 per cent.

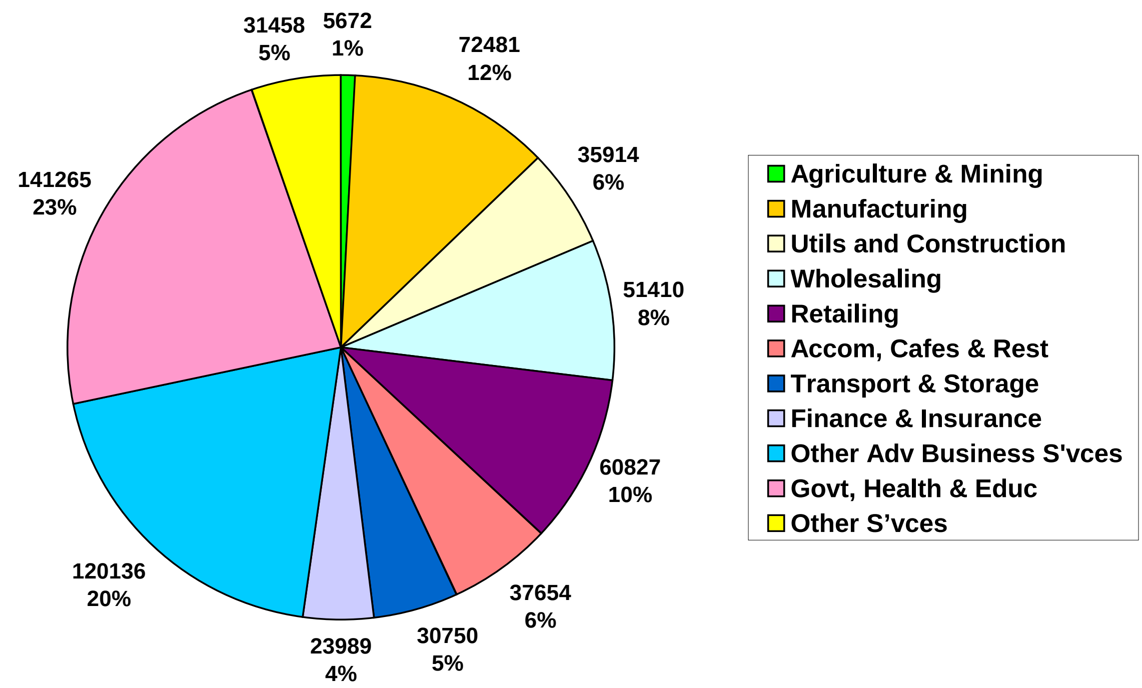



**Figure 6.2**
**Employment in the Auckland Region by Sector 2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

The sectors with the highest employment for the region as a whole are:-

- Advanced business services which together with finance and insurance account for about 23 per cent of total employment in the region.
- Government health and education, which account for a similar share of 23 per cent.
- Wholesaling and retailing combined account for about 18 per cent.
- Manufacturing (including food and beverage related activity) account for 12 per cent of total employment.

The comparison between the make-up of the Auckland economy and the national position is set out in Figure 6.3.

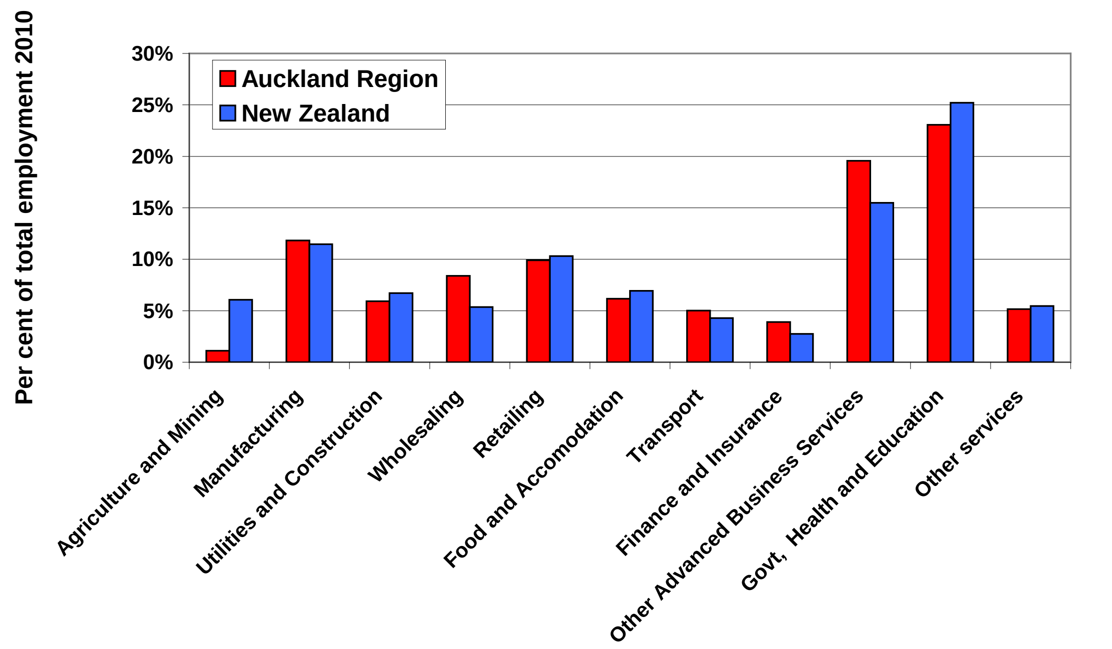



**Figure 6.3**
**Employment Distribution by Sector 2010: Auckland Region and New Zealand**

Source: Consultants estimates based on Statistics New Zealand BDD.

Compared to the national position the Auckland Region has relatively high shares of employment in Other Advanced Business Services, Finance and Insurance and Wholesaling and low shares in Agriculture and Mining, Utilities and Construction and Government, Health and Education.

The distributions of employment by sector and area looking at the contributions of each sector to total area activity are set out in Table 6.2 and in Figure 6.4

**Table 6.2**
**Employment in the Auckland Region 2010 : Contributions of Sectors to Area totals**

| | Ag and Mining | Manufact | Utils and Consr | Whole-saling | Retailing | Accom, Cafes & Rest | Tspt & Stge | Fin & Ins | Other Adv Bus Svices | Govt, Health & Educ | Other S'vices | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 1.7% | 8.9% | 7.5% | 9.2% | 13.8% | 5.8% | 2.6% | 2.9% | 15.5% | 26.8% | 5.3% | 100% |
| West | 0.9% | 17.1% | 7.3% | 4.5% | 15.1% | 5.1% | 2.8% | 1.4% | 9.7% | 29.9% | 6.0% | 100% |
| Central | 0.2% | 8.6% | 5.1% | 8.9% | 7.6% | 7.2% | 3.5% | 6.0% | 26.7% | 20.7% | 5.3% | 100% |
| South | 2.5% | 18.3% | 5.9% | 7.9% | 10.2% | 4.9% | 10.0% | 1.3% | 11.7% | 22.9% | 4.4% | 100% |
| Total | 1.1% | 11.8% | 5.9% | 8.4% | 9.9% | 6.2% | 5.0% | 3.9% | 19.6% | 23.1% | 5.1% | 100% |

Source: Consultants estimates based on Statistics New Zealand BDD.

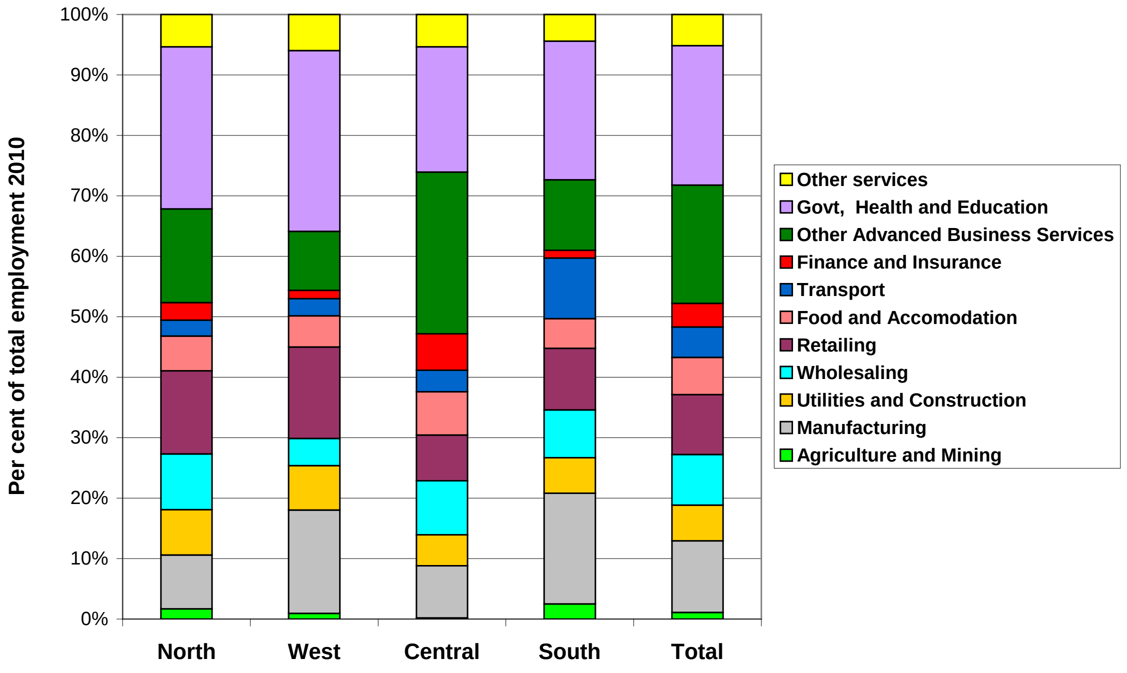



**Figure 6.4**
**Regional Employment by Area and Sector**
**(Sectoral employment as per cent of area total)**

Source: Consultants estimates based on Statistics New Zealand BDD.

There are significant differences between the sector breakdowns within areas with the Central area having a relatively high share for Advanced Business Services (which is the dominant sector) and Finance and Insurance and a share for wholesaling slightly above the regional average. The share of Central area employment in all other sectors is below the regional average. The Southern area has high employment shares in manufacturing and in transport (reflecting to a large extent the location of the airport but also the growth in logistics activities in the airport environs) and the Western area has a high share of Government related activities and retailing, activities which would be expected to be dissipated and tending not to benefit from concentration. The North largely reflects the average regional position but with a high share in retailing and a relatively low share in transport.

The alternative approach is to consider each area's contribution to the regional totals for employment in each sector and this is set out in Table 6.3 and Figure 6.5.

**Table 6.3**
**Regional Employment by Area and Sector**
**(Area employment as per cent of total for sector)**

| Area | Ag and Mining | Manu-fact | Utils and Consr | Whole-saling | Retailing | Accom, Cafes & Rest | Tspt & Stge | Fin & Ins | Other Adv Bus Svices | Govt, Health & Educ | Other S'vices | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 27% | 13% | 22% | 19% | 24% | 16% | 9% | 13% | 14% | 20% | 18% | 18% |
| West | 6% | 11% | 9% | 4% | 11% | 6% | 4% | 3% | 4% | 10% | 9% | 7% |
| Central | 8% | 36% | 43% | 52% | 37% | 57% | 35% | 76% | 67% | 44% | 51% | 49% |
| South | 58% | 40% | 26% | 24% | 27% | 21% | 52% | 9% | 15% | 26% | 22% | 26% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Source: Consultants estimates based on Statistics New Zealand BDD.

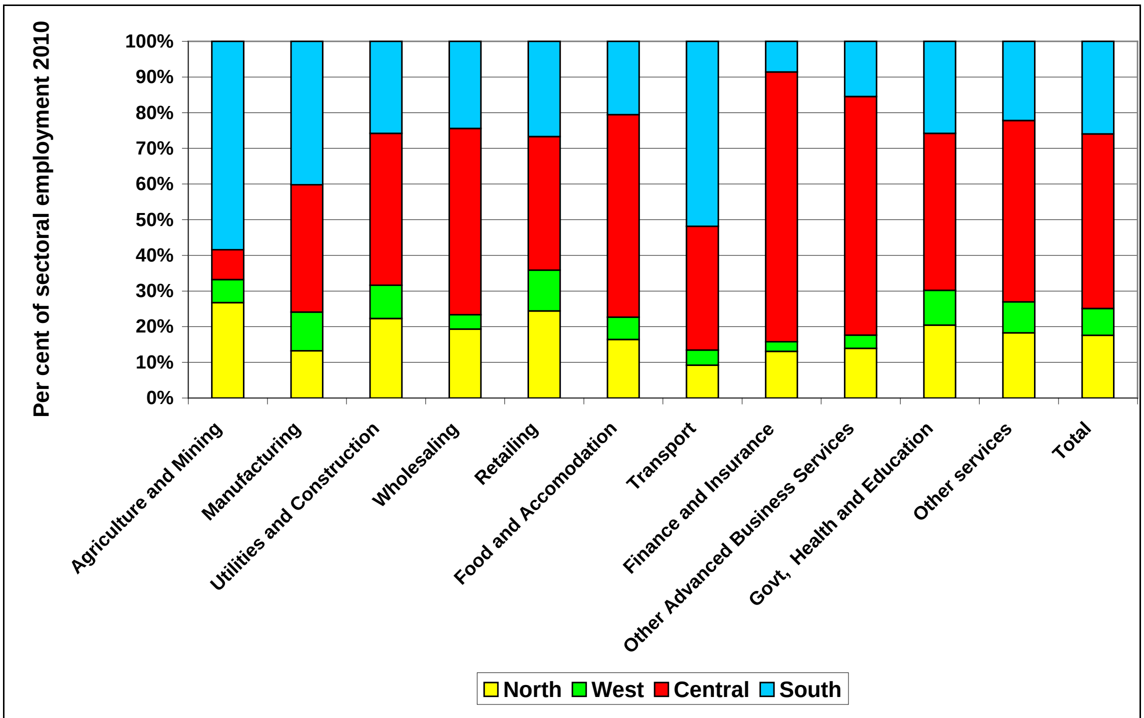



**Figure 6.5**
**Regional Employment by Area and Sector**
**(Area employment as per cent of total for sector)**

Source: Consultants estimates based on Statistics New Zealand BDD.

The figures in these demonstrate the dominance of the Central area in Finance and Insurance and in Other Advanced Business Services, with three quarters and two thirds of the total regional employment in these sectors respectively. It has a relative low share of manufacturing employment where this position is balanced by the higher share from the Southern area. The Southern area also contributes a relatively high share of employment in transport, reflecting in part the presence of Auckland International Airport

### *6.3.3 Urban/Rural Analysis*

An alternative approach to considering activity in the Auckland region is to consider the division of activity between the rural and urban parts of the region. For this analysis the former TLAs of Rodney, Papakura and Franklin have been taken as the rural areas and the 4 former cities as the urban areas.

The split of employment by rural and urban areas is set out in Figure 6.6

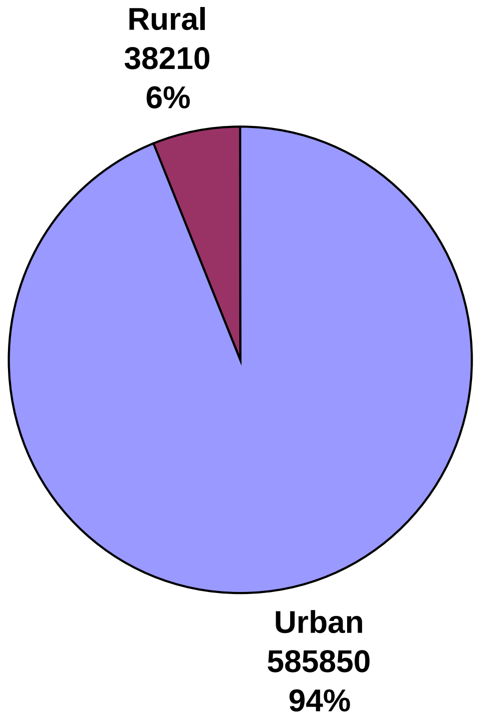



**Figure 6.6**
**Employment by in the Auckland Region by Urban and Rural Areas 2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

Almost all the workforce is employed in the areas defined as urban and employment in the rural districts is very small.

The distribution of employment by type in the rural and urban areas is set out in Table 6.4.

**Table 6.4**
**Distribution of Employment by Type in Rural and Urban Areas 2010**

| Employment Type | Total Employment | | Per cent of employment in type | |
|---|---|---|---|---|
| | Rural | Urban | Rural | Urban |
| Agriculture & Mining | 3242 | 2918 | 52.6% | 47.4% |
| Manufacturing | 5156 | 71320 | 6.7% | 93.3% |
| Utilities and Construction | 4999 | 33090 | 13.1% | 86.9% |
| Wholesaling | 1544 | 51230 | 2.9% | 97.1% |
| Retailing | 4782 | 57050 | 7.7% | 92.3% |
| Accom, Cafes & Restaurants | 2781 | 34620 | 7.4% | 92.6% |
| Transport & Storage | 1078 | 30800 | 3.4% | 96.6% |
| Finance & Insurance | 580 | 24270 | 2.3% | 97.7% |
| Other Adv Business Services | 4073 | 121450 | 3.2% | 96.8% |
| Govt, Health & Education | 7514 | 129550 | 5.5% | 94.5% |
| Other Services | 2476 | 29520 | 7.7% | 92.3% |
| Total | 38225 | 585818 | 6.1% | 93.9% |

Source: Consultants estimates based on Statistics New Zealand BDD.

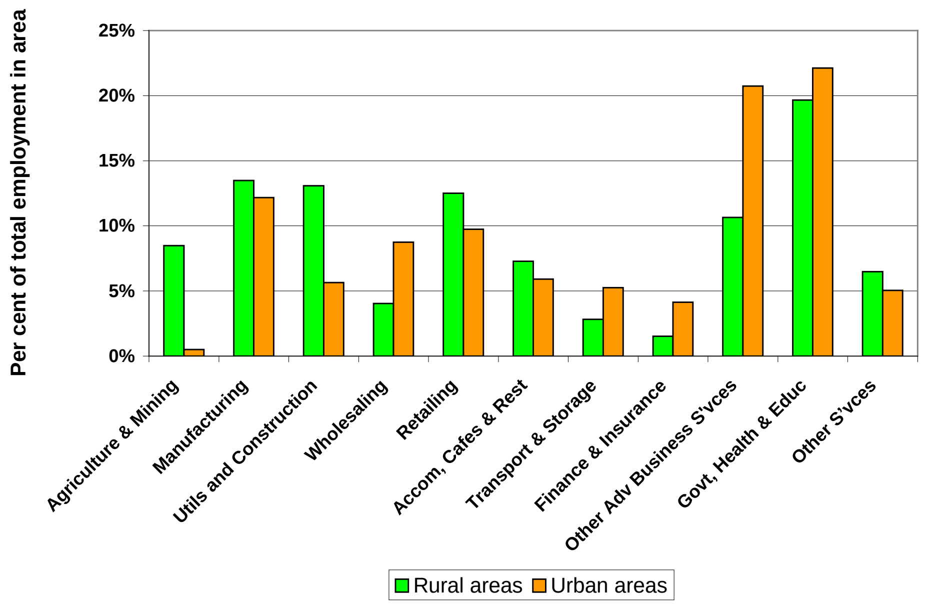



**Figure 6.7**
**Employment Share by Type in Rural and Urban Areas of the Auckland Region 2010**
**(Per cent of total employment in each area)**

Source: Consultants estimates based on Statistics New Zealand BDD.

As might be expected the rural areas have a very high share of regional employment in agriculture and mining, accounting for over half the total employment in this group. In terms of the make-up of employment set out in Figure 6.7, the rural areas also have relatively high shares of employment in utilities and construction and to a lesser extent in retailing and accommodation and food services, but this is balanced by relatively low shares in activities such as wholesaling, transport, finance and insurance and other advanced business services, activities which are major associated with the major urban areas.

### *6.3.4 Growth from 2000 to 2010*

The changes in employment over the period from 2000 to 2010 are set out in Table 6.5.

**Table 6.5**
**Changes in Regional Employment by Sector 2000-2010**

| | North | West | Central | South | Region | New Zealand |
|---|---|---|---|---|---|---|
| Primary Activities Ag & Mining | -187 | -346 | -145 | -287 | -965 | 9550 |
| Manufacturing | -1170 | -1160 | -8160 | 26 | -10464 | -20920 |
| Utilities & Construction | 2210 | 290 | 3600 | 2601 | 8701 | 41080 |
| Wholesaling | 1770 | 280 | -430 | 2658 | 4278 | 10500 |
| Retailing | 3230 | 230 | 1750 | 983 | 6193 | 24180 |
| Accom, Cafes & Restaurants | 1240 | 280 | 4470 | 1315 | 7305 | 26220 |
| Transport & Storage | -1600 | 190 | -3900 | 4097 | -1213 | -2870 |
| Finance & Insurance | 490 | 50 | 2050 | 642 | 3232 | 4340 |
| Other Adv Business Services | 4970 | 850 | 11880 | 6845 | 24545 | 67877 |
| Govt, Health & Education | 10240 | 3940 | 16320 | 13158 | 43658 | 115110 |
| Other Services | 1600 | 910 | 2930 | 1945 | 7385 | 25130 |
| **Total** | 22793 | 5514 | 30365 | 33983 | 92655 | 300197 |

Source: Consultants estimates based on Statistics New Zealand BDD.

The key points emerging from the table are:

- The substantial decline in employment in manufacturing region-wide with reductions in all areas. The effect was particularly pronounced for the Central area with the total falling by 8,200 or 24 per cent compared with a regional decline of 13 per cent.
- The decline in employment in primary activities again region-wide but with a particular focus in the Western area.
- The growth in Government, health and education region-wide which has been the largest contributor to employment growth in all areas.
- The growth in Other Advanced Business Services which was the second largest contributor to employment growth in all areas. This represented a particularly large component of employment growth in the Central area.
- The growth of employment in Finance and Insurance in the Central area which accounted for 63 per cent of the increase for the region and almost half of the increase nationally.
- The growth of employment in transport in the Southern area, compared with declines in the Northern and Central areas and a small increase in the Western area.
- Although there is an increase in wholesaling, this declines in the Central area with increases in other areas. The overall growth reflects the growing dominance of Auckland as a distribution hub. However the decline in the Central area reflects the changes in the nature of this activity with an increasing emphasis on large sites. For these the availability of suitable locations is severely constrained in the Central area, where there is less scope for large scale development and where there is greater competition with land uses prepared to pay higher prices for the space available. However development is less constrained in the other areas where there is a greater availability of suitable sites and often less competition from high value uses.

**Table 6.6**
**Contribution to Growth in Employment by Sector 2000-2010**
**(Per cent of total area growth)**

| | North | West | Central | South | Region | New Zealand |
|---|---|---|---|---|---|---|
| Primary Activities Ag & Mining | -1% | -6% | 0% | -2% | -2% | 3% |
| Manufacturing | -5% | -21% | -27% | 0% | -11% | -7% |
| Utilities & Construction | 10% | 6% | 12% | 8% | 10% | 14% |
| Wholesaling | 8% | 5% | -1% | 8% | 5% | 3% |
| Retailing | 14% | 4% | 6% | 3% | 7% | 8% |
| Accom, Cafes & Restaurants | 5% | 5% | 15% | 4% | 8% | 9% |
| Transport & Storage | -7% | 4% | -13% | 12% | -1% | -1% |
| Finance & Insurance | 2% | 1% | 7% | 2% | 4% | 1% |
| Other Adv Business Services | 22% | 16% | 39% | 21% | 27% | 23% |
| Govt, Health & Education | 45% | 70% | 54% | 39% | 47% | 38% |
| Other Services | 7% | 17% | 10% | 6% | 8% | 8% |
| **Total** | 100% | 100% | 100% | 100% | 100% | 100% |
| **Broad sectors** | | | | | | |
| Primary & Manufacturing (1) | 4% | -22% | -16% | 5% | -3% | 10% |
| Basic services (2) | 20% | 18% | 6% | 27% | 18% | 19% |
| Advanced services (3) | 24% | 17% | 46% | 23% | 30% | 24% |
| Govt health and education | 45% | 70% | 54% | 39% | 47% | 38% |
| Other services (4) | 7% | 17% | 10% | 6% | 8% | 8% |

Source: Consultants estimates based on Statistics New Zealand BDD.

Notes
(1) Agriculture and, mining, Manufacturing and Utilities and construction.
(2) Wholesaling, Retailing, Accommodation cafes and restaurant and Transport and storage.
(3) Finance and insurance and Other advanced business services.
(4) Government, health and education and Other services.

The contribution to growth by broad sector is summarised in Figure 6.8:

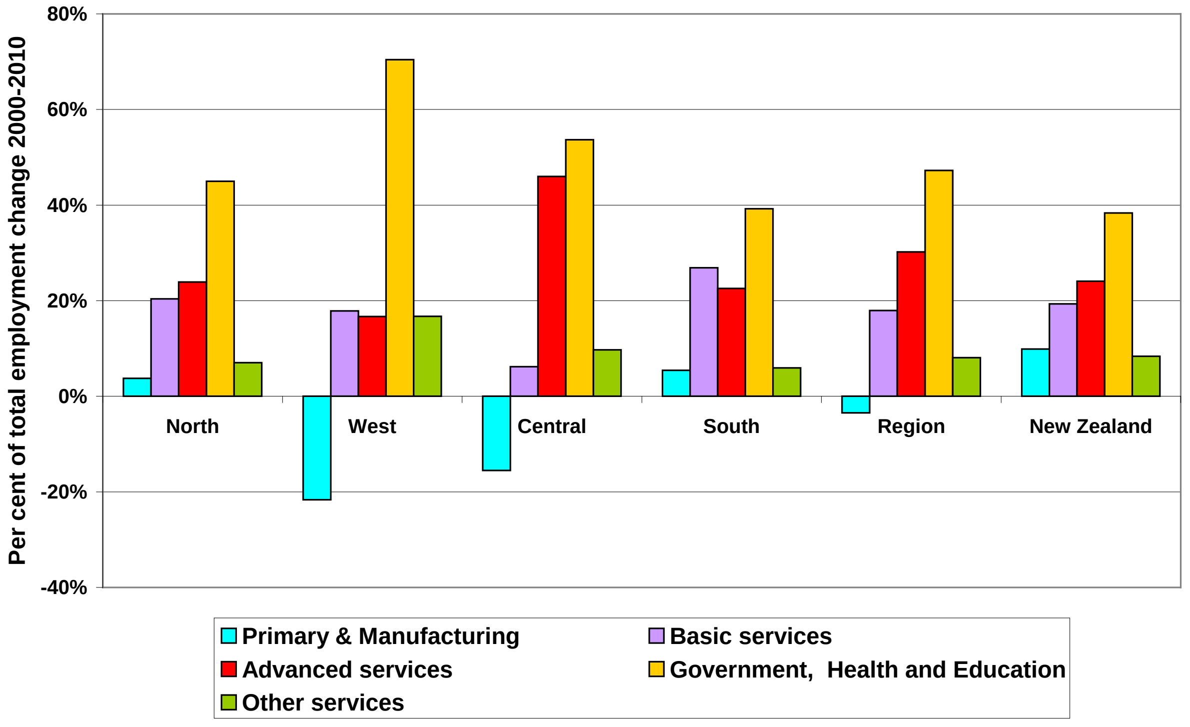



**Figure 6.8**
**Contribution to growth by broad economic sector 2000-2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

Considering the position at a **Regional level** the key trends which emerge are:-

- The key contributors to growth are Government Health and Education followed by Advanced Services, and Basic Services and for both of these the contribution at a regional level has been higher than for the country as a whole.
- There has been a small decline in the broad Primary and Manufacturing sector (including utilities and construction) which contrasts with growth in employment in this broad sector in New Zealand as a whole.
- These changes reflect the continuing transformation of Auckland towards a service based economy, with a particularly strong pattern in the Central area and an increasing move to high value activities such as finance and insurance in the CBD.

Considering the position at an area level the key trends which emerge are:-

- In the **North** area growth in employment in Government Health and Education services accounted for almost half the growth in employment, with advanced services (Finance and Insurance and Other Advanced Business Services) and basic services each contributing about 20 per cent. Against the regional trend there was a small increase in primary and manufacturing employment, which contributed about 4 per cent to total growth reflecting increases in construction and utilities which more than counterbalanced decreases in primary and manufacturing employment.
- In the **West** employment growth was dominated by increases in Government, Health and Education which accounted for about 70 per cent of employment growth. The second highest share came from Basic Services (18 per cent), slightly ahead of

Advanced Services and Other Services (each on 17 per cent). Primary and manufacturing decreased sharply.

- As with all areas, for the **Central** area growth in employment in Government, Health and Education makes the largest contribution to growth (54 per cent), although here it is followed fairly closely by Advanced Services. There has been a decline in Primary and Manufacturing employment and the contribution of Basic Services is also small in relation to the overall Regional position.
- In the **South,** again the key driver of employment growth has been growth in Government, Health and Education followed by Basic Services (driven mainly by growth in transport). Employment in Primary and Manufacturing has also increased slightly in contrast to the position for the region where overall it has declined.

From this analysis it is possible to identify signs of increasing spatial specialisation within the region including:-

- A concentration on **Advanced Services** in the Central area further consolidating its dominant position. This represents more than 50 per cent or more of the regional employment in finance and insurance and in other advanced business services.
- **Basic services** are becoming more important in the North and South in part reflecting movement away from the Central district for activities such as transport and warehousing.
- **Primary and Manufacturing** displays a mixed position but with a substantial decline in West and Central and limited growth in North and South mainly driven by relatively high growth in construction. The movement away from the Central area also probably reflects the increasing shortage there of land for large scale industrial development and the creation of new development sites in the North and in the South.

The overall picture that results is of a central core area within the region with an increasing concentration of activities particularly in advanced services which gain from agglomeration benefits and also benefit from being able to draw on a wide labour catchment area. For these activities, good transport links for the movement of people are important.

Primary and Manufacturing and Basic Services including transport and wholesaling are being increasingly located away from the more congested Central area where there is availability of suitable land for space extensive activities and where there are good transport links for the movement of freight. For these activities which typically rely on a less skilled labour force, access to wide labour catchment areas is less important. As this analysis considers the long term changes between 2000 and 2010 it also reflects the effects of the economic downturn, evident from 2008. The year on year changes are set out in Figure 6.9:

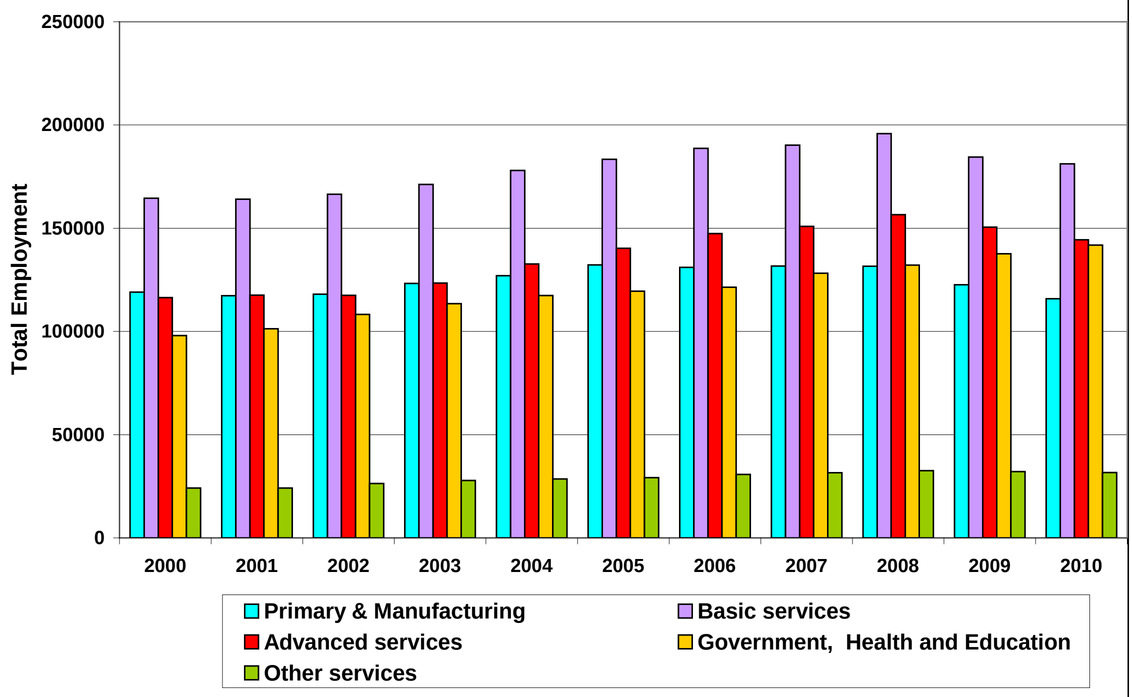



**Figure 6.9**
**Employment by broad sector in the Auckland Region 2000-2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

For all the broad sectors with the exception of Government, employment grew to reach a peak in 2008 and then declined in 2009 and 2010. For Government, Health and Education however, growth continued after 2008.

