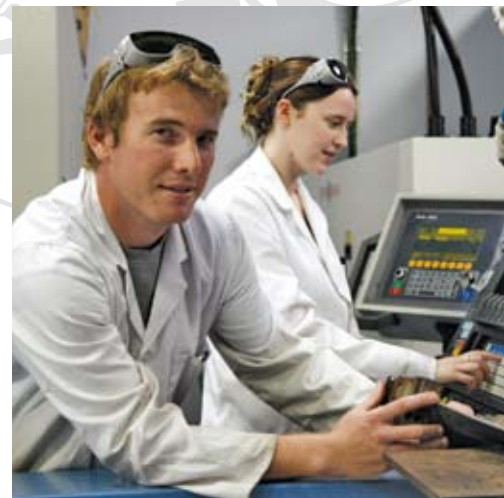


# Current Skills and Knowledge in the Outer East

## Signposts for the Future



### ► Summary Report

*Prepared by:*  
Anne Langworthy, Alexis Esposto  
and Rebecca Feldman

**November 2007**

Centre for Regional Development  
Swinburne University of Technology

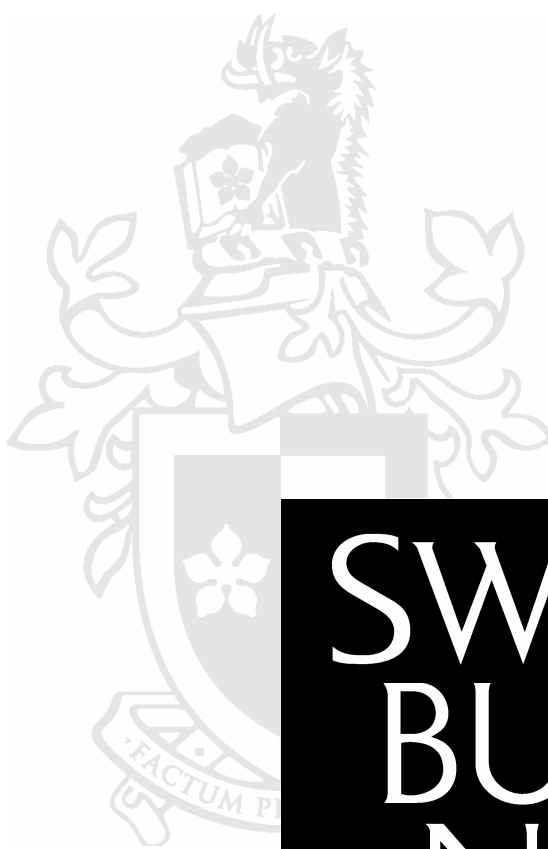


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Summary Report



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### **The Project Steering Committee**

The research team would like to acknowledge the valuable contribution of the project Steering Committee members:

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## Acronyms

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ABS	Australian Bureau of Statistics
ACER	Australian Council for Educational Research
ACC	Area Consultative Committee
AIG	Australian Industry Group
ANZSIC	Australian and New Zealand Standard Industrial Classification
ASCO	Australian Standard Classification of Occupations
BTRE	Bureau of Transport and Regional Economics
DEST	Department of Education, Science and Training
DET	Department of Education and Training
DEWR	Department of Employment and Workplace Relations
DIIRD	Department of Innovation, Industry and Regional Development
DOI	Department of Infrastructure
DOTARS	Department of Transport and Regional Services
DPCD	Department of Planning and Community Development
DSF	The Dusseldorp Skills Forum
DSE	Department of Sustainability and Environment
DVC	Department for Victorian Communities
GEN Y	Generation Y
GDP	Gross Domestic Product
ICT	Information and Communication Technologies
IT	Interview Transcript
JTW	Journey to Work
LGA	Local Government Area
LSC	Learning and Skills Council
NCVER	National Centre for Vocational Education Research
NIEIR	National Institute for Economic and Industry Research
OECD	Organisation for Economic Co-operation and Development
OELLEN	Outer Eastern Local Learning and Employment Network
OEM	Outer Eastern Melbourne
O*NET	Occupational Information Network
OT	Observer Transcript
OTTE	Office of Training and Tertiary Education
SD	Statistical Division
SUHREC	Swinburne University Human Research Ethics Committee
VET	Vocational Education and Training

## Introduction

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Since the mid-1970s nearly all OECD member countries, including Australia, have experienced fundamental economic and social change which is manifested in a variety of ways, including rapid technological change, freeing up of capital markets and increasing overseas trade (Sheehan & Esposto, 2001). Labour market changes have also been striking. In addition to increased part time work and jobs that involve varying hours of work there has been an increase in casual employment. Over the last decade the Australian labour market (and that of most OECD nations) has experienced persistent levels of skill mismatches between employees and jobs or employers and persistent levels of skill shortages in many occupations and particular industries (OECD, 2004; AIG, 2004). These mismatches have impacted heavily on regions around Australia.

As one of these regions, Outer Eastern Melbourne is characterised by:

- A significant population which tends to be homogenous, demonstrating negligible growth, ageing with pockets of socio-economic disadvantage (in the outer areas a high proportion of residents earn less than \$300 per week);
- A dominance of small and micro business rather than large industry;
- Net migration for work (for example, of the 67,555 employed residents in Yarra Ranges, 44,030 or 65% travel out of the Shire for work);
- Unemployment rates averaging 5% but 56% of the unemployed are long term unemployed. Unemployment is more marked in the outer areas of the region where youth unemployment is of concern. There is also some evidence to suggest that there are “hidden” unemployment groups, in that young people are underemployed or in casual positions; and
- Stagnant labour force participation rates (youth participation rates have improved but remain at approximately 69%).

The growth of globalisation and the knowledge economy suggests that in order to survive, regions need to be outward looking, create competitive advantage, invest in innovation, training and development and encompass value of knowledge as a factor of production. Indeed on a larger scale a study by the Organisation for Economic Cooperation and Development (OECD) examined why some economies grew faster than others and concluded that:

*“Policies that engage ICT [information and communication technologies], human capital, innovation and entrepreneurship in the growth process, alongside policies to mobilise labour and increase investment, are likely to bear most fruit over the longer term.”* (OECD, 2001, p. 8).

Garlick, Taylor and Plummer (2005) propose that regional growth and competitiveness objectives can be realised through a culture of enterprise and education. They argue the greatest impact on regional growth will come from a combination of greater human capital, access to high technology, greater industry specialisation and less government intervention.

According to a recent report by the Centre for Regional Development ‘*Community Sustainability in Outer Eastern Melbourne*’ (Langworthy & Brunt, 2005) the region is showing progress towards sustainability but there are five areas highlighted for action, one of which relates to the regional economy. This report notes the high proportion of routine (process and manufacturing) workers to symbolic analysts or those who have the capacity to take part in the emerging “knowledge economy”. As routine workers continue to be replaced by automated processes, job security and

job prospects for this sector of the workforce are diminishing. The concept of the knowledge economy is also predicated on creativity, and the OEM score for the knowledge economy indicator at 40.1, was well below the state average of 59 and a cause for concern.

Skill shortages in the areas of manufacturing, ICT, building and construction, hospitality, automotive, health and community service industries were identified by the Area Consultative Council (then JobsEast) in 2001 (JobsEast, 2001; Hardie, 2003). More recently the Office of Training and Tertiary Education has based training priorities on employment growth forecasts (OTTE 2006; 2007) and the Outer Eastern Local Learning and Employment Network has identified areas of skill shortage/opportunity (see Appendix A of full report).

Whilst this work and other studies give us part of the picture, there is a need to pull this work together in order to develop a comprehensive skills and employability inventory for the Outer Eastern Region of Melbourne. The need for a skills audit occurs in the context that today's dynamic workplace is characterized by technological advances, new management techniques and other changes which spell shifting requirements for workers, businesses and the community at large. In this changing occupational landscape, informed decision-making requires employees, employers, and policy makers to consider occupational requirements in a new way, which requires a closer focus on skills. Skills are the measurable variables that allow us to link human capital requirements in the workplace, individual capacities, and the education and training programs that can bridge the gap.

Using a "skill-based" perspective provides a tangible way to make well-reasoned judgments related to regional development and has immediate application in matching job seekers with opportunities, helping employers adjust to new workplace demands, and enabling educators to align curricula to meet workplace needs. When connected to current economic information, this skill-based perspective becomes a powerful tool for exploring and identifying the skill needs of a rapidly changing regional labour market.

## **Regional Skills Audit**

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### **Project Aims**

This project had the following aims:

- To determine whether occupations in the Outer Eastern Region of Melbourne have become more or less skill and knowledge intensive.
- To define, measure and identify the skill-sets that are most prevalent in Outer Eastern Region of Melbourne's labour market.
- To identify the skill-sets associated with higher wages and employment growth.
- To forecast the skill-sets that are required by high growth occupations and industries in the Outer Eastern Region of Melbourne.
- To determine whether the region experiences a net loss of skill and knowledge intensity as a result of the types of occupations created and available in the region.
- To investigate business and industry perceptions of skills gaps and opportunities

## **Project Partners**

The Outer Eastern Regional Skills Audit Project was undertaken by the Centre for Regional Development, Swinburne University of Technology, Lilydale, in partnership with three local councils, Knox City Council, Maroondah City Council and the Shire of Yarra Ranges. Guidance during the project was provided by the Project Steering Committee, consisting of representatives from the three Councils of the Outer East.

## **Methodology**

Prior to commencement of the project, ethics approval was sought from Swinburne University of Technology (SUHREC Project 0607/139). The main activities undertaken during this research project were completed in five stages.

### **Stage One**

The first stage of the project involved a review of literature, including an analysis of current reports, to provide pertinent regional information and a context for subsequent data analysis.

### **Stage Two**

Stage two involved the analysis of Occupational Information Network (O\*NET) data and Australian Bureau of Statistics (ABS) Census data for 10=991, 1996 and 2001. The O\*Net Analysis used the Occupational Information Network (O\*NET see Appendix B) classifications of worker competencies, assigning these to Australian employment data (ASCO 4-difit level) and mapped present and emerging skills in the region.

Measures of knowledge and skill were used to analyse changes in the composition of employment for Melbourne (SD) and the Outer East. The first is concerned with an analysis of the knowledge and skill intensity of job types. The second measure addresses whether, and to what extent, using two O\*NET measures of knowledge and skill, the content of jobs is increasing, in which part of the employment distribution these changes are occurring, and whether this increase is more prominent in male or female full time or part time employment and which occupations are growing or declining in numbers. The final measure is concerned with understanding how the knowledge and skill requirements of jobs for Melbourne (SD) and the Outer East has changed between 1991 and 2006. This analysis is conducted by examining changes in ten areas of knowledge, and seven areas of skill. Our measures used for the analysis are described below.

To describe changes in the knowledge and skill intensity of occupations, a weighted average intensity index for each of the O\*NET measures for occupations was constructed using the cross-product of level and importance (as described in Table 2.2 in the Full Report). This measure takes account of changes in the knowledge and skill intensity of occupations over the fifteen year period.

The weighted average of skill intensity measures the intensity of skills and knowledge of occupations across the whole of the labour market for the region under investigation and allows us to compare changes to the composition of skills and knowledge in terms of job types (i.e. full time and part time work for men and women).

This analysis was conducted by dividing and ranking the region's occupations in terms of knowledge and skill intensity from highest to lowest and detailing occupational changes in each decile. Occupational listings will be provided for each decile using the 340 Australian Standard Classification of Occupations for 1991, 1996 and 2001.

### **Stage Three: Journey to Work**

Stage Three used ABS Journey to Work data for 2001. Journey to work data provided information about where people work as well as where they reside. Because of changes to geographical areas, the data was not comparable across census periods; hence the analysis concentrated on the 2001 Census. Journey to Work data is analysed by origin and destination of workers and by the industry sector in which they work and by skill level calculated against the nine occupational categories of ASCO and five skill categories. It should be noted that this approach to the analysis JTW data is somewhat limited because the data is highly aggregated, namely to the first digit level of the ASCO classification of occupations and ASCO's 2<sup>nd</sup> edition skill classification. This methodology allows for an assessment of any regional skill intensity gain or loss.

### **Stage Four: Skills that add a premium**

The Project aimed to estimate the relationship between skill, knowledge and wages and/or employment growth by applying structural equation modelling. However, a high degree of multicollinearity both with and between clusters, prevented the use of latent factors. Instead an hypothesized skill cluster model was tested using hierarchical regression analysis. This enabled conclusions to be drawn about the effect of skills on earnings discrepancies.

### **Stage Five: Business Interviews and Focus Groups**

In order to supplement the quantitative data and analysis developed in Stage Two, interviews and focus groups were conducted in the Shire of Yarra Ranges and the Knox City Council with identified representatives from industry. A total of 25 interviews provided information on skill shortages, regional opportunities and strategies to increase regional employment and business growth. The Department of Victorian Communities (DVC) skills survey was used for the interviews and to structure the focus groups.

The project aimed to provide a perspective from local business representatives with regard to their current skill needs and other pertinent issues related to retention and recruitment. Feedback was also sought with regard to the opportunities and barriers they foresaw for the Outer East in creating and maintaining a skilled and responsive workforce. To gain this information, the views of business representatives in both Knox and Yarra Ranges were sought during a series of interviews and focus groups.

### **Limitations**

The study used O\*Net and ASCO classifications to analyse the skills and knowledge intensity of occupations as identified by the Australian Census for 1991,1996, 2001, and estimated the 2006 figures based on trends. This analysis cannot be seen to be a definitive description of the skills and knowledge of residents in general.

It is important to note the following limitations in the use of O\*Net classifications:

- the data on knowledge and skill came from data obtained through the analysis of US occupations and not Australian jobs; and
- the content of the informational data contained in each of the three measures of knowledge and skill is fixed in time. Thus, the occupational measures of O\*NET that we have are for the year 1998.

