Hawkesbury City Council

Attachment 3 to item 258

Hawkesbury Employment Lands Strategy.

date of meeting: 9 December 2008
location: council chambers
time: 5:00 p.m.

Hawkesbury Employment Lands Strategy

Final Report

Hawkesbury City Council December 2008





SGS Economics & Planning

This Report has been prepared for:

Hawkesbury City Council

SGS Economics & Planning

This report has been prepared by:
SGS Economics and Planning Pty. Ltd.
ACN 007 437 729
Suite 12/50 Reservoir St
Surry Hills NSW 2010
phone: 61 2 8307 0121
fax: 61 2 8307 0126
email: sgsnsw@sgsep.com.au
web: www.sgsep.com.au

Tables

Figures

Disclaimer

This report has been prepared on behalf of Hawkesbury City Council. It was prepared by SGS Economics and Planning Pty Ltd. Any representation, statement, opinion or advice expressed or implied in this publication is made in good faith. SGS Economics and Planning is not liable to any person or entity for any damage or loss that has or may occur in relation to that person or entity taking or not taking action in respect of any representation, statement, opinion or advice referred to above.

Executive Summary

Introduction

Council is seeking to provide a planning framework to support and enhance the economic competitiveness of the Hawkesbury region. In line with this vision, this Employment Strategy examines employment and employment lands within Hawkesbury LGA and recommends future strategic actions.

The study particularly focuses on the employment activity areas located in the southern part of the LGA including:

- industrial areas at North Richmond, Richmond, South Windsor, Mulgrave, McGraths Hill and Wilberforce;
- the Richmond RAAF base and UWS campus; and
- retail and commercial centres of North Richmond, Richmond and Windsor/South Windsor, and smaller neighbourhood centres.

The study is also undertaken within the employment lands planning framework set by the Metropolitan Strategy and Draft North West Subregional Strategy. Council is obliged to address employment capacity targets set by these policies as part of their LEP review and as such, employment forecasts and employment capacity targets set by the Department of Planning have been used in this study.

About 40 per cent of the LGAs jobs are outside of the areas zoned for industry, commercial and retail activities which are the focus of this study. Agricultural and rural enterprise jobs in particular are scattered in rural zones. Trends affecting these jobs and associated land use issues are not a major focus of this report.

Policy Context

State Policy

State Government policy directions are outlined in the State Plan, Metropolitan Strategy, draft subregional strategies and the State Infrastructure Strategy. In specific terms, the State planning and policy directions offer little for Hawkesbury LG:

- No major relevant infrastructure is planned.
- Within the LGA there are no major transport proposals flagged.
- There are no future upgrades of key arterials of Blacktown Road/Richmond Road to Windsor and Richmond or the flood evacuation capacity of the road.

- The Draft Strategy seeks to improve connections to regional centres however no improvements to access between Hawkesbury and Penrith, such as strategic bus corridors, have been identified.
- The Metropolitan Strategy and Subregional Strategy do not elevate any LGA centres to 'strategic' status. The Major Centres of the North West Subregion, Blacktown and Castle Hill, and the planned major centre of Rouse Hill, are outside the LGA.
- The dwelling capacity target (+ 5,000 dwellings) will be challenging for the LGA given the modest growth in the last 10 years and the significant flooding constraints and flood evacuation route provision issues.
- The employment capacity target for Hawkesbury LGA suggests that jobs will grow with population increase (+3,000 jobs). While the jobs target is modest there are a range of well positioned competing locations in the North West.

Positive directions for the LGA from the Draft North West Subregional Strategy include directions for residential increase in and around centres, the attraction of high quality jobs, and the retention of all industrial land for employment land uses.

Local Policy

Recent strategic work at the local level has been somewhat superseded by the Metropolitan and Draft North West Subregional Strategies. The Strategic Plan 2006/2007 seeks direction on employment land planning which has driven the need for this study and as such does not provide detailed economic planning recommendations.

Regional Economic Trends and Issues

Hawkesbury's location within the Greater Western Sydney (GWS) Region provides the opportunity to benefit from a number of key regional assets and economic drivers which contribute to the growing success of the region. These include:

- access to a growing skilled workforce in the wider western Sydney region and executive labour in the NW;
- access to the strong GWS economy;
- access to the orbital motorway system, particularly the M7 and M2;
- the presence of the UWS;
- recreation and parkland assets.

However, there are significant regional issues for Western Sydney that will have impacts on strategic planning.

- ***Increasing energy and fuel costs.*** A key feature of metropolitan planning is to reduce costs (economic, social, and environmental) associated with travel. This is focused on two key goals:

  - Minimising trips made in aggregate (by aiming for containment that provides more jobs within easy access to residents and maximises multi-purpose trips); and
  - Minimising trips undertaken by private vehicles (by clustering activities in centres or locations that can be serviced effectively by public transport).