## 6.4 Measures of gross output

In addition to considering employment by sector it is also possible to make estimates of gross output by sector based on average earnings and numbers employed and applying an appropriate multiplier to relate total wages to gross regional product. The numbers employed and average earnings are derived from 2006 Census data and so predate the economic downturn. The approach to the estimation of the multipliers is set out in Appendix A. The results are set out in the following five tables below.

**Table 6.7**
**Gross Regional Output by Area and Sector 2006 ($millions)**

| Area | Ag Mining | Manuf | Utilities and Const | Whole-sale | Retail | Accom Food | Transpt Storage | Fin and Ins | Adv Bus Serv | Govt | Other SVS | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 151 | 1,239 | 777 | 893 | 558 | 155 | 297 | 704 | 2,166 | 1,329 | 291 | 8,559 |
| West | 29 | 776 | 285 | 171 | 231 | 49 | 86 | 109 | 537 | 662 | 118 | 3,054 |
| Central | 36 | 2,839 | 1,276 | 2,378 | 981 | 555 | 1,036 | 3,118 | 8,777 | 2,851 | 802 | 24,648 |
| South | 191 | 2,764 | 780 | 980 | 618 | 206 | 1,378 | 571 | 1,555 | 1,630 | 307 | 10,979 |
| Region Total (1) | 407 | 7,618 | 3,118 | 4,422 | 2,388 | 965 | 2,797 | 4,503 | 13,034 | 6,472 | 1,518 | 47,241 |

**Table 6.8**[41]
**Gross Regional Output by Area and Sector 2006 (per cent of total regional output)**

| Area | Ag Mining | Manuf | Utilities and Const | Whole-sale | Retail | Accom Food | Transpt Storage | Fin and Ins | Adv Bus Serv | Govt | Other SVS | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 0.3% | 2.6% | 1.6% | 1.9% | 1.2% | 0.3% | 0.6% | 1.5% | 4.6% | 2.8% | 0.6% | 18.1% |
| West | 0.1% | 1.6% | 0.6% | 0.4% | 0.5% | 0.1% | 0.2% | 0.2% | 1.1% | 1.4% | 0.2% | 6.5% |
| Central | 0.1% | 6.0% | 2.7% | 5.0% | 2.1% | 1.2% | 2.2% | 6.6% | 18.6% | 6.0% | 1.7% | 52.2% |
| South | 0.4% | 5.9% | 1.7% | 2.1% | 1.3% | 0.4% | 2.9% | 1.2% | 3.3% | 3.4% | 0.6% | 23.2% |
| Regional Total | 0.9% | 16.1% | 6.6% | 9.4% | 5.1% | 2.0% | 5.9% | 9.5% | 27.6% | 13.7% | 3.2% | 100.0% |

Source (both tables): Consultants estimates based on Statistics New Zealand 2006 Census data.

The analysis of the data in Table 6.7 and Table 6.8 demonstrates the scale of the economy of the Central area with an estimated gross output of about $25 billion in 2006, over half the total for the Region as a whole.

Considering the key sectoral/area contributions to regional gross output, these are dominated by business services and finance and insurance in the Central area which generated output of $12 billion, about 25 per cent of the total regional output for all activities. Other major contributors to regional output in Auckland include Government, wholesaling and manufacturing in the Central area, with outputs between $2.45 and $2.8 billion and manufacturing in the Southern area with a gross output of $2.8 billion. In combination these activities would contribute almost half (48 per cent) of gross regional output.

Table 6.9 sets out the contribution of each employment sector to the total output in each of the areas.

[41] The figures in this Table and those following immediately below exclude any employment not allocated to specific CAUs. The data also includes a number of cells for which the information is regarded as confidential, largely reflecting a low number of workers. For the purposes of this part of the analysis, any such cells have been assumed to contain zero workers and so the totals which result are slightly underestimated. The effect of this underestimation is estimated from other sources to be very small and does not affect the broad conclusions reached from the analysis of the data.

**Table 6.9**
**Gross Regional Output by Area and Sector 2006 (per cent of area totals)**

| Area | Ag Mining | Manuf | Utilities and Const | Whole-sale | Retail | Accom Food | Transpt Storage | Fin and Ins | Adv Bus Serv | Govt | Other SVS | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 1.8% | 14.5% | 9.1% | 10.4% | 6.5% | 1.8% | 3.5% | 8.2% | 25.3% | 15.5% | 3.4% | 100.0% |
| West | 1.0% | 25.4% | 9.3% | 5.6% | 7.6% | 1.6% | 2.8% | 3.6% | 17.6% | 21.7% | 3.9% | 100.0% |
| Central | 0.1% | 11.5% | 5.2% | 9.6% | 4.0% | 2.3% | 4.2% | 12.7% | 35.6% | 11.6% | 3.3% | 100.0% |
| South | 1.7% | 25.2% | 7.1% | 8.9% | 5.6% | 1.9% | 12.6% | 5.2% | 14.2% | 14.8% | 2.8% | 100.0% |
| Region Total | 0.9% | 16.1% | 6.6% | 9.4% | 5.1% | 2.0% | 5.9% | 9.5% | 27.6% | 13.7% | 3.2% | 100.0% |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

Within the Region as a whole, Advanced Business Services provide the largest contribution to Gross Regional Output accounting for about 28 per cent of the total followed by manufacturing with about 16 per cent. Government services account for almost 14 percent.

Considering the individual areas Advanced Business Services provide the largest contribution in the North and Central areas and Manufacturing provides the largest contributions in the West and South. Finance and Insurance provides the second largest contribution to output in the Central area, but for other areas the contribution of this sector is relatively low.

The contribution of each area to the total gross output for each of the employment sectors is set out in Table 6.10.

**Table 6.10**
**Gross Regional Output by Area and Sector 2006 per cent of sector totals)**

| Area | Ag Mining | Manuf | Utilities and Const | Whole-sale | Retail | Accom Food | Transpt Storage | Fin and Ins | Adv Bus Serv | Govt | Other SVS | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 37.1% | 16.3% | 24.9% | 20.2% | 23.4% | 16.0% | 10.6% | 15.6% | 16.6% | 20.5% | 19.2% | 18.1% |
| West | 7.2% | 10.2% | 9.1% | 3.9% | 9.7% | 5.1% | 3.1% | 2.4% | 4.1% | 10.2% | 7.8% | 6.5% |
| Central | 8.7% | 37.3% | 40.9% | 53.8% | 41.1% | 57.5% | 37.0% | 69.3% | 67.3% | 44.1% | 52.9% | 52.2% |
| South | 47.0% | 36.3% | 25.0% | 22.2% | 25.9% | 21.3% | 49.3% | 12.7% | 11.9% | 25.2% | 20.2% | 23.2% |
| Regional Total | 100% | 100% | 100.0% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

With the exception of Agriculture and Mining, the Central area makes the largest contribution to Gross Regional Output in all the employment sectors and in particular providing over two thirds of the regional output in Finance and Insurance and other Advanced Business Services.

From Table 6.9 it is possible to get a picture of the position for each of the constituent areas, and the total share of each sector in the total output of the area can be compared with the share for the region. This is set down in a simple table which highlights the sectors where each area has shares above and below the regional average. The critical value is taken as a share 2 or more percentage points different to the regional average.

**Table 6.11**
**Size of Shares of Contributions of Individual Areas within the Auckland Region to Gross Regional Output**

| Area | High Shares | Low Shares |
|---|---|---|
| North | Utilities and Construction | Transport and Storage<br>Other Advanced Business Services |
| West | Manufacturing<br>Utilities and Construction<br>Retailing<br>Govt, Health and Education | Wholesaling<br>Transport and Storage<br>Finance and Insurance<br>Other Advanced Business Services |
| Central | Finance and Insurance<br>Other Advanced Business Services | Manufacturing |
| South | Manufacturing<br>Transport | Finance and Insurance<br>Other Advanced Business Services |

In general, the picture that this reveals is of the dominance of the Central area in the finance and insurance and other business services sectors matched by relatively low shares in all of the other areas, except for Finance and Insurance in the North. This highlights the importance of the Central area for the provision of these services on a region-wide basis. The importance of transport in the South, in part reflecting the location of the airport, is also matched by relatively low shares in the North and West.

Table 6.10 indicates the extent to which each area contributes to the total output of each of the sectors in the region. Because of the size the Central area, it accounts for the largest share of the gross sectoral output for almost all the sectors identified, even for those where this represents a small share of the total Central area output. The only exceptions to this are the Transport sector where the South has the largest share and Agriculture and Mining where the North and South both have larger shares.

## 6.5 Earnings and employment density:

The data from the 2006 Census also allows an assessment to be made of the average earnings by area and sector, and this is set out in Table 6.12

**Table 6.12**
**Average Earnings by Area and Sector 2006 ($pa)**

| Area | Ag and Mining | Manu | Utils and Const | Whole-saling | Retail-ing | Accom, Cafes & Rest | Tspt & Stge | Fin & Ins | Other Adv Bus Svices | Govt, Health & Educ | Other S'vices | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 31700 | 41500 | 45600 | 48800 | 28100 | 19400 | 40000 | 56600 | 49900 | 41100 | 31600 | 41100 |
| West | 25700 | 40000 | 43200 | 41300 | 24000 | 16000 | 32800 | 44500 | 43700 | 40000 | 29100 | 36300 |
| Central | 27600 | 45700 | 51600 | 53400 | 31700 | 25500 | 43600 | 63800 | 58600 | 46000 | 38300 | 49000 |
| South | 33000 | 44900 | 45900 | 46900 | 27200 | 20800 | 46000 | 52100 | 46200 | 40900 | 32600 | 40700 |
| Average | 31400 | 44000 | 47700 | 50400 | 28700 | 22600 | 43800 | 60200 | 54400 | 42900 | 34600 | 44300 |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.
Excludes employment not allocated to a CAU and employment not allocated to a sector.

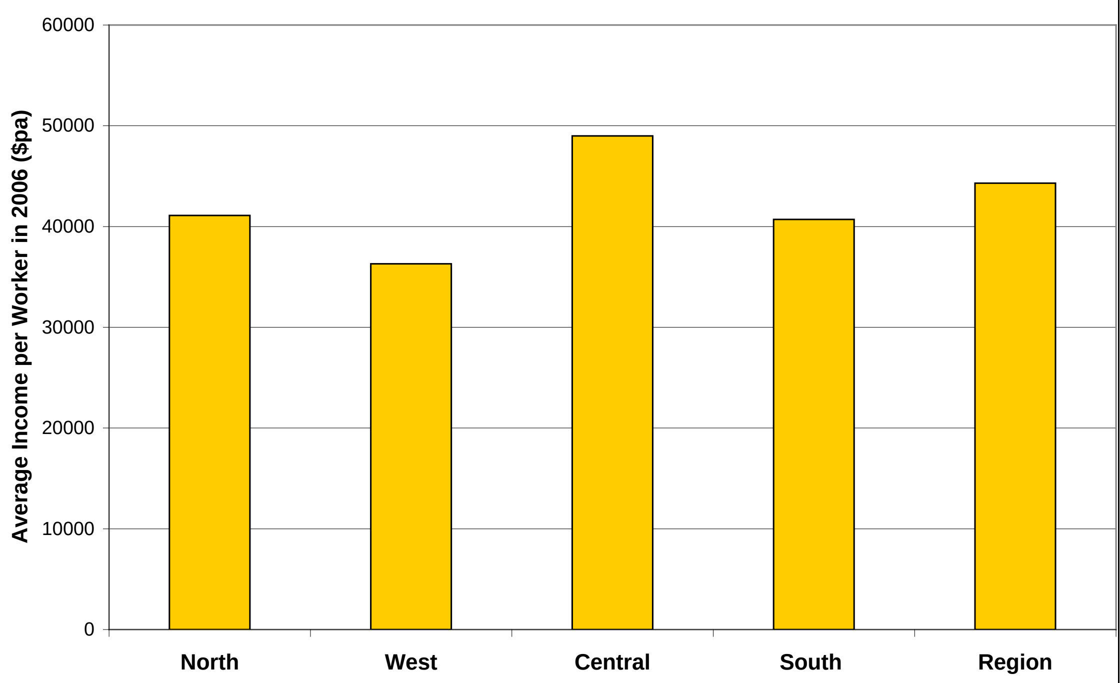



**Figure 6.10**
**Average Income per Worker by Workplace Area 2006 ($pa)**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

The table and figure reveal a considerable spread of average earnings levels by area with the highest levels being achieved in the Central area and the lowest in the West which were about 25 per cent lower than the Central area. In part this may be explained by different industrial composition since as Figure 6.11 indicates there is a substantial difference in the earnings by sector.

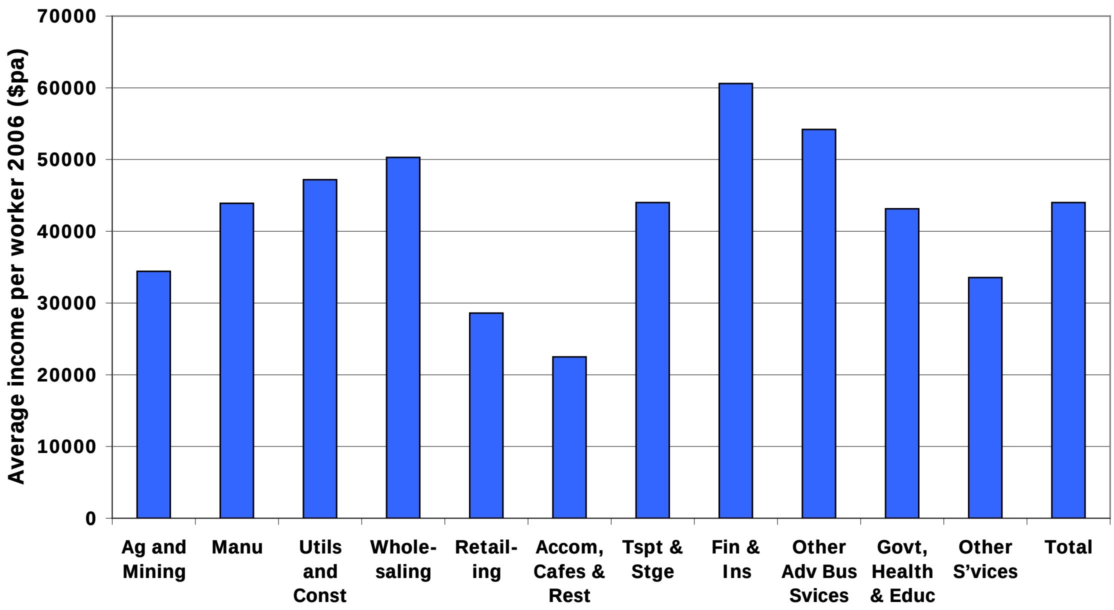



**Figure 6.11**
**Average Annual Earnings by Sector 2006**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

The highest earnings are in Finance and Insurance and Other Advanced Business Services while the lowest are in Retail and Accommodation Cafes and Restaurants. Although as discussed in an earlier section there has been considerable growth in Government Health and Education over the period from 2000 to 2010 this has relatively low earnings, and so has tended to limit the overall growth in economic output in the region.

Putting these two pieces of information together it is possible to look at the relative earnings within sectors by area and this is set out in Table 6.13 and Figure 6.12

**Table 6.13**
**Average Earnings by Area and Sector 2006 (Per cent of average for sector)**

| Area | Ag and Mining | Manu | Utils and Const | Whole-saling | Retail-ing | Accom, Cafes & Rest | Tspt & Stge | Fin & Ins | Other Adv Bus Svices | Govt, Health & Educ | Other S'vices | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| North | 72% | 94% | 103% | 110% | 63% | 44% | 90% | 128% | 113% | 93% | 71% | 93% |
| West | 58% | 90% | 98% | 93% | 54% | 36% | 74% | 100% | 99% | 90% | 66% | 82% |
| Central | 62% | 103% | 117% | 121% | 72% | 58% | 98% | 144% | 132% | 104% | 86% | 111% |
| South | 75% | 101% | 104% | 106% | 61% | 47% | 104% | 118% | 104% | 92% | 74% | 92% |
| Total | 71% | 99% | 108% | 114% | 65% | 51% | 99% | 136% | 123% | 97% | 78% | 100% |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

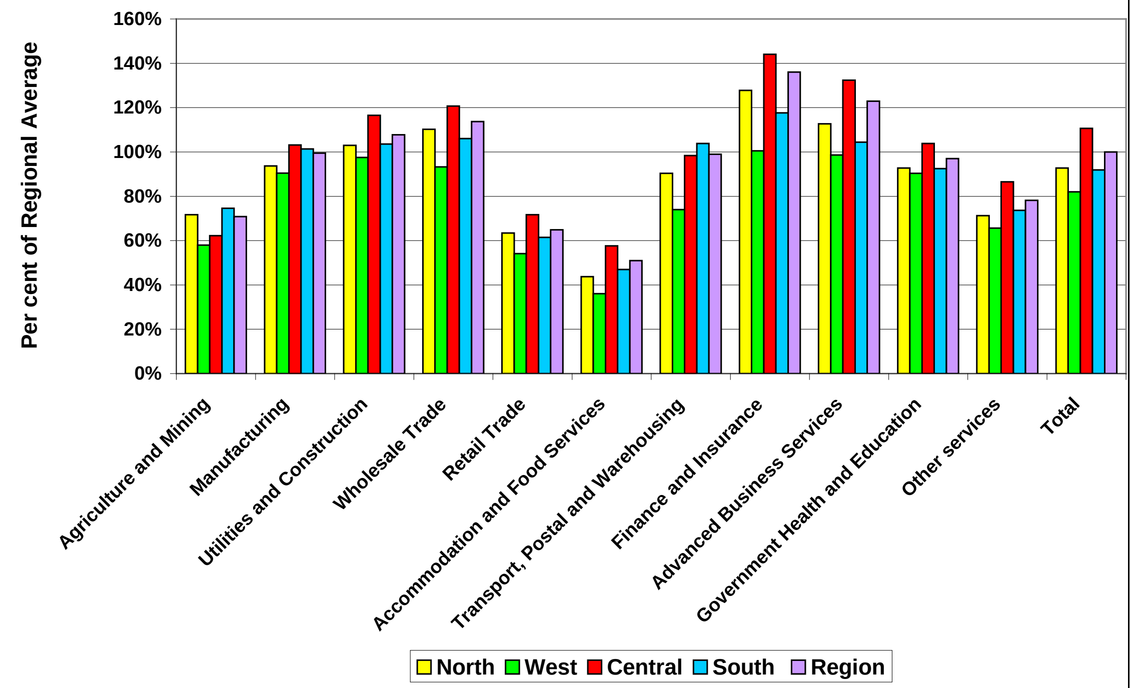
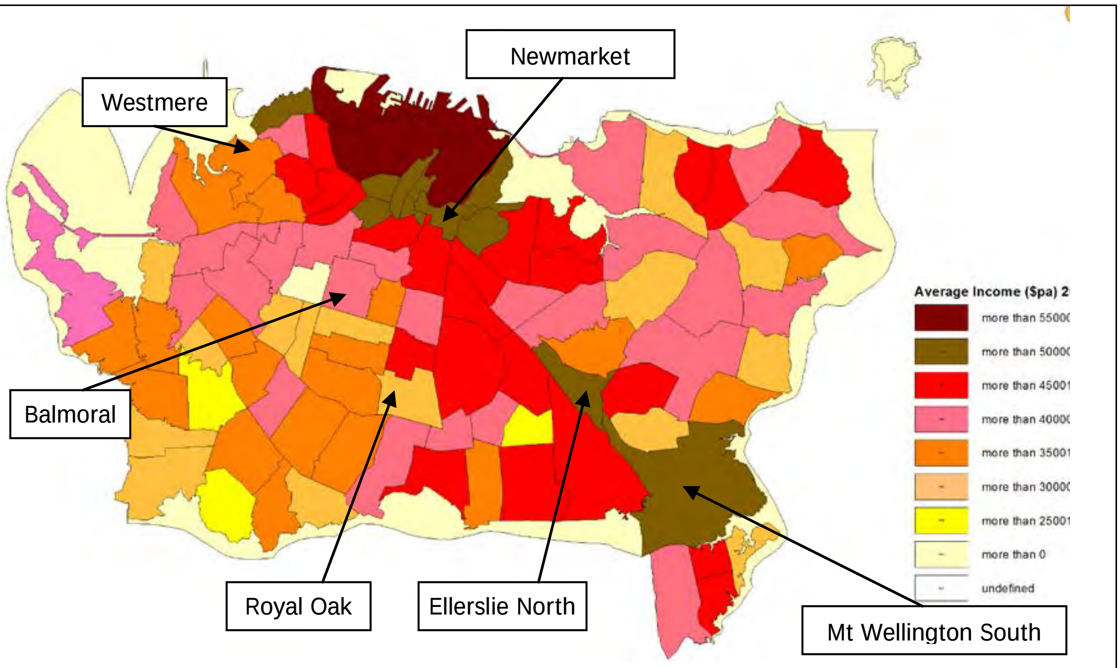



**Figure 6.12**
**Average Wages by Sector and Area 2006 (Per cent of average for sector)**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

From the table it can be seen that the Central area achieves above regional average wage rates for almost all sectors except agriculture and mining, and transport and storage. The West has low average wage rates for all the sectors identified. This demonstrates that it is not only the industrial composition which contributes to low average earnings for these areas, but differences in average earnings levels within industries between the different areas within the region.

As well as looking at the differences between wage rates between areas it is possible to look in more detail within the areas. As an example, the patterns of average incomes by CAU in Central Area in 2006 are set out in Figure 6.13:




**Source: 2006 Census**

**Figure 6.13**
**Average Incomes in the Central Area by Workplace 2006 ($pa )**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

The figure demonstrates the concentration of high income workers in the CBD and around the fringes and along southern motorway/rail corridor. The high wages in the CBD in part reflect the agglomeration benefits from the large cluster of activity there.

The position for the former Manukau City component of the Southern Area is set out in Figure 6.14:

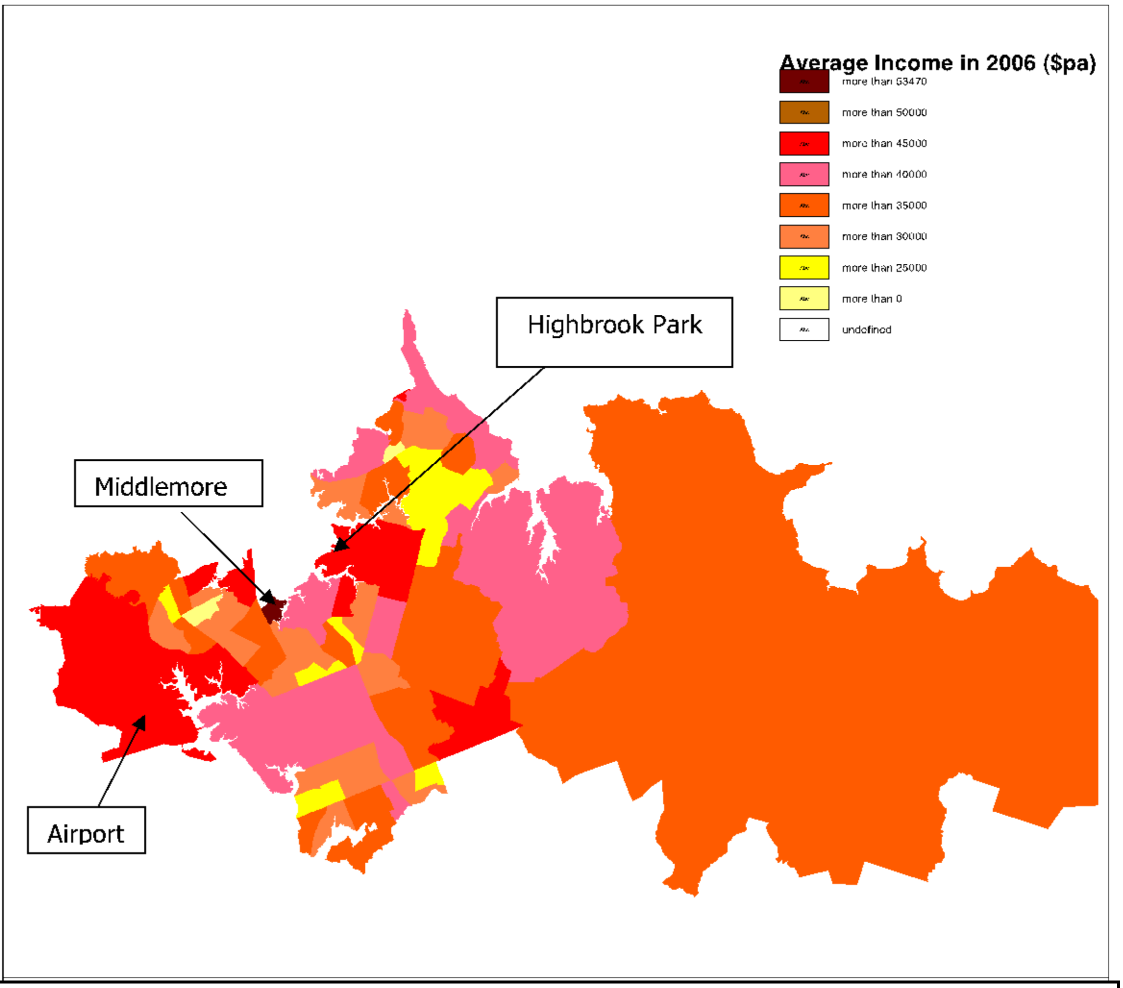



**Figure 6.14**
**Average Incomes in Southern Area (former Manukau City only) by Workplace 2006 ($pa )**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

For the southern area incomes are typically lower and there is not the same clear hierarchy as in Auckland City. The highest incomes are found in more dispersed areas, at Middlemore reflecting the location of the major hospital, in and around the airport, and in Highbrook Park. Average incomes in the Manukau urban core are relatively low, reflecting both low average wage rates for a number of the key sectors typically concentrated there such as Advanced Business Services and Finance and Insurance (as set out in Table 6.12) and also a higher proportion of employment in low wage activities particularly retailing.

In addition to looking at average incomes, we have also examined the densities of employment at different locations. The position for the Central Area in 2006 is set out in Figure 6.15:

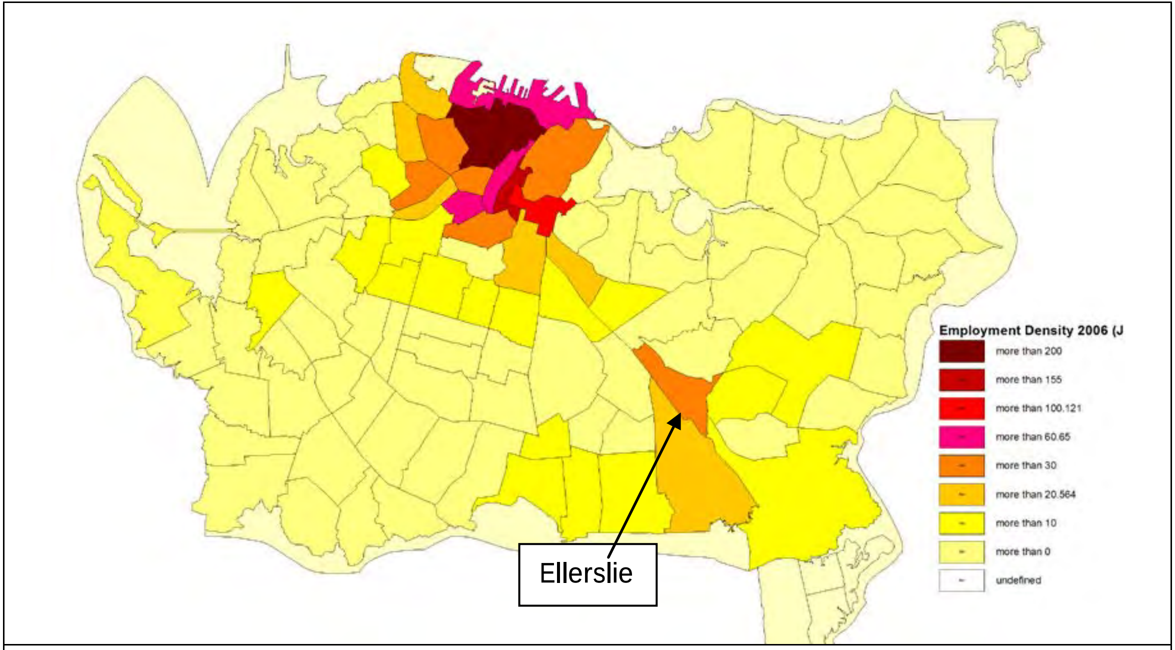



**Figure 6.15**
**Average Employment Density Auckland 2006**
**(Jobs/hectare)**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

The figure shows the high density areas of employment in the CBD and fringes and stretching down the Great South Road corridor. Ellerslie is highlighted as a separate high density area. To a large extent the high density locations are associated with relatively high wage levels, particularly in the CBD and also at Ellerslie, demonstrating the possible importance of agglomeration benefits in generating higher levels of economic activity.

# 7 Existing movement patterns within Auckland

- The Auckland region is almost entirely self-sufficient for labour.
- 68 per cent of people work in the area that they live in.
- The workforces in the North, West and Southern areas are largely (75 per cent or more) composed of workers living within the same areas.
- For the Central area, there is a much higher dependence on workers from outside the area with only 55 per cent living within it.
- Those who do commute intra-regionally are most likely to travel to Auckland central making the CBD more reliant on inter-area commuting than other areas within the region.
- Since 1996, population growth has outstripped jobs growth in all but Auckland central leading to a change in travel patterns.
- There is a correlation between lower wage/lower productivity jobs and proximity of work and home.
- Central Auckland dominates business trips although 73% across the region take place within the same area.
- Most shopping trips are within a local area, although 20% are into central Auckland.
- For businesses anecdotal information suggests proximity to other related businesses and services is important.
- The trend towards major freight and distribution hubs close to transport links and markets means Auckland central dominates freight movements.
- Half of all migrants to New Zealand settle in Auckland, most in central and south.

## 7.1 Introduction

One element of the linkages between different areas within the Auckland region is the extent to which people move between these areas either through their journeys to work, their business trips, their school trips or their trips for other purposes. Commuting trips provide a measure of the extent to which areas are dependent on other areas for supplying the workforce for their employers or conversely as a measure of the extent to which workers resident in an area are dependent on employers in other areas to provide them with employment. The movement of business travellers gives an indication of the linkages between firms in different areas, although it is recognised that in some cases possibly substantial parts of this interaction may occur electronically. Education trips give a measure as the extent to which major educational establishments draw students from wide areas within the region and shopping trips give an indication of the balance between longer distance movements to major retail hubs and shorter distance movements to more local shopping centres.

It should be noted however that with the exception of journey to work data, information is only available for other journeys made by car or by public transport and does not include walking trips. The figures therefore will tend to underestimate local journeys and interactions and this needs to be kept in mind when considering the figures.

## 7.2 Journey to work patterns

### *7.2.1 Introduction*

In considering journey to work pattern we have considered initially the most recent position for which data is available, 2006 and then considered the trends that have been observed over the previous 10 years.