Because of changes to geographical areas, the Journey to Work data was not comparable across censuses; hence the analysis concentrated on the 2001 Census by skill level calculated against the nine occupational categories of ASCO and five

skill categories. It should be noted that this approach to the analysis JTW data is somewhat limited because the data is highly aggregated.

Business interviews and focus groups were conducted with a small sample of business representatives. These businesses were identified as significant by the Economic Development Officers in Knox and Yarra Ranges. Maroondah opted not to participate in this area of the study given expected changes in the workforce due to the development of the Transit City. The sample represents those businesses whose managers agreed to participate from a large list of invited businesses.

## Literature Review

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### Introduction

A scan of the literature immediately reveals the prominence of skills as a contemporary social and economic issue, globally and locally. In common with the rest of the developed world, Australia faces the demographic challenges related to an ageing population, the population shift from rural and regional areas to urban areas and the emerging characteristics of Generation Y. Industry demand for a more skill and knowledge intensive workforce capable of adjusting to rapid technological change and competitive pressure in an increasingly deregulated marketplace also throws skills issues into focus which in turn has repercussions for education and training.

A crescendo of research into skills has developed over the last decade. Evidence of the interest of global organisations in the issue can be found in recent reports and studies commissioned by the United Nations European Union and the Organisation for Economic and Cultural Development (Smith, 2000; OECD, 1996; OECD, 2006). Similarly State and Federal Governments (for example reports by DVC, DET, DEET, DOI, DEWR, DIIRD, & DOTARS) and Industry organisations (for example, Australian Industry Group, Business Council of Australia, Industry and Higher Education Council, Australian Chamber of Commerce, Agri-foods Skills Council, Construction and Property Services Industry, Service Skills Australia) have demonstrated strong interest.

The relevance of the issue to educational institutions particularly those that focus on post compulsory sector including vocational, further and higher education is also amply demonstrated (for example NCVER; ACER; Centre for Population and Urban Research and the Centre for the Economics of Education and Training, Monash University; and the Centre for Strategic Economic Studies, Victoria University) . Some organisations are even totally focussed on these areas i.e. the Dusseldorp Skills Forum which seeks to achieve changes needed to enable all Australians to reach their potential through the acquisition of skills and knowledge (for example Long & Burke, 2006; Saulwick & Muller, 2006; Birrell & Rapson, 2006; AIG & DSF, 2007).

Findings from some of these reports and the wider literature highlight the importance of skills and knowledge of the resident workforce for a sustainable future.

### Worldwide Trends

The need for a skills audit occurs in the context initially identified by the project team and described in the introduction to this report. Fundamental changes in the way economies function are impacting on industry structures, labour markets and the way we work. Literature that focuses on the future of work describes the impact of technology, a trend towards lifelong learning and workplaces that focus on their staff as a source of competitive advantage. It also describes the tension between the need for greater productivity and the resultant downward pressure on costs; the extreme business that leaves little space for critical reflection and creative dialogue which is central to sustained organisational development and innovation (Jenkins & Garvey, 2001).

Not only does international trade create more competitive pressures but increased distance between producers and buyers is driving greater processing of information to improve the connection between both ends of the market place. The marketplace is becoming increasingly deregulated, provide goods and services 24 hours a day, seven days a week. It will be characterised by uncertainty, rapid change and complexity. The edge that developed countries will have will be the productivity of

knowledge work and knowledge workers (Drucker, 1998; OECD, 2004; The Allen Consulting Group, 1999; 2004; & 2006).

In thriving economies, knowledge is increasingly becoming the principle component of value creation, productivity and economic growth (Florida & Kenney, 1991, cited in Houghton & Sheehan, 2000). It is knowledge and innovation that will not only result in the emergence of new industries but lead to the continual evolution of existing sectors (Smith, 2000). The integration of new technologies, continued innovation and the consequent up-skilling of workplace roles, means continuing change in the types of occupations available in the workforce and the significance of various industries in their contribution to employment.

Already we are seeing the emergence of the twenty-first century organisations ranging from corporate virtual countries, large organisations that assume the form and responsibilities of a democratic large scale national government, to a plethora of organisation forms that will co-exist or network, some lasting no longer than a specific project that the futurists predicted last century. The workplace may be a satellite work centre or a neighbourhood teleworking centre. A virtual office might combine with these centres so that the social side of work is fulfilled. Flexible work agreements will facilitate work from home, inner city offices will increasingly feature the part time workdesk or “motelling” in a shared urban space with remote connectivity. The electronic brief case may well accompany nomadic work (Morelli, 1999).

The scenarios of the futurists emphasise the need for future workers who are adaptable, attuned to lifelong learning, and innovative. Thus the approach to education can no longer be linear and formal education is seen in the wider context of lifelong or ongoing learning which may take place in a variety of contexts at different times during a person’s lifetime (Langworthy & Turner, 2003). The need for generic transferable skills and work ready graduates is emphasised in a number of reports where it is clear employers value employees who are multi-skilled, team-work orientated, highly computer literate and able to deal with and appreciate people from diverse walks of life (DEST, 2002; AIG, 2002; Peter D. Hart Research, 2006; Precision Consultancy, 2007 and others). To this end the majority of Australian universities have stated graduate attributes and addressed employability skills (Precision Consultancy, 2007) and a similar focus on graduate attributes can be found internationally (Peter D. Hart Research, 2006).

In the future, advanced economies are likely to have continued unemployment and, conversely, skills shortages as the population ages. Despite successive age groups expecting to retire at a younger age than the one before, increasing life expectancy points to a later retirement (Rickard, 1999). Increasingly part time contract and casual work is becoming a feature of the labour market (Sheehan & Esposto, 2001; OECD, 2004; AIG, 2004) which also includes people in full time employment working longer hours (for example Productivity Commission, 2005, cited in Victoria's Workforce Participation Taskforce, 2005).

Informal and unpaid work in families will still account for a significant proportion of the total time people spend working. Rather than job creation strategies to address unemployment and the potential for social disadvantage, the need for social inclusion policies that provide sufficient formal and informal work to achieve a “full engagement” society has been identified (Williams & Windebank, 1999).

In common with other OECD countries, Australia is experiencing an ageing workforce and an emerging younger generation, Generation Y, that is demonstrating a different approach to work and life. Tribal and connected in ways not experienced by the baby boomers, this younger generation gives priority to things other than necessarily acquiring material possessions. They will marry late if at all and also delay having a

family if at all. They have experienced the way their parents have worked and do not choose to work this way (MacKay, 2007). Other research into the characteristics of Generation Y paints a picture of a creative, impatient demographic who want to work less but who want to engage in work that is meaningful and personally rewarding; they also want to be well rewarded for their skills and accomplishments (Zemke, Raines & Filipczak, 2000). The new generation of young workers want instant gratification and are sure of their competence and somewhat unwilling to recognise their faults.

As indicated by several reports (AIG & DSF, 2007; Ferguson, 2007) today's young people will form a critical part of the future skilled labour force. Recent research (Ferguson, 2007; Saulwick & Muller, 2006) indicates that young people want to be part of the labour market, and to engage in meaningful work. Some young people feel positive and hopeful with regard to work and feel that the ability to find work, and prosper if they are diligent, is a given (Saulwick and Muller, 2006). Others, early school leavers or those who live in rural areas or are unemployed, experience significant barriers to their preparation for and participation in the world of work.

## **The Changing Nature of the Contemporary Australian Labour Market**

Over the last decade, Australia has enjoyed relative economic prosperity. On average, the percentage of overall employed persons has increased by almost two percent per year and labour force participation has climbed steadily, reaching 65.1 percent in August 2006, increasing from 63.9 percent in 1996. (DVC, 2006). The OECD Economic Survey of Australia (2006) describes Australia as the "lucky country" not only because of the resources boom but because the country has "made its own luck" through its macroeconomic framework and labour market reforms. However, inside this general prosperity, the labour market picture is complex. The OECD report identifies future challenges in relation to fiscal policy, boosting productivity growth and raising labour market flexibility.

Despite the relative strength of the economy and low levels of unemployment enjoyed over the last decade, this period has also been characterised by profound changes to industry structure, nature of work and of the composition and skill needs of Australia's workforce. Issues like the image and attractiveness of specific industry sectors, the lack of career structure and occupational wastage (for example a mechanic who becomes a truck driver for higher pay), seasonality and security of work have been thrown into focus.

Since the 1980s there has been a decrease in the contribution to Gross Domestic Product (GDP) of goods producing industries and a rise in the contribution of service industries, a trend which has continued to the present day (ABS Year Book, 2007). Over the same period, Australia has experienced growth in professional jobs but negligible growth in manual jobs (Keating, 2006). However all occupations increasingly require employees to have different, and for almost all occupational roles, a more sophisticated and comprehensive set of skills (DEST, 2002).

Nationally, employment has declined in primary industries, the utilities sector, (electricity, gas and water supply) and the communications industry. (Victoria's Workforce Participation Taskforce, 2005; DOTARS & BTRE, 2003). In contrast, employment has grown in technology and knowledge intensive industries, including education, health and community services, finance and insurance, communication services business services, services to mining and various high technology manufacturing industries (DOTARS & BTRE, 2003). Such industries are important in their association higher wages, availability of career paths, and greater workplace flexibility.

These changes in turn, have manifested skill shortages across many occupations, as well as mismatches between the skill sets of existing workers and the emerging skill requirements of the current and future workforce (DEST 2002; AIG, 2004; The Allen Consulting Group, 2006).

Higher need training areas in automotive, building and construction, business services, metals and engineering transport and storage and wholesale, retail and personal services have been identified by the State Government in response to skill shortages and greater industry training need (OTTE, 2007). Regionally, skill shortages in the areas of manufacturing, ICT, building and construction, hospitality, automotive, health and community service industries were identified by the Area Consultative Committee (then JobsEast) in 2001 and more recently by the Outer Eastern Local Learning and Employment Network which has also included primary industries and water (including horticulture, orchard and berry industries) and tourism and hospitality (an area highlighted for decreased training by the State Government).

Whilst the strength of the economy and low rates of unemployment have resulted in skill shortages, additional reasons include: the growth of new industries with few ready-skilled tradespeople available; relocation of new industries into different regions with a different skills base; reduced interest in particular industries among potential job seekers; location of industry, or project-based work, in rural or regional areas with a small skills base; technology changes within an industry, especially production, resulting in new methods and therefore new skills needs; and changes in qualification requirements (for example, a Year 12 mathematics requirement for some trades). That being said, it should be noted that employers generally value qualifications less than educational stakeholders, distinguishing between formal qualifications and relevant experience and competence (Selby Smith & Ridout, 2007).

The occupational structure in many industries has been affected by continuing increases in part-time and casual work. Between 2001 and 2005 part time employment more than doubled relative to full time employment with around 29 percent of the overall workforce employed part time by 2005 (Abhayaratna & Lattimore, 2006). Predictions from the Productivity Commission further indicate that over the period 2005-2025 overall employment is projected to increase by 23.8% while total hours worked is projected to increase by only 15.8% (Productivity Commission, 2005, cited in Victoria's Workforce Participation Taskforce, 2005).

Although the tendency to engage in part-time work has increased in general, certain employee groups are more likely to work on a less than full time basis. A far greater percentage of females compared males are currently engaged in part-time work (In 2005, 46.3% versus 15.2%) although there is some indication that that prime-age females (25-44 years) who are entering the workforce are working full-time rather than part-time. (Victoria's Workforce Participation Taskforce, 2005). Younger people and older workers also contribute substantially to the part-time workforce.

Government has increasingly focussed on Vocational Education and Training (VET) for young people in order to meet skill shortages but there is evidence that shortages in health, engineering and accounting are currently being filled by skilled migration or international student graduates. Birrell and Rapson (2006) further argue that the most rapid expansion of occupations in Australia is in the managerial, professional and associate professional areas which require Higher Education rather than VET qualifications

Another looming issue in the labour market relates to men not in the workforce. Currently 30% of men are classified as economically inactive which means that they are out of the workforce and not seeking employment. Whilst ageing of the population is seen as one reason for the climbing rate of male inactivity, there is a

suggestion that there will be some males who will be economically inactive for their lifetime. The report, *Men not in Work* (Lattimore, 2007), suggests Generation Z men will work longer but a significant group will have only sporadic attachment to the labour force.

Almost all of the decline in workforce participation for males aged 35-50+ has been accounted for by those men who have no post-school qualifications (Keating, 2006). Rapid changes in technology have had a significant impact on many industries which causes demand for new skills and in some cases makes old skills obsolete (DEST, 2002). Occupations requiring higher skills will represent nearly 44% of employment by 2013, up from 36% in 1996.

## **Government Initiatives**

As Australia prepares for a federal election, it is clear that skills are a focus for both sides of the political spectrum. Skills are addressed by both the Government and the Opposition. For both there is a focus on the development of human capital and productivity. In a speech made to Parliament on October 12, 2006, the Prime Minister emphasised the importance of workplace reforms to workforce participation and productivity. He introduced the *Skills for the Future* program, new investments totalling \$837 million to help upgrade adult skills education, improve vocational training and education (in addition to the creation of Australian Technical Colleges), business skills vouchers for apprentices and work skills vouchers to be used in TAFEs and private and community colleges for early school leavers and those without educational qualifications. The program also includes 500 extra Commonwealth supported engineering places at University from 2008 (Howard, 2006).

In January 2007, the Australian Labour Party released a New Directions paper on the critical link between long term prosperity, productivity growth and human capital investment. The Opposition contends that the Australian economy has been insulated by the resources boom and that Australia has made a declining investment in education. Thus the paper proposes that productivity growth will only be achieved through large scale investment in the development of human capital – in early childhood development, schools, skills and vocational education, and university education. It is argued that this investment will also add to the social capital and have flow on benefits for health and well being of Australians (Rudd & Smith, 2007).

Government policies implemented at a national, state and local level continue to focus on and attempt to address Australia's current skill needs in a variety of ways. Recent areas of major reform relate to skill formation through education and training, meeting immediate skill requirements through skilled migration, and welfare reform (Welfare to Work). In addition a priority is being placed on making information about the education and training system more accessible to employers, students, parents and career advisors.