- ***A renewed need for public transport and land use integration.*** As oil prices rise and the imperative to reduce greenhouse gas emissions increases the planning aim of enhancing centres, supported by public transport and other integrated transport, will be increasingly important.

- ***Food security in the Sydney Basin.*** The external benefits of a proximate and accessible food supply (future cost savings from reduced need to transport food) are increasingly a consideration in weighing up the merits of urban development versus protecting agricultural production. As the cost of transport rises there will be a need for food to be produced as close as possible to population concentrations. Agricultural and rural industries in the Hawkesbury – already a significant economic contributor - will be increasingly important from this perspective.

- ***Employment related disadvantage in Western Sydney.*** The workforce profile and job stock in western Sydney has traditionally been in generally lower value professions than in the eastern region. The North West subregion has increased the stock of higher order jobs but it remains critical that good quality jobs are increased, and part of the employment offer in the subregion. Business parks are often cited as a means of attracting higher value jobs but a clear understanding of the potential future role of such a development, whether the pre-requisites for success exist and whether policy criteria can be met need to be considered.

- ***Increasing the spread of 'knowledge' workers across the industry sectors.*** High quality jobs are now spread across the industry types. Achieving high quality jobs growth in western Sydney is not therefore just about increasing office jobs. The response needs to be more sophisticated, and be based around core competitive strengths of the subregions and its workforce. A key aim should be to increase the knowledge component of the value chains in sectors concentrated in the west such as manufacturing, transport, logistics and warehousing.

Strengths and Challenges

Analysis of Hawkesbury's economic profile, employment land supply and consultation with stakeholders finds the following key strengths and challenges for the LGA.

Strengths

Hawkesbury has a growing economy

Hawkesbury's employment has consistently grown in the last 10 years though at a reduced rate since 2001. The economic analysis found that Hawkesbury LGA has:

- relatively high employment self-containment (ratio of local jobs to resident workers) and high self sufficiency (share of local residents working locally);
- a large proportion of qualified residents; and
- A comparable, or higher, proportion of managers and professionals in the key industries of Manufacturing and Construction, Education and Health sectors compared to the Sydney Region and North West subregion.

Hawkesbury has clear industry strengths

Agriculture and Government Administration sectors are key sectors connecting Hawkesbury to regional and international markets. Local industry sectors such as Manufacturing and Construction will benefit from the southern LGA's proximity to the North West Growth centre and expected 67,000 new dwellings.

Employment in the LGA is spread further than southern LGA employment lands

The economic analysis found that 40 percent of employment in the LGA is located outside the employment land precincts. This is a significant finding and suggests that further investigation is required to examine the nature of employment uses on non-employment land. As well as agriculture, such land uses include 'rural industries' on mixed agricultural land (e.g. Rural Press, Mushroom composting at Mulgrave) and also accommodation jobs which are part of the Agricultural and Tourism economies. Given the identified high specialisation of the Agricultural industry sector, this further analysis is considered an important part of supporting and enhancing the economic competitiveness of the LGA.

Hawkesbury LGA has key strategic assets to build on

The strategic site cluster of the RAAF base, UWS Richmond and Hawkesbury Racing Club near Clarendon Station may provide an opportunity to provide 'higher order' office functions around an underused heavy rail asset. There are significant undeveloped land areas in the vicinity of Clarendon Station suitable for investigation for such a development.

Challenges

Unlocking capacity of existing employment land

There is currently a mismatch between the type of land available and the nature of land desired for industrial and business activities. This differs for industrial and business zoned land.

There is currently a large stock of vacant industrial employment land, with some lots vacant for more than 5 years. Industry anecdotes suggest that there is demand potential but it does not have the value or volume to bridge up-front land servicing costs which will typically confront the 'first' developer. Unlocking the capacity of existing lands will require addressing this servicing issue.

With regards to retail and commercial floor space, there is potential within existing controls but the configuration of existing sites or the barrier of existing development constrains demand. There are few opportunities for prime commercial development given the current supply opportunities.

Certain employment precincts lack road and service infrastructure

While Mulgrave and South Windsor are accessible by rail, Mulgrave is the only employment precinct with superior access to a major road (Windsor Road). South Windsor has secondary road access via residential roads. There is no provision in the subregional strategy for upgrades or extensions to major roads into the LGA.

Sites within these precincts lack servicing. Servicing industrial land for power and water has become a barrier to development as the first developer of an unserviced area must provide the upfront costs that tend to benefit subsequent developers.

Management of Hawkesbury's agricultural lands will gain in importance as food security becomes a more pressing issue

This will require forward planning to assess the scale and nature of land that would become more valuable for food production for the Sydney Basin in the future. Land auditing and an assessment of land uses on these lands would be a key requirement of such investigations.