### *7.2.2 Current (2006) position*

The position for 2006 is set out in Table 7.1 and Table 7.2.

**Table 7.1**
**Commuting Patterns in the Auckland Region 2006**

| Residence of workers | Place of Work | | | | | | |
|---|---|---|---|---|---|---|---|
| | North | West | Central | South | Region | Rest of NZ | Total |
| North | 88,140 | 3,609 | 33,894 | 3,699 | 129,342 | 1,503 | 130,845 |
| West | 5,487 | 31,794 | 30,957 | 3,702 | 71,940 | 723 | 72,663 |
| Central | 8,001 | 6,183 | 140,517 | 17,637 | 172,338 | 1,929 | 174,267 |
| South | 2,532 | 1,230 | 47,892 | 103,596 | 155,250 | 1,824 | 157,074 |
| Region | 104,160 | 42,816 | 253,260 | 128,634 | 528,870 | 5,979 | 534,849 |
| Rest of NZ | 1,767 | 438 | 3,582 | 2,259 | 8,046 | | |
| Total | 105,927 | 43,254 | 256,842 | 130,893 | 536,916 | | 536,916 |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

**Table 7.2**
**Commuting Patterns in the Auckland Region 2006**

| Residence of workers | Place of Work | | | | |
|---|---|---|---|---|---|
| | North | West | Central | South | Region |
| North | 83% | 8% | 13% | 3% | 24% |
| West | 5% | 74% | 12% | 3% | 13% |
| Central | 8% | 14% | 55% | 13% | 32% |
| South | 2% | 3% | 19% | 79% | 29% |
| Region | 98% | 99% | 99% | 98% | 99% |
| Rest of NZ | 2% | 1% | 1% | 2% | 1% |
| Total | 100% | 100% | 100% | 100% | 100% |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

For the region as a whole, the labour market is very self-contained with only small numbers of workers coming into the region or Auckland residents travelling to work to destinations outside. Within the region there are however fairly substantial flows of workers between areas. The Central area is a major destination for workers from outside the area with only just over half of the jobs being filled by local residents. For the Region as a whole about 68 per cent of employment is met within the area of residence, although this varies from a low figure of 44 per cent for West to a much higher proportion of 81 per cent for the larger employment area of Central.

The level of self-sufficiency in terms of jobs filled by local workers is set out in Figure 7.1

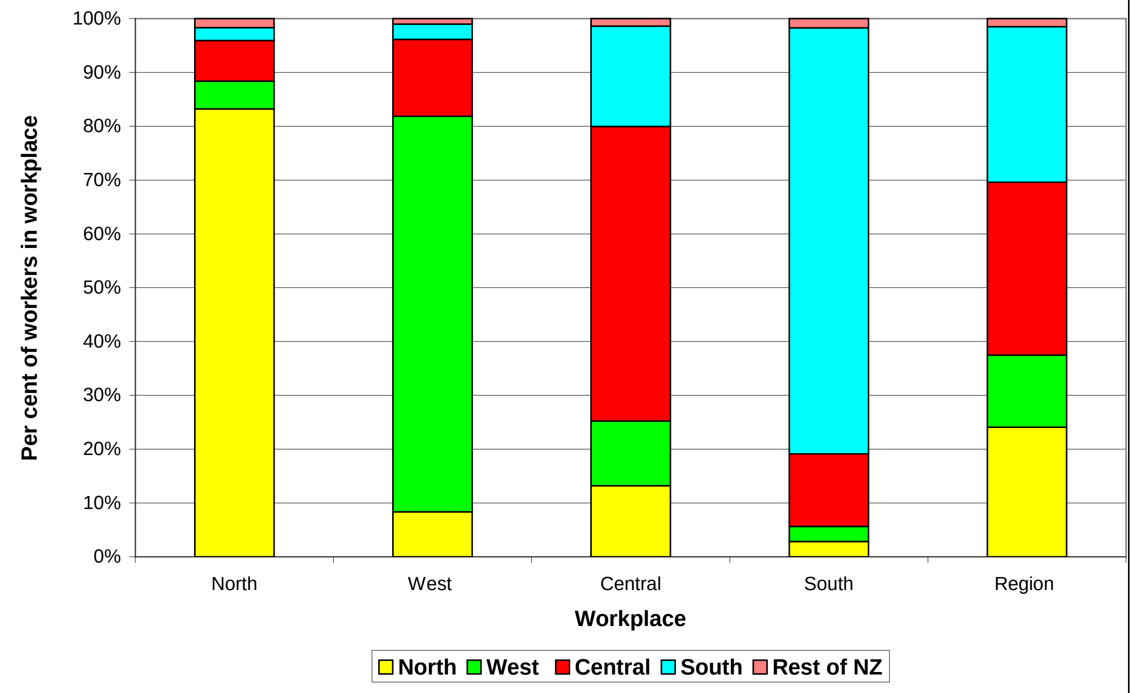



**Figure 7.1**
**Residential Location of Workers in the Auckland Region by Workplace 2006**

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

The workforces in the North, West and Southern areas are largely (75 per cent or more) composed of workers living within the same areas. For the Central area, there is a much higher dependence on workers from outside the area with only 55 per cent living within it.

### *7.2.3 Commuting by Industry Type*

Within different industrial sectors there are particular patterns of commuting and to some extent the differences in commuting patterns by area reflect the differences in the composition of employment within these. A selection of results for 2006 for the commuting patterns by employment sector is set out in Table 7.3.

**Table 7.3**
**Inter-Area Commuting by Selected Industrial Sector 2006**

| Industry Sector | Proportion of workers travelling between areas |
|---|---|
| All Sectors | 31% |
| Finance and Insurance | 40% |
| Manufacturing | 35% |
| Other Business Services | 33% |
| Retail | 24% |
| Accommodation and Food | 24% |

Source: Consultants estimates based on Statistics New Zealand 2006 Census data.

Workers in finance and insurance, a sector with high average wage rates and productivity have fairly dispersed commuting patterns, whereas workers in the retail and accommodation and food sectors with much lower wage rates and value added are more likely to work in the areas where they live. The position for manufacturing probably reflects the location of a number of major manufacturing areas on the boundaries of the areas such as Rosebank, Mount Wellington and East Tamaki and although there may be substantial inter-area commuting the distances travelled may only be small.

### *7.2.4 Changes from 1996*

The changes in daily trip patterns between 1996 and 2006 are set out in Table 7.4.

**Table 7.4**
**Changes in Journey to Work Patterns 1996-2006 (daily trips)**

| Residence of workers | Place of Work | | | | | | |
|---|---|---|---|---|---|---|---|
| | **North** | **West** | **Central** | **South** | **Region** | **Rest of NZ** | **Total** |
| North | 22,221 | 816 | 1,998 | 612 | 25,647 | 504 | 26,151 |
| West | 1,677 | 4,185 | 2,418 | 1,023 | 9,303 | 309 | 9,612 |
| Central | 2,490 | 1,179 | 25,611 | 4,671 | 33,951 | 939 | 34,890 |
| South | 747 | 180 | 6,579 | 21,897 | 29,403 | 804 | 30,207 |
| Region | 27,135 | 6,360 | 36,606 | 28,203 | 98,304 | 2,556 | 100,860 |
| Rest of NZ | 855 | 198 | 1,158 | 1,113 | 3,324 | | |
| Total | 27,990 | 6,558 | 37,764 | 29,316 | 101,628 | | 101,628 |

Source: Consultants estimates based on Statistics New Zealand Census data.

The proportion of the growth of employment that has been met from workers from different areas is set out in Table 7.5.

**Table 7.5**
**Changes in Journey to Work Patterns 1996-2006 (daily trips)**

| Residence of workers | Place of Work | | | | |
|---|---|---|---|---|---|
| | **North** | **West** | **Central** | **South** | **Region** |
| North | 79% | 12% | 5% | 2% | 25% |
| West | 6% | 64% | 6% | 3% | 9% |
| Central | 9% | 18% | 68% | 16% | 33% |
| South | 3% | 3% | 17% | 75% | 29% |
| **Region** | **97%** | **97%** | **97%** | **96%** | **97%** |
| Rest of NZ | 3% | 3% | 3% | 4% | 3% |
| Total | 100% | 100% | 100% | 100% | 100% |

Source: Consultants estimates based on Statistics New Zealand Census data.

The key points which emerge from this include:-

- For the region as a whole, almost all the increase in employment is met from residents with only 3 per cent coming from those living outside the region.
- Regional self-sufficiency in the labour market has therefore remained very high and virtually unchanged.

At a more local level, changes since 1996 have reduced the self sufficiency of the North, West and South areas within the Auckland region and this has therefore led to an increased share of commuting into these areas from elsewhere in the region. The reverse has however been the case with the Central area with a greater degree of self-sufficiency, despite the increase in employment being greater than the increase in the workforce, implying relatively low growth rates in commuting to outside of the area.

The overall balance between growth in total employment and total workforce is illustrated in Figure 7.2.

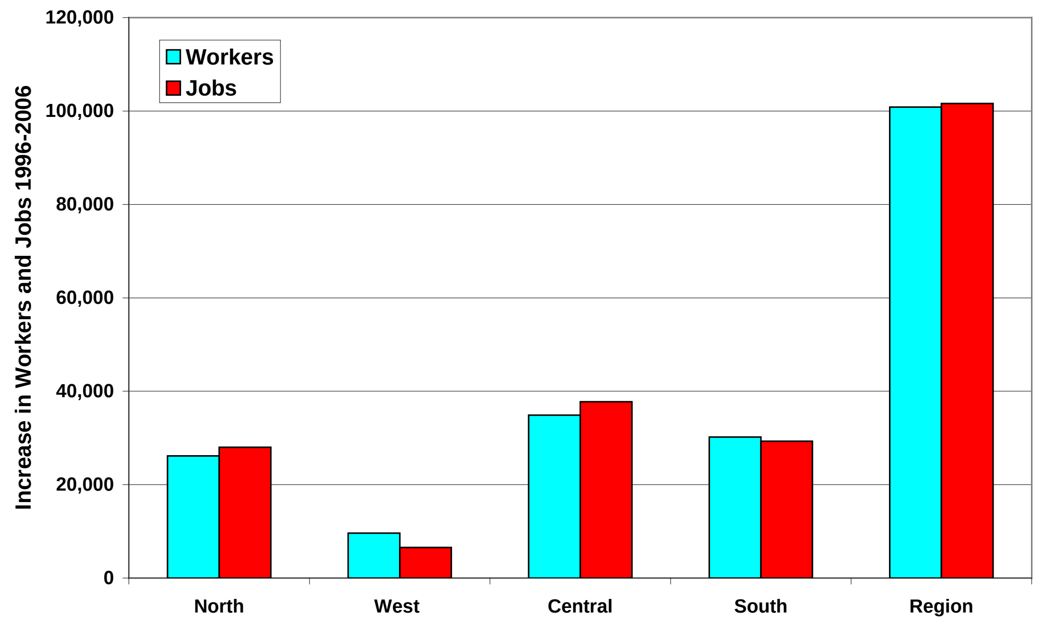



**Figure 7.2**
**Growth of Workforce and Employment by Area 1996-2006**

Source: Consultants estimates based on Statistics New Zealand Census data.

In general therefore the patterns that emerges is of a region as a whole which is largely self-contained in terms of the match between jobs and employment but where movements between the different areas have been changing in part as the balance within these between workers and jobs has changed and in part because of more general changes in commuting patterns. In particular, in the West and to a lesser extent in the South, the number of workers has increased faster than the number of jobs and this has been accompanied by an increase in commuting to other areas. For the North and Central area the number of jobs has increased faster than the number of workers. For the North this has still been accompanied by an increase in commuting flows from outside the area, whereas for the Central region, possibly in part because of growth of employment in the CBD, the reverse has been the case and the level of self-sufficiency has increased slightly.

### 7.3 Patterns of Business Travel

Information on the patterns of business travel is available from the outputs of the Regional Transport Model (ART3) for 2006 based on a programme of surveys and other data collection undertaken in that year. The broad pattern of movement that results is set out in Table 7.6.

**Table 7.6**
**Distribution of Business Trips by Car and Public Transport 2006**
**(Trips per Average weekday)**

| | Destination | | | | |
|---|---|---|---|---|---|
| **Origin** | **North** | **West** | **Central** | **South** | **Total** |
| North | 53,400 | 3,499 | 11,505 | 4,304 | 72,708 |
| West | 3,585 | 16,956 | 9,716 | 2,551 | 32,809 |
| Central | 10,660 | 8,898 | 132,779 | 17,988 | 170,325 |
| South | 4,077 | 2,462 | 20,443 | 70,767 | 97,749 |
| Total | 71,722 | 31,815 | 174,443 | 95,610 | 373,590 |

Source: Auckland Council ART model.

**Table 7.7**
**Distribution of Business Trips by Car and Public Transport 2006**
**(Trips per Average weekday-Per cent of Total)**

| | Destination | | | | |
|---|---|---|---|---|---|
| **Origin** | **North** | **West** | **Central** | **South** | **Total** |
| North | 14% | 1% | 3% | 1% | 19% |
| West | 1% | 5% | 3% | 1% | 9% |
| Central | 3% | 2% | 36% | 5% | 46% |
| South | 1% | 1% | 5% | 19% | 26% |
| Total | 19% | 9% | 47% | 26% | 100% |

Source: Auckland Council ART model.

In total, 73 per cent of business trips are made within each of the areas with 27 per cent made between areas within the Region. The Central area dominates the number of business trips both generating high volumes of movements internal to the area but also having strong interconnections to other areas. 12 per cent of total regional business trips are to the Central area from outside and 10 per cent are from the Central area to other areas within the Region. There are particularly strong links between the Central and Southern area which represent about 10 per cent of all regional movements and over a third of those which are not internal within the individual areas.

## 7.4 Shopping Trips

Similarly the pattern of shopping travel is available from the outputs of the Regional Transport Model (ART3) and this is set out in Table 7.8.

**Table 7.8**
**Distribution of Shopping Trips by Car and Public Transport 2006**
**(Trips per Average weekday)**

| | Destination | | | | |
|---|---|---|---|---|---|
| **Origin** | **North** | **West** | **Central** | **South** | **Total** |
| North | 103,153 | 3,461 | 4,806 | 2,560 | 113,981 |
| West | 3,016 | 41,182 | 8,340 | 1,607 | 54,146 |
| Central | 4,828 | 8,559 | 100,092 | 12,877 | 126,356 |
| South | 2,438 | 1,765 | 11,386 | 102,192 | 117,781 |
| Total | 113,435 | 54,967 | 124,625 | 119,236 | 412,263 |

Source: Auckland Council ART model.

**Table 7.9**
**Distribution of Shopping Trips by Car and Public Transport 2006**
**(Trips per Average weekday-Per cent of Total)**

| | Destination | | | | |
|---|---|---|---|---|---|
| **Origin** | **North** | **West** | **Central** | **South** | **Total** |
| North | 25% | 1% | 1% | 1% | 28% |
| West | 1% | 10% | 2% | 0% | 13% |
| Central | 1% | 2% | 24% | 3% | 31% |
| South | 1% | 0% | 3% | 25% | 29% |
| Total | 28% | 13% | 30% | 29% | 100% |

Source: Auckland Council ART model.

This demonstrates a fairly tight distribution at an area level with most journeys made inside their particular areas. The Central area has about 20 per cent of its shopping trips from outside and Manukau has 13 per cent. It should be emphasised that these relate to mechanised trips only and a number of more local shopping journeys will therefore be excluded.

### 7.5 Inter-firm and within firm Linkages

Inter-firm linkages are by their nature often harder to identify since they may not involve the movement of tangible commodities, and to examine these we have had to rely on more qualitative and anecdotal sources of information. Some of these connections, the vertical linkages between firms, suppliers and markets are however clearly vital since they provide the connections with suppliers of various inputs including labour and with the customers for the various products manufactured or otherwise generated.

The nature and importance of the horizontal linkages between firms however varies significantly from sector to sector. Where knowledge sharing is an important driver of productivity gains these links will be expected to be more important. For example, Audretsch and Feldman[i] examined the concentration of product innovation in the United States.[42] They found that industries with higher R&D rates and higher shares of skilled labour are more concentrated as is the case in Auckland, and interpret their results as being evidence of the importance of the tacit transmission of knowledge, which can occur via links between similar firms within a sector.

A key feature of the economy of the Auckland region is the importance of the service sectors, which account for a very high proportion of total employment and economic activity. Within this sector, especially for the more advanced business services there is a high dependence on access to a skilled workforce possibly spread over a wide area and face to face contacts with other industry players are also important.

An example of the benefits of improved within firm links is highlighted in the results of an interview we carried out with a representative of Westpac Bank.

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[42] Audretsch, D.B. & Feldman, M.P. (2004). 'Knowledge spillovers and the geography of innovation', In Henderson, J.V., & Thisse, F-T (Eds.) *Handbook of Regional and Urban Economics*, vol 4, Elsevier: Amsterdam: 2713-2739.

**Case Study – Within firm links**

In 2002 Westpac relocated its head office from Wellington to Auckland. In 2011 the company moved into a new, purpose built headquarters in Takutai Square, adjacent to Britomart Station. The move involved bringing together a number of corporate functions located at different site in Auckland. It also involved the transfer of the company's financial markets team from Wellington. An important driver of Westpac's decision to locate its corporate services on one site was the desire to create a unique identity and culture within the bank and for customers. Essentially, the advantages of locating all corporate services (including training and call centre roles) at one site outweighed costs. The advantage was the increased interaction between staff that the single site would provide. It is also useful to note the choice of location, in close proximity to rail, bus and ferry transport and also CBD amenities including Vector Arena.

Within the manufacturing sectors which again account for a significant part of the workforce, the key factors underpinning the choice of location are the availability of suitable land for the activities undertaken and access for goods inwards and outwards. This leads to industrial concentrations at locations which meet these requirements, but there is typically little interaction between firms, even those operating within very similar sectors. Some initiatives are being promoted particularly within the food and beverage industry with the development of the Food Innovation Precinct near the airport and efforts are being made to involve universities and CRIs with industry but to date these have had relatively little impact.

### 7.6 Freight Movements

There is relatively little data about the movement of freight within the Auckland region other than the flows of heavy vehicles on key roads and as a result any assessment is largely qualitative.

Auckland region acts as a major distribution hub for the whole of the country, even in many cases for goods produced elsewhere in New Zealand including the South Island. A key part of the activity is port related with goods from the port being transported to processing and distribution centres elsewhere in the Central area and also increasingly in the Southern area. For some of these goods, distribution centres are used to break down loads and hold the goods before despatch elsewhere but for others, for example Rosebank there may be more complex value added types of activities, including processing and repackaging. Many of the distribution centres also handle goods produced domestically, being operated by the manufacturers themselves or act as consolidation depots for the major warehousing companies and retailers. There are strong trends to increase the proportions of goods handled by these centres in order to aid distribution to the next level down the chain especially where timed deliveries are required, again which is tending to increase the dominance of facilities within the Auckland region.

While these trends are apparent there is however limited quantitative information on the patterns of freight movements within the region. Flows on a selection of key links within the Region are set out in Figure 7.3.

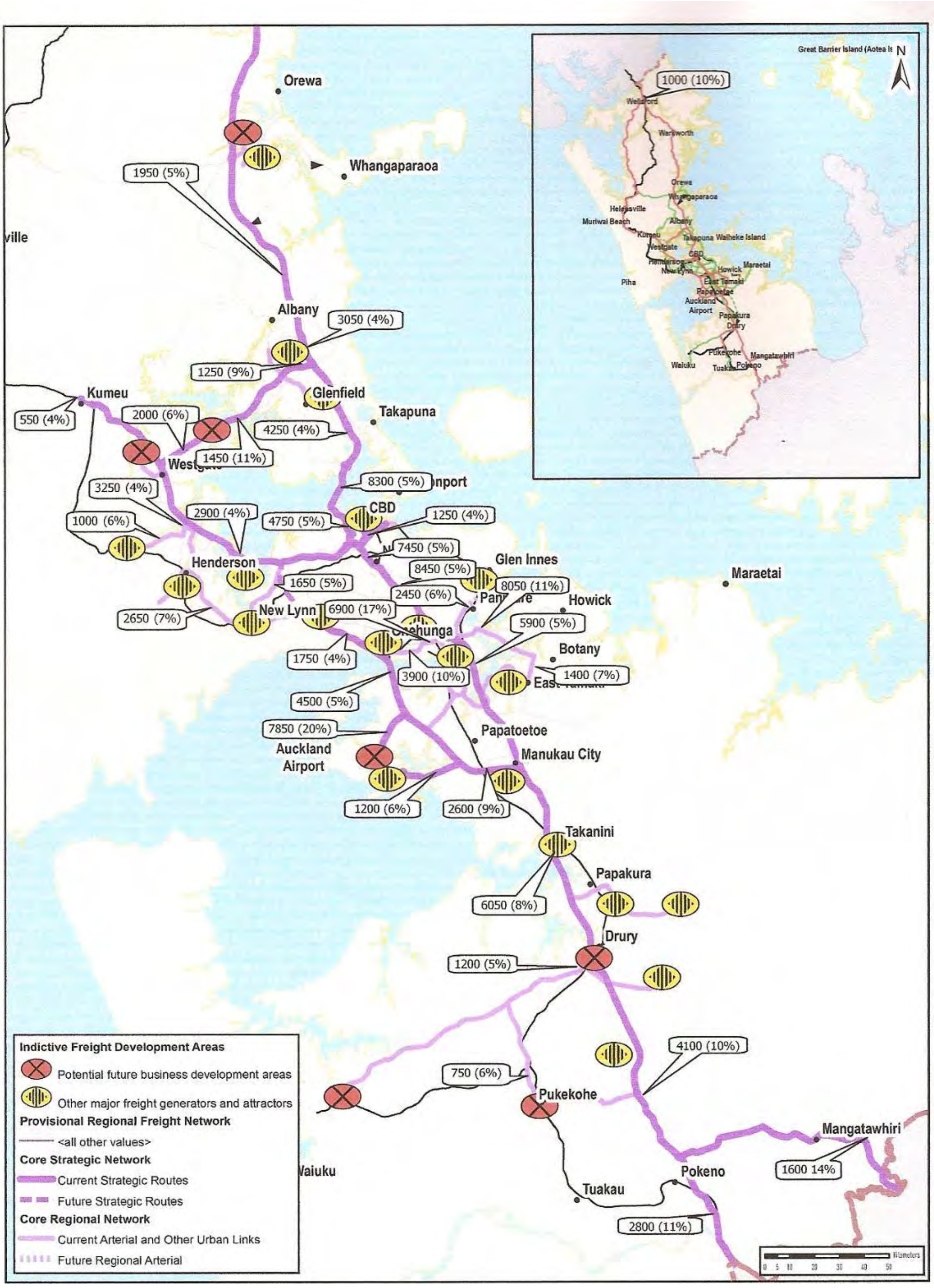



**Figure 7.3**
**Heavy Vehicle Flows on the Auckland Strategic Road Network**
**(Average daily flows and per cent of total traffic)**

Source: Auckland Council.

At a more detailed level there is information on the volumes of freight traffic in the road network within the Central Area and this is set out in Figure 7.4.

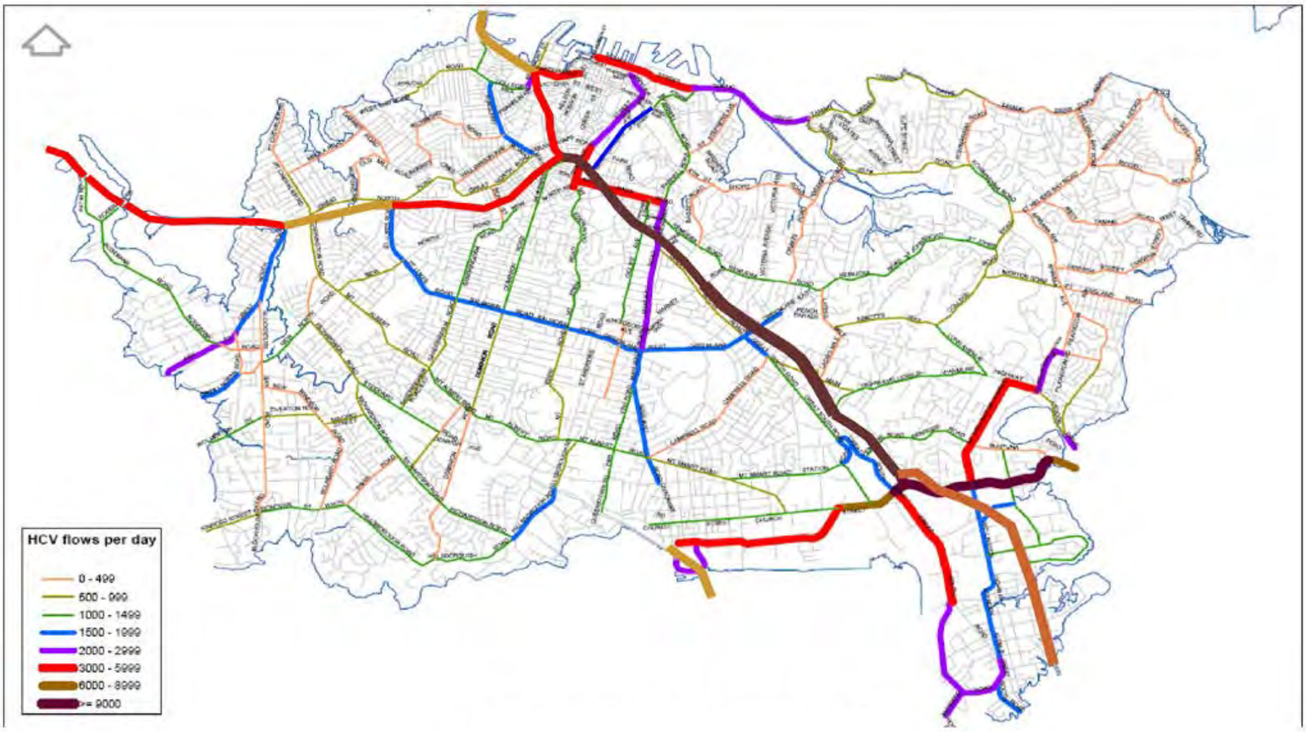



**Figure 7.4**
**Heavy Commercial Vehicle Flows in the former Auckland City 2006**

Source: Consultants estimates.

Both the figures point to the high flows of heavy vehicles on the State Highway network particularly on the main north-south axis, linking the CBD and the port to the main manufacturing and distribution hubs in the Penrose/Mount Wellington area and further south round the airport. Flows across the Harbour Bridge and into the North Shore also provide the linkages with the range of distribution activities in the Albany area and also form part of the longer distance movements between central Auckland and Northland and areas further north in the region.

## 7.7 Migration patterns

Migration provides another form of linkage within the region. The patterns of migration within and to the region over the period from 2001 to 2006 are set out in Table 7.10 and Table 7.11.

**Table 7.10**
**Patterns of Migration in and into the Auckland Region 2001-2006**

| Place of Residence in 2006 | Residence in 2001 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | North | West | Central | South | Total Region | Overseas | Other NZ | Total |
| North | 157,347 | 5,628 | 9,540 | 3,630 | 176,145 | 32,661 | 25,971 | 234,777 |
| West | 3,675 | 89,934 | 11,289 | 2,166 | 107,064 | 16,086 | 19,131 | 142,281 |
| Central | 7,608 | 7,644 | 194,013 | 12,078 | 221,343 | 58,068 | 49,152 | 328,563 |
| South | 2892 | 2,784 | 16,137 | 218,034 | 239,847 | 36,903 | 44,223 | 320,973 |
| Total Region | 171,522 | 105,990 | 230,979 | 235,908 | 744,399 | 143,718 | 138,477 | 1,026,594 |
| Other NZ | 15,453 | 8,388 | 18,723 | 17,961 | 60,525 | 147,696 | 1,925,556 | 2,133,777 |
| Total | 186,975 | 114,378 | 249,702 | 253,869 | 804,924 | 291,414 | 2,064,033 | 3,160,371 |

Source: Consultants estimates based on Statistics New Zealand Census data.

**Table 7.11**
**Patterns of Migration in and into the Auckland Region 2001-2006**
**Source of Residents in 2006**

| Place of Residence in 2006 | Residence in 2001 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | North | West | Central | South | Total Region | Overseas | Other NZ | Total |
| North | 67% | 2% | 4% | 2% | 75% | 14% | 11% | 100% |
| West | 3% | 63% | 8% | 2% | 75% | 11% | 13% | 100% |
| Central | 2% | 2% | 59% | 4% | 67% | 18% | 15% | 100% |
| South | 1% | 1% | 5% | 68% | 75% | 11% | 14% | 100% |
| Total Region | 17% | 10% | 22% | 23% | 73% | 14% | 13% | 100% |

Source: Consultants estimates based on Statistics New Zealand Census data.

In general, while there has likely to have been substantial movement within the Areas typically the majority of residents in 2006 had lived in the same areas in 2001. The region as a whole has however attracted considerable numbers of overseas migrants attracting half the total for the country reflecting the general preference of these migrants for spatially concentrated areas (Mare 2007). Within the region there has been a particular focus on the Central area and the South as the larger centres within the Region and also areas where there may be larger numbers of earlier immigrants from the same regions. While not contributing to linkages within the region, migrants from outside do provide potential linkages with other regional and overseas destinations and can be a source of new ideas as well as providing additional members of the workforce.

# 8 Analysis by Sector

- Auckland demonstrates a competitive advantage in eleven sectors, ranging across business services, manufacturing (including marine), travel and tourism and health.
- The region has experienced considerable growth in competitive advantage sectors, particularly business services in central Auckland, health and technical services.
- Employment across all competitive advantage sectors is focussed on the CBD, southern industrial corridor, airport/Manukau and North Harbour.
- Marine sector is focussed around CBD, Henderson, Hobsonville and Mt Wellington, travel and tourism employment highest around the CBD and the airport.
- Transport sector focussed on south and located close to manufacturing, 87% of regional employment in the sector is in central and south.
- Business services contribute most to GRP, followed by manufacturing.
- Manufacturing growth in south and shift from central to other areas is based on need for land and proximity to transport links.
- The largest manufacturers are in south in primary metal and metal resources, pulp and paper and food products.
- Ports of Auckland is a significant international gateway for all of New Zealand as well as for the region.
- There is value in clustering of similar business, including links with research and education institutes.
- Financial and insurance sector strongly focussed on central but Other business services show greater distribution reflecting servicing of local residential as well as commercial markets.

## 8.1 Introduction

In addition to considering the overall picture we have also looked at the position for a range of sectors within the Auckland economy. The information on these has come from a range of sources and the analysis combines earlier work described in outline in Section 3 with detailed analysis undertaken as part of this project. This information has been drawn from a number of sources and as a result there are some issues with the consistency of the data which is drawn from different datasets, is reported for different years and provides different types of information. In general, however the messages that come from the analysis are fairly consistent and we have therefore used the different sources of information to attempt to build up as full a picture as possible on the operation and importance of the sectors.

The analysis is considered in two parts. The first looks at the spatial patterns of activity for the 11 sectors in which Auckland is considered to have a competitive advantage defined by work undertaken by the former Ministry of Economic Development (MED) and Auckland Tourism Events and Economic Development (ATEED) (subsequently called the competitive advantage or CA sectors)[43]. The second part looks at a selection of more broadly defined sectors typically in line with ANZSIC06 1 digit level definitions.

## 8.2 Competitive Advantage (CA) Sectors

### *8.2.1 Introduction*

The sectors in which Auckland is considered to have a competitive advantage comprise:-

- Business services
- Metals and metal products
- Paper products
- Electronics and electrical equipment
- Machinery
- Food
- Marine
- Health
- Tourism
- Technical services
- Transport services

The full definition of these sectors is set out in Appendix A.

Typically the sectors identified above comprise a combination of both manufacturing and wholesaling or other services and therefore do not align with the more broadly based but more functional ANZSIC categories. The information that is available for these is therefore more limited and is also not aligned with Census data.