## **The Picture for Regional Areas**

Despite the pervasiveness of skills shortages generally, it is important to note that skills needs vary across industries and equally across different areas of Victoria. The impact of skills shortages in regional and non-metropolitan areas has been significant and the body of recent research concerned with the skill requirements and deficits in regional areas attests to this (DVC, 2006; DOTARS & BTRE 2003 & 2006).

The prosperity of regions across Australia varies markedly (BTRE, 2003) and the factors which contribute to the economic health of these areas are complex. Overall, regional Victoria has experienced substantial employment growth in recent years. Between October 1999 and June 2006 an additional 19 percent of the population in

regional Victoria gained employment (DVC, 2006) making the level of overall unemployment in some regions lower than in metropolitan Melbourne. However, as indicated in the Victorian Regional Skills Shortage Survey (DVC, 2006) recruitment difficulties were experienced significantly in many industries. The DVC report indicated that, across all industries in regional Victoria, an average of seventy-seven percent of employers attempted to recruit in the last 12 months and that twelve percent of their vacancies remained unfilled. Additionally, the report showed that across all industries, 19 percent of employers had difficulty retaining workers. This information points to the fact that skill deficits in regional areas cannot be entirely accounted for by an actual lack of appropriately skilled employees (DVC, 2006). In addition to actual shortages, employers in regional areas often experience recruitment difficulties where, appropriately qualified individuals may exist in the labour market but are, for a variety of reasons not made available within a specific region.

## **Successful Regions**

### **The importance of local skills, local jobs and local communities.**

An information paper produced by the Bureau of Transport and Regional Economics (2003) indicated that regions with highly diverse economies were exhibited more stable economies and were less subject to volatile growth patterns. Other factors which influenced regional economic growth were the availability of facilities, remoteness, leadership as well as resource and the regional skill base. Regionally success breeds success and thus regions where the 'requisite skill an knowledge capacity are in place are more likely to attract viable and dynamic industries (NIEIR, 2004 cited in Langworthy and Brunt, 2005).

The creation of local jobs and the retention of the local working population has significant advantages for local communities and regional economies including: fostering an increasing sense of community; decreasing the costs of commuting and the resulting impacts of travel on the environment; maximising time spent with family and leisure time.

## Skills and Knowledge Intensity

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### Introduction

This section defines and applies the methodology used to examine knowledge and skill intensity of jobs in the region, identifying whether and to what extent the knowledge and skill content of jobs is increasing, in which part of the employment distribution these changes are occurring, and whether this increase is more prominent in male or female full time or part time employment types.

### The O\*NET A suggested approach to defining and measuring skill

One way of achieving a good understanding of the skill needs of a changing economy and labour market is through the O\*NET. Developed by a consortium led by the US Department of Labor, its first version was launched in 1998 and was designed to replace the Dictionary of Occupational Titles. It is considered to be the most comprehensive standard source of occupational information in the US. An advantage of the O\*NET is that it offers statistical information that can be applied to the Australian context to analyse labour market change.<sup>1</sup> It provides very detailed information on about 1,120 occupations and is continually updated to reflect the dynamic and ever-changing nature of employment. The framework that organises the O\*NET data is called the Content Model (Peterson et al., 1999, p. 25). This classifies data into six domains that provide detailed information related to the attributes of occupations and to the characteristics required of people who actually do the job. It includes the specific domains and elements in the O\*NET database that might be used to describe jobs. These components are based on psychological and job analysis research carried out by the Department of Labor and contain over 300 job related descriptors.

### O\*NET Skills

The approach taken by the O\*NET to define skill is that of Mumford et al. (1999). They define skill as a set of general procedures that underlie the effective acquisition and application of knowledge in different areas of endeavour (Ch. 3, p. 4). Mumford et al. provide a taxonomy of 46 O\*NET skill descriptors encompassing two broad categories. The first are ten basic skills, and the second are 36 cross-functional skills. The ten *basic* skills are divided into two groups: content and process skills. The 36 *cross-functional* skills are further divided into five categories, namely social, problem solving, technological, systems, and resource management.

### O\*NET Knowledge

The O\*NET defines knowledge as a collection of discrete but related facts, information and principles about a particular area of work. Knowledge is acquired through formal education and/or training or can be built upon a collection of a variety of experiences. In the O\*NET taxonomy, the 33 knowledges can be regarded as belonging to general categories and are regarded as being essential elements in the successful performance of occupational tasks. Others are narrower and can only be applied to a fine range of occupational groups, while others can be seen as being occupation specific.

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<sup>1</sup> For example, Esposto (2005) used the O\*NET to analyse labour market change, while Sheehan and Esposto (2001) used it to study the characteristics of Australian jobs.

## Employment Growth

Table 1: Employment change by region, 1991-2006

Region	Persons employed		Change 1991-2006
	1991	2006	
Melbourne (SD)	1,252,430	1,620,539	29.4
Knox (C)	54,683	67,829	24.0
Maroondah (C)	38,427	49,991	30.1
Shire of Yarra Ranges (S)	53,798	68,942	28.1
	<b>Men Full-time</b>		
Melbourne (SD)	597,370	682,211	14.2
Knox (C)	27,096	30,901	14.0
Maroondah (C)	18,441	21,243	15.2
Shire of Yarra Ranges (S)	26,546	29,388	10.7
	<b>Men Part-time</b>		
Melbourne (SD)	107,359	186,254	73.5
Knox (C)	4,101	6,344	54.7
Maroondah (C)	3,106	5,539	78.3
Shire of Yarra Ranges (S)	4,457	7,797	74.9
	<b>Women Full-time</b>		
Melbourne (SD)	319,414	387,135	21.2
Knox (C)	12,733	15,062	18.3
Maroondah (C)	9,224	10,891	18.1
Shire of Yarra Ranges (S)	11,651	13,676	17.4
	<b>Women Part-time</b>		
Melbourne (SD)	319,414	364,938	14.3
Knox (C)	10,754	15,522	44.3
Maroondah (C)	7,657	12,319	60.9
Shire of Yarra Ranges (S)	11,145	18,081	62.2

Source: ABS Census, 1991, 1996 and 2001 and author's calculations. Not stated and inadequately described not included in calculations.

For both the Melbourne (SD) and OEM part time work is taking an increasingly prominent share of total employment. Inspection of Table 1 above indicates that the growth in part-time employment has clearly outstripped the growth in full-time employment for men and for Knox Maroondah and Yarra Ranges. For women in, the Melbourne (SD) full time employment grew more than part time employment in contrast to the very strong growth in women's part time employment in OEM. In Melbourne (SD) total employment grew by 29.4 percent between 1991 and 2006, however, full-time for work grew by a smaller percentage when compared to total employment growth. When compared to full-time work, part-time work for men grew more than five fold.

## The Skill and Knowledge Intensity of Occupations: Melbourne SD and the Outer Eastern Region

Worker requirements of occupations are determined by analysing the overall skill and knowledge intensity change in occupations. Table 2 shows changes in the skill intensity of occupations and growth in employment for the period 1991 to 2006. It is important to note that for every year, for the total employed population and for men and women, the skill intensity index is higher for the Melbourne (SD) compared to the OEM. This indicates that the skill occupations in the Melbourne (SD) area require higher skill levels compared to people living in the OEM. The skill intensity results show that for total employment job creation for residents in the Melbourne (SD) area high skilled occupations are favoured.

**Table 2: Skill intensity scores and indices change for total employment, and male and female full time employment, 1991-2006<sup>2</sup>**

Year	Melbourne (SD)	OEM	Melbourne (SD)	OEM	Melbourne (SD)	OEM
	<b>Total employment</b>		<b>Male full time</b>		<b>Female full time</b>	
1991	6.52	6.43	7.30	7.28	6.23	6.04
1996	6.65	6.40	7.40	7.21	6.74	6.36
2001	6.77	6.38	7.52	7.15	7.08	6.55
2006	6.86	6.36	7.61	7.11	7.43	6.77
<b>Skill Intensity Index</b>						
1991	100.00	100.00	100.00	100.00	100.00	100.00
1996	102.04	99.58	101.46	99.02	108.19	105.40
2001	103.88	99.19	103.09	98.22	113.62	108.49
2006	105.24	99.00	104.26	97.57	119.21	112.13

Source: ABS Census, 1991, 1996 and 2001. Skill intensity index 1991 =100. Author's calculations. Not stated and inadequately described not included in calculations.

Table 3 shows that these trends are more pronounced with disaggregation of OEM into the Cities of Knox and Maroondah and the Shire of Yarra Ranges, reflecting the fact that people who live in OEM tend to work in occupations that are less skill intensive than in the Melbourne (SD). The indices and changes reported in Table 2 show that the Shire of the Yarra Ranges experienced the sharpest decline in terms of total skill intensity of residents' jobs. In contrast, the growth in part time employment in the Melbourne (SD) favour higher skill levels compared to those of the OEM.

<sup>2</sup> Estimates of employment growth for 2006 are obtained using a linear trend method matching the 1991, 1996, and 2001 census employment data to 2006, using the least squares methodology.

**Table 3: Total skill intensity levels for full time employment for men and women, 1991-2006**

Year	Knox	Maroon -dah	Yarra Ranges	Knox	Maroon -dah	Yarra Ranges	Knox	Maroon -dah	Yarra Ranges
	Total employment			Male full time employment			Female full time employment		
1991	6.39	6.58	6.37	7.32	7.51	7.09	5.90	6.11	6.14
1996	6.37	6.56	6.31	7.27	7.43	6.99	6.22	6.48	6.43
2001	6.37	6.60	6.22	7.22	7.44	6.88	6.41	6.78	6.53
2006	6.37	6.60	6.18	7.19	7.41	6.80	6.63	7.07	6.73
Skill intensity scores									
1991	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1996	99.78	99.79	99.17	99.37	98.93	98.58	105.40	106.08	104.86
2001	99.80	100.30	97.74	98.62	99.05	97.06	108.72	111.01	106.38
2006	99.79	100.39	97.10	98.21	98.65	95.86	112.37	115.67	109.65
<b>Change</b>	<b>-0.21</b>	<b>0.39</b>	<b>-2.90</b>	<b>-1.79</b>	<b>-1.35</b>	<b>-4.14</b>	<b>12.37</b>	<b>15.67</b>	<b>9.65</b>

Source: ABS Census, 1991, 1996 and 2001. Skill intensity index 1991 =100. Author's calculations. Not stated and inadequately described not included in calculations.

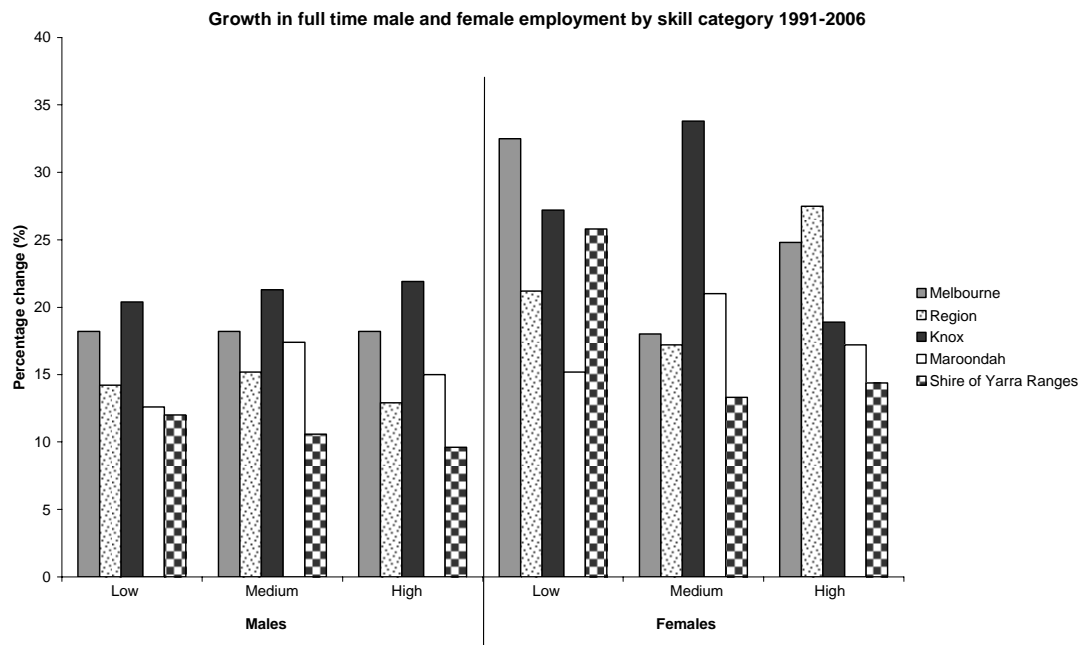
Skill intensity of occupations in the Shire of Yarra Ranges declined the most, followed by Knox and Maroondah. This decline in the skill intensity suggests a decline in much of the highly skilled employment created in the outer East and that the jobs created for regional men require lower levels of skill intensity.

In contrast growth in full time employment for women is skill intensive. For women living in the OEM, the increase in occupations with the highest skill intensity was most marked in Knox followed by Maroondah and finally the Shire of Yarra Ranges. This is perhaps due to a shift from the manufacturing sector towards the services sector. It can be argued that transition from a manufacturing based regional economy towards a services sector economy potentially favours women.

### **Changes to the Skill Intensity of Job Types for the Melbourne (SD) and the Outer Eastern Melbourne**

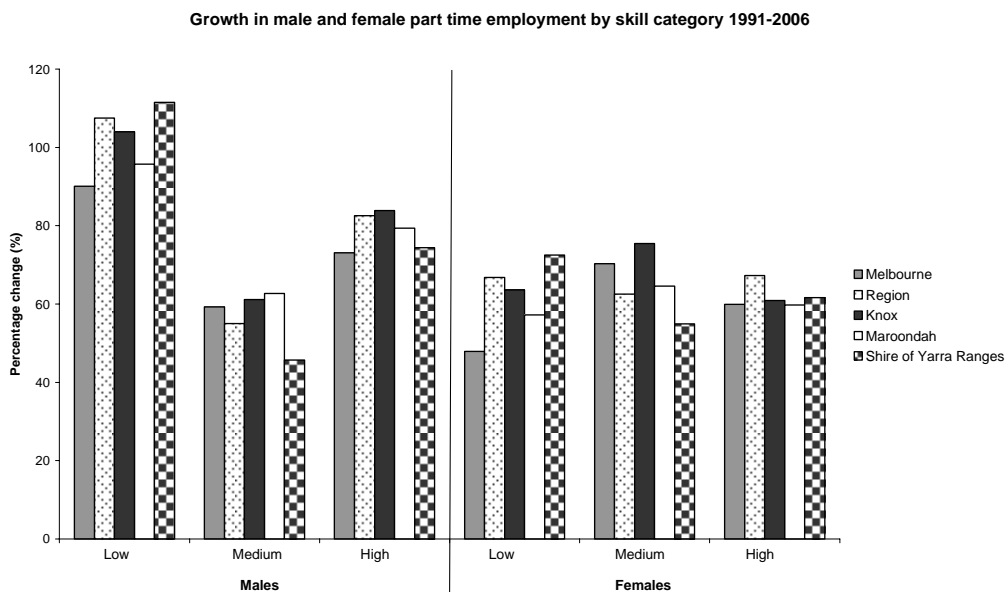
Changes in the skill content of job, the employment distribution of these jobs for men and women in Melbourne SD and OEM is explored dividing skill intensity into low, medium and high categories. The employment change for full time employment for the Melbourne (SD) and OEM is calculated by aggregating the lowest three deciles thus creating the 'low skill intensity' decile category. This same exercise is done for the middle of the distribution and the middle skill intensity category is created by aggregating deciles 4, 5, 6 and 7. Finally, the high skill intensity decile category is created by aggregating deciles 8, 9 and 10. Changes for the Melbourne (SD) and OEM of Melbourne in terms of male and female full time work are detailed in Figures 1 and 2 below.

**Figure 1: Growth in male and female full time employment by skill category, 1991-2006**



Source: Author calculations.

**Figure 2: Growth in male and female part time employment by skill category, 1991-2006**

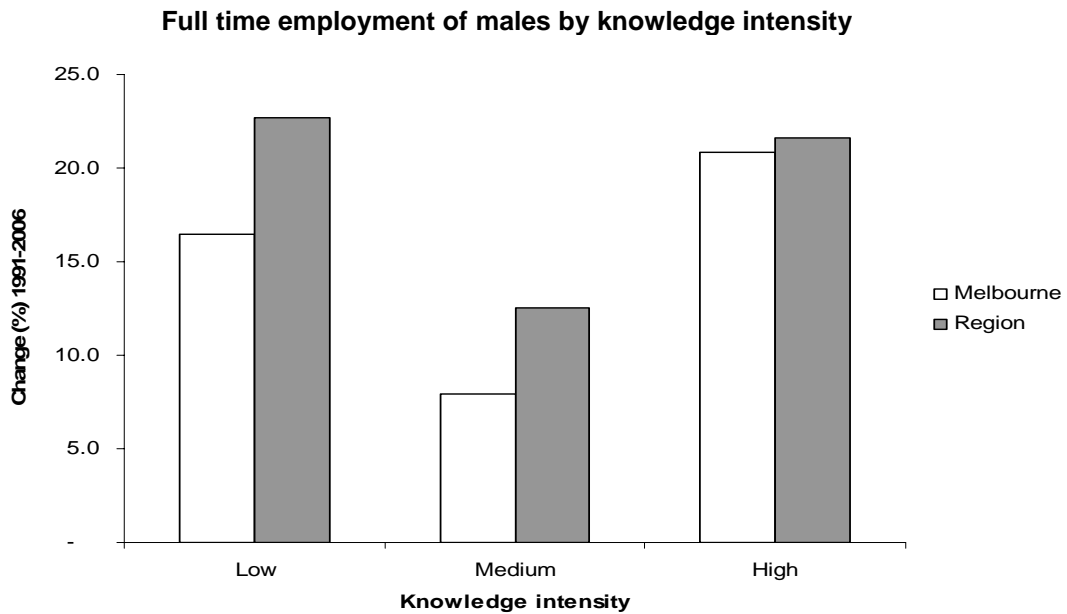


Source: Author calculations.

Growth in full time and part time employment was strong in all geographic areas for men and women. For the Cities of Knox and Maroondah, skill intensive employment growth was stronger in the medium skill intensive occupations than the low and high. In contrast, the Shire of the Yarra Ranges experienced stronger employment growth in the low skill intensive occupations, followed by medium skill intensive occupations. Thus employment growth in the Shire of the Yarra Ranges is concentrated in the low skill intensive work, whereas for the other two LGAs the growth is concentrated in middle and the top end of the skill intensive distribution. Figure 3 records the growth

in the knowledge intensity of work for men in both regions. For men in full time work, the knowledge intensity increased the most at the extremities of the distribution, with stronger growth overall recorded for Melbourne (SD).

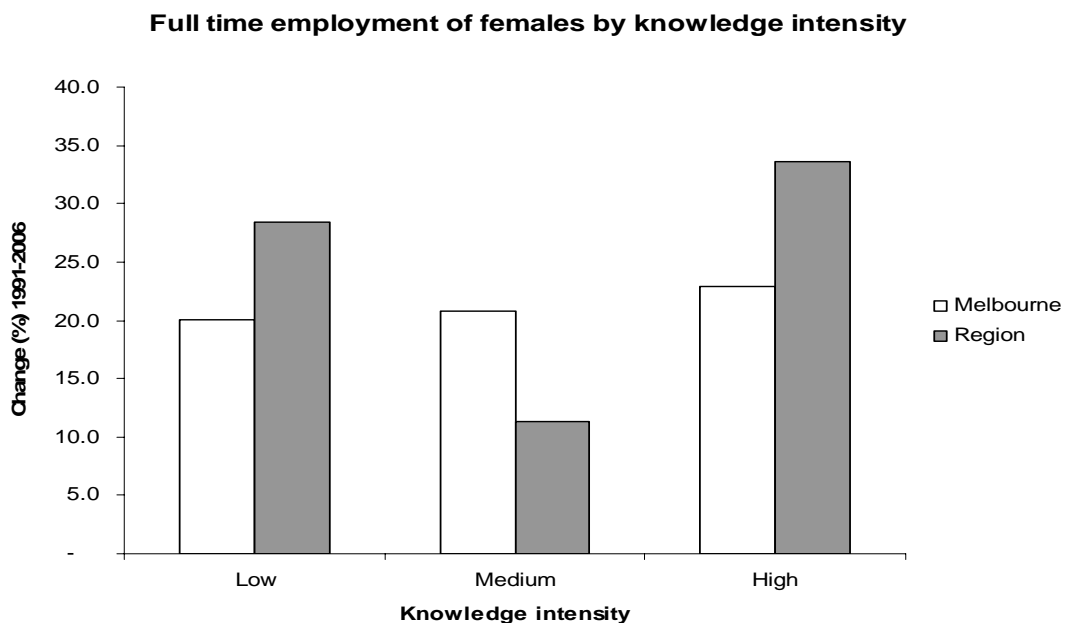
**Figure 3: Growth in full time male employment by knowledge category, 1991-2006**



Source: Author calculations.

Women experienced a similar growth across the three categories of knowledge intensity. In contrast, for Melbourne SD, growth was concentrated in the high and low knowledge categories.

**Figure 4: Growth in full time female employment by knowledge category, 1991-2006**



Source: Author calculations.

### **The Knowledge Intensity of full time employment: Knox, Maroondah and the Shire of the Yarra Ranges**

All three LGAs experienced growth in each knowledge category for men and women. The trend in knowledge intensity growth was similar to that seen in skill intensity employment growth. For men the growth in employment was stronger for low knowledge intensive work, whereas for women the growth was concentrated in high knowledge intensive category. For women, the City of Maroondah growth was stronger in medium knowledge intensive jobs, whereas for Knox and the Shire of the Yarra Ranges growth was concentrated in the high and low knowledge intensive occupations.

Growth in the knowledge intensity of part time employment is quite strong for the Melbourne (SD) and OEM, replicating the trends seen in the skill intensity of work. For men and women in the Melbourne (SD) the growth in knowledge intensive work is more robust at the extremities of the distribution. For the region in aggregate this trend is replicated for men, but not for women where the larger growth is seen in medium knowledge intensive work creation.

### **The Skill Requirements of Occupations: Melbourne (SD) and Outer Eastern Melbourne**

The themes emerging from the decile analysis of skill and knowledge intensities can be looked at from a different perspective. An alternative approach is to examine changes in specific skill and knowledge areas of occupations, which provides valuable information about changes in the occupational requirement of workers.

### **The skill requirement trends for full time employment: Melbourne (SD) and the Outer Eastern Melbourne**

Figures 5 and 6 detail the changes to the seven skill areas for men and women in full time work for the Melbourne (SD) and the OEM. The changes are quite dramatic for men, with increases in all areas in the Melbourne (SD) and declines in all areas with the exception of technical skills in the OEM. For women all skill areas increased, but the magnitude of the changes was larger in the Melbourne (SD) than in OEM.

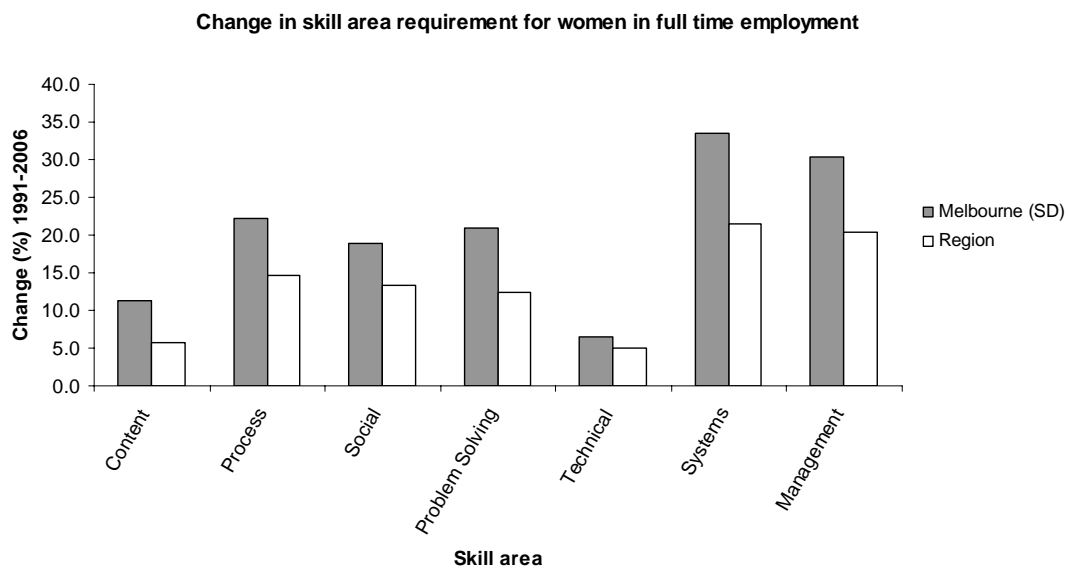
The demand for technical skills grew for both men and women employed in the Melbourne (SD) and the OEM. This skill area is concerned with the developed capacities used to design, set up, operate and correct malfunctions involving the use of machinery and technological systems. It includes technology design, equipment selection and installation, programming of computers for different purposes, testing of equipment, and product and equipment maintenance. The slow growth may reflect a long-term period of structural change from a manufacturing-based economy to the services sector. The fact that this skill area was the only one to grow in terms of demand indicates that it is of significance for men in the OEM and reflects the relevance of manufacturing employment for men in the OEM.

**Figure 5: Change in skill area requirement for men in full time employment, Melbourne and Region, 1991-2006.**



Source: Author calculations.

**Figure 6: Change in skill area requirement for women in full time employment, Melbourne (SD) and Region, 1991-2006.**



Source: Author calculations.

### The skill requirement trends for full time employment: Knox, Maroondah and the Shire of Yarra Ranges

Figures 7 and 8 provide a summary of the changes of skill area requirements for full time work for men and women for Knox, Maroondah and the Shire of the Yarra Ranges. For men, increases can be seen in the areas of social, management and technical skills in the Cities of Maroondah and Knox. The areas of social and management skills declined significantly in Yarra Ranges, creating an fall for the whole of the OEM when the data was aggregated. The only area to experience an increase in skill intensity in the Shire of the Yarra Ranges was technical..

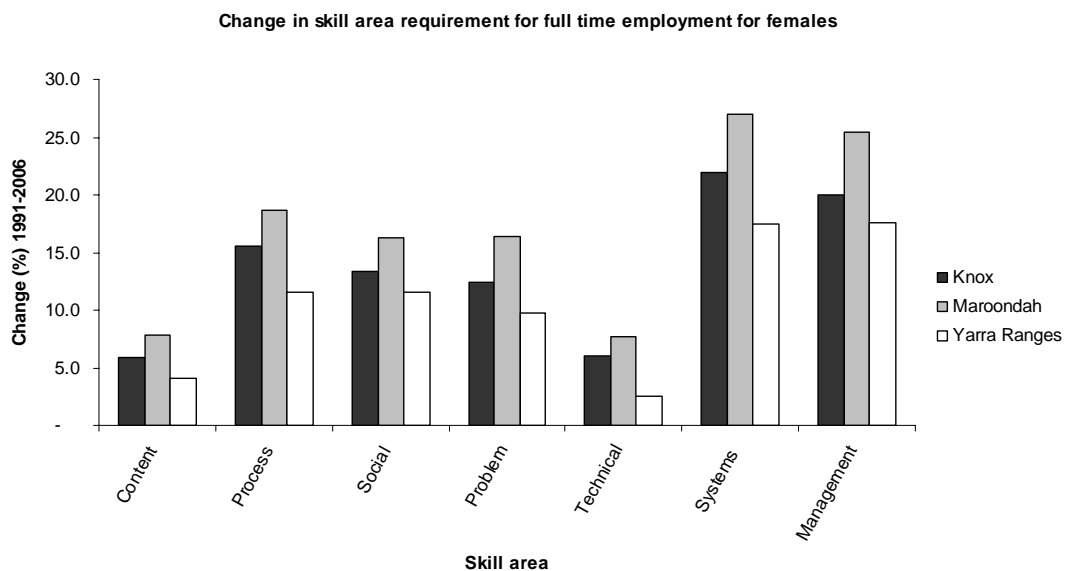
**Figure 7: Change in skill area requirement for full time employment for men, Knox, Maroondah and Shire of Yarra Ranges, 1991- 2006.**



Source: Author calculations.