### *8.2.2 Overall Analysis for the Identified Key Sectors*

The overall statistics for each of the key Competitive Advantage sectors identified by MED and ATEED are set out in Table 8.1 for the numbers of business units and in Table 8.2 for the numbers employed. It should be noted that the employment figures exclude the owners of businesses and so under-record the numbers actually working in the different sectors. It also explains why the numbers of business units are in some cases greater than the numbers employed.

[43] The sectors comprise those included in Knowledge Intensive Manufacturing and Services (KIMS) and High Value Manufacturing (HVM) defined for MED and ATEED.

**Table 8.1**
**Numbers of Business Units in Key Sectors by Area 2010**

| | North | West | Central | South | Region Total | Total New Zealand |
|---|---|---|---|---|---|---|
| Business Services | 3586 | 1063 | 7923 | 2359 | 14931 | 32972 |
| Metals and Metal products | 168 | 103 | 231 | 315 | 817 | 2676 |
| Paper products | 39 | 29 | 110 | 67 | 245 | 486 |
| Electronics and Electrical Equipment | 304 | 101 | 454 | 202 | 1061 | 2247 |
| Machinery | 394 | 160 | 555 | 606 | 1715 | 4712 |
| Food | 266 | 91 | 540 | 262 | 1159 | 2980 |
| Marine | 137 | 59 | 69 | 62 | 327 | 656 |
| Health | 111 | 34 | 188 | 104 | 437 | 865 |
| Tourism | 203 | 41 | 500 | 176 | 920 | 2405 |
| Technical Services | 2257 | 633 | 3424 | 1215 | 7529 | 16602 |
| Transport Services | 485 | 381 | 730 | 1293 | 2889 | 8278 |
| **Total** | **7950** | **2695** | **14724** | **6661** | **32030** | **74879** |

Source: Consultants estimates based on Statistics New Zealand BDD.

**Table 8.2**
**Employment in Key Sectors by Area 2010 (1)**

| | North | West | Central | South | Region Total | Total New Zealand |
|---|---|---|---|---|---|---|
| Business Services | 4876 | 1148 | 28700 | 6850 | 41574 | 93150 |
| Metals and Metal products | 887 | 329 | 2370 | 3487 | 7073 | 15280 |
| Paper products | 140 | 420 | 800 | 961 | 2321 | 4020 |
| Electronics and Electrical Equipment | 2080 | 423 | 4560 | 1077 | 8140 | 15260 |
| Machinery | 1323 | 442 | 3405 | 3652 | 8822 | 21810 |
| Food | 1529 | 733 | 7862 | 5256 | 15380 | 33670 |
| Marine | 270 | 660 | 610 | 175 | 1715 | 3430 |
| Health | 806 | 625 | 2880 | 2810 | 7121 | 9290 |
| Tourism | 630 | 70 | 3765 | 5056 | 9521 | 16740 |
| Technical Services | 6040 | 600 | 22360 | 1918 | 30918 | 64680 |
| Transport Services | 1124 | 542 | 4230 | 6650 | 12546 | 33950 |
| **Total** | **19705** | **5992** | **81542** | **37892** | **145131** | **311280** |

Source: Consultants estimates based on Statistics New Zealand BDD.
Notes (1) Excludes business owners

The position for each of the Competitive Advantage sectors over time is set out in Table 8.3.

**Table 8.3**
**Growth in Employment in Competitive Advantage Sectors 2000-2010**

| CA Sector | As at Feb 2000 | As at Feb 2002 | As at Feb 2004 | As at Feb 2006 | As at Feb 2008 | As at Feb 2009 | As at Feb 2010 | Growth 2000-2010 |
|---|---|---|---|---|---|---|---|---|
| Business Services | 28,770 | 29,630 | 33,400 | 39,100 | 41,850 | 42,590 | 41,550 | 44% |
| Metals and Metal products | 7,710 | 7,300 | 7,850 | 8,170 | 8,060 | 7,590 | 7,070 | -8% |
| Paper products | 3,230 | 2,980 | 2,670 | 2,290 | 2,430 | 2,380 | 2,330 | -28% |
| Electronics and Electrical Equipment | 7,080 | 7,160 | 7,960 | 8,900 | 8,980 | 8,290 | 8,090 | 14% |
| Machinery | 8,350 | 8,870 | 9,210 | 9,160 | 9,670 | 9,340 | 8,830 | 6% |
| Food | 12,720 | 13,540 | 14,010 | 14,220 | 14,950 | 15,440 | 15,340 | 21% |
| Marine | 1,780 | 2,210 | 1,900 | 1,830 | 2,160 | 1,960 | 1,720 | -3% |
| Health | 4,630 | 5,340 | 5,750 | 6,500 | 6,920 | 7,030 | 7,140 | 54% |
| Tourism | 8,850 | 8,500 | 9,450 | 9,900 | 10,110 | 9,680 | 9,500 | 7% |
| Technical Services | 21,700 | 24,220 | 25,770 | 29,500 | 32,190 | 31,990 | 30,910 | 42% |
| Transport Services | 10,520 | 11,520 | 12,530 | 13,840 | 14,100 | 13,580 | 12,490 | 19% |
| Total All CA sectors | 115,340 | 121,270 | 130,500 | 143,410 | 151,420 | 149,870 | 144,970 | 26% |

Source: Consultants estimates based on Statistics New Zealand BDD.
(Note: Because of the way in which these numbers were collected the figures in this table are slightly different to those in Table 8.2).

While growth for the sectors as a whole has been fairly substantial, 26 per cent over the period compared to 18 per cent for all industries, the rates of growth in the different sectors have displayed considerable variation. These range from a decline of 28 per cent in paper products and 8 per cent in metals and metal products to increases of 42 per cent in Technical services, 44 per cent in Business Services and 54 per cent in the small "Health" sector (mainly focussed on the provision and wholesaling of medical and pharmaceutical products). In general, employment in the manufacturing focussed sectors as a whole has increased relatively slowly at about 10-11 per cent whereas growth in the service sectors has been much more rapid at 33 per cent over the period.

The growth of the broad categories of Auckland Competitive Advantage sectors over the period from 2001 to 2010 for the four areas within the Auckland Region is set out in Figure 8.1

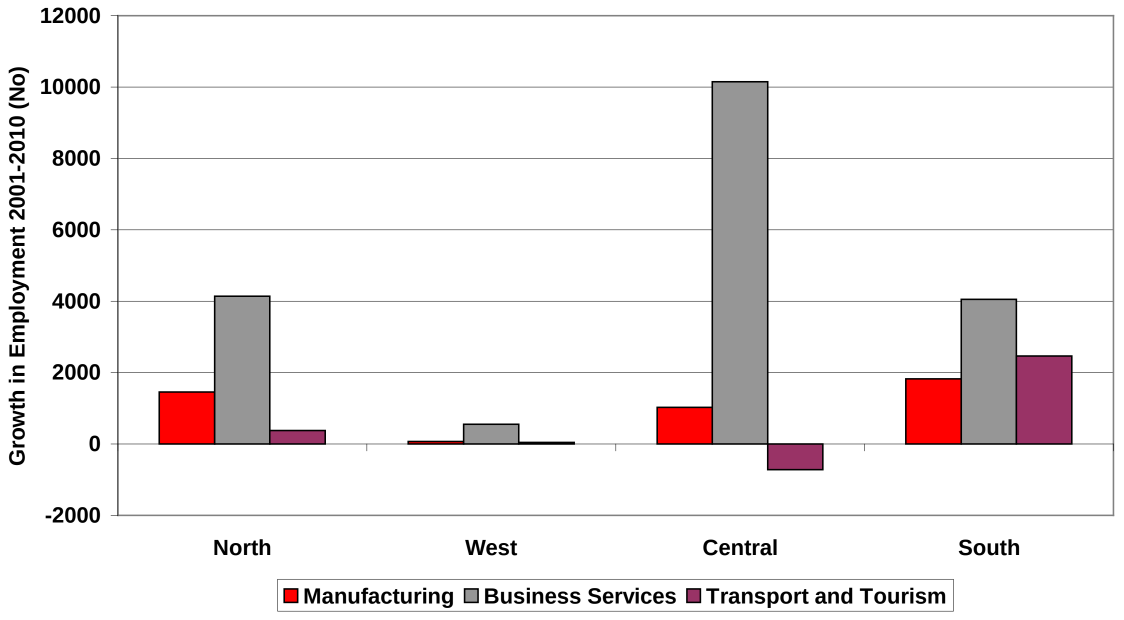



**Figure 8.1**
**Growth of Employment in Auckland Competitive Advantage Sectors by Area 2000-2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

Within the defined Competitive Advantage sectors, the changes in employment over the period from 2000 to 2010 indicate some increases in the degree of specialisation by area. The bulk of the growth in the Business Services Competitive Advantage sector has occurred in the Central area and the growth in Transport and tourism Competitive Advantage Sector in the South area, with a decline in the Central area as activities have relocated. Growth in the Manufacturing Competitive Advantage sectors is spread more widely although again with some concentration in the South. Growth in the West area has been relatively modest.

The spatial locations of employment in 2010 have also been identified. These are summarised below but set out in detail including both maps of the region as a whole and the central areas in Appendix B.

The overall distribution of total employment in the Competitive Advantage sectors is set out in Figure 8.2.

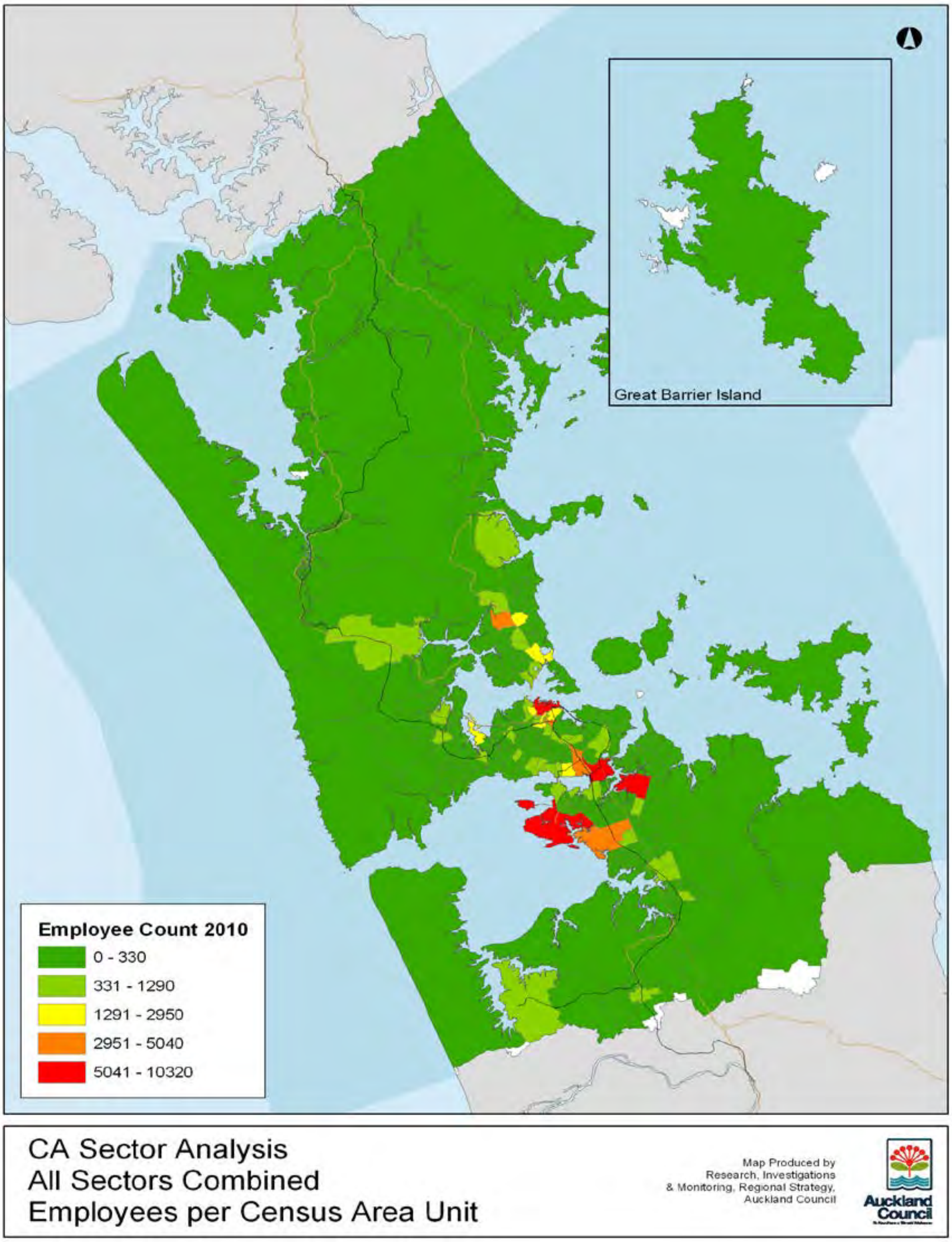
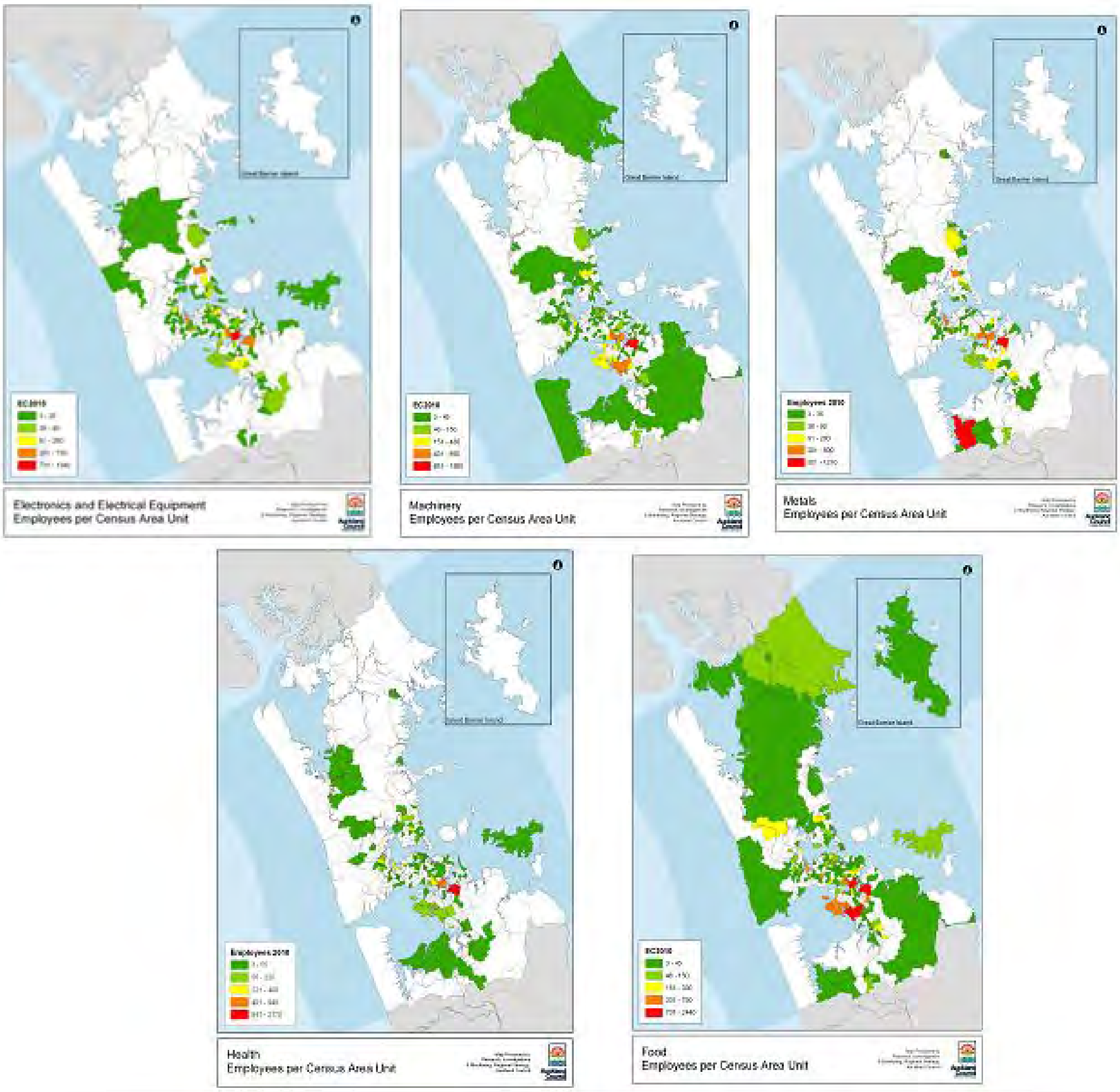



**Figure 8.2**
**Employment in All Competitive Advantage Sectors 2010**

Source: Consultants estimates based on Statistics New Zealand BDD.

This shows that employment is focussed in the CBD, in the industrial belt from Penrose and Te Papapa through Mt Wellington to Highbrook/East Tamaki and around the airport and central Manukau. A smaller concentration exists at the North Harbour Estate south of Albany.

The locations of employment for a group of Competitive Advantage manufacturing activities are set out in Figure 8.3. It should be noted that the scales for these maps while similar are not exactly the same and so they should be regarded primarily as illustrative of the main trends.




Note: The scales for each of these maps while similar are not exactly the same and so they should be used for identifying broad trends rather than more detailed analysis.

**Figure 8.3**
**Distribution of Employment for Selected Competitive Advantage Sectors in 2010: Electronics and Electrical Equipment, Machinery, Metals, Health and Food**

Source: Consultants estimates based on Statistics New Zealand BDD.

For each of the primarily manufacturing sectors included in Figure 8.3, while activity is fairly widely dispersed there are strong concentrations of activity in the Mount Wellington and East Tamaki/Highbrook areas reflecting the availability of land for development and reasonable transport links.

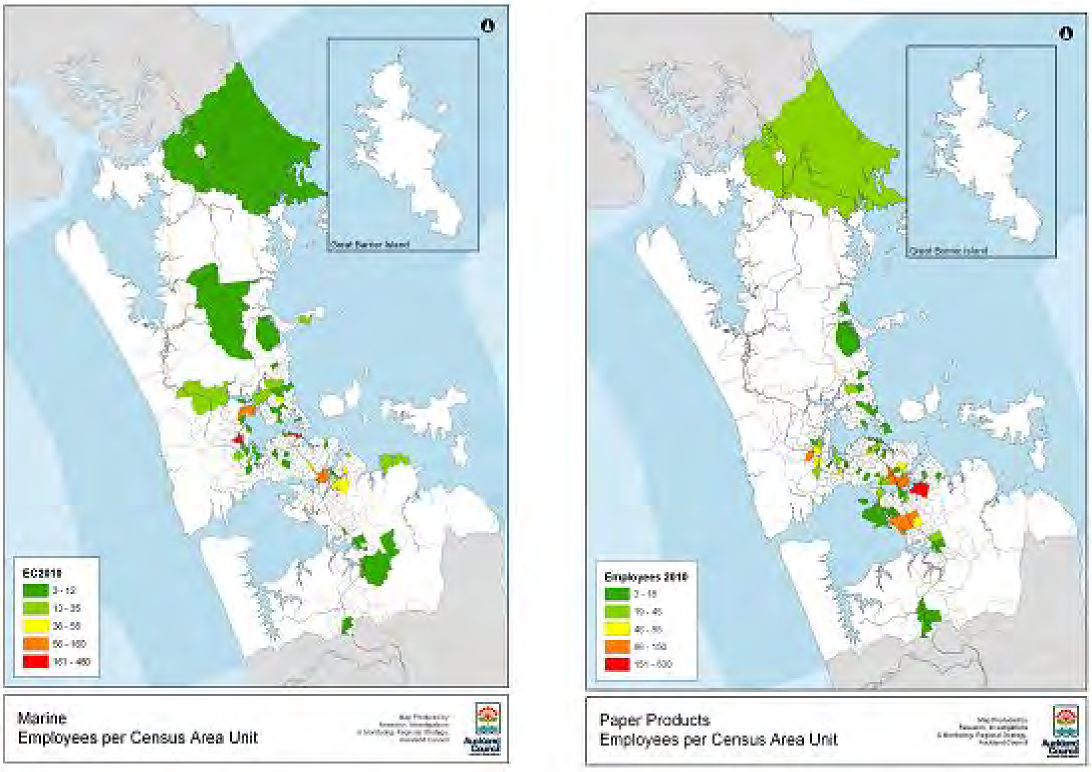
For Food there is also a concentration of activity in central Manukau and around the airport, again reflecting the availability of land particularly for more recent development. The FoodBowl (Auckland) has also been developed in this area to take advantage of the availability of suitable space for development and also the proximity of firms within the sector, although the former factor is probably the more important.

Within Metals the location of the Glenbrook steel mill clearly stands out, which takes advantage of the proximity to supplies of iron sand, one of the key raw materials used in the process. The mill also has a good rail link which is used for the movements of both inputs and outputs.

Machinery also has something of a lesser concentration round the airport and central Manukau.

For a number of the activities North Harbour estate also has moderate levels of employment, again reflecting the benefits of available land and reasonable communications.

The position for Marine and Paper is set out in Figure 8.4.



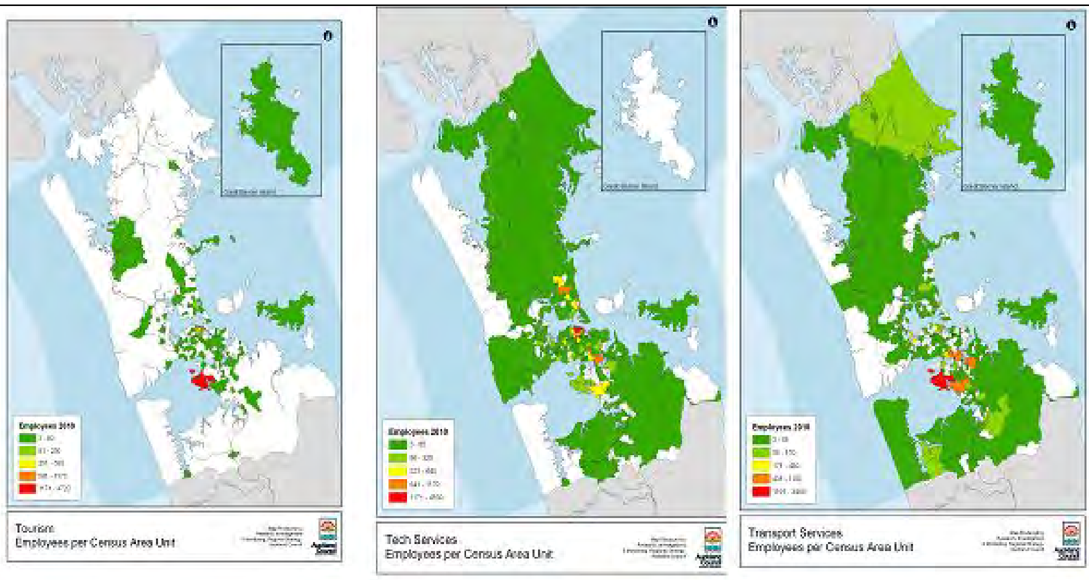

Note: The scales for each of these maps while similar are not exactly the same and so they should be used for identifying broad trends rather than more detailed analysis.

**Figure 8.4**
**Distribution of Employment for Selected Competitive Advantage Sectors in 2010: Marine and Paper**

Source: Consultants estimates based on Statistics New Zealand BDD.

For the Paper and Marine sectors there is a much lower level of dispersion of employment across the region with employment concentrated at a smaller number of locations. In terms of the key area, Paper shows a pattern of employment similar to that described above for the other primarily manufacturing activities with concentrations in Mount Wellington/East Tamaki and to a lesser extent in central Manukau, again related to the availability of suitable land. Marine which is a more specialised activity however demonstrates different patterns with concentrations of employment typically although not always in waterside locations, including the CBD in Auckland, Selwood Road in Henderson, Mount Wellington and Hobsonville.

The distribution of employment for three of the larger service sectors is set out in Figure 8.5.




Note: The scales for each of these maps while similar are not exactly the same and so they should be used for identifying broad trends rather than more detailed analysis.

**Figure 8.5**
**Distribution of Employment for Selected Competitive Advantage Sectors in 2010: Tourism, Technical Services and Transport Services**

Source: Consultants estimates based on Statistics New Zealand BDD.

These display different distributions of employment with the Competitive Advantage “Tourism” activities with a strong focus on air transport being concentrated near the airport and to a lesser extent in the CBD. Transport services have a strong focus round the airport and central Manukau and also in the major industrial belt from Penrose to Highbrook, demonstrating the strong linkages with manufacturing, although employment at a lower intensity is dispersed across the region. Technical services, which to a large extent are linked with commercial and business service type activities, are focussed on the CBD with smaller concentrations in Ellerslie and Mt Wellington and Takapuna and North Harbour estate to the north of the harbour but again with low intensity employment across the region.

The final figure covers business services the largest of the Competitive Advantage sectors and this is set out in Figure 8.6.

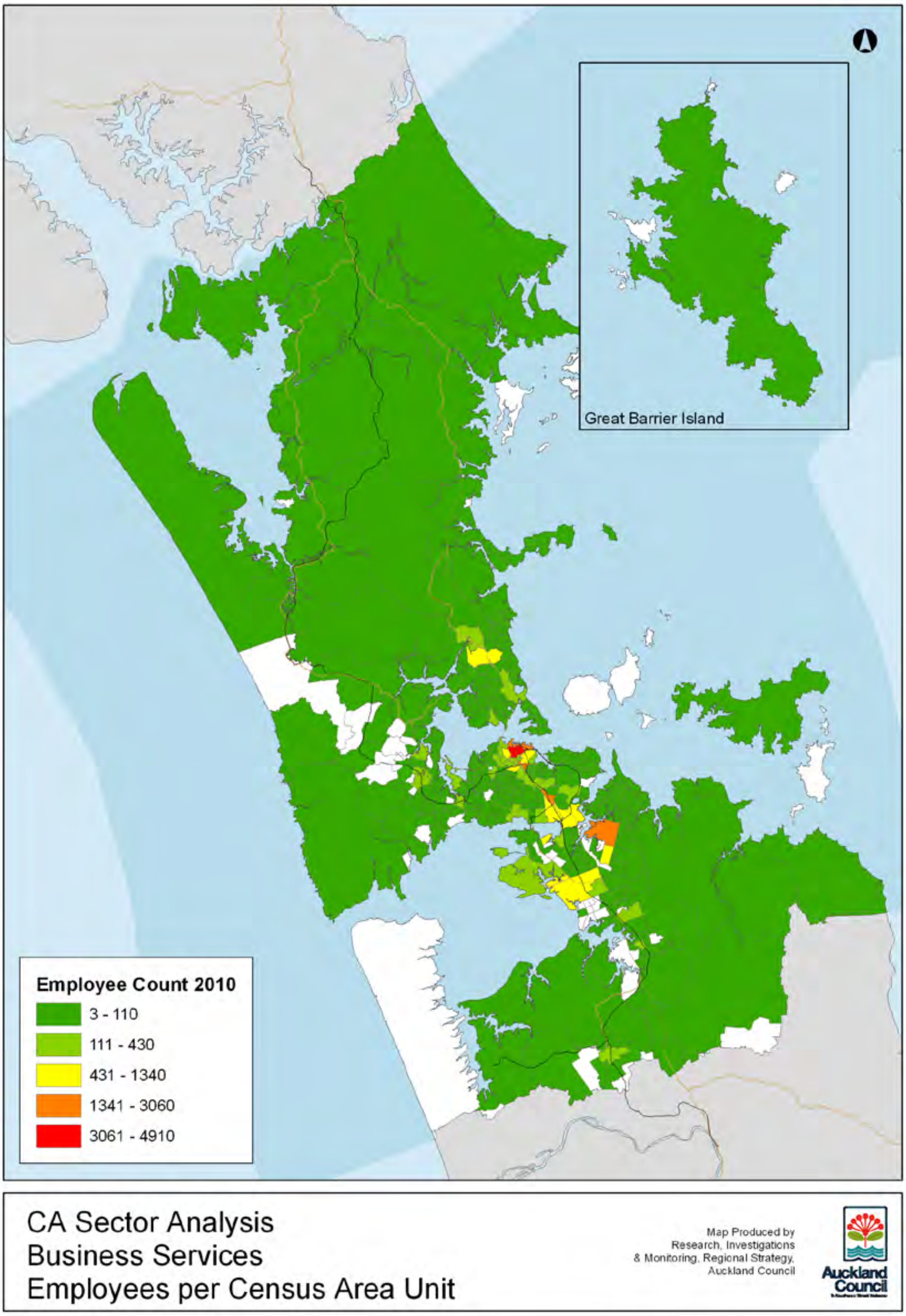



**Figure 8.6**
**Distribution of Employment for Selected Competitive Advantage Sectors in 2010: Business Services**

Source: Consultants estimates based on Statistics New Zealand BDD.

To a large extent the pattern for the Competitive Advantage Business services sector replicates that for Technical Services to which it is strongly linked, with a strong focus in the CBD supported by the newly developing Highbrook area, Ellerslie and Newmarket. At a less intensive level activity is also distributed across the region.

## 8.3 Analysis of Selected Key ANZSIC Sectors: Manufacturing

### *8.3.1 Introduction*

In terms of individual ANZSIC sectors in 2006, the manufacturing sector was the second largest contributor to the Auckland region's GRP with $7.6 billion (after Other Business Services). The manufacturing sector was also ranked second largest in NZ making up 13.8 percent of the country's GDP[44].

At the most aggregated level the table below reports manufacturing output by previous TLA areas. The figures in the table are derived from the estimates developed earlier in this report but are broadly similar to those developed in the *ARC Industry Snapshot for the Manufacturing Sector.*[45]

**Table 8.4**
**Auckland Manufacturing Output by Previous TLA Areas (2006)**

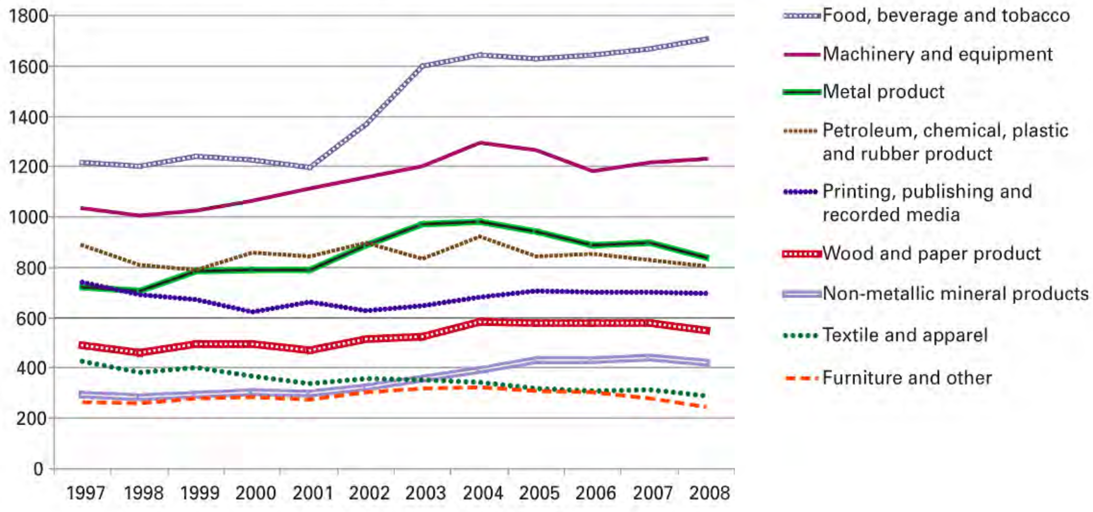
| Council Area | Manufacturing GRP (2006) $m | Per cent of Manufacturing GRP (2006) | Per Cent of Total GRP by Area (2006) |
|---|---|---|---|
| Rodney District | 273 | 4% | 15% |
| North Shore City | 966 | 13% | 14% |
| Waitakere City | 776 | 10% | 25% |
| Auckland City | 2,839 | 37% | 11% |
| Manukau City | 2,257 | 30% | 25% |
| Papakura District | 249 | 3% | 30% |
| Franklin District | 258 | 3% | 21% |
| Auckland Region | 7,618 | 100% | 16% |

Source: Consultants estimates based on Statistics New Zealand Census data.