For women, the picture is very positive, showing increases in the skill intensity of work for all areas in all three LGAs. The City of Maroondah experienced the sharpest increases in skill intensity, followed by Knox and the Shire of the Yarra Ranges.

**Figure 8: Change in skill area requirement for full time employment for women, Knox, Maroondah and Shire of Yarra Ranges, 1991-2006.**



Source: Author calculations.

Changes in part time employment, which differ from the trends in full time employment, are detailed in Table 4 below.

**Table 4: Skill area requirement changes for part time employment, Melbourne (SD) and OEM, 1991-2006.**

Skill area	Men		Women	
	Melbourne (SD)	Region	Melbourne (SD)	Region
Content Skills	3.3	2.0	4.4	1.3
Process Skills	-0.3	-1.5	4.1	-1.0
Social Skills	5.3	5.1	3.5	-1.1
Complex Problem Solving Skills	0.8	-0.6	5.6	0.9
Technical Skills	-7.9	-8.7	-5.9	-5.8
Systems Skills	1.0	-0.7	8.0	0.9
Resource Management Skills	-1.5	-0.8	2.9	-2.3

Source: Author's calculations.

For women in part time employment, the pattern of change was similar in Maroondah and the Shire of Yarra Ranges. Maroondah experienced falls in five out of seven skill areas, the Shire in six of the seven, while Knox experienced falls in technical and management skills only. The data show that part time employment requires content skills for both men and women.

### **The Knowledge Requirements of Occupations: Melbourne (SD) and the Outer Eastern Melbourne**

In this section, the analysis focuses on changes to ten knowledge areas for both regions. Table 4 shows details of the ten knowledge areas for men and women in the Melbourne (SD) and OEM. The changes occurring in the knowledge areas are as dramatic for men as the changes shown in skills, with increases in most areas in the Melbourne (SD) and declines in eight out of the areas for the OEM. For women all but one area fell in the Melbourne (SD), whereas five out of the ten experienced decline in the region.

These trends show that overall the demand for knowledge intensive work is increasing at a much faster rate for women than for men. These trends are similar to those found in the skill areas, indicating that the performance of women in full time work in the OEM is much better than that of men in full time work.

**Table 5: Knowledge area requirement changes for full time employment, Melbourne (SD) and OEM, 1991-2006.**

Skill area	Men		Women	
	Melbourne (SD)	Region	Melbourne (SD)	Region
Business and Management	5.3	-2.7	10.8	4.5
Manufacturing	3.9	9.0	18.7	20.9
Engineering	-3.1	-1.0	1.5	-4.0
Maths and Science	0.2	-4.8	12.0	8.7
Health	0.7	-4.6	4.7	14.9
Education	7.0	-4.6	25.9	19.6
Arts	1.6	-7.2	5.8	-0.9
Law and Public Safety	-2.5	-8.4	12.0	5.2
Communications	5.8	-2.1	4.8	-1.5
Transportation	7.3	11.5	-3.0	-4.7

Source: Author's calculations.

The trends for part time employment creation in terms of knowledge areas contrast those for men in the region in full time employment and are relatively similar for men and women in the Melbourne (SD) and women in the OEM. Men in part time work in the OEM experienced increases in the knowledge requirements of employment in the following areas: business and management, manufacturing, health services, education and training, the arts, law and public safety, communications and transportation. These changes reflect the importance of part time work creation in the region. Men in the Melbourne (SD) experience the same trends, with both regions experiencing strong increases in communication knowledge.

Women in the Melbourne (SD) experienced declines in the two knowledge intensity categories of engineering and transportation, while women in the OEM experienced declines in five knowledge areas, the largest being in engineering and technology.

**Table 6: Knowledge area requirement changes for part time employment, Melbourne (SD) and OEM, 1991-2006.**

Skill area	Men		Women	
	Melbourne (SD)	Region	Melbourne (SD)	Region
Business and Management	7.9	9.5	2.8	0.2
Manufacturing	1.1	6.3	6.1	11.0
Engineering	-13.2	-13.6	-3.3	-4.1
Maths and Science	-0.1	-0.1	1.6	-1.1
Health	9.6	5.5	1.0	-2.6
Education	6.0	6.5	7.5	1.3
Arts	4.8	3.4	2.4	-1.5
Law and Public Safety	2.6	2.9	3.5	1.5
Communications	15.2	14.5	7.5	3.5
Transportation	2.5	8.4	-5.1	-7.2

Source: Author's calculations.

The trends found in the analysis of knowledge intensity requirement for full time employment indicate similar trends to those found in the skill areas. Women in the Outer East are performing much better in full time employment creation than their male counterparts in the region. The demand for occupational knowledge for men rose in part time work, but fell in full time work, indicating that the demand for knowledge intensive work for men living in the area is not as robust as that required of women. It can be hypothesized that knowledge intensive work is favouring women perhaps indicating that women living in the region are far better equipped to cope with the demands of the modern workplace than men.

## Summary

The period from 1991 to 2006 demonstrates strong employment growth in both OEM and Melbourne SD. In line with the findings of research into the changing nature of work, part time work is now taking a significantly greater share of employment growth. During this time women's participation in the workforce has also grown and thus it is not surprising to find that the growth of employment for women outstripped the growth in employment for men in both regions.

Despite these similarities, there are striking differences between employment patterns of residents in Melbourne and the Outer East. OEM differs significantly in terms of the skill and knowledge intensity of resident's occupations and within OEM there are differences between the three municipalities of Knox, Maroondah and Yarra Ranges.

Skill intensity declined for male full time and part time occupations in OEM and particularly in the Shire of Yarra Ranges. However, Outer Eastern women are faring better than men; the skill intensity of the full time jobs of women has grown with the strongest growth experienced in Knox followed by Maroondah and then Yarra Ranges. The skill intensity of women's part time work has increased in Knox but declined in Maroondah and more strongly in Yarra Ranges.

However, skill intensity growth for Outer Eastern men in full time employment was weaker in than Melbourne in all categories. Furthermore trends for Melbourne show an even growth across the three levels of skill intensity whilst OEM trends show slightly higher growth in the medium and low skill categories.

The Shire of the Yarra Ranges experienced the lowest growth of the three LGAs in both the medium and high skill intensity categories, and the second highest growth in full time work for women in the low skill category. Over the 15 year period, these results can be interpreted as a shift in resident job creation from high and medium skilled occupations towards lower skilled occupations and men are increasingly being employed in occupations requiring lower skill intensive work. The City of Knox experienced the strongest growth by skill intensity in all categories for both men and women, with the strongest growth seen in the male high skill category,

An examination of the seven aggregated O\*Net skill categories again shows that the experience for women contrasts to that of men. Although the growth is weaker than that experienced by residents of Melbourne, OEM women's occupations grew in intensity of content skills; process skills; social skills; resource management skills; problem solving skills; technical skills; systems skills and resource management skills.

For men however the skill intensity of jobs declined in all areas except technical skills. When the data is disaggregated into the three municipalities increases in the skill areas of social skill and management skills are seen alongside the already observed increases in technical skills.

Similar to Melbourne, the Outer East was more likely to experience growth in the low and high knowledge intensity categories than the medium category when the deciles are grouped. In Outer Eastern Melbourne knowledge intensity fell for men employed full time compared to a small rise in the knowledge intensity of men employed in Melbourne SD for the same period whilst it increased for women.

Inspection of the knowledge intensity indices for men in 2006, indicates that the jobs created for the men who work full time in the Shire of the Yarra Ranges require lower intensities of knowledge than those created for resident workers in Maroondah and Knox, but most concerning is the fact that the knowledge intensity of these occupations have declined at a faster rate.

When it comes to part time work, the knowledge intensity of women's employment declined in the OEM in contrast to the experience of Melbourne women employed part time. Both regions experienced a growth in the knowledge intensity of women's full time work. Men employed part time experienced a similar increase in the knowledge intensity of jobs as Melbourne residents.

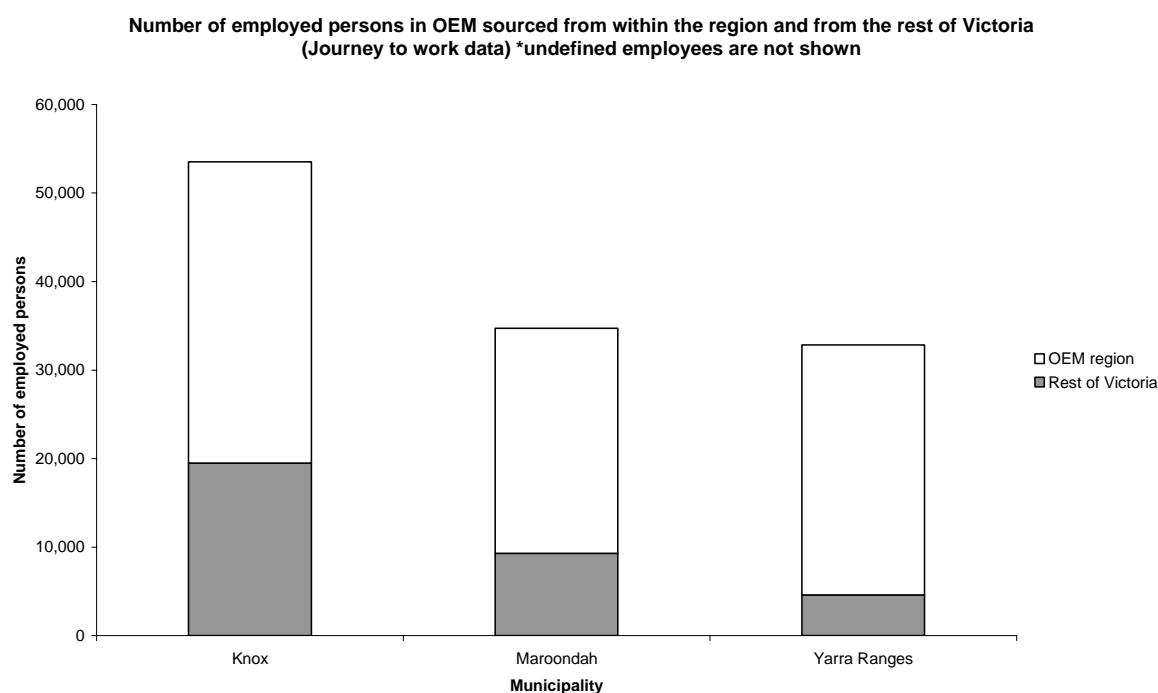
Overall, OEM experienced less growth in the knowledge and skill intensity of jobs, than that experienced for Melbourne. The performance of the OEM in terms of knowledge intensive work, is particularly concerning, not only because it declined, but because this trend contrasts to the experience of Melbourne (SD) and Australia. Of concern also is the decline in skill intensity of men's occupations and a trend in part time work which tends to favour lower skill and knowledge intensity in OEM again in contrast to Melbourne. These results may indicate some disadvantage in terms of job creation for residents in OEM.

## Journey to Work

### Origin of the workforce origin in Outer Eastern Melbourne

Outer Eastern Melbourne (OEM) has a combined workforce of 187,346 which represents 9.4% of the total Victorian workforce. The employment capacity of the region is 65%; that is, it can provide employment for 121,625 people from a pool of 187,346 resident workers. However, 27.5% (33,406) of regional jobs are performed by people who live outside the region. Taking this into account, 87,975 persons, or less than half (47.0%) of employed OEM residents work within the region, making OEM a significant exporter of employees. The graph below illustrates where workers originate from to populate jobs in OEM.

**Figure 9: Origin of workers for jobs in OEM**



Source: ABS JTW data, ABS Census and author calculations

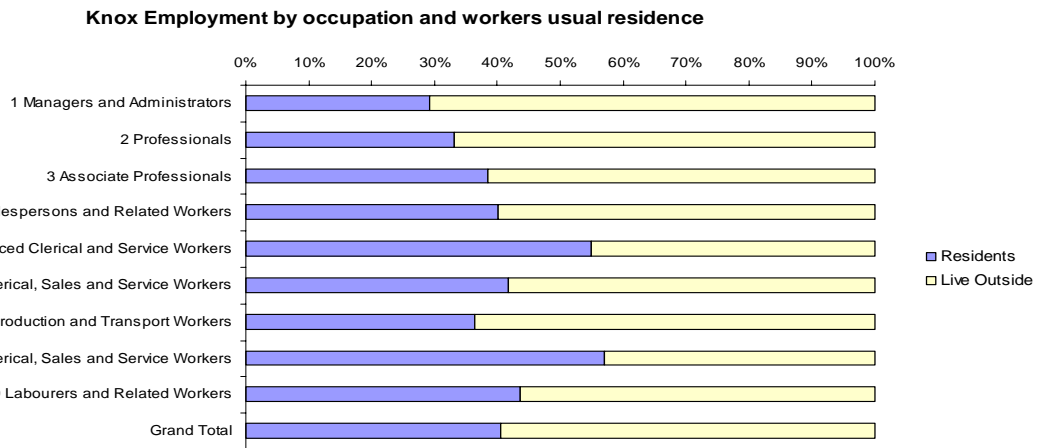
The highest proportion of employed OEM residents travelling outside the region for work is found in Knox, followed by Maroondah and the Shire of the Yarra Ranges:

- Of a total of 67,382 employed residents in the Shire of Yarra Ranges 56.9 percent (38,330) are employed within OEM. Of the total number of jobs (employment capacity) in the Shire of Yarra Ranges 70.6 percent of these (23,303) are performed by residents of the Shire.
- In Maroondah 43.8 percent (21,181) of employed Maroondah residents work within OEM. Of the total number of jobs (employment capacity) in Maroondah, 38.2 percent (13,320) of the total number of jobs are performed by Maroondah residents.
- The City of Knox has the lowest percentage of employed residents working within OEM (39.4%). Of the total jobs (employment capacity) in Knox, approximately 40.5 percent (21,701) of the total number of jobs are performed by Knox residents.