The Industry Snapshot which uses a slightly different price base reported that between 1997 and 2008 all the former territorial authority areas showed growth in their manufacturing GRP, with the exception of Auckland City where this declined by $132 million. Conversely, Manukau City recorded the biggest increase in manufacturing activity with an additional $388 million added to the areas manufacturing GRP during this period. The following chart extracted from the former ARC's Industry Snapshot identifies the growth patterns of the main manufacturing sub-sectors between 1997 and 2008.

[44] If Government, Health and Education are treated as a combined sector, Manufacturing makes the third largest contribution, behind Other Business Services and the aggregated Government sector.
[45] ARC (2009), Industry Snapshot for the Manufacturing Sector.

**Figure 3: Manufacturing GRP by Territorial Authority (TA), 2008**




*Source:* Infometrics Ltd

*Note:* Value added or GRP expressed in $1995/96 million constant prices

Overall growth in the region's manufacturing GRP was driven by the performance of the following sub-sectors:

- Food, beverage and tobacco manufacturing (with an additional $491 million),
- Machinery and equipment manufacturing (with an increase of $198 million),
- Non-metallic mineral products manufacturing (with an increase of $128 million), and
- Metal product manufacturing (with an additional $120 million).

From a national, value added perspective, the Auckland region produced 36.3 percent of the total manufacturing GDP in New Zealand in 2008. However since Auckland is responsible for only 33.7 percent of total New Zealand manufacturing employment, this is consistent with the notion of higher productivity in Auckland compared to the rest of New Zealand.

The manufacturing sector in Auckland is largely dominated by small firms with less than 10 employees. In 2008:

- 79.1 percent of all manufacturing businesses in the region had less than 10 employees
- 19.4 percent had between 10 to 100 employees, and
- 1.5 percent of manufacturing businesses had more than 100 employees.

However, the 128 businesses employing over 100 people were responsible for 33 percent of manufacturing employment in the region in 2008. The 79 per cent of businesses with less than 10 employees only accounted for 14 per cent of employment. Most employees in the sector worked for businesses with between 10 to 100 employees, accounting for 54 percent of total manufacturing employment in 2008.

Within the region, Manukau City employed the most per business with an average of 14.0 employees per manufacturing business, followed by Auckland City with an average 11.4 employees per manufacturing business and Papakura District with 10.0 employees per manufacturing business.

### *8.3.2 Spatial Distribution of Employment in Manufacturing*

The spatial distribution of employment in the manufacturing sector as a whole in 2006 is set out in Figure 8.7:

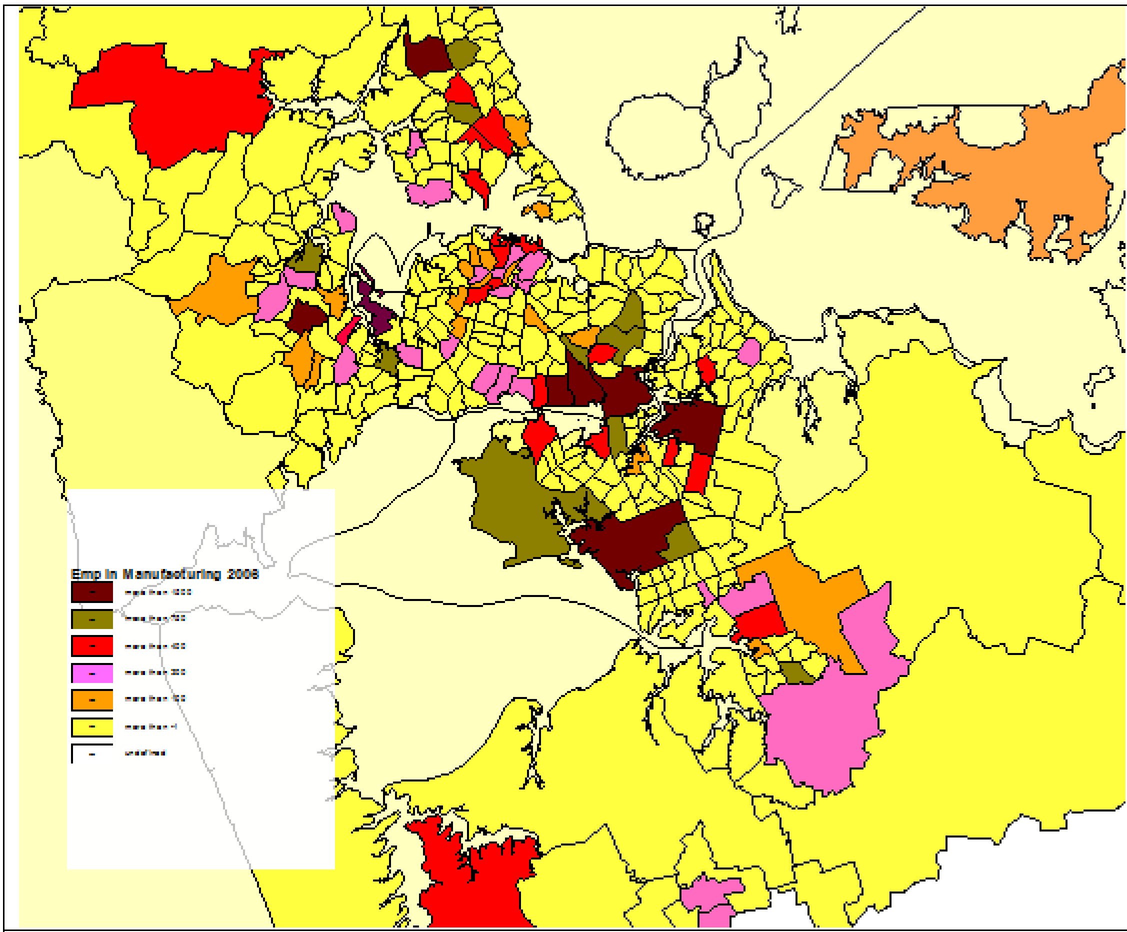



**Figure 8.7**
**Employment in Manufacturing 2006**

Source: Consultants estimates based on Statistics New Zealand Census data.

Employment is concentrated in areas where there is land which has been available for the development for what in many cases are space extensive activities. The main areas include:-

- North Harbour.
- Henderson.
- Rosebank.
- Te Papapa/Penrose/Mt Wellington South/Highbrook (East Tamaki).
- Manukau Central.

There are also some "legacy" areas round the CBD and possibly round Takapuna but manufacturing activity in these tends to be declining as activities shift to the newer industrial areas. The relocation of the Lion Brewery from Newmarket to East Tamaki would be an example of this. This movement away from the CBD provides opportunities for new activities, typically in the service sector, which can benefit from agglomeration economies to relocate to these central areas.

Based on average number of employees per business, large manufacturing businesses tend to be involved in primary metal and metal product manufacturing and pulp, paper and converted paper product manufacturing with more than 30 employees per business on average.

Food product manufacturing is notable for the proportion of firms with over 100 employees, accounting for 36 of the 128 firms of this scale in Auckland. Machinery and equipment manufacturing and beverage and tobacco product manufacturing had the next largest number of firms employing over 100 people with 13 each.

The following sections deal with different components of the manufacturing sector in the region.

**Food and beverage manufacturing**

### *8.3.3 Introduction and scale of the sector*

In 2010, the Auckland region had around 650 food and beverage manufacturing businesses, representing about 27 per cent of the total for New Zealand. The firms in the region tend to be small compared with the national position with an average size of 23 compared to the national average of 31.

Key statistics about the industry as a whole are set out in Table 8.5.

**Table 8.5**
**Food and Beverage Manufacturing :Employment and Business Units**

| | North | West | Central | South | Total Region | Total NZ |
|---|---|---|---|---|---|---|
| 2001 | | | | | | |
| Employment | 1120 | 1068 | 4501 | 7405 | 14094 | 70430 |
| Firms | 87 | 69 | 167 | 164 | 487 | 1881 |
| Firm size | 12.9 | 15.5 | 27.0 | 45.2 | 28.9 | 37.4 |
| 2010 | | | | | | |
| Employment | 1387 | 1571 | 4440 | 7275 | 14673 | 71110 |
| Firms | 139 | 77 | 230 | 181 | 627 | 2304 |
| Firm size | 10.0 | 20.4 | 19.3 | 40.2 | 23.4 | 30.9 |
| Change 2001-2010 | | | | | | |
| Employment | 267 | 503 | -61 | -130 | 579 | 680 |
| Firms | 52 | 8 | 63 | 17 | 140 | 423 |
| Firm size | 5.1 | 62.9 | -1.0 | -7.6 | 4.1 | 1.6 |

Source: Consultants estimates based on Statistics New Zealand BDD.

The industry within the region is dominated by activity in the Southern area which in 2010 accounted for just under half of the jobs although because the average firm size was large, these were employed in 29 per cent of the firms. The Central area has a higher share of firms (37 per cent of the regional total) but only about 30 per cent of total employment. While employment overall has remained broadly static increasing by about 1 per cent over the decade for 2000-2010 here has been some change in the patterns of activity with growth in employment in the North and West more than counterbalancing declines in the Central and Southern areas.

According the Manufacturing Industry Snapshot which was based on the former territorial authority areas, two main food product manufacturing sub-sectors in the region in 2008 were:

- 'Other food product' manufacturing, which was the main employer accounting for 31.2% of total employment. Of this, 48 percent of jobs in other food product manufacturing were located in Manukau City and 34 per cent Auckland City.
- The second largest employer, Bakery product manufacturing, accounted for 27.8 per cent of total employment. One third of the employees were employed in Manukau City and one third in Auckland City.
- The Auckland City area has a number of beer and malt, cake and pastry, and soft drink, cordial and syrup manufacturers.
- Meat-processing and wine manufacturing businesses are located across the wider region.

### *8.3.4 Spatial Distribution of Activities*

In addition to considering the sector at a former TLA level, we have also investigated the patterns of employment at a more spatially disaggregated position. For this analysis we have used information derived from the 2006 Census for the Food and beverage manufacturing sector as a whole. Employment in 2006 at more disaggregated local level is set out in Figure 8.8

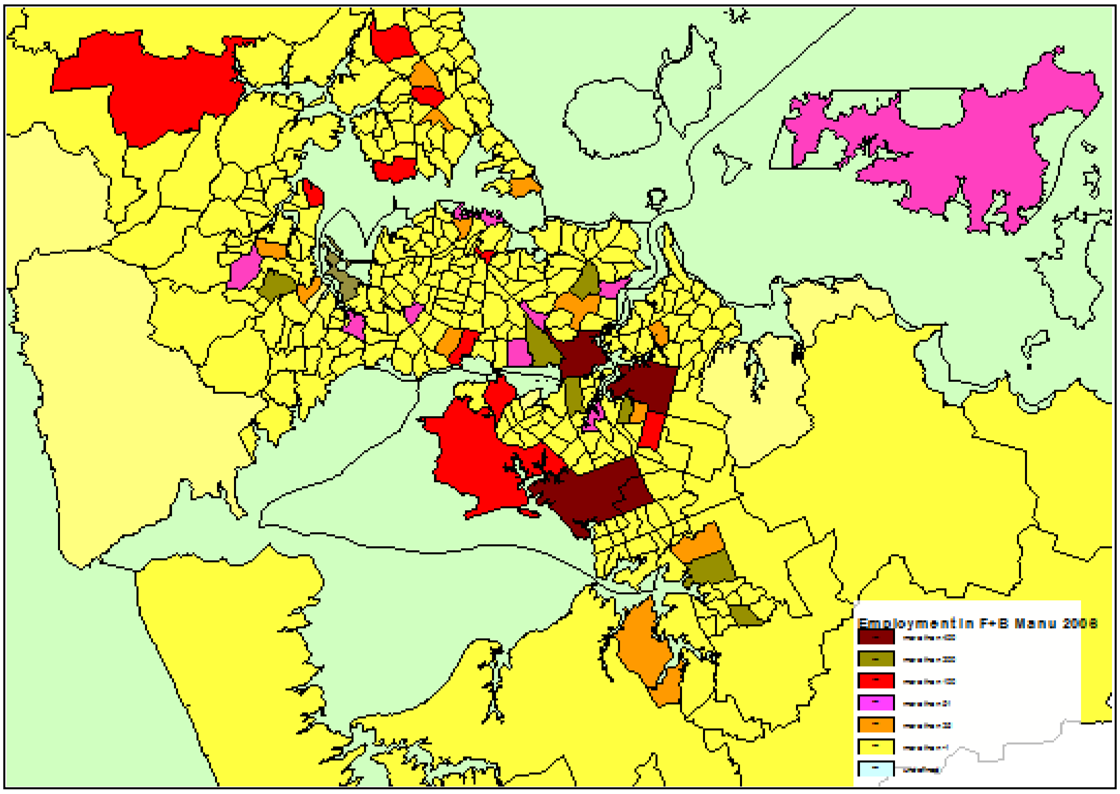



**Figure 8.8**
**Employment in Food and Beverage Manufacturing (ANZSIC06) by CAU 2006**

Source: Consultants estimates based on Statistics New Zealand Census data.

The position that the figure reveals is that activity occurs at a number of locations across the region with particular concentrations in the main industrial areas of Mount Wellington South, which contains the Coca-Cola and TipTop factories, Highbrook and East Tamaki, (brewing and bakery) and in Manukau and Wiri. There are also a number of subsidiary areas where activity may be dependent on a particular feature such as the presence of deep water adjacent to the Chelsea sugar refinery and the vineyards round Kumeu.

Other important areas with some of the main activities include:

- Rosebank (Cadbury's chocolate).
- Henderson.
- Glen Innes (wine making).
- Penrose.
- Takanini (dairy products).
- Newmarket (brewing).

To a large extent this pattern replicates the pattern for manufacturing as a whole and many of the factors which influence location for food and beverage manufacturing are the same as those for manufacturing as a whole. This particularly relates to the availability of suitable land for locating factories and to a lesser extent the accessibility to the main transport routes for the movement of product in and out of the factories.

The high level of activity around Manukau and the airport coincides with the location for the FoodBowl (Auckland) which is aiming to provide leading-edge research and commercialisation facilities to food manufacturers in the Auckland region. While this will service a wide range of manufacturers in New Zealand and also in Australia for which the proximity to the airport also provides an advantage, it is expected that the key users of the facility will be those based in Manukau and South Auckland.

Overall, the share of the Auckland region of the Food and beverage Competitive Advantage sector as defined by then MED accounts for 46 per cent of total employment in the sector in New Zealand and about 39 per cent of business units. Within the region in terms of both employment and business units Auckland City has the largest share of the activity. This reflects the particular nature of the activities defined since as well as including selected components of Food and beverage manufacturing, these also include wholesaling activities which are strongly concentrated in Auckland. Although Auckland has the highest share of jobs and business units, the highest average firm size is achieved in Papakura with 25 employees compared to a regional average of 13 and a national average of just 11 employees. Papakura is home to a number of large food manufacturing facilities, particularly concerned with the manufacture of biscuits and of dairy products where access to farms in the south of the region and the north of Waikato may be an advantage for the supply of the raw inputs.

### *8.3.5 Linkages within the Food and Beverage Manufacturing Sector*

According to former ARC research more than one third of inputs into the Auckland Food and beverage sector are sourced from other industries in the region. A significant component here is likely to be packaging, identified as a strong complementary local industry to food and beverage manufacturing activity in Auckland. Other significant movements within the region would include sugar from the Chelsea refinery to a number of food processing activities, and the movement of liquid milk from the rural areas into dairy product plants in Takanini and Mount Wellington.

Much of the industry is also dependent on movements through the port either for domestically produced materials, including chocolate and bulk wine from the South Island. Similarly substantial volumes are sent outwards though the port, either to domestic destinations, particularly the Christchurch area or to international destinations.

Other factors affecting the broad concentrations of activity in the food and beverage manufacturing sector in the region include:-

- The size of the local market for the products.
- The availability of skilled and unskilled labour.
- The availability of inputs from the growing number of complementary industries including packaging and preservation services, and machinery suppliers and engineers.
- The particular location of firms within the region is typically either driven by:-
- Circumstances specific to the requirements of the particular industry, such as access to deep water for the Chelsea sugar refinery or to vineyards for wine production.
- The availability of suitable land for development. In this the food and beverage industry shares the characteristics of the manufacturing and wholesale industries in general.

As part of our interviews we explored the potential for linkages between firms in the food and beverage industry who appeared to be clustered in particular locations. From these discussions it emerged that while firms might act as arms-length suppliers to each other there was little collaboration between them in the development of existing or new products, with firms preferring to act independently. Even with the establishment of the facilities in The FoodBowl, there is a reluctance of producers to work together to develop this.

Our interviews also covered the possible linkages with the CRIs, Universities or similar agencies. While there was some interaction with these, their impact was typically small and where linkages did exist they were typically with agencies away from the region with those in Palmerston North and Christchurch providing the main linkages.

## 8.4 Machinery and equipment manufacturing sector

### *8.4.1 Introduction and scale of the sector*

The Machinery and equipment manufacturing sector employed 16,100 people in the Auckland region in 2010. This sector is comprised of a wide number of components which amongst others include:

- Professional and scientific equipment manufacturing.
- Computer and electronic equipment manufacturing.
- Electrical equipment manufacturing.
- Domestic appliance manufacturing.
- Pump, compressor, heating and ventilation equipment manufacturing.
- Specialised machinery and equipment manufacturing.
- Other machinery and equipment manufacturing.

A breakdown of employment and business units in the sector by area is set out in Table 8.5.

**Table 8.5**
**Machinery and Equipment Manufacturing: Employment and Business Units**

| | North | West | Central | South | Total Region | Total NZ |
|---|---|---|---|---|---|---|
| **2001** | | | | | | |
| Employment | 2071 | 1764 | 6274 | 7226 | 17335 | 41270 |
| Firms | 537 | 266 | 639 | 664 | 2106 | 5729 |
| Firm size | 3.9 | 6.6 | 9.8 | 10.9 | 8.2 | 7.2 |
| **2010** | | | | | | |
| Employment | 2227 | 1455 | 5011 | 7446 | 16139 | 40600 |
| Firms | 570 | 278 | 595 | 678 | 2121 | 6222 |
| Firm size | 3.9 | 5.2 | 8.4 | 11.0 | 7.6 | 6.5 |
| **Change 2001-2010** | | | | | | |
| Employment | 156 | -309 | -1263 | 220 | -1196 | -670 |
| Firms | 33 | 12 | -44 | 14 | 15 | 493 |
| Firm size | 4.7 | -25.8 | 28.7 | 15.7 | -79.7 | -1.4 |

Source: Consultants estimates based on Statistics New Zealand BDD.

This is an activity that is concentrated strongly in the Central and South areas which account for over three quarters per cent of total employment in the sector in 2010.

Overall there has been a decline in employment in this sector in the region falling by about 7 per cent between 2001 and 2010, with the numerical decline being greater than that for the country as a whole. Within the region the main area of decline is the Central area where employment has declined by over 1250 and there has also been a significant decline in Waitakere. Growth at a smaller scale has occurred in the North and South areas.

Despite the fall in employment the number of firms has increased slightly overall, leading to a fall in the average business unit size from 7.2 to 6.5. Although employment is concentrated in The Central and Southern areas, the number of business units is distributed more evenly across the region. As a consequence, the average firm size in the Central area and even more so in the Southern area is above the average for the region and also for the country as a whole.

The spatial distribution of employment in Equipment and machinery manufacture in 2006 is set out in Figure 8.9.

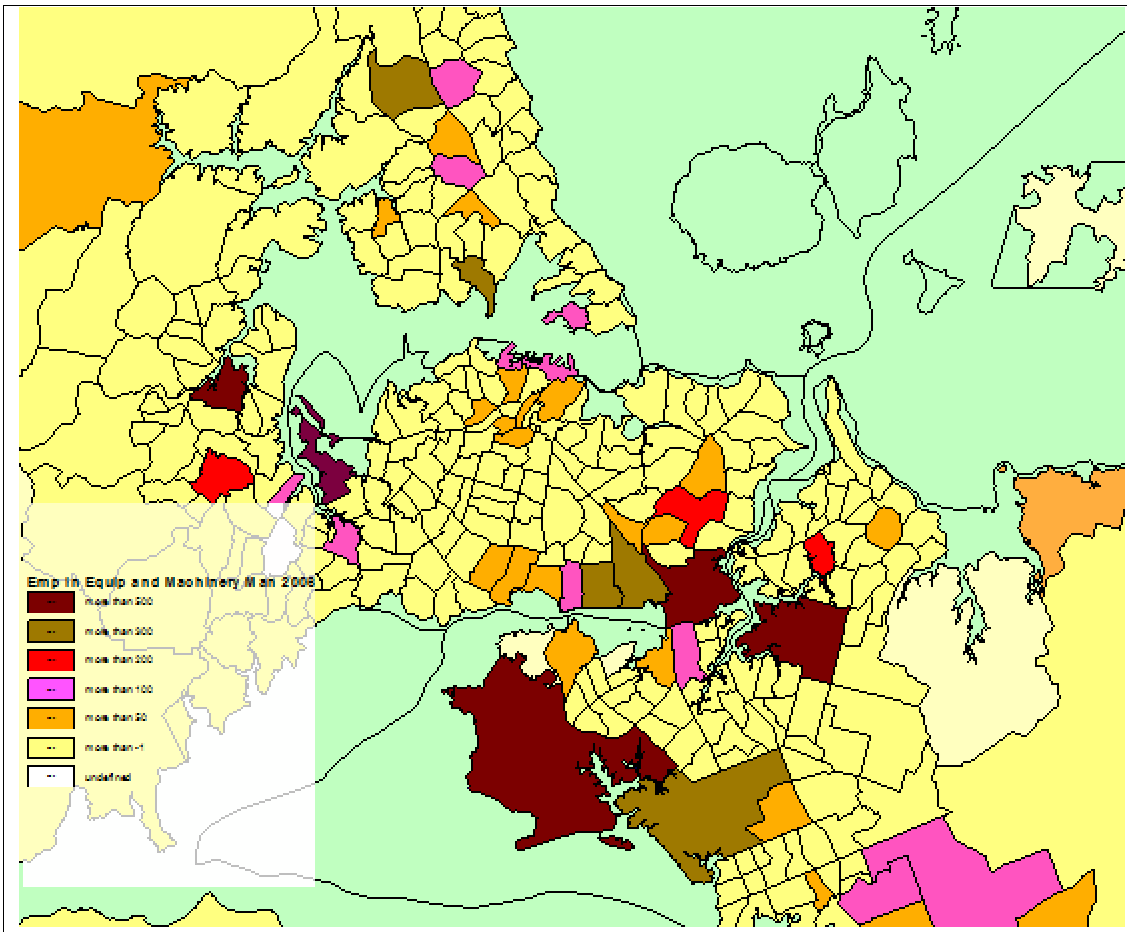



**Figure 8.9**
**Employment in Machinery and Equipment Manufacturing 2006**

Source: Consultants estimates based on Statistics New Zealand Census data.

In general this follows the broad patterns established above for manufacturing as a whole, but with the inclusion of the Kingdale area in Waitakere and Northcote South in North Shore.

### *8.4.2 Linkages within the Sector*

Although machinery and equipment manufacturing is widely spread across the region with a pattern that is related closely to the availability of suitable land for development, advanced manufacturing industry, a component of the Equipment and machinery sector, is largely located around the Tamaki area.

## 8.5 The Marine Sector

### *8.5.1 Introduction and overall scale*

The marine sector forms part of the equipment and machinery manufacturing sector described above. The ARC's Marine Sector Industry Snapshot indicated that it is strongly concentrated in the Waitakere area reinforcing the area's comparative advantage in the marine sector. Overall, 41.9 per cent of total employment in this sector in 2008 was in boat building and repair services (2,270 employees) with over 45 percent of these located in Waitakere city. Boat building and repair services also showed strong growth over the period 2000 to 2008 with an additional 440 people employed during this period.

The ARC's Marine Sector Industry Snapshot focused on the recreation marine industry in the Auckland region, while acknowledging that it is integrated with both the commercial and defence marine industries – sharing services and activities across the other two.[46] The recreation marine sub-sector contributed $399 million to Auckland's gross regional product (GRP) in 2006, less than 0.7 percent of total GRP for the region.[47] The recreation sector is important, due to the considerable export component of its output. Marine industry training is coordinated and assisted by the Boating Industry Training Organisation (BITO). In 2007, the Auckland region had 57 percent of apprentices in the boat building industry, and 61 percent in 2008. The majority of these were in Waitakere city.

### *8.5.2 Linkages in the Marine Sector*

The Marine industry sector is made up of the building and servicing of recreational vessels; commercial vessels such as ferries, fishing boats, tugs and barges; and services to the marine defence industry.

The sector requires skilled input from designers, engineers, mechanics and architects; carpenters, surveyors and painters; divers and drivers; specialised insurance assessors; craftspeople; computer programmers and services of the tourism industry.[48] Thus the value chain of the marine industry is extensive and integrated with various other sectors.

A study of Auckland's innovation system found that, the marine sector 'has major impacts on the New Zealand economy, creating demand for products such as sails and ropes, fitments and accessories; fine leather, foodstuffs, wine, furniture, plumbing fittings, linen, upholstery and carpets; pool chemicals and excursion craft. It involves regular and extensive refit and repair activity'.[49]

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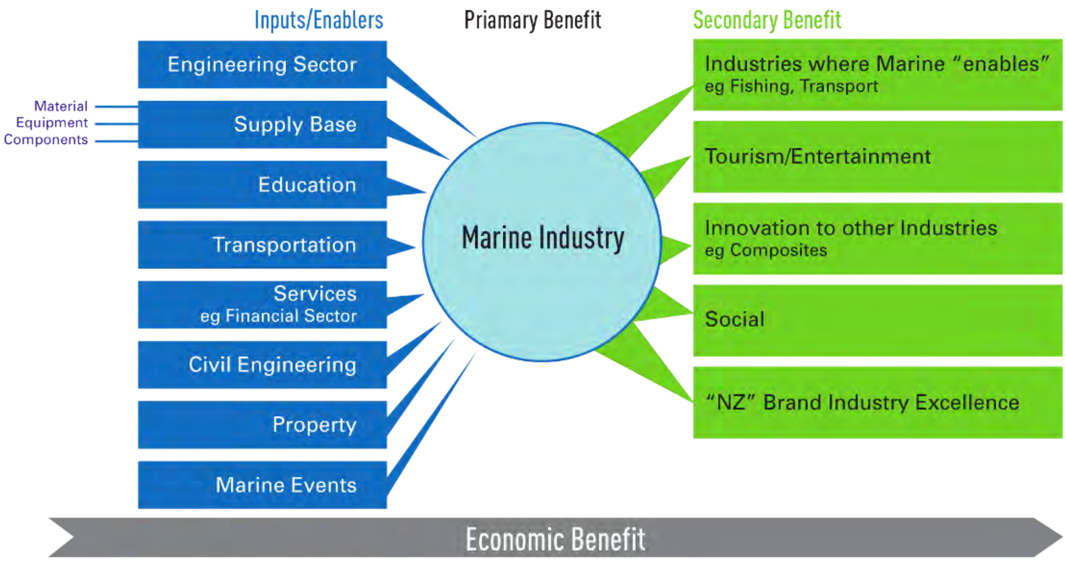
[46] ARC, 2009, Marine Industry Snapshot.
[47] ARC, Economic Futures Model.
[48] Deloitte and Walker Projects, 2008, Auckland Regional Innovation Systems Review. Report commissioned by the Ministry of Economic Development, June 2008.
[49] Deloitte and Walker Projects (2008), Ibid.

The ARC Industry Snapshot found that "it is essentially a manufacturing industry, however, interdependent with other industries. It is diverse, ranging from suppliers of new materials, advanced electronics and new technologies not exclusive to the marine sector."

The Snapshot also noted that the sector has major impacts on the Auckland economy "from the research and education sectors to specialised manufacturing for products such as textiles, sails and ropes, leather, furniture, electronic equipment and also to the construction industry for trades such as plumbing, welding, painting and coatings." However, these studies do not shed very much light on the nature of these linkages in a spatial sense, providing little insights into where related activities take place and why. Observation suggests that whilst services related to maintaining existing craft may be concentrated around existing marine facilities the manufacturing aspects of the sector are increasingly locating in areas where there is land available for purpose built production facilities, such as Southern Spars who have recently relocated their manufacturing activity in a new purpose built facility in Rosebank to replace their previous manufacturing facility in Wynyard Quarter.

**Figure 8.10 Marine Industry Value Chain**




*Source:* Auckland Plus (2009) Auckland Marine Industry Feasibility Study.

## 8.6 Transport

### *8.6.1 Introduction*

The Transport sector comprises a range of activities involved with the movement of passengers and freight by a variety of modes. The distribution of employment and its growth over the period from 2001 to 2010 is set out in Table 8.6.

**Table 8.6**
**Transport and Storage : Employment and Business Units**

| | North | West | Central | South | Total Region | Total NZ |
|---|---|---|---|---|---|---|
| **2001** | | | | | | |
| Employment | 1949 | 1021 | 11305 | 11038 | 25313 | 65879 |
| Firms | 750 | 556 | 1606 | 1501 | 4413 | 12385 |
| Firm size | 2.6 | 1.8 | 7.0 | 7.4 | 5.7 | 5.3 |
| **2010** | | | | | | |
| Employment | 2597 | 1165 | 11378 | 14874 | 30014 | 75154 |
| Firms | 895 | 533 | 1709 | 1843 | 4980 | 14177 |
| Firm size | 2.9 | 2.2 | 6.7 | 8.1 | 6.0 | 5.3 |
| **Change 2001-2010** | | | | | | |
| Employment | 648 | 144 | 73 | 3836 | 4701 | 9275 |
| Firms | 145 | -23 | 103 | 342 | 567 | 1792 |
| Firm size | 0.3 | 0.3 | -0.4 | 0.7 | 0.3 | 0.0 |

Source: Consultants estimates based on Statistics New Zealand BDD.

In 2010 about 87 per cent of employment in the sector was concentrated in the Central and Southern areas, reflecting both the presence of a number of large firms providing bus, rail, port and airport services, and also the large demands for the movement of freight generated by the high levels of manufacturing and distribution in these two areas. Employment in the sector has grown quite strongly between 2001 and 2010, but with most of this growth being focussed on South area and to a much smaller extent in the North area. In the Central area, employment has remained virtually unchanged throughout the period.

With the exception of the Central and Southern areas average firm sizes are small, reflecting the large numbers of owner drivers providing services both for the movement of road freight and for taxi services. In the Central area there are large employers in the provision of bus, rail and port services and in the Southern area the airport is a large employer.

Using slightly different definitions which exclude travel agency services, the breakdown of employment by type in 2006 is set out in Table 8.7.

**Table 8.7**
**Employment in the Transport Sector by Activity and Area 2006**
**(ANZSIC06 Definitions)**

| Area | Road Transport | Rail Transport | Water Transport | Air and Space Transport | Other Transport | Services to Transport | Storage | Total |
|---|---|---|---|---|---|---|---|---|
| North | 1023 | 126 | 90 | 183 | 24 | 771 | 117 | 2334 |
| West | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 543 |
| Central | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 2,316 |
| South | 2,499 | 39 | 42 | 2,079 | 111 | 3,240 | 1,329 | 9,339 |
| Total Region | 6,381 | 396 | 576 | 2,871 | 255 | 8,799 | 2,022 | 21,300 |

Source: Consultants estimates based on Statistics New Zealand Census data.

The main activities within the sector as defined in the table are road transport and services to transport which itself includes a number of activities of which the largest are probably freight forwarding, customs broking and port operations, which underpins the importance of this type of activity in the Central area. Air and space transport focussed round the airport is also important.

### *8.6.2 Spatial Distribution of Activity*

The pattern of total employment in the sector at a more detailed spatial level for the totals for 2006 in Table 8.7 is set out in Figure 8.11.

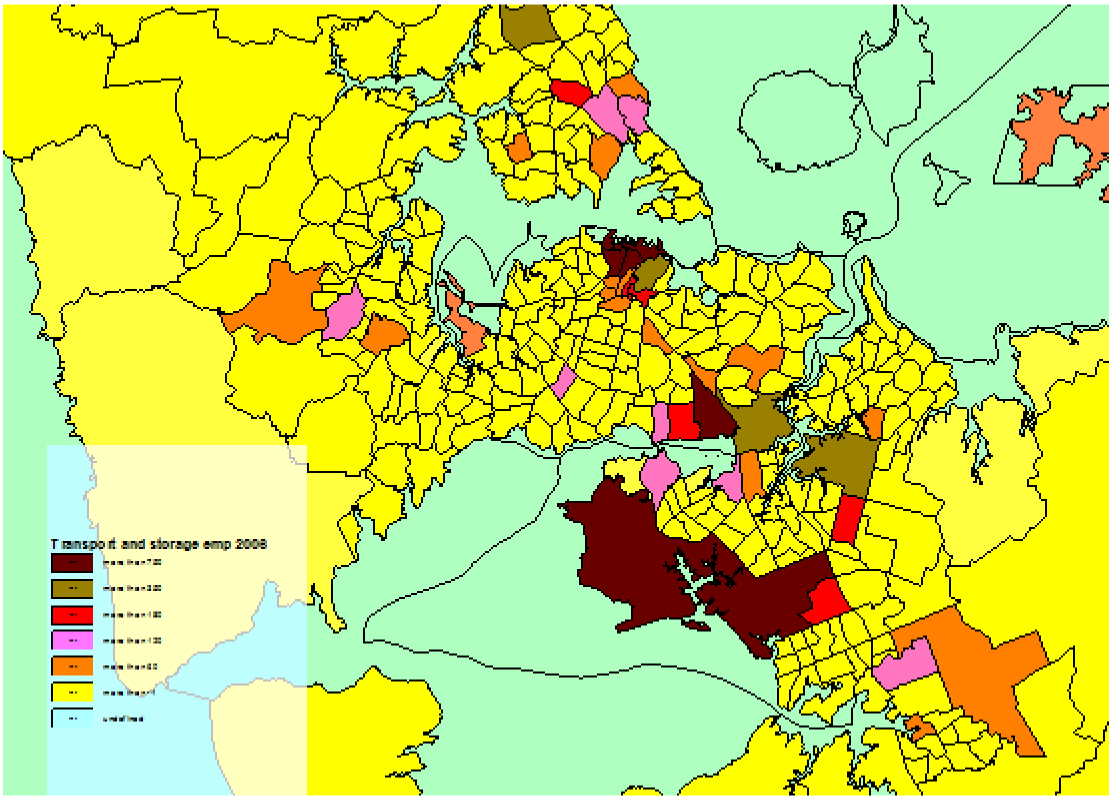



**Figure 8.11**
**Employment in the Transport Sector 2006**
Source: Consultants estimates based on Statistics New Zealand Census data.

The main points which emerge from this are:-

- There are relatively high levels of activity located in the main manufacturing areas with road transport operations both supporting manufacturing industry and also being attracted to similar types of sites, suitable for space extensive activities and also with good connections to the key transport links. These are particularly concentrated in Penrose and adjacent to the airport but are also important across the industrial belt from Te Papapa to Highbrook, and in the Manukau Central and Wiri areas.
- Penrose and Mount Wellington South and increasingly Wiri are also important for intermodal connections to rail.
- The CBD is important for port related activities and also for the provision of a range of transport services, reflecting either the proximity to the port or the accessibility to workers and customers offered in the central area. The CBD is also important as the centre for rail and bus public transport operations in the region.

- The airport is also a major employer in the transport sector and this combined by a number of road transport and warehousing/logistics activities in the vicinity of the airport contributes to a high level of employment.

The contribution of the Transport sector to gross output has been identified at both an area and a CAU level following the approach outlined above in Section 6.4. The contribution at an area level is set out in Table 8.8. The spatial distribution of this component is set out in Figure 8.12.

**Table 8.8**
**Gross Regional Output by Area and Sector 2006 ($millions)**

| Area | Transport and Storage | Total Area Output | Transport as Per cent of Total Area Output |
|---|---|---|---|
| North | 297 | 8600 | 3% |
| West | 86 | 3,100 | 3% |
| Central | 1,036 | 24,800 | 4% |
| South | 1,379 | 11,100 | 12% |
| Region | 2,797 | 47,500 | 6% |

Source: Consultants estimates based on Statistics New Zealand Census data.

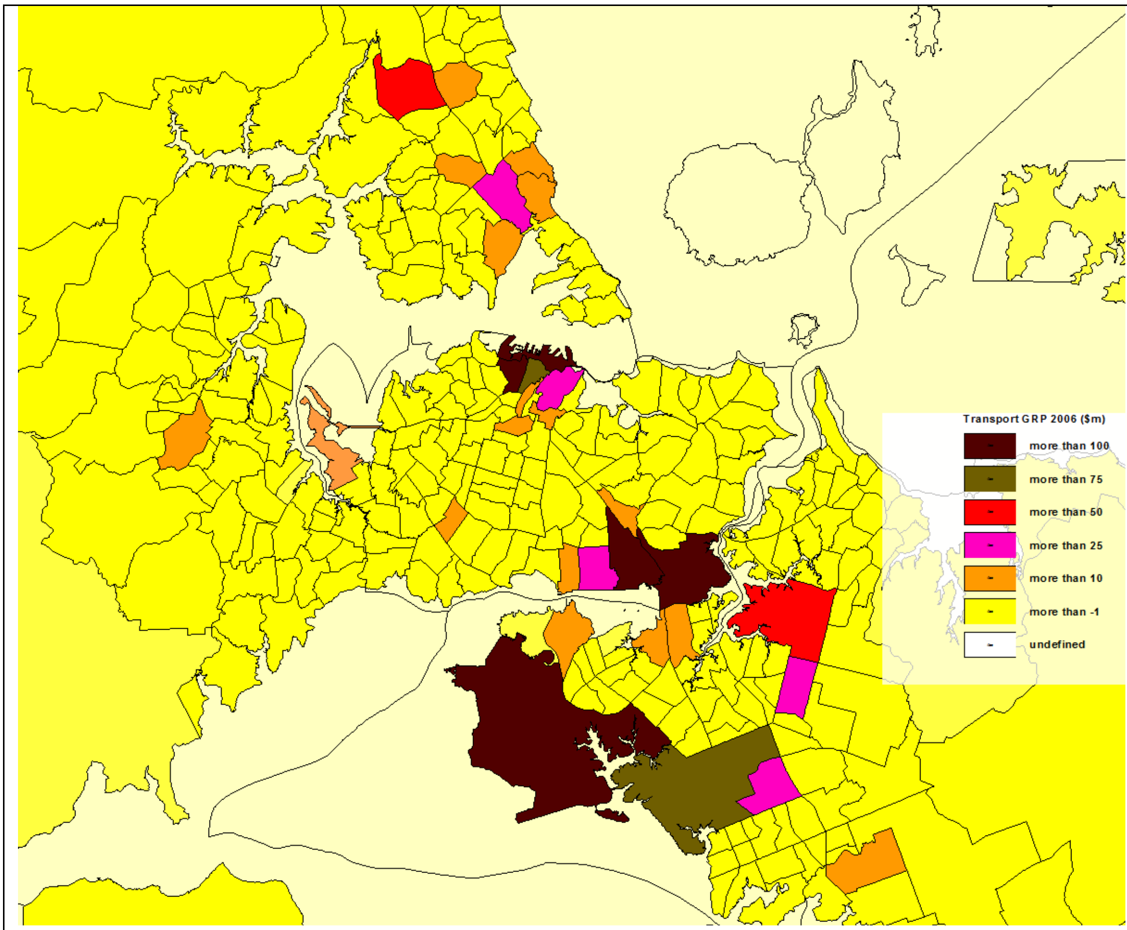



**Figure 8.12**
**Distribution of Transport GRP 2006**

Source: Consultants estimates based on Statistics New Zealand Census data.

The position revealed is much the same as the pattern of employment in Figure 8.11 although this highlights the importance of the CBD, the airport and the Penrose/Mount Wellington area. Both the airport area and Penrose/Mount Wellington combine a wide range of transport operations with major warehousing and transport activities. In the Penrose/Mount Wellington area in particular these both support local manufacturing and also act as distribution hubs in their own right.

The airport area also supports a number of logistical activities, many of which do not have any direct link with the airport but are simply taking advantage of the availability of land and the good road transport links in the area.

The combination of these means that the gross output of the CAU containing the airport generates almost 30 per cent of the transport gross product for the region as a whole as is set out in Table 8.9. Other CAUs generating high levels of transport output are also included in the table, and the 5 listed contribute almost 50 per cent of the total regional output.

**Table 8.9**
**Key CAUs contributing to the Regional Transport Gross Output 2006**

| CAU | Transport Gross Output | Per cent of regional total for transport sector |
|---|---|---|
| **Mangere South (Airport and environs)** | **890** | **29%** |
| **Penrose** | **185** | **6%** |
| **Auckland Harbourside** | **170** | **6%** |
| **Mt Wellington South** | **145** | **5%** |
| **Auckland Central West** | **120** | **4%** |

Source: Consultants estimates based on Statistics New Zealand Census data.

The distribution of activity in terms of employment and numbers of firms for the Competitive Advantage sector as defined by the then MED for transport which relates primarily to the movement of freight is set out in Table 8.10.

**Table 8.10**
**Employment and Business Units in the MED Competitive Advantage "Transport Services" Sector**

| | Employment 2010 | | Business Units 2010 | | |
|---|---|---|---|---|---|
| Area | Total | Per cent of Region | Total | Per cent of Region | Average firm size |
| North | 1124 | 9% | 485 | 17% | 2.3 |
| West | 542 | 4% | 381 | 13% | 1.4 |
| Central | 4230 | 34% | 730 | 25% | 5.8 |
| South | 6650 | 53% | 1293 | 45% | 5.1 |
| Total Region | 12546 | 100% | 2889 | 100% | 4.3 |
| NZ | 33950 | | 8278 | | 4.1 |

Source: Consultants estimates based on Statistics New Zealand BDD.

This shows the dominance of the Southern area even excluding air transport.

The then MED's Competitive Advantage definition of tourism also has a strong connection to transport with the inclusion of a number of items related to air transport and the results for this are set out in Table 8.11.

**Table 8.11**
**Employment and Business Units in the MED Competitive Advantage "Tourism" Sector**

| Area | Employment 2010 | | Business Units 2010 | | Average firm size |
|---|---|---|---|---|---|
| | Total | Per cent of Region | Total | Per cent of Region | |
| North | 630 | 7% | 203 | 22% | 3.1 |
| West | 70 | 1% | 41 | 5% | 1.7 |
| Central | 3765 | 40% | 500 | 54% | 7.5 |
| South | 5056 | 53% | 176 | 19% | 28.7 |
| Total Region | 9521 | 100% | 920 | 100% | 10.3 |
| **NZ** | **16740** | | **2405** | | **7.0** |

Source: Consultants estimates based on Statistics New Zealand BDD.

Again this shows the dominance of the Southern area as an employment centre largely reflecting the activity connected with the airport. The Central area is also important because of the activities of international airlines who have their offices in the city and also for the concentration of travel agent activity.

The impact of the airport as a single large employer is also reflected in the relatively large firm size.

## 8.7 Business Services and Finance and Insurance

### *8.7.1 Introduction and Scale of the Sector*

The Business services and Finance and insurance sector together form the largest sector in the Auckland region, estimated to account for 32 per cent of Auckland's GRP in 2008 ($15,870 million). This is comprised of business services $11,400 million and finance and insurance $4,470 million.

Activity within the Business services and Financial services sector is very much concentrated in the Central area within the region as Table 8.12 demonstrates.

**Table 8.12**
**Employment in Finance and Insurance and in Other Business Services 2010**

| Activity | North | West | Central | South | Total Region | Total NZ | Region as % of NZ |
|---|---|---|---|---|---|---|---|
| Finance & Insurance | 3134 | 631 | 18181 | 2056 | 24002 | 52040 | 46% |
| Other Business Services | 15435 | 4263 | 73675 | 18131 | 111504 | 265510 | 42% |
| Total | 18569 | 4894 | 91856 | 20187 | 135506 | 317550 | 43% |
| Per cent of region | 13.7% | 3.6% | 67.8% | 14.9% | 100.0% | | |
| Total Emp | 108130 | 46080 | 301210 | 159420 | 614840 | 1889900 | 33% |
| Per cent of total employment | 28.8% | 10.6% | 30.5% | 30.5% | 100.4% | 16.8% | |

Source: Consultants estimates based on Statistics New Zealand BDD

In these two sectors, employment in the region is a high proportion of the national totals accounting for 46 per cent for finance and insurance and 42 per cent for business services. For finance and insurance this share has been growing (from 44 per cent in 2001) but for business services it has been broadly stable. Over two-thirds of the total employment in these sectors is located in the Central area, a share that has fallen slightly, but to some extent the numbers for 2010 may reflect the effects of the economic downturn which has probably hit these types of activity particularly hard.

The detailed patterns of employment in these sectors are available for 2006. The position for the finance and insurance sector is set out in Figure 8.13 for the region as a whole and in Figure 8.14 for the Central area.

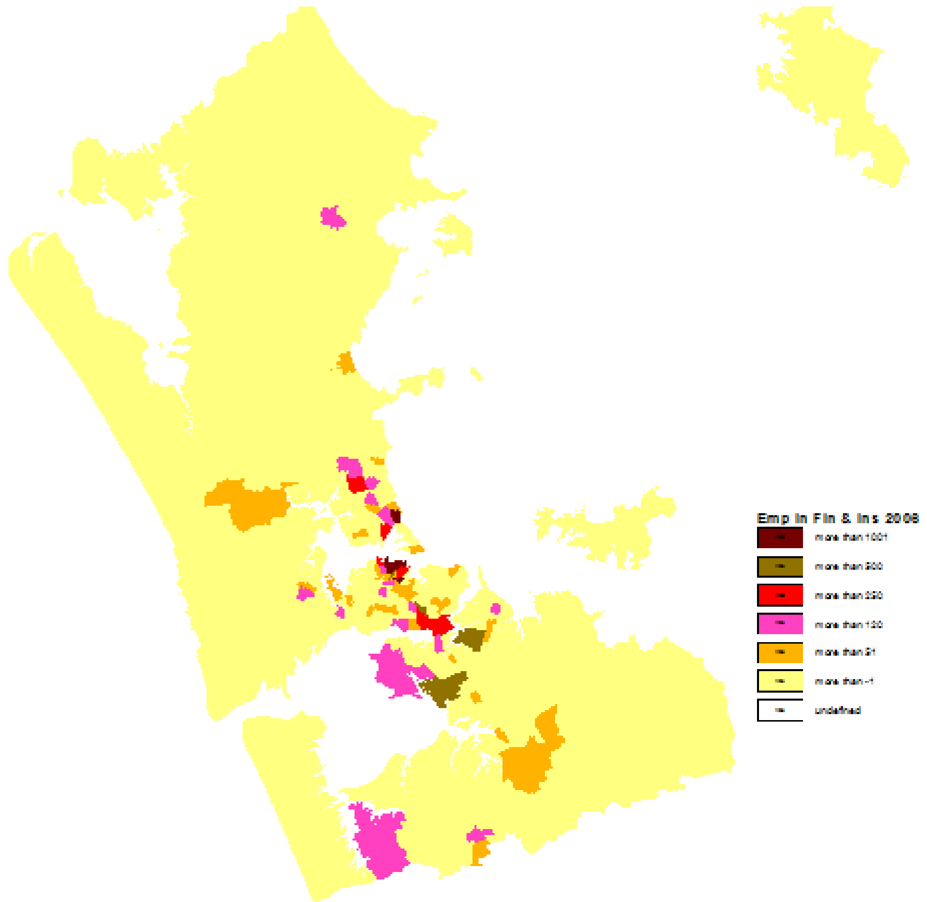



**Figure 8.13**
**Distribution of Employment in Finance and Insurance 2006 – Full Region**

Source: Consultants estimates based on Statistics New Zealand Census Data.

Considering the full regional position there is a noticeable level of employment in the rural centres of Warkworth and Pukekohe as well as substantial employment in Glenbrook (although this may the result of a statistical anomaly or a particular event at the time of the Census. For areas closer to Auckland such as Orewa and Papakura the levels of employment are lower suggesting that there is a greater level of dependence on the services provided at the larger urban centres closer to the CBD.

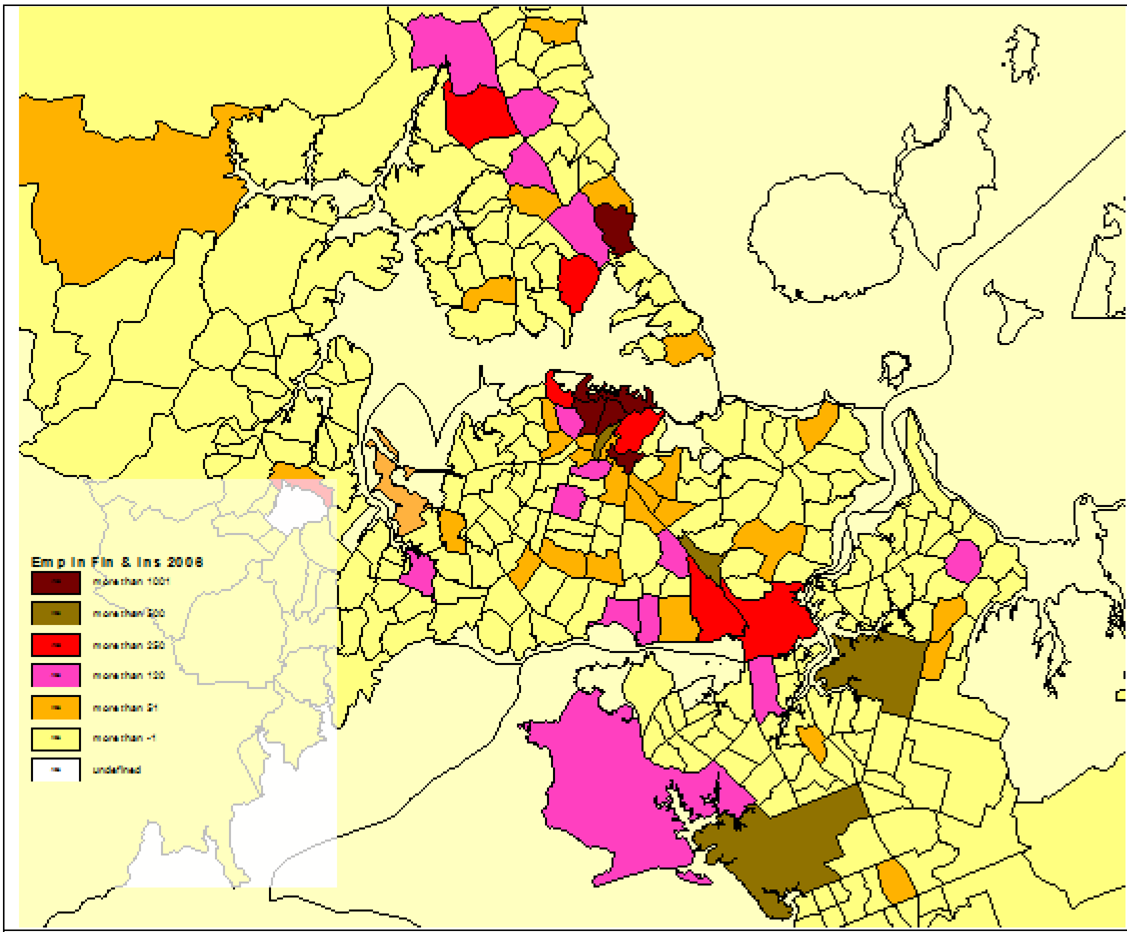



**Figure 8.14**
**Distribution of Employment in Finance and Insurance 2006 -Central Areas**

Source: Consultants estimates based on Statistics New Zealand Census Data.

From Figure 8.14 the dominance of the CBD and Newmarket is clear with a further centre at Takapuna. There is also fairly substantial employment in Ellerslie North acting as a local centre supporting the manufacturing in the belt to the south and also in Highbrook, potentially with a similar function. Manukau Central potentially has a mixed role supporting the surrounding industrial area and in addition supporting the commercial activity in the town centre. In general the Finance and Insurance sector needs to be able to draw on a large skilled workforce, particularly for the higher level functions typically contained in the major offices. It also relies on accessibility to its customers and the concentrations of activity in the CBD with its high level of commercial activity and in or adjacent to the main industrial areas in Highbrook and Ellerslie reflect these trends. There are also smaller concentrations of activity at the smaller centres within the city with a greater emphasis on easy accessibility to the residential areas.

The position for Other Business Services is displayed in Figure 8.15 and Figure 8.16.

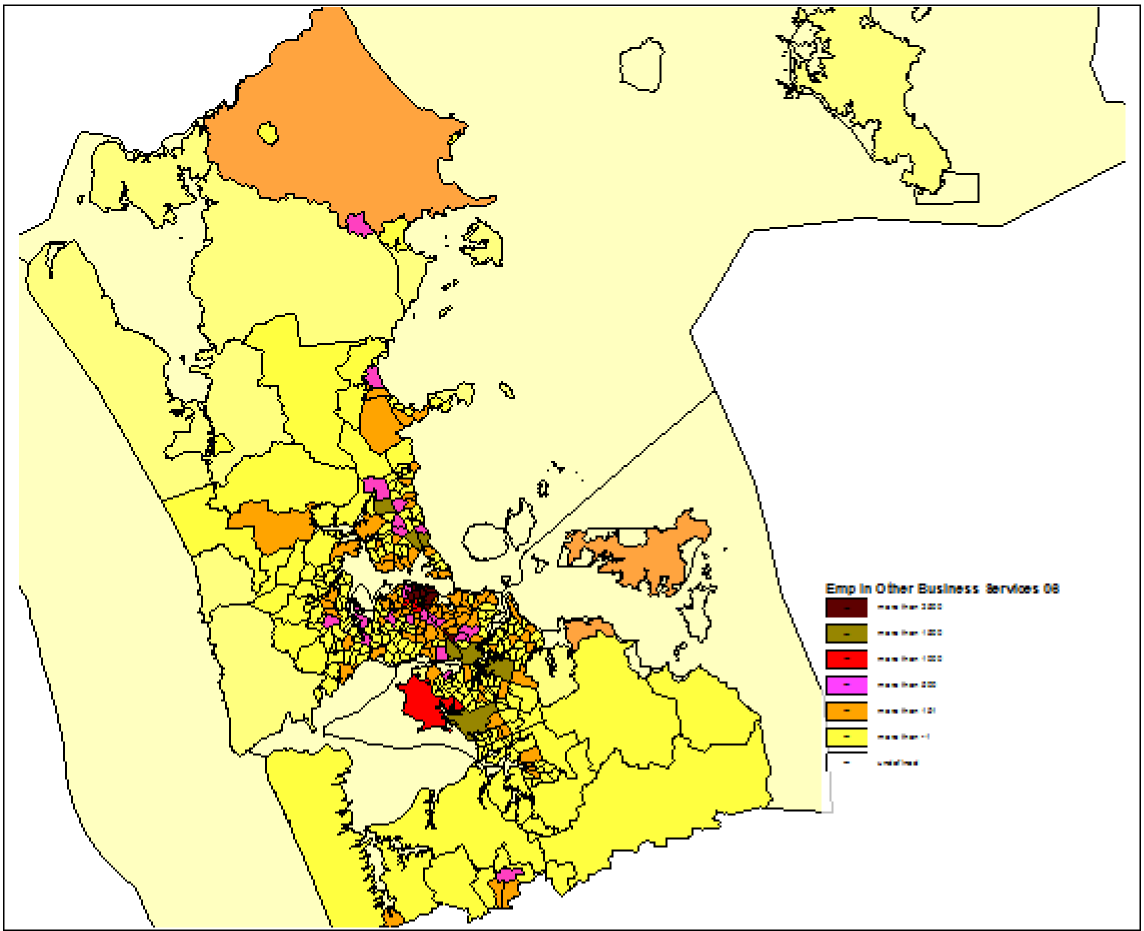



**Figure 8.15**
**Distribution of Employment in Other Business Services 2006 – Full Region**

Source: Consultants estimates based on Statistics New Zealand Census Data.

For the region as a whole activity is much more widely spread than for finance and insurance, although again the importance of Warkworth and Pukekohe can be identified. There is also possibly a greater need to be closer to the main residential areas with relatively higher levels of activities in regional centres such as Orewa and across the main urban areas as is highlighted in Figure 8.16.

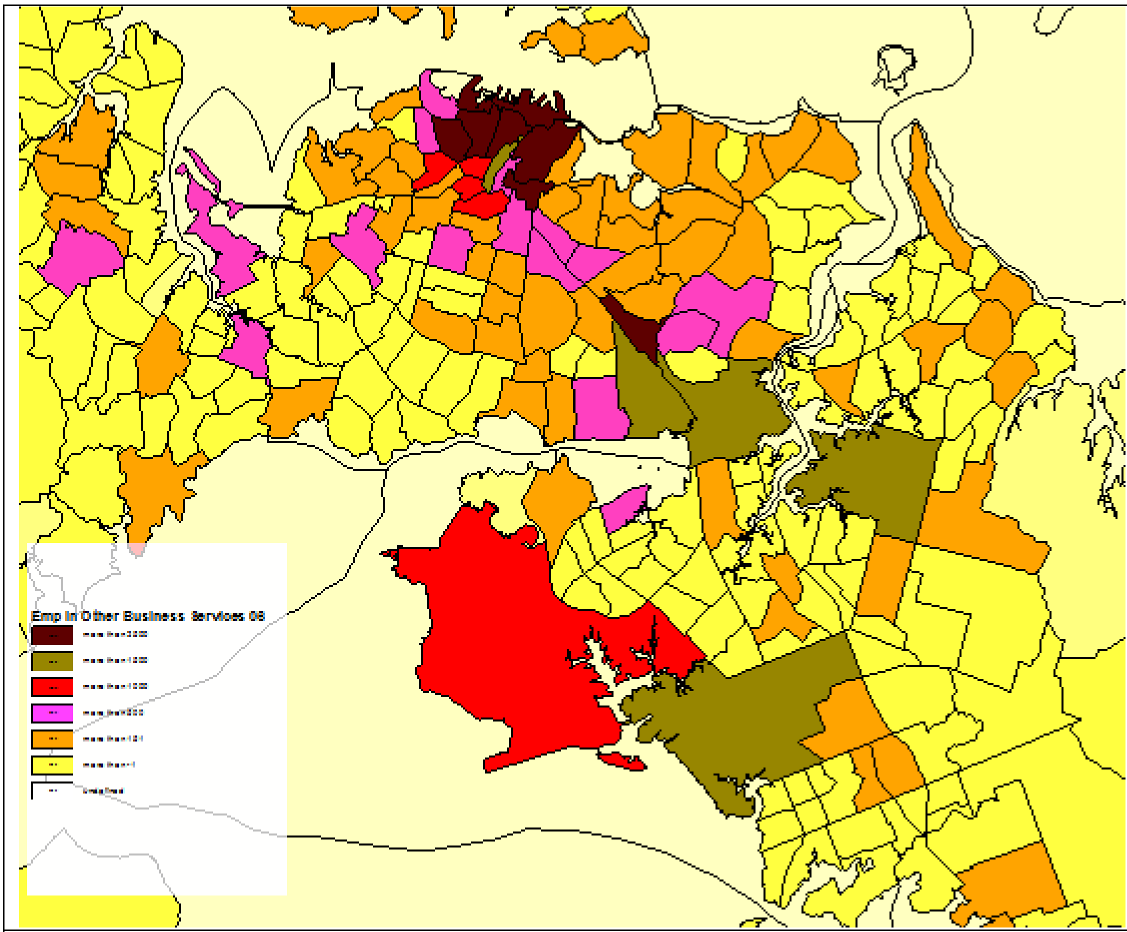



**Figure 8.16**
**Distribution of Employment in Other Business Services 2006 – Central Area**

Source: Consultants estimates based on Statistics New Zealand Census Data.

For the Central area, the position displays a degree of similarity to that observed for finance and insurance although there is a wider spread of Other Business Services employment. The dominance of the CBD, extending to the east and south is again highlighted together with Ellerslie North.

With their focus on the central area, these two sectors Finance and Insurance and Other Business Services have been the major drivers of growth in the CBD between 1996 and 2006 with growth in their employment of 10,300 broadly matching the total increase for the CBD as a whole of 10,900. Their share of CBD employment has therefore grown from 45 per cent in 1996 to 52 per cent in 2006, indicating some increase in the degree of specialisation in the area.

At a final level we have also assessed the gross output from these sectors and the results at an area level are set out in Table 8.13:

**Table 8.13**
**Gross Output from the Finance and Insurance and Other Business Services Sectors 2006 ($millions)**

| | Finance and Insurance | Other business services | Combined Total | Per cent of regional total |
|---|---|---|---|---|
| North | 704 | 2165 | 2869 | 16% |
| West | 109 | 537 | 646 | 4% |
| Central | 3,118 | 8,777 | 11,895 | 68% |
| South | 572 | 1554 | 2126 | 12% |
| Region (1) | 4,503 | 13,033 | 17,536 | 100% |

Source: Consultants estimates based on Statistics New Zealand Census Data.

At an area level the Central area accounts for more than two thirds of the output of the Finance and Insurance and Other Business Services sectors. The distribution of gross output at a CAU level is set out in Figure 8.17.

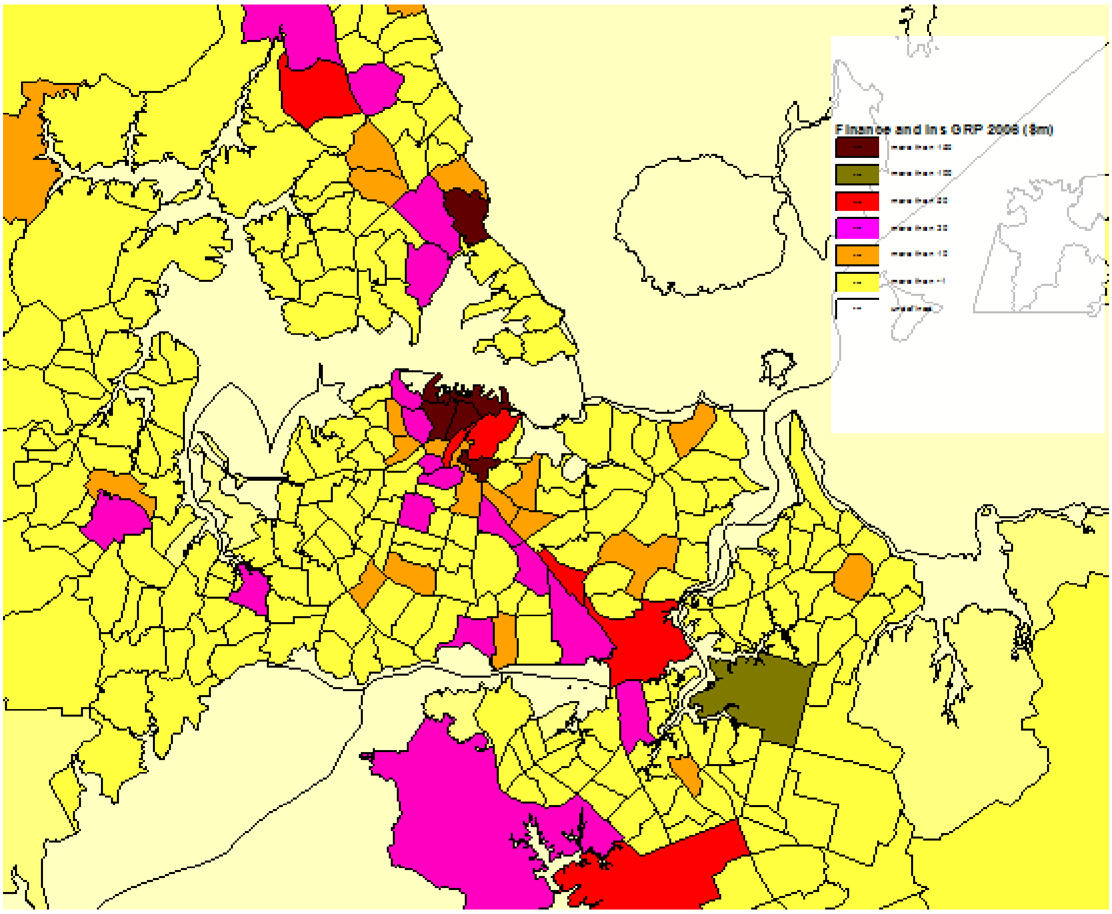



**Figure 8.17**
**Distribution of Finance and Insurance GRP 2006 ($m)**

Source: Consultants estimates based on Statistics New Zealand Census Data.