## Workforce movement and skill level

The figures below show employment by occupation and worker's residence for each of the three municipalities. In terms of worker's residential status and occupation, the differences between the Shire of Yarra Ranges and the Cities of Knox and Maroondah are quite striking. For each of the nine ASCO occupations in the Shire of the Yarra Ranges, the proportion of employment by occupation and worker's usual residence favoured residents who lived and worked within the Shire. For example, 75 percent of Managers who worked in the Shire lived in the Shire. This is in direct contrast to the Cities of Knox and Maroondah, where 71 and 68 percent of managers were non-residents of Knox and Maroondah, respectively. This trend was also reflected in all occupations with the exception of Advanced Clerical and Service Workers for the City of Maroondah and Advanced Clerical and Service Workers and Elementary Clerical, Sales and Service Workers for the City of Knox.

**Figure 10: Work destinations of employees by residential location for the City of Knox, 2001, by ASCO 2<sup>nd</sup> Edition occupational classification.**



Source: ABS JTW data, ABS Census and author calculations.

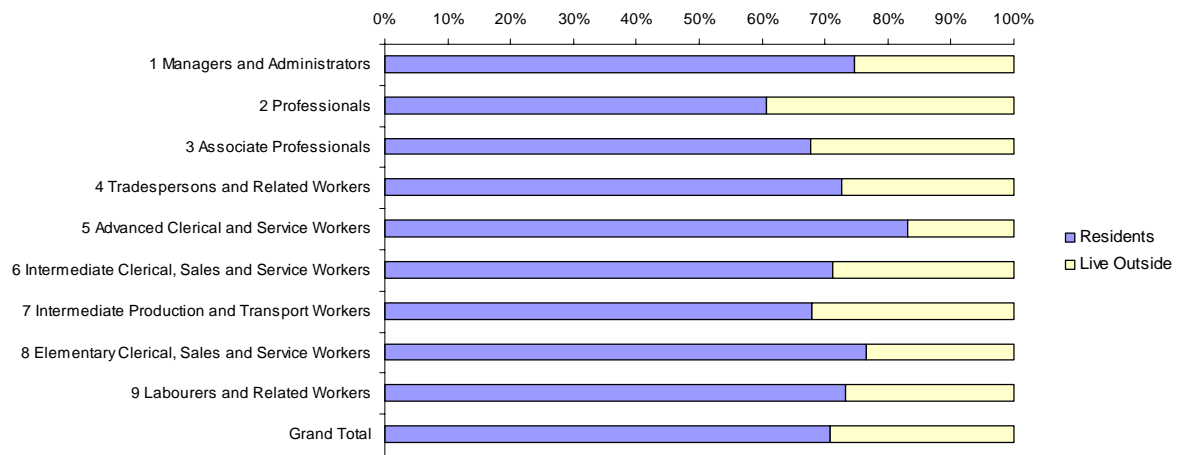
**Figure 11: Work destinations of employees by residential location for the City of Maroondah, 2001, by ASCO 2<sup>nd</sup> Edition occupational classification.**



Source: ABS JTW data, ABS Census and author calculations.

**Figure 12: Work destinations of employees by residential location for the Shire of the Yarra Ranges, 2001, by ASCO 2<sup>nd</sup> Edition occupational classification.**

**Yarra Ranges Employment by occupation and workers usual residence**

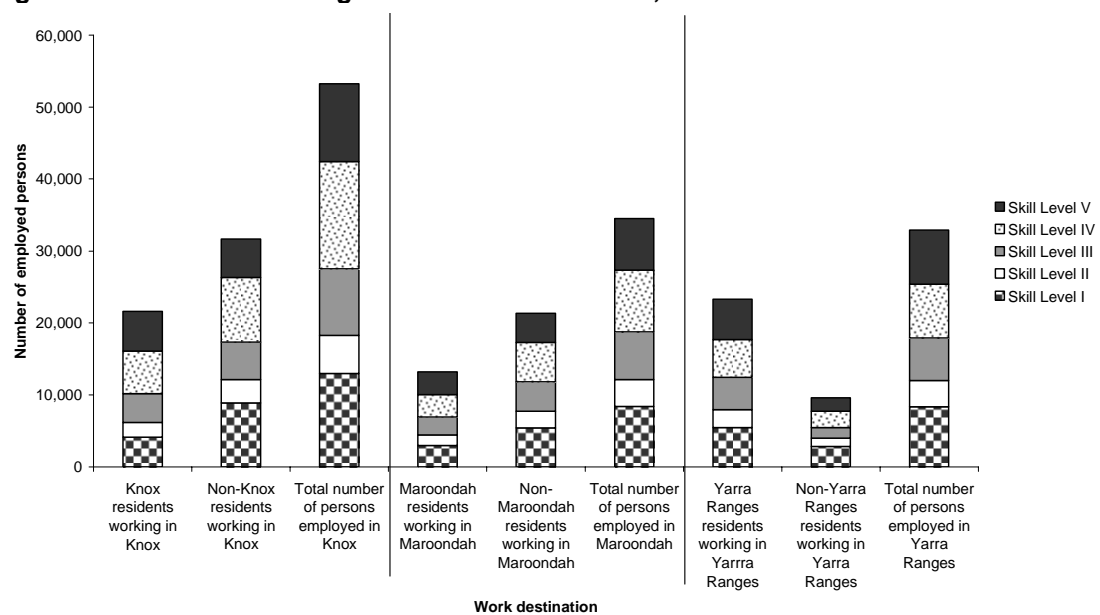


Source: ABS JTW data, ABS Census and author calculations.

### Skill level of the workforce

Complementing employment statistics with information on the skill level of the workforce assists understanding of the skill intensity of various industry sectors, local government areas and the region. The ASCO (2<sup>nd</sup> ed) classification includes both formal education and/or training as well as previous experience required for entry to an occupation. Skill Level I includes manager, administrators and professionals, Skill Level II includes associate professionals, Skill Level III tradespersons, advanced clerical and service workers, Level IV includes intermediate clerical, sales and service workers and intermediate production and transport workers, Level V includes elementary clerical, sales and service workers and labourers. The graph below shows the skill level and origin of the workforce in Knox, Maroondah and Yarra Ranges in more detail.

**Figure 13: Skill level and origin of Workforce in Knox, Maroondah and Yarra**

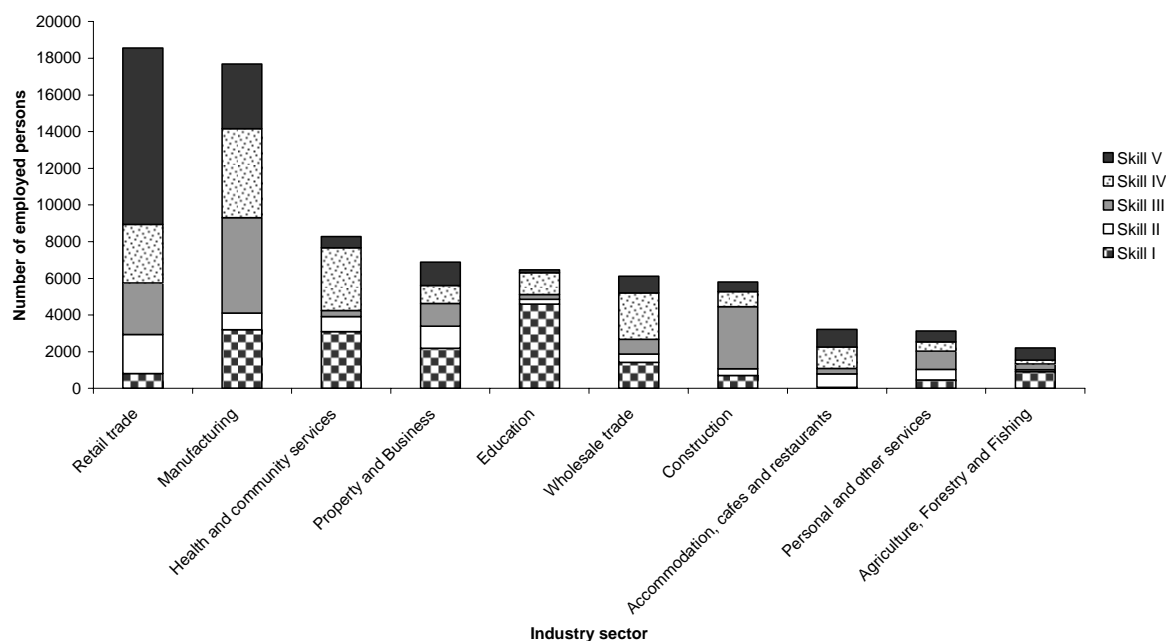


Source: ABS JTW data, ABS Census and author calculations

## Significant employment sectors in OEM

Significant regional sectors as a destination for employed persons in OEM are: Retail Trade (18,559), Manufacturing (17,680), Health and Community Services (8,275), Property and Business (6,886), Education (6,426), Wholesale and Trade (6,117), Construction (5,790) Accommodation, Cafes and Restaurants (3,128), Personal and Other Services (3,126) and Agriculture, Forestry and Fisheries (2,214). The graph below shows the skill level of employed persons living in OEM for each of the significant employment sectors.

**Figure14: Industry sector by skill level of employed persons in OEM**



Source: ABS JTW data, ABS Census and author calculations

Professional and Managers are more likely to be employed in Education, Property and Business, Health and Community Services and Agriculture. Low Skill employment is more likely in the Retail Trade, Accommodation Cafes and Restaurants. Manufacturing employs a range of skill levels, and construction, not unexpectedly has concentration of mid level or trade skills. Each significant employment sector is discussed below:

- The retail sector is a significant employer of OEM residents (18,559 people). Knox has more employment in this sector (7,169) than Yarra Ranges and Maroondah (5,608 and 5,782 respectively). There is a net movement of employees out of Yarra Ranges. By far the highest proportion of workers in this sector are low skilled, with over half (9,612) having a skill level of 5. The next largest skill category is IV (3,210 people) and the smallest I (819 people).
- The manufacturing sector is also a significant employer of people living in the region. A total of 17,680 people are employed with most (8,139) located in Knox and the least in Yarra Ranges (3,767). Conversely, the largest proportion of manufacturing employees live in Yarra Ranges (7,238) although a significant proportion of workers also live in Knox (6,360). In terms of skill attributes across the region, most workers have attained an ASCO skill level III (5,191) or IV (4862). The number of employees with skill level I and those

with the least skills (Skill Level V) are approximately equivalent when (3,199 of 3518 respectively).

- Health and community services in OEM employs 8,275 residents, the largest proportion of which are located in Knox (3,297) followed by Maroondah and Yarra Ranges. This industry employs a high number of workers at either end of the skill spectrum: 3,090 highly skilled, level I workers and 3,422 low skilled, level V workers across the region. The proportion of workforce in the other skill categories is comparatively few. The skill spectrum for the industry is very similar by destination and origin, but there is net migration of workers from Yarra Ranges to the other two municipalities.
- The property and business services sector employs 6,886 OEM residents. The largest category is contains employees with a skill level of I (2,193 or approximately 30% of OEM workforce in this industry). The other four skill levels employ approximately the same number of workers (1201, 1240, 980 and 1272 respectively from levels 2 to 5) summed across the municipalities. There is slightly more employment in Knox and net movement out of Yarra Ranges to satisfy this demand.
- The education sector employs 6,462 people who live in OEM, with most of those located in the Yarra Ranges (2,868) presumably because of the higher proportion of education establishments located in this municipality. The skill attributes are strikingly similar in the three municipalities and there is little net movement between locations; that is the education sector is largely serviced by the resident population at each locale.
- Wholesale trade in OEM employs 6,117 people living in the region, with over half the employment (3087) occurring in the City of Knox and is largely drawn from the Knox resident population and the adjoining Yarra Ranges. Across the region, the largest category of employees (2,517) are relatively low skilled (Level IV), however the second highest aggregate skill category across the region is Level I.
- The construction industry employees 5,790 OEM residents and in terms of size is relatively evenly distributed across the three municipalities (1,615 residents in Maroondah, 2,055 in Knox and 2,120 in Yarra Ranges). Across the three municipalities, most workers have a skill level of III and more employees travel out of Yarra Ranges to service the sector than occurs in the other two municipalities.
- The accommodation, café and restaurant sector employs 3,218 people who live in OEM and nearly half of these people work in the Yarra Ranges (1565). The dominant skill level of workers is IV (1,184) and the fewest in category V (58). The ratio of skill categories is very consistent for the three municipalities and is largely serviced by local employees (i.e. no net movement between the three LGA's).
- The personal and other services sector employs a total of 3,126 residents living in OEM, most of who have a skill level of three (nearly 30% of residents). Most employment occurs in Knox, with slightly less positions in Yarra Ranges followed by Maroondah. There is a small net migration of Yarra Ranges employees out of their municipality to service this industry.

- The agriculture, forestry and fishing sector (AFF) sector employs a relatively small number of people who resident in the region (2,214 people). Of these, the majority of people (2,019) are employed in Yarra Ranges most of whom also live in the Yarra Ranges (1,928). This shows that the AFF sector is a significant employer of local residents. Less than five percent of workers in this industry are located in the other two municipalities. In terms of skill levels for workers in this industry (Yarra Ranges), most are highly skilled (43% of workers have an ASCO skill level of 1) or at the lower end of the skill spectrum (32% have a skill level of IV). The majority of highly skilled workers also reside in Yarra Ranges).
- The transport and storage sector is not a significant employer in OEM with around 2,000 people in the industry and is not discussed further. Similarly, the communication services, finance and insurance industry, the government communications and defence sector, and cultural and recreational industries are all marginal employers of OEM residents (less than 2000 employees per industry) and are not discussed further, nor is gas, electricity and water supply or the mining industry significant employers.

Details of work origin and destination for each industry sector by skill levels can be found in Appendix J of the full report.

## Skills that Provide a Premium

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Using the O\*Net Content Model framework, comparisons of worker requirements can be made across a wide range of vocational fields and environments in the form of cross-occupational descriptors, thus allowing the identification of generalized skill requirements of a geographical region.

As the basic skills (which include the Content skills of reading comprehension, active learning, writing, speaking, mathematics and science; and the four Process skills: learning strategies, critical thinking, active learning and monitoring) are foundational to the acquisition of the more complex cross-functional skills (which form the five clusters of complex problem solving, social skills, technical skills, systems skills, and resource management skills), it would be expected that those skills would only influence earnings discrepancy through their effect on the cross-functional skills and would not in and of themselves provide a premium in the labour market. This relationship is illustrated in Figure 15.



**Figure 15: Expected link between Skills and Labour Market Premium**

A comparison of Melbourne and regional results suggests that skills contribute to earnings discrepancy to some extent in both cases, although to a much lesser extent in the region. While overall in Melbourne, critical thinking will facilitate the acquisition of the systems skill of Judgement and Decision-Making and thus result in a clear premium (18.4 percent increase in earnings), no such premium exists in the region. The only skill to contribute to earnings discrepancy in the region is the Active Learning which is only associated with a relatively small increase in wages (4.3 percent).

## **Focus Groups and Interviews**

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The Outer East spans 2,645 km and is home to over 390,000 people, of whom 187,346 make up the working population. By 2031, the population is expected to increase to over 438,000 (DSE, 2004). Over this time, the number of households is expected to increase by over 43,000 with a concomitant decrease in size from 2.745 to 2.353 persons per household. The population is expected to age significantly with large increases in the over 60's age group by 2031 (DSE, 2004). Currently the region has a 65% employment capacity. Journey to Work data show significant regional sectors as destination for all workers in order of numbers employed regionally are: Retail Trade, Manufacturing, Health and Community Services, Property and Business, Education, Wholesale and Trade, Construction and Accommodation, Cafes and Restaurants. Professional and Managers are more likely to be employed in Education, Property and Business and Health and Community Services and Agriculture. Low Skill employment is more likely in the Retail Trade, Accommodation Cafes and Restaurants. Manufacturing employs a range of skill levels, and construction, not unexpectedly has concentration of mid level or trade skills.

Sectors employing regional residents in order of numbers employed are: Retail Trade, Manufacturing, Health and Community Services, Property and Business, Education, Wholesale Trade, Construction, and Accommodation, Cafes and Restaurants. Regionally there is close alignment between resident occupation and numbers employed in the sector in the Retail Trade, Manufacturing, Property and Business, Wholesale Trade and Construction with any variation appearing between Local Government Areas.

Industry trends must be examined in the context of anticipated demographic changes. Over the last 30 years, Knox has been one of Melbourne's main growth areas, but the supply of broad hectare land for new dwellings is now limited and population growth is expected to decline dramatically (DSE, 2004). By 2031, Knox's population is expected to grow to 162,000 from its current large residential base of 147,000. Over this time household numbers will grow by 15,000, but the number of occupants per household will decrease. Consistent with broad trends across Australia and the developed world, Knox's population is expected to age significantly with large increases in the over 60's age group by 2031 (DSE, 2004).

The population in Yarra Ranges is projected to grow marginally for the next 25 years, increasing to over 148,000 by 2031 from a residential base of approximately 143,000 (DSE, 2004). Over this time the number of households will increase by over 11,000, but the number of occupants per household will decrease (DSE, 2004). Consistent with broad trends across Australia and the developed world, Yarra Ranges population is expected to age significantly with large increases in the over 60's age group by 2031 (DSE, 2004).

The current residential base of Maroondah is 99,200 with the population expected to grow to 127,993 by 2031. The number of households in Maroondah is expected to increase by 22,920 and, like the other Outer Eastern municipalities, the numbers of occupants per household will decrease and the population will age. Although Maroondah businesses are not represented in the business sample for interviews and focus groups, dominant industry sectors for Maroondah are included.

Chapter Two has demonstrated, trends in the development of the skills and knowledge intensity of regional occupations have not increased at the same rate as the Melbourne Statistical Division on average over the last 15 years and in some cases have tended to decline, especially in relation to male employment.

## Industry Representation at Focus Groups and Interviews

Thirty-four businesses participated in the project; 25 in interviews and nine attending the two focus groups. Interviewees and focus group participants were business owners, managers or people responsible for employment within the organisation. The number of employees of the businesses represented ranged from 15 to 1200. Industry representation at focus groups and interviews is shown in Figure 16 below:

**Figure 16: Focus Group and Industry Representation**

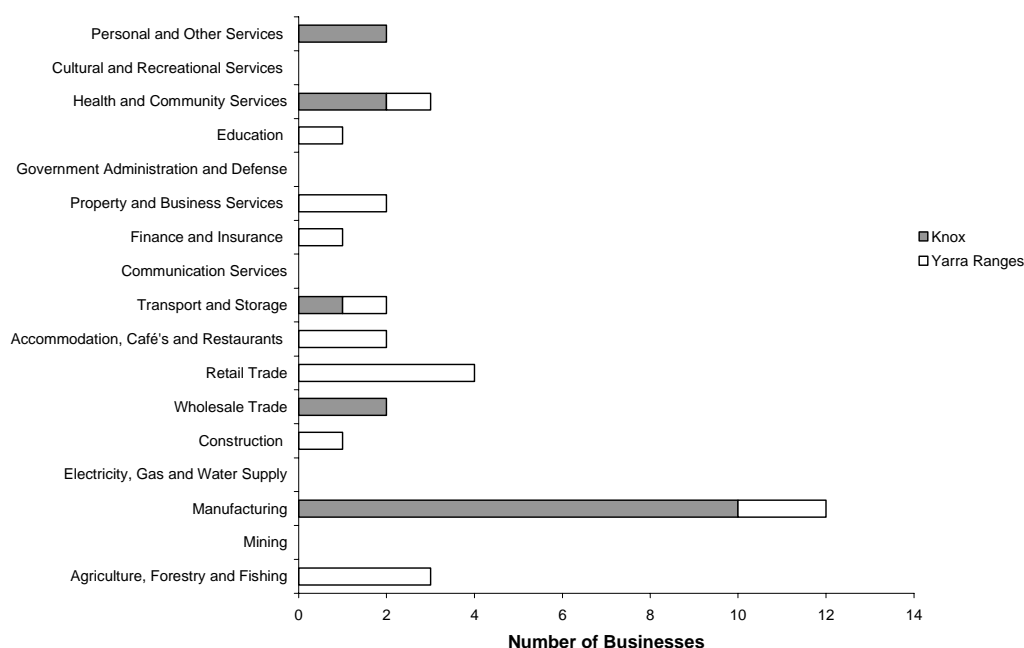


Figure 16 above shows that most regional industry sectors were represented, with the exclusion of government administration and defence, communication services, electricity, gas and water supply and the mining sector. Most interviews were conducted with owners or managers of manufacturing businesses who were based mainly in the City of Knox. The region and particularly Knox, has substantial local employment in the retail and manufacturing sectors.

Tourism and agribusiness are major drivers of the local economy in the Yarra Ranges. Here, major industries in terms of job provision are manufacturing, retail trade and construction work. The growth in the service sector has been noted in both Chapters Two and Three where a more detailed information about industry sector and occupations is provided.

## Business Confidence and Expected Growth

Approximately 75% of businesses represented at interview expect to grow in the coming 12 months. The remaining 25% of businesses are expected to remain the same or decline slightly. In general, patterns were consistent for the two municipalities but confidence was slightly higher in Yarra Ranges than in Knox.

Industry representatives articulated challenges and barriers to growth faced by their respective industries. These included:

- increased competition in general and competitive pressures generated by low-cost manufacturing in developing countries;
- the impact of continued drought;
- the loss of the skilled manufacturing workforce as older workers retired;

- higher land prices and limited availability of land in both Knox and Yarra Ranges;
- reduced spending on luxury items due to bushfire and drought;
- low skill level and motivation/poor attitude of casual staff; and
- negative perceptions related to manufacturing and manufacturing work.

Strategies to facilitate business growth included:

- utilising under-employed sectors of the workforce such as people with disabilities and mothers returning to work;
- diversification; and
- expansion into interstate and export markets.

Areas of expected significant growth included:

- expansion into high end technical products and up-market product lines;
- increased production of diesel engines and the remanufacture of existing products to comply with Australian standards;
- diversification into aluminium extrusion and water tanks;
- additional recycling in waste management;
- increase in home based services in the health sector (mental health and aged care); and
- increasing capacity and lifestyle facilities in the hospitality and tourism sector.

Employment levels in general were not expected to decline, although a loss of certain low or semi skilled jobs was expected due to offices becoming paperless or industries moving off shore.

### **Specific Skills Shortages by Industry Sector**

Nearly every industry sector was experiencing skills shortages at some level. Difficulty in sourcing people for some roles appeared to be exacerbated by the fact that the skills/knowledge needed was highly specific or specific to the particular company, for example skills in the manufacturing of a company product, or particular selling techniques.

A number of business representatives also pointed to the complexity of many roles and the need for employees to be multi-skilled (for example, problem-solving in the sale of technical products) which made such roles difficult to fill. On-the-job training and career progression within the company was seen as a solution to address specific skill requirements.

In terms of generic skills, various business representatives mentioned that there was a shortage of employees with sophisticated communication and computer skills. Tradespeople such as diesel mechanics were also in short supply,

In some cases skills shortages arose where there was a high turnover of employees - primarily in low-skilled positions within the food and beverage and construction industries.

In-house training and up-skilling of staff was a major strategy used by businesses to compensate for skills shortages.

Desirable generic skills held by employees included:

- enthusiasm;
- good communication skills;
- the ability to communicate project ideas;

- the capacity for teamwork;
- positive attitude;
- good interpersonal skills;
- respect for people from a variety of backgrounds and cultures; and
- computer skills (even the simplest jobs require a level of computer literacy).

**Table 7: Identified Regional Skills Shortages**

<b>Industry Sector (ANZIC)</b>	<b>Regional Skill Shortage</b>
Agriculture, Forestry and Fishing	Customer Service Order Packers
Manufacturing and Construction	Sales staff Instrumentation and injection moulding technicians Apprentices and tradesmen (fitters, electricians, die-setters, joiners wood machinists, carpenters boiler-makers, diesel mechanics, powder coater) Labourers Management staff Admin (accounts clerk, office supervisor) Process Workers General Manager/factory Manager
High-tech Manufacturing	Graduates (research and development staff, scientists, engineers {mechanical, production and combustion design}) Associate professionals (drafting and technical roles)
Wholesale/Retail Trade	Process and routine workers Tradespeople (MIG welders, fitters and joiners, service technicians) Sales staff (technical department head and general) Administration staff, warehouse clerk Drivers Marketing Assistant
Health and Community Services	Healthcare professionals & workers (care managers, district nurses, critical care nurses, pharmacists, speech pathologists, podiatrists, general medical staff and allied health professionals, Division 1 nurses, anaesthetists, pediatricians, social worker) Truck drivers
Retail	Warehouse staff Sales staff (direct-selling and general) Computer skills (SAP experience) Receptionist Technician
Property and Business Services	Employment Consultants Property Management Staff
Finance and Insurance	Accountants
Transport and Storage	Diesel Mechanics, Drivers
Accommodation, Cafés And Restaurants	Administration/Front Office Staff Food And Beverage Staff House-keeping Staff Administration (finance staff) Night managers
Education sector	Laboratory technicians Cleaners Administration and clerical staff Professionals (teachers especially maths, sciences and languages)
<b>Personal and other services</b>	Training support Officers Events co-ordinator Administration (accounts receivable clerk) Customer Service Officer (bilingual)

## **Addressing Future Skills Need**

When asked about the role of Council in assisting local businesses in meeting future skill needs, businesses representatives suggested that council could:

- Take a more active role in facilitating linkages and work opportunities in the region;
- Assist with an online register which catalogues the skills of local workers;
- Utilise Council publications to promote the region as a great place to live and or work; and
- Increase linkages between business and schools.

Most businesses in the region were involved in training programmes (either in house or externally) for employees to satisfy the requirement for an increasingly multi-skilled workforce. Increasingly, staff also need to be computer literate to work with computer-operated machinery and specialised computer packages.

There was a greater need for future staff to have more qualifications at certificate, diploma and degree level. There was some overlap between the skills that the businesses indicated were currently lacking and those which were anticipated to be required in the future. Across many industries, there was an emphasis on the need for future employees to have good communication/customer service/ skills and the ability to deal with a diverse range of people.

## **Ceasing Recruitment**

Participant feedback indicated that the recruitment process for some positions was long and difficult. At the time of interview, a number of participants indicated that some positions within their organisations were as yet unfilled. However, only in rare cases participants had 'given up' recruiting for a position. In other instances, companies would stop advertising externally and promote an existing staff member from within the organisation in order to fill the vacant position. One Shire of Yarra Ranges business representative (in the transport and storage industry) indicated that the business had little difficulty with recruitment of staff. Reasons why positions were difficult-to-fill included the specialised skill requirements of the job (51%); uncompetitive remuneration (32%); and low status of the work.

## **The Importance of Employing Local People**

Participants indicated significant advantages of employing locally, including increased staff retention and greater convenience for staff working close to home.