For Finance and insurance, gross output is very much concentrated in the CBD (extending to Newmarket) and Takapuna. High levels of output are also generated in the main industrial areas and also along the Great South Road corridor to Ellerslie and Mount Wellington.

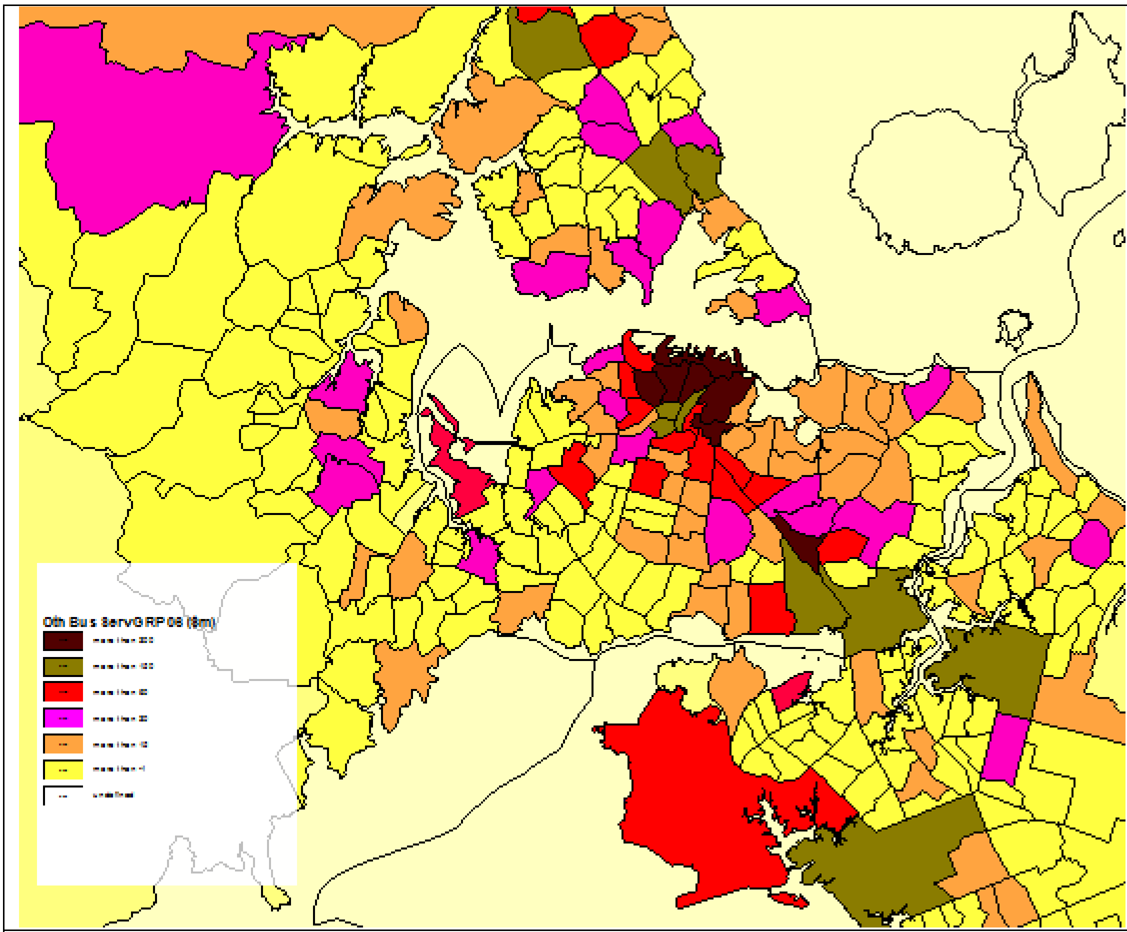



**Figure 8.18**
**Distribution of Other Business Services GRP 2006 ($m)**

Source: Consultants estimates based on Statistics New Zealand Census Data.

Compared to Finance and insurance, other business services are more widely distributed reflecting the greater importance of serving residential as well as commercial markets and the lesser importance of having access to a wider workforce. Again however this has a concentration of activity in the CBD and Newmarket and down the Great South Road corridor to Ellerslie and Mount Wellington.

# 9 Education and Training

- Central Auckland universities draw students from across the region but those beyond the centre attract students primarily from their own area.
- 46 per cent of students attending central Auckland universities are from outside the area.
- 68 per cent of public tertiary students attend a central Auckland university.
- 65 per cent of private training establishments are in Auckland central.
- Little evidence exists to connect location with industry linkages, it appears to be more based on a balance between student catchment and cost of premises.

## 9.1 Introduction

Educational linkages have been examined in two ways, the first considering the areas from which the major tertiary establishments draw their students and the second looking at the distribution of all training establishments across the region.

The areas from which students are drawn for the main tertiary institutes are set out in Table 9.1. It should be noted that these figures are drawn from the regional transport models which only have data for motorised trips by car and public transport. Trips made by walking or cycling are not included but the inclusion of these would tend to increase the numbers of students from local areas.

**Table 9.1**
**Movements of Students to Key Educational Areas 2006**

| Area | University / Institute | | | | | |
|---|---|---|---|---|---|---|
| | Albany (Massey) | Akoranga (AUT) | Central Auckland (UoA + AUT) | Unitec | MIT | Total |
| North | 2874 | 2143 | 5914 | 275 | 62 | 11267 |
| West | 80 | 61 | 3854 | 711 | 51 | 4757 |
| Central | 84 | 112 | 19939 | 3422 | 630 | 24187 |
| South | 51 | 86 | 7476 | 257 | 6247 | 14118 |
| Total | 3089 | 2403 | 37182 | 4665 | 6989 | 54328 |

Source: AC Transport Model estimates

From the table it appears that while the universities in the centre of Auckland attract students from a catchment area that covers the region as a whole, the other facilities mainly attract students from the area in which they are located or in the case of Unitec from the adjoining Western area.

Information has also been obtained on the full set of training establishments including language schools and other private training institutions in the region and the locations of these are set out in Table 9.2:

**Table 9.2**
**Training Establishments in the Auckland Region**

| Location | Total | |
|---|---|---|
| | Number | Percent of total |
| North | 28 | 11% |
| West | 18 | 7% |
| Auckland CBD | 70 | 28% |
| Rest of Central area | 93 | 37% |
| South | 40 | 16% |
| **Total** | **249** | **100%** |

Source: Ministry of Business, Innovation and Employment.

In total, there are about 250 recognised training establishments in the region which are very much concentrated in the CBD and in the Central area in general. There is little information about their linkages with other agencies but it is likely that their locations represent a balance between having access to a wide catchment population which would support a city centre location and seeking cheap premises which would favour a location in the suburbs. There are, for example, a number of establishments in Penrose, some apparently providing industrial training facilities and some providing services such as religious training, which may have more limited local linkages.

# 10 Local centres within Auckland

- The region is dominated by the Auckland CBD, which accounts for 12.6 per cent of regional employment.
- The CBD is dominant within a number of sectors, most notably finance and insurance, advanced business services, government and defence, entertainment and sport and food and accommodation.
- Other key economic centres in the region include Newmarket, Albany, Takapuna, Henderson, New Lynn, Rosebank, Ellerslie/Penrose, Manukau and the Airport.
- CBD growth broadly mirrors regional growth, with exception of a drop between 2000-2002.
- Shift of manufacturing and transport out of CBD since 2005 has largely been offset by growth in service-orientated jobs.
- There has been an increasing focus on higher value added activities within the regional economies.
- Albany has seen significant growth with jobs rising from 3,861 jobs in 1996 to 14,679 by 2006 but this has impacted on growth in Takapuna (somewhat offset by development around Smales Farm).
- Significant jobs growth has also been seen around Ellerslie/Penrose (32.4% between 2001-2006).
- South Auckland has responded to a decline in metals and machinery manufacturing through growth in other manufacturing sectors.

## 10.1 Geographic and Planning environment

Auckland's development has been shaped by a combination of geographical constraints, central and local government policies and plans, and their translation by developers and consumers.[50]

The dominant geographic factors which have influenced Auckland's urban form include:

- The Waitemata Harbour to the east, and Manukau Harbour to the west, are separated by a thin isthmus no more than one kilometre across at its narrowest point.
- The presence of a large volcanic field scattered across the isthmus with resultant cones, lakes, lagoons, caldera, islands and depressions.
- The boundaries formed by the Waitakere Ranges to the northwest and the Hunua Ranges to the south-east.

The policy context is dominated by the Auckland Plan which sets out a vision and strategic direction for what Auckland could be like in 30 years.

[50] ARC, 2010, A Brief History of Auckland's Urban Form, p4.

## 10.2 Observations for key centres

The key observations for the selected centres, chosen on the basis of their exhibiting strong employment concentrations, are set out in the following sub-sections.

### *10.2.1 Auckland CBD*

Firstly, in terms of scale of employment, the dominance of CBD in relation to other centres is very stark, accounting for 12.6 per cent of overall regional employment.

At the sectoral level the CBD has particularly high shares of employment within Finance and insurance (39.4 per cent of regional total), Other advanced business services (23.3 per cent), Government and defence (25.5 per cent), entertainment and sport (21.3 per cent) and food and accommodation (21.3 per cent).

The dominance of Finance and insurance and Other advanced business services is such that these two sectors combined account for 52 per cent of employment (34,689 jobs) within the CBD. In comparison, the next highest concentration observed within these two sectors is in Ellerslie/Penrose, with 5,849 people employed.

This picture of specialisation is exactly as theory predicts, with activities benefitting from agglomeration concentrating in central, accessible locations to reap productivity benefits.

### *10.2.2 Newmarket*

With a relatively high proportion of employment within Finance and insurance and Other advanced business services (48 per cent of employment in the centre) Newmarket appears to be something of an offshoot of the CBD. However, the scale of this activity is substantially lower than the CBD, with only 3.8 per cent of regional Finance and insurance employment and 3.7 per cent of regional Other advanced business services employment. Newmarket is perceived to be a strong retail centre but by 2006 there were less people employed in this activity in Newmarket (1,683) than the CBD (3,741), Albany (1,920), Takapuna 1,728 and Manukau 2,709 and only slightly more than Henderson (1,617).

### *10.2.3 Ellerslie/Penrose*

This is a particularly interesting location. With 18,270 jobs this area is actually the second largest employment centre in the region. Notably the area has a very high concentration of employment within Other advanced business services accounting for 27 per cent of jobs in the area (5.082 people are employed in this sector in Ellerslie/Penrose). In addition a further 867 people are employed in Finance and insurance with these two sectors combined accounting for 32 per cent of employment in the area.

Manufacturing is also strongly represented in this area, with 3,354 employees, as is the Utilities and construction sector. The 1,604 people employed in this sector represents the largest concentration of this activity within the region and reflects the presence of companies such as Fletcher Construction and Hawkins Construction. Wholesaling (with 3,204 jobs) and transport and storage (984 jobs) are also strong.

### *10.2.4 Albany*

Albany is a relatively new centre. With employment of 15,351 in 2006 it has reached an equivalent size to the combined Takapuna and Westlake (Smales Farm) zones. It is a hub for retailing for the sub regional market, to some extent taking over a role previously dominated by Takapuna. Albany is also attracting a significant proportion of activity in Finance and insurance (2.3 per cent of regional employment in 2006) and most notably in Other advanced business services (3.1 percent), which was almost identical to Takapuna's share.

### *10.2.5 Takapuna*

Takapuna (including Smales Farm) is particularly strong in Finance and insurance, Government and defence health and Community services. Although, Finance and insurance employment is on a much smaller scale than the CBD, at 6 per cent of regional employment in this sector this is the second highest concentration of this activity within the region.

### *10.2.6 Henderson*

With 7,332 employees in 2006 Henderson is only around half the size of Albany and Takapuna. Manufacturing with 1,401 employees and retailing with 1,617 employees are the largest activities within the area, accounting for 40 per cent of employment. Finance and insurance and Other advanced business services are a relatively small component of Henderson's employment picture, accounting for 279 and 858 jobs respectively or 15 per cent of total employment in Henderson.

### *10.2.7 New Lynn*

The picture for New Lynn is similar to Henderson with a strong presence in manufacturing (1,080 jobs) and retailing (1377 jobs), jointly accounting for 50 per cent of employment within the centre. Again, Finance and insurance and Other advanced business services are a notably small component of employment, accounting for only 14 per cent of New Lynn's employment with 183 jobs in Finance and insurance and 474 jobs in Other advanced business services.

### *10.2.8 Rosebank*

Rosebank is essentially a manufacturing and distribution centre. Of the 6009 people employed in this area 2,793 (45 percent) work within manufacturing. A further 1,287 people (21 per cent of employment within Rosebank) work in Wholesaling. The pattern is one of relatively space extensive activities located away from residential catchment areas but with reasonable accessibility provided by SH 16.

### *10.2.9 Manukau (including Wiri)*

Manukau (including Wiri) is also relatively large employment area providing 18,147 jobs in 2006. The area is notable for a high concentration of employment in Manufacturing ( 4,326 jobs), Wholesaling ( 2,469 jobs), Retailing (2,709 jobs), Transport ( 990 jobs), and Govt and defence (1,251 jobs). However, employment within Finance and insurance and Other advanced business services is relatively low, accounting for only 15 per cent of employment within the area.

The prevalence of manufacturing activity is a reflection of the availability of land and good accessibility provided by the location including close proximity to SH1, SH20, the main trunk rail line and Auckland International Airport.

### *10.2.10 Airport and Environs*

This area is not surprisingly dominated by employment in Transport and Storage, with this sector accounting for 40 per cent of employment in the area and providing 5,160 jobs. There has been strong employment growth between 1996 and 2006 in a number of sectors including wholesaling (549 new jobs), retailing (411 new jobs), transport and storage (1,458 new jobs) and business services (1029 new jobs).

### *10.2.11 Rural Centres*

As noted in previous sections the nature of Warkworth and Pukekohe is one of a rural service centre with a level of activity across all sectors but particularly high employment in sectors such as retail (22 percent in Pukekohe), business services (12.7 percent in Pukekohe), wholesaling, construction and government services.

## 10.3 Changes over time within and between centres (2001-2010)[51]

This section analyses the position of the selected centres in relation to the region and the country as a whole over time.

### *10.3.1 Auckland CBD*

The Auckland CBD is taken to include the area bounded by the motorways and the harbour.

The growth in total employment in the CBD over the past decade and its comparison with regional and national growth is set out in Figure 10.1

[51] The figures in this section are mainly drawn from the Statistics NZ data based on the Business Demographics Database. They represent a different definition of employment from other measures and so any comparisons of totals needs to be undertaken with some caution.

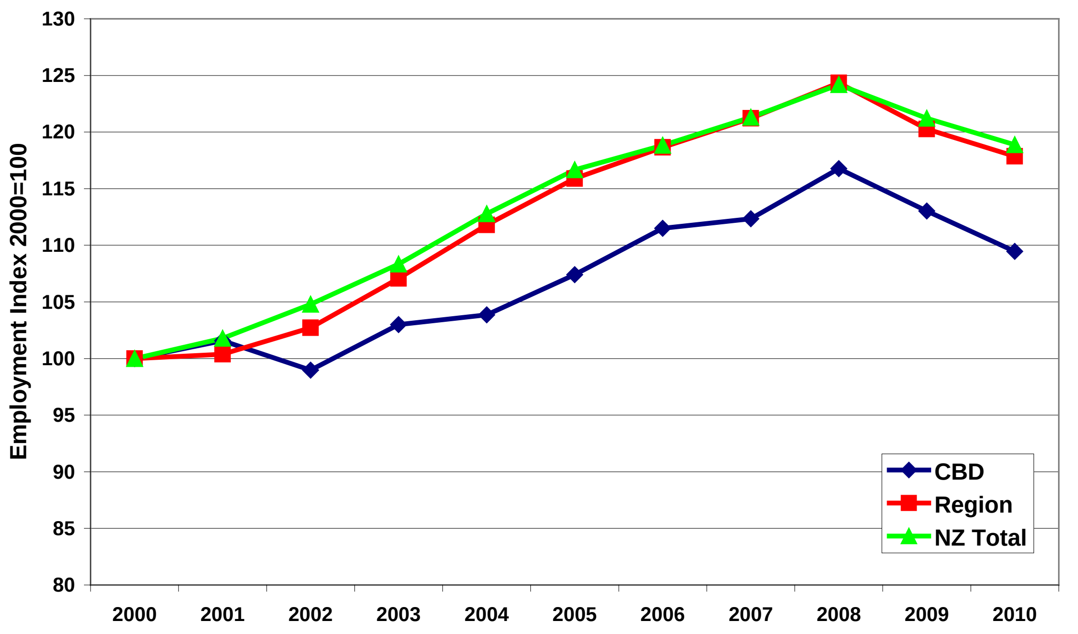



**Figure 10.1**
**Employment Growth in the Auckland CBD, Auckland Region and New Zealand (Index 2000 = 100)**

Source: Consultants estimates based on Statistics New Zealand BDD.

Over the initial part of the decade, employment in the CBD was broadly static with employment in 2002 slightly below that in 2000. However after 2002 employment started to grow and has broadly mirrored that in the region and in New Zealand as a whole, reaching a peak in 2008 and falling sharply to 2010. The low growth over the initial years from 2000 mirrors the position earlier with again employment totals remaining broadly stable from 1996. The lack of growth in the CBD may have reflected transport constraints which started to be relieved with the improvement of the rail services with the opening of the Britomart station in 2003.

For the further analysis of change in the CBD, we have divided the period into two parts 2000 to 2006 and 2006 to 2010. While this does not divide the period equally, the use of 2006 as an intermediate point allows comparison with detailed census data for that year.

The changes in the nature of employment in the CBD over the period from 2000 to 2006 and 2006-2010 are set out in Figure 10.2.

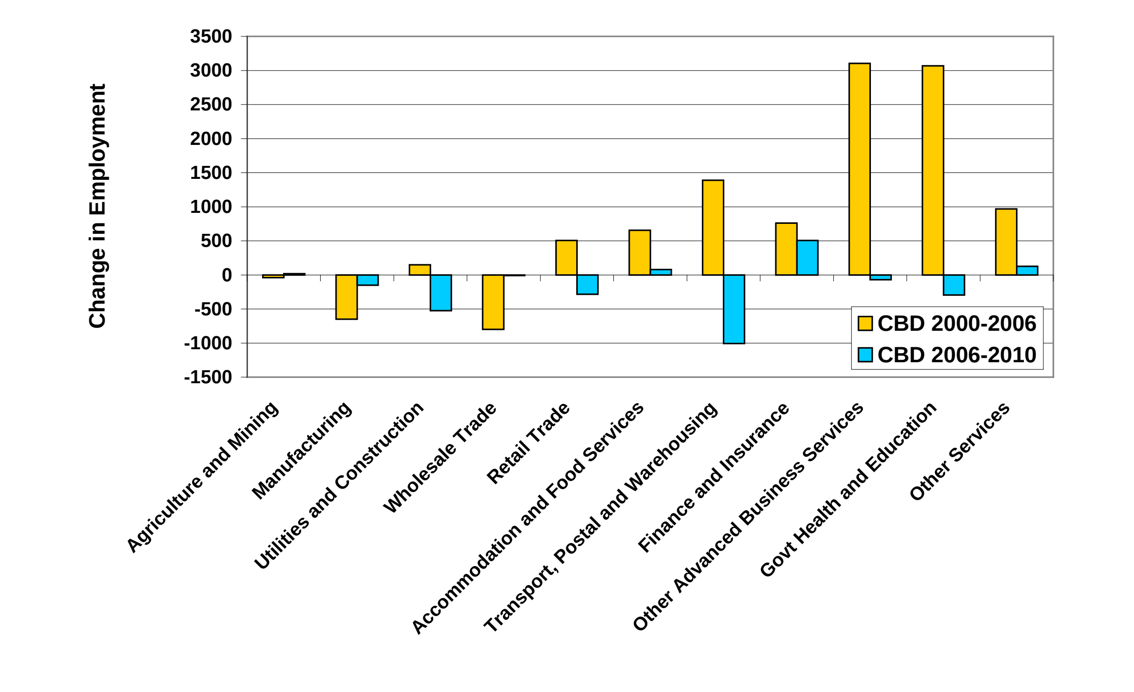



**Figure 10.2**
**Growth in Employment by Broad Industrial Sector for the Auckland CBD**

Source: Consultants estimates based on Statistics New Zealand BDD.
Note: Advanced Business Services includes Communications Services, Property Services and Business Services.

The figures demonstrate the contrast between the first part of the decade with growth in the majority of the sectors identified and the second part of the decade where employment has declined in the majority of sectors and where growth has occurred it has been limited. The first part of the decade when total employment in the CBD grew by 11.5 per cent however also included reductions in manufacturing and wholesaling, reflecting the changing nature of the CBD in a time of economic growth and also the relocation of these activities to areas where there was scope for expansion and the development of more appropriate facilities. The reduction in the scale of these activities may have helped to provide the space for the growth of the service orientated employment.

Over the later part of the decade over which total employment in the Auckland CBD fell by about 2 per cent, growth was mainly confined to the Finance and Insurance sector which gained about 500 jobs. There were much smaller increases in Other Services and Accommodation and Food Services, both sectors with a low value of output per worker (as set out in Figure 6.11). In other sectors employment declined or was virtually static, even for Other Advanced Business Services (although here the declines was only small) and Government, Education and Health which had provided much of the growth in the earlier part of the decade.

The growth by sector in the CBD can be compared with that for the Region and for New Zealand as a whole. This is set out in Figure 10.3.

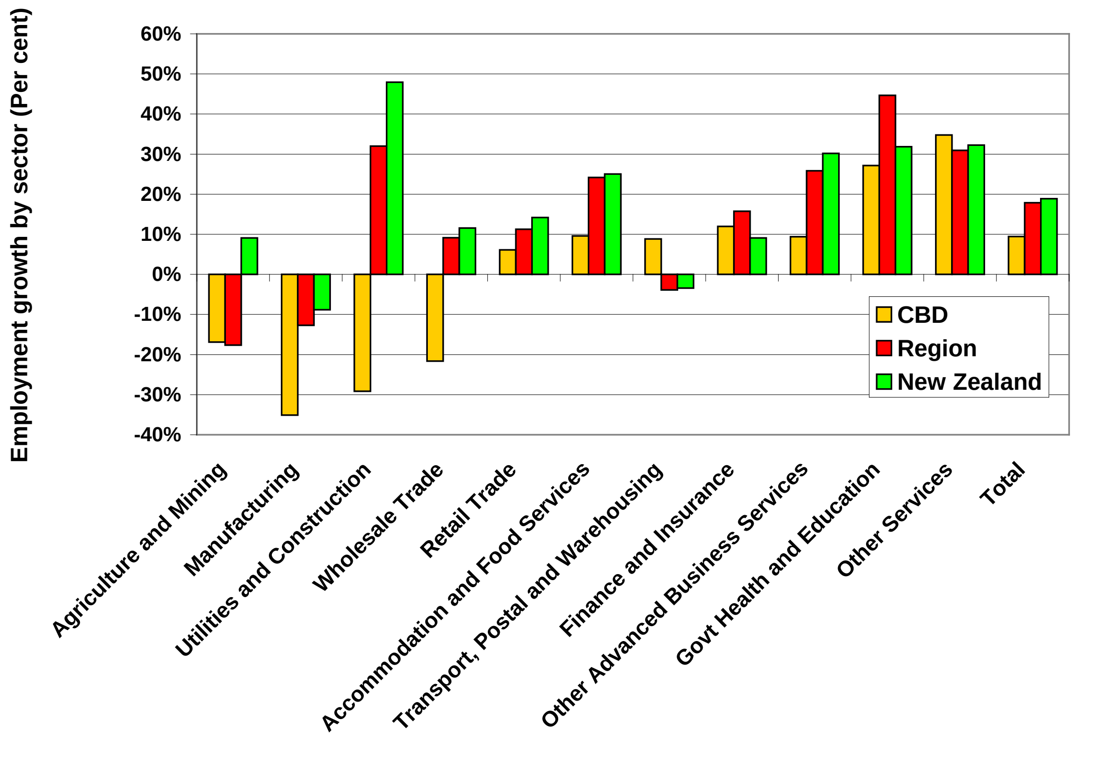



**Figure 10.3**
**Contributions to Employment Growth 2000 to 2010 (Per cent of total growth)**

Source: Consultants estimates based on Statistics New Zealand BDD.
Note: Advanced Business Services includes Communications Services, Property Services and Business Services.

Over the period from 2000 to 2010 employment growth rates by sector in the CBD have typically been lower than those for the Region and also than those for New Zealand as a whole. In part this may reflect the limited growth in the CBD in the early part of the period identified in Figure 10.1. The pattern of growth set out in Figure 10.1 also indicates the extent to which activity in sectors such as Manufacturing, Utilities and Construction and Wholesale Trade is switching away from the CBD and being replaced by employment in more advanced service activities. However the growth in this sector has been relatively modest and has resulted in the share of the CBD in these activities declining over the period.

The change in the share of total regional employment by sector in the CBD over the period from 2000 to 2010 is set out in Table 10.1.

**Table 10.1**
**Changes in CBD Shares of Regional Employment by Sector 2000, 2005 and 2010**

| Sector | CBD employment as share of regional total | | |
|---|---|---|---|
| | 2000 | 2005 | 2010 |
| Agriculture and Mining | 2.0% | 2.1% | 1.3% |
| Manufacturing | 2.7% | 2.3% | 1.9% |
| Utilities and Construction | 4.8% | 3.4% | 3.2% |
| Wholesale Trade | 7.9% | 5.9% | 6.0% |
| Retail Trade | 6.6% | 7.0% | 6.5% |
| Accommodation and Food Services | 25.3% | 23.2% | 22.7% |
| Transport, Postal and Warehousing | 13.5% | 16.1% | 15.3% |
| Finance and Insurance | 50.9% | 43.5% | 49.8% |
| Other Advanced Business Services | 33.7% | 27.9% | 28.4% |
| Govt Health and Education | 10.5% | 12.4% | 10.0% |
| Other Services | 13.1% | 14.1% | 14.2% |
| **Total** | **15.5%** | **14.2%** | **14.3%** |

Source: Consultants estimates based on Statistics New Zealand BDD.

The CBD accounts for almost half the employment in Finance and insurance and almost 30 per cent in Other Advanced business services. While these shares have declined over the 10 year period, this decline was concentrated in the early years of the decade when development in the CBD as a whole may have been constrained and in the 5 years between 2005 and 2010, the share of the CBD in total regional employment and shares of Finance and insurance and Other Advanced business services have increased despite the effects of the economic downturn. There is therefore some evidence that while the pre-eminence of the CBD fell in the early part of the decade, it is now growing and increasingly benefiting from the advantages of agglomeration and clustering.

### *10.3.2 Patterns for other employment centres*

For employment centres outside the CBD again there is a pattern of variability in terms of job increases or declines being relatively high. This is possibly symptomatic of the gradual transformation of the region's economy, with a change in the nature of the CBD and an increasing focus on higher value added type activities within the regional economy generally leading to a re-distribution of activities.

It is noteworthy however that the limited overall growth in CBD employment of about 9 per cent between 2000 and 2010 contrasts with the position for the region and for the country as whole where growth was of the order of 18-19 per cent. It is possible that the relative accessibility constraints facing the CBD, especially in the early years in the decade may have played a part in this and the later more substantial growth appears to support this. Growth in the selected centres has however been mixed ranging from a decline of 11 per cent in New Lynn to an increase of 210 per cent in Albany.

The pattern of employment change by sector over the period from 2000 to 2010 is set out in Figure 10.4 which covers all the centres and in Figure 10.5 which excludes Albany.

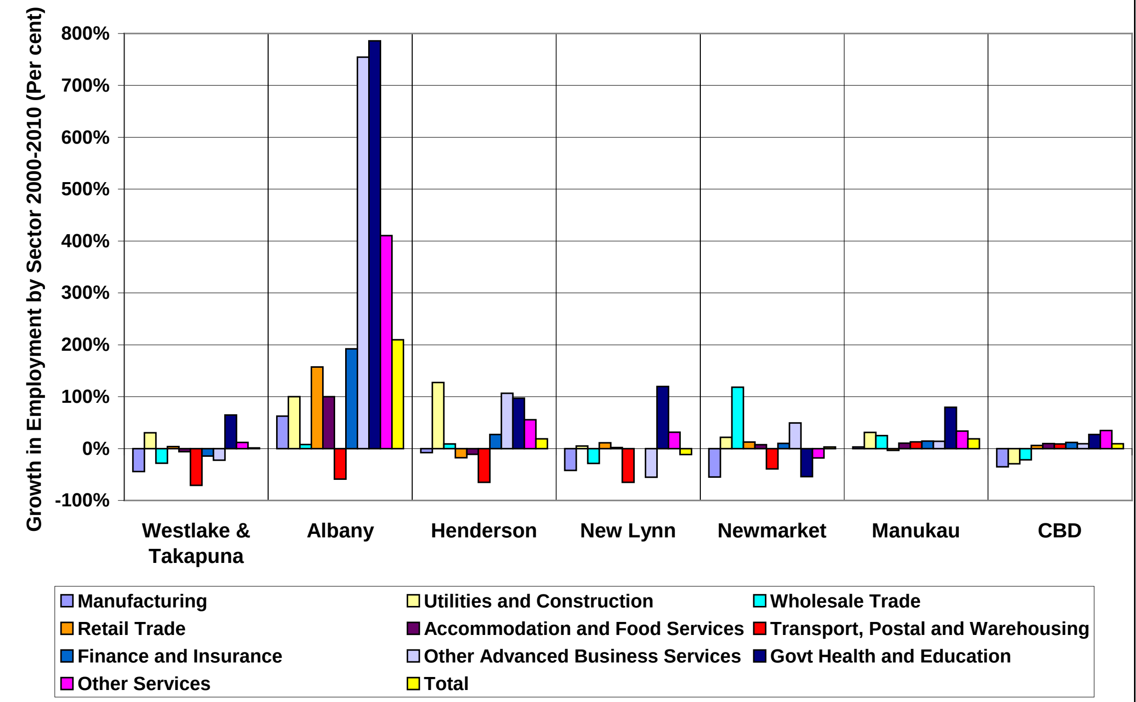



**Figure 10.4**
**Growth in Employment by Broad Industrial Sector for the Major Regional Centres within Auckland 2000-2010**
**(Per cent of total growth in each area)**

Source: Consultants estimates based on Statistics New Zealand BDD.
Note: Advanced Business Services includes Communications Services, Property Services and Business Services.