## **Retention Strategies**

In general, staff turnover for businesses in Knox was lower than for Yarra Ranges. Staff longevity was a source of pride for many businesses with interviewees in both areas very pro-active in their efforts to retain staff. In Knox, 66% of businesses had specific retention strategies, in Yarra Ranges it was over 90%. Often companies employed more than one strategy, the most common being flexibility in work hours (63%), higher pay (58%) and additional training opportunities (54%).

## Hard to fill vacancies

The table below indicates the hard to fill vacancies identified in the business interviews and focus groups.

**Table 8: Hard to Fill Vacancies in the Region**

Industry Sector (ANZSIC)	Regional Vacancies - Hard to Fill
Agriculture, Forestry and Fishing	Customer Service Order Packers, designers, horticulturalists
Transport and Storage	Driver – Waste Collection, Drivers
Construction	General Manager/factory Manager
Manufacturing	Estimator Sales Person, Apprentice Joiners, Accounts clerk and Office Supervisor, Process Workers, Technicians Dye-setters Electrician, Trouble-Shooters, MIG Welder, Powder Coater Sales
Wholesale Trade	Technical sales area, Fitters and Joiners, Marketing Assistant, Director of Sales, Warehouse Clerk
Retail Trade	Receptionist Sales Fitting Room Attendant, Technician
Accommodation, Café's and Restaurants	Food and beverage workers, Finance department, Night managers, Cart Barn Attendants
Property and Business Services	Employment Consultant
Finance and Insurance	Accountants
Health and Community Services	Division 1 Nurses, Anaesthetists, Paediatricians Social Workers
High-tech Manufacturing	Product technician and Technician and Technical Roles, Environmental Reporting Services Department, Production Engineer, Research and Development (Scientist/engineer), Combustion engineer, Project Engineer, Mechanical Project Engineer
Personal and Other Services	Training support Officers, Events co-ordinator Position, Accounts receivable clerk, Customer Service – Mandarin Speaker

## Discussion of Findings

The findings from the interviews and focus groups in Knox and Yarra Ranges were consistent with a range of reports and current literature in relation to skill needs and shortages. Employers valued employees who were multi-skilled, team-work orientated, highly computer literate and able to deal with a appreciate people from diverse walks of life (DEST, 2002; AIG, 2002; Peter D. Hart Research, 2006) and others.

Difficulties in recruiting professionals were noted particularly in those industries that required research and development and the health professions in general. Unlike in other regions where skills shortage surveys have been undertaken (DCV, 2006) a shortage of tradespeople in the Outer East was highlighted by only some local business interviews; for others the region was seen as a having a rich source of qualified tradespeople which would appear to be consistent with ABS Census data that tell us the majority of qualified residents have trade qualifications.

The openness shown by some organisations with regard to employing people with disabilities is consistent with the increasing recognition of the need to draw from diverse working populations and a willingness by government to take measures to facilitate the participation of people with disabilities in the workforce. Despite this improvement however, there was a lower workforce participation rate for people with disabilities comparative to other diverse groups (migrants) amongst the participant businesses. Participant feedback and comments appear to indicate that this cohort are not necessarily applying for work in a variety of fields and that there may be some reservations on the part of employers about their capacity of people with disabilities to fulfil job and productivity requirements, particularly in non-routine or higher level roles. Such concerns and barriers have been echoed in the literature (Penny, 2005; Kirkwood, 2007).

Employee feedback with regard to migrant workers was positive as has generally been the case in the literature. A recent report by the Learning and Skills Council in the UK (LSC, 2006) classified migrant workers into distinct groups - highly-skilled 'global' migrants who worked in professional roles, 'economic migrants' who were attracted by higher wages and worked in low-skilled roles in Western countries, and aspiring migrants who would work in lower-skilled positions while they took time to improve their English language skills. This situation was reflected for a local migrant employee who was a specialist in IT but who due to poor English skills had undertaken process work and subsequently moved on to an appropriate position in his field. The generally positive and favourable attitudes employers expressed with regard to migrant employees, as diligent and enthusiastic workers was also reported by the Skills Council (2006).

It was apparent from these interviews and previous research that migrant workers could face considerable barriers due to both language difficulties and their qualifications not being properly recognised in Australia. Even in this small sample of revealed that migrant employees sometimes, as a result of these hurdles ended up in positions for which they were over-qualified. It was interesting to note that the migrant population which were employed in local businesses in the region consisted mainly of people from Western countries (for example, the UK, Canada, England). This is consistent with overall nature of the migrant population in the Outer East, the majority of whom are from Western or European countries.

The relatively homogeneous nature of the population in the Outer East is likely to influence the number of migrants that are employed in local businesses. Firstly, there is less local migrant workers available and (as suggested by one business interviewed) and not such a pressing need to employ people from diverse backgrounds to best meet the needs of the local population.

The attitude expressed to older workers by employers was universally positive. Businesses were well aware of the reality of an aging population and were both worried about the effects of this (particularly in the manufacturing industry) and keen to capitalise on the experience and skill base of older workers. Although it was apparent from research that older workers still experience some discrimination (Lundberg & Marshallsay, 2007) more recent research indicated that business are now more willing to employ older workers – this is partly necessitated by the ageing workforce and the reality of skills shortages in various industries but also represent a show change in attitude on the part of employers who see older workers, particularly in higher skilled industries as highly valuable, as indicated by some research, more so than younger workers (Munnell, Sass & Soto, 2006).

The research highlighted a number of issues that were of concern to industry representatives in the region. A number of participants in Knox indicated that the expectations of highly-qualified young workers - with regard to immediate promotions

and higher wages created tensions within the companies. Research into the characteristics of Generation Y paints a picture of a creative, impatient demographic who want to work less but who want to engage in work that is meaningful and personally rewarding; they also want to be well rewarded for their skills and accomplishments (Zemke, Raines & Filipczak, 2000). The new generation of young workers want instant gratification and are sure of their competence and somewhat unwilling to recognise their faults. It was the perception of some participants that younger workers wanted to be promoted without necessarily doing the time in their current job and demonstrating a well-developed work ethic.

Participant attitudes to apprentices were also mixed. Whilst some businesses employed a number of apprentices, others were unwilling to invest the time and energy in training young people or coping with a perceived poor work ethic.

Some participants also commented that young people were only interested in 'sexy' roles and there were recurrent complaints from employers who indicated that they could not get reliable staff for low-skilled/casual work. A dislike for unskilled/monotonous or unpleasant work has been highlighted in young people (DSF, 2006) and native Australian workers more generally. The labour of low-skilled migrant workers is therefore utilised to fill this gap, both here and internationally.

Another issue highlighted by the interviewees was their inability to find skilled and proficient casual workers. A number of interviewees in the health sector spoke of the need to employ casual staff (particularly nurses) and the adverse impacts this had on continuity and quality of care. In line with previous studies in the health sector, regional business perceives permanent health sector workers to deliver the highest standard of care but they are unable to source these employees locally and are attempting to recruit internationally.

Business interviews and focus group sessions highlighted real need in the areas of education and training and some inadequacy in the capacity of education and training providers to meet the needs of their business and employees. Whilst apprentices were employed by some of the interviewed business, barriers to employing apprentices and school leavers were identified and clearly business preferred to experienced, skilled workers who reside locally.

Regional interviewees and focus group participants demonstrated high levels of commitment to their business and often enthusiasm, business innovation and entrepreneurial leadership. It was thus not surprising to find high levels of business confidence in this cohort. Many of the manufacturing businesses demonstrated high levels of technological development. This appears to be at odds with the apparent decline in skill and knowledge intensity of some key regional occupations revealed in the Chapter Two analysis. However, the participant sample cannot be seen to be representative of regional business given industry sector representation, the size of participating businesses and the difficulty experience in recruiting project participation.

## Conclusions

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Outer Eastern Melbourne does not have the employment capacity to provide jobs for all regional resident workers. The fewest jobs are located in Yarra Ranges followed closely by Maroondah. Knox has a greater number of jobs but still significantly fewer than resident workers. In addition the lowest percentage of OEM employed residents work in Knox. The lack of local jobs presents a disadvantage to workers and to the local economy.

Whilst the period from 1991 to 2006 saw strong employment growth in both OEM and Melbourne SD, the patterns of this growth bear closer examination. In line with the findings of research into the changing nature of work, part time work is now taking a significantly greater share of employment growth. During this time women's participation in the workforce has also grown and thus it is not surprising to find that the growth of employment for women outstripped the growth in employment for men in both regions. This reflects trends Australia-wide.

Despite these similarities, there are striking differences between employment patterns of residents in Melbourne and the Outer East. Outer Eastern Melbourne differs significantly in terms of the skill and knowledge intensity of resident's occupations and within OEM there are differences between the three municipalities of Knox, Maroondah and Yarra Ranges with employment disadvantage increasing with distance from Melbourne.

As Maroondah has access to good public transport, it is not surprising that Maroondah has the highest proportion of residents travelling to Melbourne for work. Over three quarters of Maroondah's employed residents travel outside the municipality for work. Of the 34,836 jobs in Maroondah, 38 percent are performed by Maroondah residents and more workers come from other municipalities than from either Knox or Yarra Ranges to work in Maroondah. Most of Maroondah's residents with high skill occupations travel out of Maroondah every day for work.

Knox has the largest number of regional jobs and the largest resident workforce although it has the lowest percentage of employed residents working within OEM. Of the 53,828 jobs in Knox, 40 percent are performed by Knox residents. High and low skilled workers travel from Knox to work each day. Knox experienced the strongest growth by skill intensity for all categories for both men and women with the strongest growth in the male high skill category. There was also growth in the knowledge intensity of women and men in part time work and a growth in the knowledge intensity of women in full time work. That being said, it should be noted that for men overall there has been a decline in skill intensity and a tendency towards lower skilled occupations.

Yarra Ranges has experienced the sharpest decline in skill intensity for men and the weakest growth in skill intensity for women. The Shire experienced the lowest growth of the three LGAs in both the medium and high skill intensity categories, and the second highest growth in full time work for women in the low skill category. Inspection of the knowledge intensity indices for men in 2006, indicates that the jobs created for the men who work full time in the Shire of Yarra Ranges require lower intensities of knowledge than those created for resident workers in Maroondah and Knox, but most concerning is the fact that the knowledge intensity of these occupations have declined at a faster rate. The workforce in Yarra Ranges is comprised of mostly OEM residents with over 70 percent of jobs performed by Yarra Ranges residents. Because the employment capacity for Yarra Ranges is limited

(32,961 jobs in total for a working population of 67,382) there is a leakage of all skill levels when residents travel out of the municipality for work. It is presumed that the high proportion of skill level 1 (managers and administrators) workers in Yarra Ranges is attributable to the predominance of small and micro business in the Shire.

Men and women workers in the region experience differing trends. Women in the Outer East are faring better than men; the skill intensity of the full time jobs of women has grown with the strongest growth experienced in Knox followed by Maroondah and then Yarra Ranges (although it should be noted that the decline in skill intensity of women's part time work, except in Knox, runs contrary to trends in Melbourne and Australia where the knowledge and skill intensity of part time work is growing strongly).

Overall the trend away from high skilled occupations towards lower skilled occupations is a concern for the region. The trend can be explained to a certain degree by the dominant regional industries that tend to favour lower skilled occupations but the growth in the number of residents employed in lower skilled occupations throws into focus the issue of regional job creation.

The study raises a number of questions for government, local government and education. Given that the growth of globalisation and the knowledge economy suggests that in order to survive, regions need to be outward looking, create competitive advantage, invest in innovation, training and development and encompass the value of knowledge as a factor of production, the trend in regional skill and knowledge intensity is a strong warning sign. Why are we not seeing the creation of the more skill and knowledge intense jobs for residents?

It has already been noted that the lack of local jobs presents a disadvantage to workers and to the local economy but what capacity does the region have for growing the employment base particularly focusing on innovative and skill and knowledge intense industry?

Furthermore, if we are able to build this employment base do we have the requisite skills and knowledge in the resident workforce? In this study skill and knowledge intensity has been determined by analysis of the occupations of residents and it cannot be presumed that this provides a definitive description of the skills and knowledge of residents, although occupations tend to align with formal educational qualifications. This raises further questions about the whether the current jobs of residents are commensurate with the skills and knowledge of residents. Could residents take up positions requiring higher skills and knowledge levels, if those jobs were available?

The education sector data demonstrate that the region has many high skill and knowledge level workers living and working in the region which has a significant number of educational establishments including schools, TAFE and a university. This would suggest that the region is well placed to build skill and knowledge capacity. However business interviews and focus group sessions highlighted real need in the areas of education and training and some inadequacy in the capacity of education and training providers to meet the needs of their business and employees. Whilst apprentices were employed by some of the interviewed business, barriers to employing apprentices and school leavers were identified. How does the education sector respond to the education and training needs of existing business and work to build capacity of regional workers for the future? How can the education sector be involved in bringing about desired changes in the resident workforce?

Clearly business preferred experienced, skilled workers who reside locally and some were prepared to invest in up skilling current workers to fill skill shortages. The participating businesses represented employed from 15 to 1200 workers so the cohort was not representative of smaller and micro business. Thus the capacity of smaller and micro businesses is not represented in the study. Given the large number of these businesses in the region, this is an area that warrants further investigation.

Like the rest of Australia, the region is facing demographic challenges: an ageing workforce and a younger generation who is creative, impatient and wants to work less but wants to engage in work that is meaningful and personally rewarding and to be well rewarded for their skills and accomplishments (Zemke, Raines & Filipczak, 2000). This presents a challenge for business and education. How do we maximize and further develop the skills and knowledge of mature age workers, particularly men given the decline in their workforce participation levels (Lattimore, 2007) and the skill levels of current regional occupations? How do we make the most of the creativity and work culture of the younger generation?

Whilst the study highlights challenges facing the regional economy it also provides an opportunity for local government, education and business to focus efforts to improve the skills and knowledge of the resident workforce and assist in the creation of a sustainable regional economy.

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