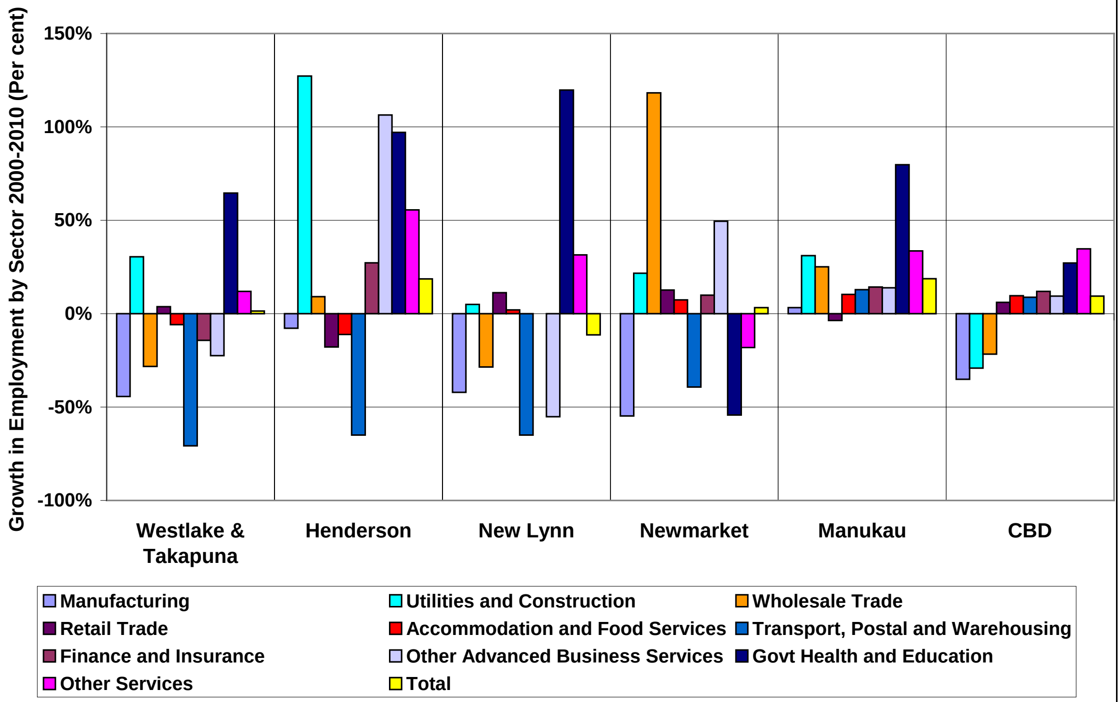



**Figure 10.5**
**Growth in Employment by Broad Industrial Sector for the Major Regional Centres within Auckland excluding Albany 2000-2010**
**(Per cent of total growth in each area)**

Source: Consultants estimates based on Statistics New Zealand BDD.

Other than the very substantial growth in Albany which has affected almost all sectors including manufacturing which has typically declined in the other centres, the pattern of growth in the selected regional centres is mixed and it is difficult to detect general themes. Declines in Transport postal and warehousing have been experienced in most of the centres but in a number there have been increases in Wholesaling. Employment in Government Health and Education again has generally but not always increased. The different patterns may suggest a position of greater specialisation within each of the centres, and relying on good linkages with others to provide a comprehensive set of services.

### *10.3.3 Patterns within other centres*

**Newmarket** reflected the CBD with a substantial increase in employment in other advanced business services, rising from 1989 jobs in 1996 to 3,673 in 2006. However, for the finance and insurance sector, although employment rose from 957 jobs in 1996 to 1,1149 in 2001 by 2006 this number had fallen back to 1,023, possibly reflecting the growing trend towards concentration within the CBD. The centre also experienced an increase in wholesaling and retailing from 1941 to 2457 jobs. These areas of growth were offset by a substantial reduction across all manufacturing activity from 837 jobs in 1996 to 318 in 2006.

The centre experienced strong growth, with employment increasing from a total of 7,290 jobs in 1996 to 10,143 jobs in 2006. Overall, Newmarket is a medium sized centre with strong specialisation in other advanced business services, wholesaling and retailing.

**Ellerslie/Penrose**. Growth in overall employment of 8.5 per cent between 1996 and 2001 and a significant 32.4 per cent (5,772 jobs) between 2001 and 2006. The growth in employment in Ellerslie/Penrose over this period is greater than the total level of employment in New Lynn only 474 jobs less than total employment in Rosebank in 2006.

**Table 10.2: Ellerslie/Penrose - Employment by selected sectors**

| | Food and Bev | Printing and publishing | Metals and metal products | Machinery and equipment manufacturing | Manufacturing (inc other) | Utilities and Const | Whole-saling | Other advanced business services | Total (all Sectors) |
|---|---|---|---|---|---|---|---|---|---|
| **1996** | 252 | 639 | 594 | 747 | 1728 | 573 | 2448 | 2973 | 13233 |
| **2001** | 252 | 585 | 624 | 528 | 1641 | 1065 | 2514 | 3522 | 14355 |
| **2006** | 369 | 513 | 483 | 252 | 2472 | 1647 | 3204 | 5082 | 19005 |
| **Change 96-06** | **117** | **-126** | **-111** | **-495** | **744** | **1074** | **756** | **2109** | |
| | | | | | | | | | |
| **1996** | 1.9 % | 4.8% | 4.5% | 5.6% | 13.1% | 4.3% | 18.5 % | 22.5% | |
| **2001** | 1.8 % | 4.1% | 4.3% | 3.7% | 11.4% | 7.4% | 17.5 % | 24.6% | |
| **2006** | 2.0 % | 2.8% | 2.6% | 1.4% | 13.4% | 8.9% | 17.3 % | 27.5% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

Whilst manufacturing (with the exception of food and beverage) has declined, growth in employment has been driven by the Other advanced business services, Utilities and construction and Wholesaling sectors. The growth in Other advanced business services employment, where an additional 2,109 jobs have been added underline the attractiveness of this location for new office developments, particularly along Great South Road, where significant new capacity has been added.

**Albany** is a new centre, growing from 3,861 jobs in 1996 to 14,679 jobs in 2006, but is now almost equivalent in employment terms to Takapuna (including Smales Farm).

Manufacturing activity in Albany has increased from 933 jobs in 1996 to 1,461 jobs in 2006. However, a consequence of the rapid overall growth of the centre is that the proportion of manufacturing activity has fallen from 24.2 per cent of total jobs in Albany in 9.4 1996 to per cent in 2006. The two groups of activities mostly responsible for the growth for Albany are Wholesaling and Retailing and financial and business services. The table below illustrates the changes in employment in these sectors and changes in proportions of total employment between 1996 and 2006.

**Table 10.3: Albany - Employment by selected sectors**

| | Wholesaling | Retailing | Finance and Insurance | Other advanced business services | Total (all Sectors) |
|---|---|---|---|---|---|
| **1996** | 1206 | 381 | 21 | 234 | 3861 |
| **2001** | 2496 | 1368 | 360 | 1374 | 9684 |
| **2006** | 3261 | 1920 | 621 | 3186 | 14679 |
| | | | | | |
| **1996** | 31.3% | 9.9% | 0.5% | 6.1% | |
| **2001** | 25.8% | 14.1% | 3.7% | 14.2% | |
| **2006** | 21.0% | 12.4% | 4.0% | 20.5% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

The table clearly illustrates the pattern of growth in Albany over the period. Most notable is the growth in Other advanced business services, with 2,942 new jobs and this sector now accounting for over 20 per cent of employment in the centre.

**Takapuna (including Smales Farm).** The growth of Takapuna is a mixed story. The town centre has suffered from the development of Albany, notably through the flat performance of retail employment. Takapuna was North Shore's dominant retail centre until the development of Albany.

Employment in business service activities has performed well, due in large part to the development of the Smales Farm area, adjacent to the Northern Motorway and North Shore Busway. The level of employment in Finance and Insurance makes Takapuna the region's second highest concentration of activity in this sector.

The Health and Community services sector is also heavily represented in this centre with a major hospital and associated support services. The growth in employment in this sector between 1996 and 2006 is notable, with an increasing concentration of activity being observed.

**Table 10.4: Takapuna- Employment by selected sectors**

| | Health and Community services | Retailing | Finance and Insurance | Other advanced business services | Total (all Sectors) |
|---|---|---|---|---|---|
| **1996** | 1056 | 1632 | 1257 | 2154 | 11514 |
| **2001** | 2391 | 1518 | 1464 | 3015 | 13479 |
| **2006** | 2871 | 1728 | 1620 | 3387 | 15126 |
| | | | | | |
| **1996** | 9.2% | 14.2% | 10.9% | 18.7% | |
| **2001** | 17.7% | 11.3% | 10.9% | 22.4% | |
| **2006** | 18.7% | 11.3% | 10.6% | 22.1% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

Takapuna town centre is notable as an area of high amenity, however, the location is constrained by relatively poor accessibility. A recent study demonstrated that the level of employment density in Takapuna was substantially higher than would be expected given the accessibility of the area.[52]

**Henderson** is a relatively small centre with 6,945 jobs in 2006 and a high degree of reliance on retail activity. This activity accounted for 21.5 per cent of Henderson's employment in 2006. The next largest proportion was in Other advanced business services, accounting for 11.4 per cent or 858 jobs.

A notable feature is the decline in manufacturing in the centre. Although Metals and metal manufacturing saw an increase of 177 jobs Other manufacturing declined by 945 jobs. Overall, across all manufacturing sectors employment in Henderson fell by 864 jobs between 1996 and 2006.

[52] Williamson, John; Richard Paling and David Waite. 2008b. "Assessing Agglomeration Impacts in Auckland: Phase 1," MED Occasional Paper 08/05, Ministry of Economic Development, Wellington. Available online at www.med.govt.nz.

| Table 10.5: Henderson - Employment by selected sectors | | | | | | |
|---|---|---|---|---|---|---|
| | Metals and metal products | Manufacturing (inc other) | Retailing | Finance and Insurance | Other advanced business services | Total (all Sectors) |
| **1996** | 201 | 1122 | 1542 | 267 | 636 | 6672 |
| **2001** | 135 | 885 | 1494 | 258 | 591 | 6546 |
| **2006** | 378 | 177 | 1617 | 279 | 858 | 6945 |
| | | | | | | |
| **1996** | 3.0% | 16.8% | 23.0% | 4.0% | 9.5% | |
| **2001** | 2.1% | 13.6% | 22.9% | 4.0% | 9.0% | |
| **2006** | 5.0% | 2.4% | 21.5% | 3.7% | 11.4% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

**New Lynn** is a small employment centre. After contracting notably between 1996 and 2001 employment growth returned between 2001 and 2006.

| Table 10.6: New Lynn - Employment by selected sectors | | | | | |
|---|---|---|---|---|---|
| | Manufacturing (inc other) | Retailing | Finance and Insurance | Other advanced business services | Total (all Sectors) |
| **1996** | 984 | 1479 | 270 | 522 | 5295 |
| **2001** | 822 | 1338 | 168 | 477 | 4773 |
| **2006** | 840 | 1377 | 183 | 474 | 4896 |
| | | | | | |
| | | | | | |
| **1996** | 18.6% | 27.9% | 5.1% | 9.9% | |
| **2001** | 0.0% | 0.0% | 0.0% | 0.0% | |
| **2006** | 19.9% | 28.1% | 3.7% | 9.7% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

As with Henderson, retail is the predominant activity in the centre, accounting for 28.1 per cent of employment in 2006. However, employment in this sector has declined by 102 jobs from 1996 levels. Manufacturing makes a notable contribution to employment in New Lynn. Across all manufacturing activities employment has fallen by 300 jobs, from 1,566 jobs in 1996 to 1,206 in 2006. Other manufacturing is the dominant manufacturing activity in New Lynn. This activity has lost 140 jobs over the period 1996-2006 but with larger losses in other sectors it has increased its proportion of overall employment to 19.9 per cent. There is relatively little business service activity in New Lynn.

**Rosebank** has seen strong growth in employment between 1996 and 2006, adding 1,122 jobs over the period. Although relatively small both Utilities and construction and Other advanced business services contributed significantly to this growth adding 270 jobs and 342 jobs respectively. The other key growth sector was in Wholesaling, as Rosebank became a more important distribution centre with the increasing accessibility provided by new roading investments, accompanied by affordable, large parcels of developable land.

| Table 10.7: Rosebank - Employment by selected sectors | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Food and Bev | Printing and publishing | Metals and metal products | Machinery and equipment manufacturing | Manufacturing (inc other) | Wholesaling | Total (all Sectors) |
| **1996** | 327 | 270 | 606 | 618 | 1635 | 867 | 5124 |
| **2001** | 231 | 360 | 558 | 615 | 1161 | 879 | 5061 |
| **2006** | 246 | 414 | 561 | 651 | 1158 | 1287 | 6246 |
| | | | | | | | |
| **1996** | 6.4% | 5.3% | 11.8% | 12.1% | 31.9% | 16.9% | |
| **2001** | 4.6% | 7.1% | 11.1% | 12.2% | 23.0% | 17.4% | |
| **2006** | 3.9% | 6.6% | 11.7% | 0.6% | 34.2% | 20.6% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

Notably, this period saw a reduction in manufacturing employment in Rosebank, falling 3,456 jobs in 1996 to 3,030 in 2006.

### Manukau (including Wiri)

In Manukau, a decline in metals and machinery manufacturing activity was offset by a small increase in Food and beverage employment and a much larger increase on other manufacturing activity. Overall, manufacturing employment rose but only by 198 jobs between 1996 and 2006.

| Table 10.8: Manukau - Employment by selected sectors | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Food and Bev | Metals and metal prods | Machinery and equipment manufact-uring | Manufact-uring (inc other) | Transport and Storage | Retail-ing | Other advanced business services | Govt and Defence | Total (all Sectors) |
| **1996** | 1386 | 591 | 630 | 1527 | 567 | 2181 | 2181 | 510 | 14145 |
| **2001** | 1341 | 438 | 375 | 1833 | 798 | 2487 | 2487 | 903 | 15612 |
| **2006** | 1491 | 381 | 93 | 2382 | 990 | 2709 | 2709 | 1251 | 18621 |
| **Change 96-06** | 105 | -210 | -537 | 855 | 423 | 528 | 528 | 741 | 4476 |
| | | | | | | | | | |
| **1996** | 9.8% | 4.2% | 4.5% | 10.8% | 4.0% | 15.4% | 15.4% | 3.6% | |
| **2001** | 8.6% | 2.8% | 2.4% | 11.7% | 5.1% | 15.9% | 15.9% | 5.8% | |
| **2006** | 8.1% | 2.1% | 0.5% | 12.9% | 5.4% | 14.7% | 14.7% | 6.8% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

Employment growth within the centre was driven by transport and storage, retailing, other advanced business services and government and defence. The latter adding 741 jobs with a strong public sector presence developing within the centre.

### Airport and Environs.

This area provided strong and consistent employment growth between 1996 and 2006, adding 4,500 new jobs. The stand out sector is Transport and Storage, adding 1,408 new jobs but also of note is the 1,029 new jobs within Other advanced business services activities.

| Table 10.9: Airport and environs - Employment by selected sectors | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Food and Bev | Machinery and equipment manufacturing | Manufacturing (inc other) | Transport and Storage | Whole-saling | Retail-ing | Finance and Ins | Other advanced business services | Total (all Sectors) |
| **1996** | 102 | 957 | 441 | 3702 | 300 | 441 | 69 | 705 | 8253 |
| **2001** | 96 | 726 | 705 | 4803 | 423 | 705 | 144 | 879 | 10038 |
| **2006** | 192 | 720 | 852 | 5160 | 849 | 852 | 195 | 1734 | 12753 |
| **Change 96-06** | 90 | -237 | 411 | 1458 | 549 | 411 | 126 | 1029 | 4500 |
| | | | | | | | | | |
| **1996** | 1.2% | 11.6% | 5.3% | 44.8% | 3.6% | 5.3% | 0.8% | 8.5% | |
| **2001** | 1.0% | 7.2% | 7.0% | 47.8% | 4.2% | 7.0% | 1.4% | 8.8% | |
| **2006** | 1.5% | 0.3% | 6.7% | 40.5% | 6.7% | 6.7% | 1.5% | 13.6% | |

Source: Consultants estimates based on Statistics New Zealand Census Data.

A little surprisingly manufacturing activity declined in this area over the period, with a net 114 jobs lost. Biggest losses were in Machinery and equipment manufacturing (237 jobs). However Other manufacturing added 411 jobs and Food and beverage an additional 90 jobs.

## 10.4 Overall Assessment

The emerging patterns within and between the centres can be summarised as follows:

- The growing concentration of Finance and insurance sector activity in the CBD, with Takapuna being the only other centre to show signs of both a significant concentration of activity and on-going growth in this sector.
- For Other business services although the CBD dominates there are strong concentrations of activity in Albany, Takapuna, Newmarket and Ellerslie/Penrose. Conversely, Henderson, New Lynn and Rosebank provide relatively little employment in this sector, with Manukau and the airport environs sitting in the middle. The picture appears to be one of a concentration of activity along the State Highway One corridor spreading north and south from the CBD and a very noticeable lack of employment in this sector across centres in west Auckland.
- The expectation is that these types of activities will tend towards concentration within accessible, high amenity centres. Perhaps one surprise is the extent of activity that is taking place within Ellerslie/Penrose. Clearly, this area is highly attractive location, possibly due to the high levels of accessibility provided.
- Manufacturing, one of the sectors less likely to benefit from agglomeration is declining in most centres and showing little growth in the few centres where no decline is observed. However, there are changing patterns of manufacturing activity, with declines in some activities such as Machinery and equipment manufacturing being offset by increases in others, notably Food and beverage in Ellerslie/Penrose, Manukau and the airport.

Overall, the Northern centres (Albany and Takapuna are increasingly providing business service and retail services. The southern centres provide more manufacturing employment with retail being important in Manukau and distribution at the airport. The western areas are dominated by retail (New Lynn and Henderson) and distribution at Rosebank. The relative size differences and composition of the centres clearly raises the possibility of a centre/periphery pattern of development with the CBD at the centre and centres along the north/south axis benefitting from good accessibility and or amenity growing strong growth. The western centres, however, appear less connected and more peripheral to this pattern of development.

## 11 Future Trends

- Auckland is developing as a polycentric city region with a strong CBD and rapidly growing regional centres.
- Growth in advanced business services and decline in primary manufacturing reflect global trends.
- Growth is taking place in niche manufacturing sectors, such as marine and food and beverage industries.
- Patterns of employment growth will be expected to reflect the benefits from and respond to agglomeration effects.
- Availability of suitable land will in part drive growth and strongly influences location choices.

The economic linkages in the Auckland economy will potentially change as the patterns of economic activity evolve over the future. To assess the future patterns of activity in the region and assessment has been made of trends and changes over the recent past to help identify the future position.

Two notable features of the Auckland economy over the past 10 years have been the growth in employment in advanced business services and the continued (and increasing) decline in manufacturing employment. The position for the period from 2001 to 2010 is set out in Figure 11.1.

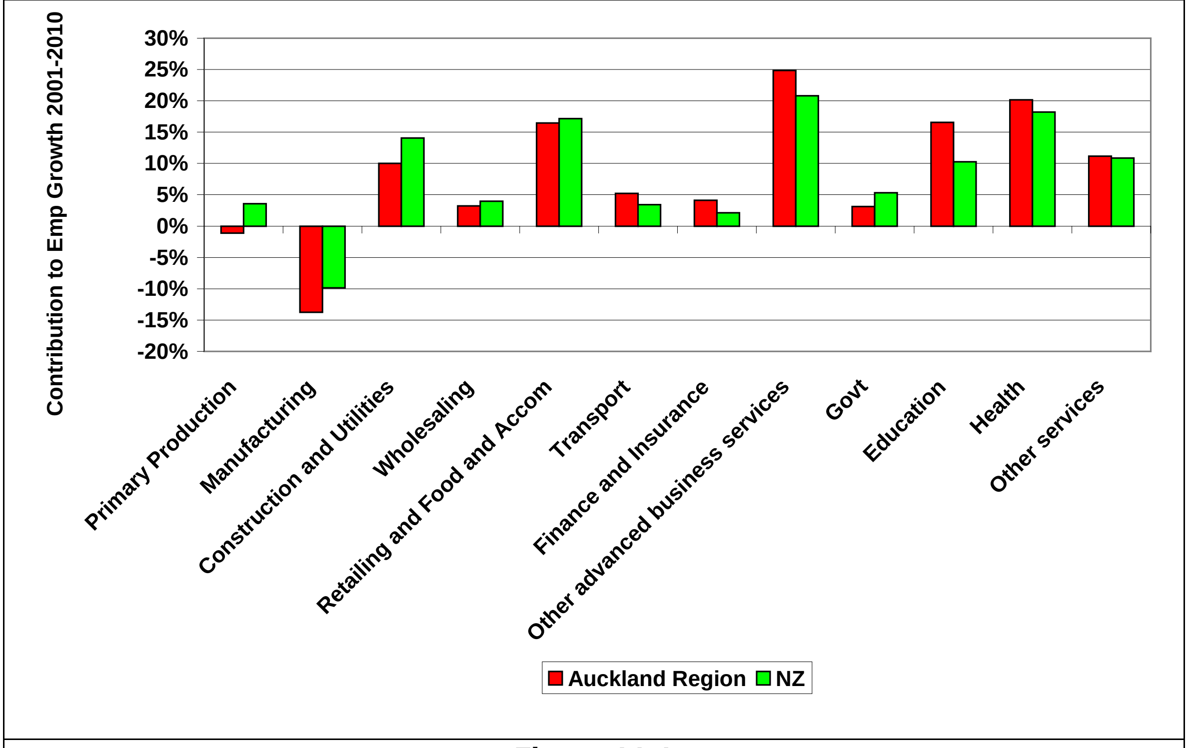



**Figure 11.1**
**Contribution to Employment Growth 2001-2010**
**(Per cent of total employment growth)**

Source: Consultants estimates based on Statistics New Zealand BDD.

These trends are very much in line with those observed elsewhere in other countries with a reduced emphasis on employment in primary activities and manufacturing and with an increased emphasis on what are essentially labour intensive service activities. In many cases, these service activities based in the urban areas add value to the primary and manufacturing sectors through elements such as product development, design and marketing.

The continuation of these trends suggests an increased emphasis on provision of higher level services, which typically require access to a wide labour force and which also gain benefits from agglomeration. This will result in pressure for expansion particularly within the CBD and also but to a lesser extent at the other larger regional centres. Employment in the primary and manufacturing sectors as a whole is likely to decline although there may be growth in particular niche sectors within this, as the experience of the food and beverages sub-sector demonstrates. Within the urban area, activity in these sectors is likely to concentrate primarily on areas where there is suitable land for development coupled with reasonable transport accessibility for the movement of the inputs and outputs required for the manufacturing and associated logistics operations.

The key activities within the service sectors appear to recognise the benefits of agglomeration with strong linkages between firms and workers within the different sectors. However within the manufacturing sector, the horizontal linkages between firms appear to be much more limited and in addition there appears to be only limited interaction with the CRIs and the universities. Efforts are being made to encourage more inter-firm interaction particularly within the food and beverage sector with the development of the Food Innovation precinct and there is probably a role for central or local Government to support this and extend this initiative to other sectors.

Overall, Auckland is beginning to exhibit the characteristics of a polycentric city. This has a strong core CBD and developing centres towards the urban periphery located within a single labour market area and with a significant proportion of higher value added activity becoming concentrated within the CBD and these other centres (e.g. Takapuna or Manukau) or corridors (e.g. Great South Road around Ellerslie/Penrose). The Urban Studies literature provides support for the development of city regions with a number of centres. An important point is that accommodating high value activities in centres rather than allowing broader dispersal will be likely to generate higher returns and wages in the future.

## 12 Implications for spatial planning – industrial land

- Demand for Group 1 land is unlikely to diminish.
- Continued provision of greenfield land for industrial activities will contribute to economic transformation.
- Changing business patterns see growth of newly built, large-scale, clean warehousing sites and displacement of other industrial activities to lower-cost urban fringe.

An interesting question is whether the changing patterns of economic activity might reduce the need to provide additional greenfield land for industrial activities in the future? In fact, it would appear unlikely that demand for Group 1 land[53] will diminish in the future.

There are a range of dynamic changes taking place within Auckland's economy that support this view. Firstly, production processes are changing within these industrial sectors, with activities such as warehousing not only increasing but also becoming more reliant on large sites and more automated processes. New, purpose built premises are often required as older buildings are not always compatible with new processes, leading to a need for clear development sites.

But it is also important that these locations are close to other areas of economic activity. And so these cleaner types of industrial activity are contributing to the displacement of other industrial activities such as heavy construction from business areas where land values are rising. In turn, these displaced activities require large, low cost sites which can be located on the urban fringe. Such a pattern of development can be observed in Silverdale, north of Auckland for example.

**Silverdale – Case Study**

Silverdale has grown significantly in the last 12 years but employment remains strongly concentrated in just a small number of sectors. The major source of employment is the construction sector and this activity is strongly concentrated in Silverdale South. In 2000 construction activity accounted for 32 per cent of employment in Silverdale South (610 jobs) and by 2009 this had risen to 44 per cent (1330 jobs).

Other important sectors are manufacturing, wholesale and retail. Manufacturing is the second largest employer in Silverdale South after construction, accounting for 34 per cent of jobs in 2000 and although the proportion of employment had fallen to 25 per cent of jobs in 2009, the total number of jobs in this sector had increased slightly.

[53] Group 1 activities require land extensive sites and can contribute to reverse sensitivity issues due to noise, odour emissions. They comprise: Manufacturing, Construction, Wholesale Trade and Transport and Storage.

Of the 1,168 additional jobs created in Silverdale South between 2000 and 2010, 720 or 62 percent have been created in the construction sector. An obvious question is whether this may be related to local employment associated with the residential intensification of the area? The data reveals that construction employment in Silverdale South is concentrated in Heavy and Civil Engineering Construction (780 jobs) and Construction Services, (450 jobs) out of 1,405 jobs in 2010. Therefore, the data suggests that this growth was not likely to be directly related to residential construction activity in the local area and is serving a wider, sub-regional need.

There are also examples of business areas transforming from industrial to commercial, including Rosedale on the North Shore, where smaller scale commercial developments effectively crowded out further industrial activity from an area initially developed for industrial purposes. The transformation is even more stark in Ellerslie/Penrose. This area is regarded as an industrial powerhouse but now has the second largest concentration of employment in businesses services in the region, behind only the CBD and higher than any recognised centre.

Therefore, although employment in industrial activities is almost static and has declined steeply in manufacturing, the provision of greenfield land for industrial activities will help to ensure that the dynamic process of economic transformation of existing centres and business areas can continue. The economy is simply a system and in this case it would appear that a systems approach will better support the transformation of Auckland's economy over time, rather than focusing on changes within the industrial sectors themselves.

## 13 Improving Auckland's Economic Performance

- Provision of appropriate transport infrastructure and connections.
- Provision of public infrastructure to support high levels of urban amenity.
- Provision of cost-effective Business 1 (Industrial) land.
- Encouragement of interactions and linkages between industries.

A key interest of Government is what steps it can undertake to improve the performance of Auckland and enhance its role as an internationally competitive city. The analysis we have undertaken suggests that there are several areas where central and local government can make important contributions. These include:-

- Provision of appropriate transport infrastructure, linking workers with potential employment areas especially to support the accessibility of the high value added activities in the Auckland CBD and other strategic urban centres. From our analysis this is probably the key element in improving the performance of the Auckland economy and is supported by comments from agencies like OECD who have noted the deficiencies in this area. Broadband is another area where the improvement of infrastructure with public sector involvement to serve the key centres is important.
- Provision of other public infrastructure to support high levels of urban amenity in the major service sector employment areas.
- Provision of Business 1 (Industrial) land to allow manufacturing activities and other activities requiring large sites to develop and relocate. Relocation from less suitable central areas will provide opportunities for new more suitable higher value activities to get established and take advantage of and contribute to agglomeration benefits resulting from higher employment densities.
- Provision of good transport connections for the movement of the inputs and outputs of the manufacturing and distribution processes.
- Provision of support for agencies which encourage interactions and linkages between industries. These could include training facilities both for the provision of appropriately skilled workers and the dissemination of best practice, joint operational or research facilities of which The FoodBowl (Auckland) in Manukau is a prime example or steps to facilitate the application of basic research for commercial application.

## 14 Overall Assessment

- Linkages are vital for growth but more effective in business services than manufacturing.
- Agglomeration delivers benefits for business linkages through improved connectivity.
- Growth requires good accessibility to central and regional hubs.
- Role for both central and local government in providing high quality urban environments.

Within the Auckland region, there is a wide range of linkages between the different constituent areas and between the activities undertaken.
For manufacturing the linkages between similar firms are typically much less pronounced. Vertical linkages with suppliers and customers are more important and much of the recent development in this sector has occurred along the motorway network facilitating the movements of inputs and outputs, although the key determinant of location is typically the availability of suitable land for development.

More important linkages are however found in the advanced business services sector which has grown rapidly and which is likely to be at the forefront of the future growth and globalisation of the Auckland economy. This sector benefits from the agglomeration benefits arising from the linkages between concentrations of workers at key central locations who because of the range of skills required tend to be drawn from wide catchment areas. To support this growth therefore requires good accessibility to these central areas and the provision of a high quality urban environment to make working these attractive. For both of these, Governments at both a central and local level have a role in providing important support.

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# APPENDIX A - Competitive Advantage Sectors

**Table A1.1**
**Definitions of Competitive Advantage Sectors**

| Competitive Advantage Sector | Activities Included |
|---|---|
| Business Services | L7841 Legal Services<br>L7842 Accounting Services<br>L7851 Advertising Services<br>L7854 Business Administrative Services<br>L7855 Business Management Services<br>L7869 Business Services nec |
| Metals and Metal Products | C2711 Basic Iron and Steel Manufacturing<br>C2749 Structural Metal Product Manufacturing nec<br>C2759 Sheet Metal Product Manufacturing nec<br>C2762 Spring and Wire Product Manufacturing<br>C2769 Fabricated Metal Product Manufacturing nec<br>F4522 Metal and Mineral Wholesaling |
| Electronics and Electrical Equipment | C2839 Professional and Scientific Equipment Manufacturing nec<br>C2849 Electronic Equipment Manufacturing nec<br>C2854 Electric Light and Sign Manufacturing<br>C2859 Electrical Equipment Manufacturing nec<br>F4615 Electrical and Electronic Equipment Wholesaling nec<br>F4731 Household Appliance Wholesaling |
| Machinery | C2863 Food Processing Machinery Manufacturing<br>C2864 Machine Tool and Part Manufacturing<br>C2865 Lifting and Material Handling Equipment Manufacturing<br>C2866 Pump and Compressor Manufacturing<br>C2869 Industrial Machinery and Equipment Manufacturing nec<br>F4619 Machinery and Equipment Wholesaling nec |
| Food | C2121 Milk and Cream Processing<br>C2122 Ice Cream Manufacturing<br>C2152 Cereal Food and Baking Mix Manufacturing<br>C2172 Confectionery Manufacturing<br>C2179 Food Manufacturing nec<br>C2181 Soft Drink, Cordial and Syrup Manufacturing<br>C2183 Wine Manufacturing<br>C2184 Spirit Manufacturing<br>F4711 Meat Wholesaling<br>F4715 Fruit and Vegetable Wholesaling<br>F4717 Liquor Wholesaling<br>F4719 Grocery Wholesaling nec |
| Marine | C2822 Boatbuilding |
| Health | C2543 Medicinal and Pharmaceutical Product Manufacturing<br>C2832 Medical and Surgical Equipment Manufacturing<br>F4796 Pharmaceutical and Toiletry Wholesaling |

**Table A1.1**
**Definitions of Competitive Advantage Sectors**

| Competitive Advantage Sector | Activities Included |
|---|---|
| Tourism | I6401 Scheduled International Air Transport |
| | I6402 Scheduled Domestic Air Transport |
| | I6403 Non-Scheduled Air and Space Transport |
| | I6641 Travel Agency Services |
| Technical Services | F4612 Professional Equipment Wholesaling |
| | F4613 Computer Wholesaling |
| | J7120 Telecommunication Services |
| | L7810 Scientific Research |
| | L7823 Consultant Engineering Services |
| | L7829 Technical Services nec |
| | L7834 Computer Consultancy Services |
| | L7853 Market Research Services |
| Transport Services | I6110 Road Freight Transport |
| | I6301 International Sea Transport |
| | I6629 Services to Water Transport nec |
| | I6642 Road Freight Forwarding |
| | I6643 Freight Forwarding (except Road) |
| | I6649 Services to Transport nec |
| | J7112 Courier Services |
| Paper Products | C2339 Paper Product Manufacturing nec |
| | F4795 Paper Product Wholesaling |