Employment land supply/demand gap analysis

Industrial land

Notional industrial zoned land supply was based on vacant land available in each precinct. This assumes that there will be minimal change to the current intensity of landuse on already developed industrial zoned land. A significant majority of available vacant land is in the Mulgrave precinct (80 per cent).

Net additional industrial floor space demand (130,755 square metres) was compared to the net potential supply (273,588 square metres) to reveal a supply surplus of 143,000 square metres or around **28 hectares** (at a notional FSR of 0.5:1). It should be noted that this is an indicative figure, indicating a moderate supply 'buffer'. The buffer could be eroded quickly by a couple of big occupiers and a surge in development.

Table 1. Industrial Land Supply/Demand Analysis, Floor space (square metres).

Type	Demand (square metres)	Supply (square metres)	A. Gap/Surplus (square metres)	B. Notional FSR	A ÷ B Gap Land (square metres)
Industrial	130,755	273,588	142,833	0.5:1	285,666

Source: SGS 2008

Business Land

The overall analysis found potential additional supply of around 129,600 square metres in existing business zones. This was spread across all precincts except in the Windsor centre where there was no additional potential in the controls after 'netting' out heritage floorspace.

Estimated future business floor space demand (56,197 square metres) was subtracted from the estimated net supply (129,574 square metres) to identify a notional supply surplus of approximately **73,400 square metres** within existing controls.

Table 2. Business land Supply/Demand Analysis, Floor space (square metres).

Type	Demand (square metres)	Supply (square metres)	A. Gap/Surplus (square metres)
Business	56,197	129,574	73,377

Source: SGS, 2008

Strategic Planning Approach

Key Finding

A key finding of this study is that there is no immediate shortage of industrial or business zoned land in the Hawkesbury LGA. Nevertheless, constraints to development are apparent. In industrial areas vacant land is often unserviced, with threshold costs limiting development, or has poor access to key transport routes. In commercial / business areas existing lot configurations, heritage and existing development constrains the potential for renewal and reinvestment. For Windsor centre, the lack of notional supply is within a highly constrained centre and as such additional retail/commercial floorspace would need to be provided through redevelopment of existing sites at

higher densities than currently allowed or by an expansion of areas zoned for business elsewhere in the Windsor area (around Richmond Station or in South Windsor for example)

Recommended Strategies

Based on this finding and the other strengths and challenges identified in the report, it is recommended Council pursue the following strategies to address the economic prosperity of the LGA. An indicative timing is identified but this should be adjusted depending on new findings or an un-anticipated development that requires an earlier resolution of the issue. While some strategies are immediate, and can be considered in the short term (for the next LEP), most will be medium to long term strategies underpinned by further investigation.

Strategy	Indicative Timing
1. Investigate and facilitate the servicing of vacant industrial lands to unlock existing supply	Immediate
2. Capitalise on underutilised transport infrastructure and lobby for improved servicing .	Immediate
3. Facilitate renewal of existing centres with capacity for growth whilst ensuring high quality urban design and structure planning. • Richmond (around Richmond station and by redeveloping between Windsor Street and Bosworth Street to provide a 'forum' space and mixed use opportunities) • North Richmond (investigate scope to create a high amenity and mixed use main street along Riverview Road) • Windsor Station (identify opportunities for minor commercial and retail development for local populations)	Short term (within 3 years) Short to medium term (within 5 years) Short to medium term (within 5 years)
4. Capitalise on the LGAs strategic assets to provide high quality jobs, by considering the future of land at Clarendon for a high amenity office and business development.	Short term (within 3 years)
5. Investigate additional industrial land supply to address future employment growth • Mulgrave (south of Park Road and on the western side of the rail line) • South Windsor (the areas east of Fairey Road not currently zoned industrial) • North Richmond (near the corner of Terrace Road and Bells Line of Road for service industry currently on Bells Line of Rd)	Short to medium term (within 5 years) Short to medium term (within 5 years) Medium to long term (5 to 10 years)
6. Investigate the nature of employment activities on non-employment zoned lands and their contribution to agriculture and tourism sectors	Short term (within 3 years)
7. Support specialised industry sectors of Agriculture and Government, Administration and Defence (Richmond RAAF).	On-going

Strategy	Indicative Timing
8. Identify appropriate development treatments for gateway areas.	
• George Street and Blacktown Road (for low impact visitor and tourist uses with complementary residential and community activities)	Short term (within 3 years)
• Windsor Road, Mulgrave (boulevard treatment with higher amenity showrooms and larger format retailing)	Short term (within 3 years)
• Bells Line of Road, North Richmond (boulevard treatment with higher amenity showrooms and larger format retailing)	Short to medium term (within 5 years)

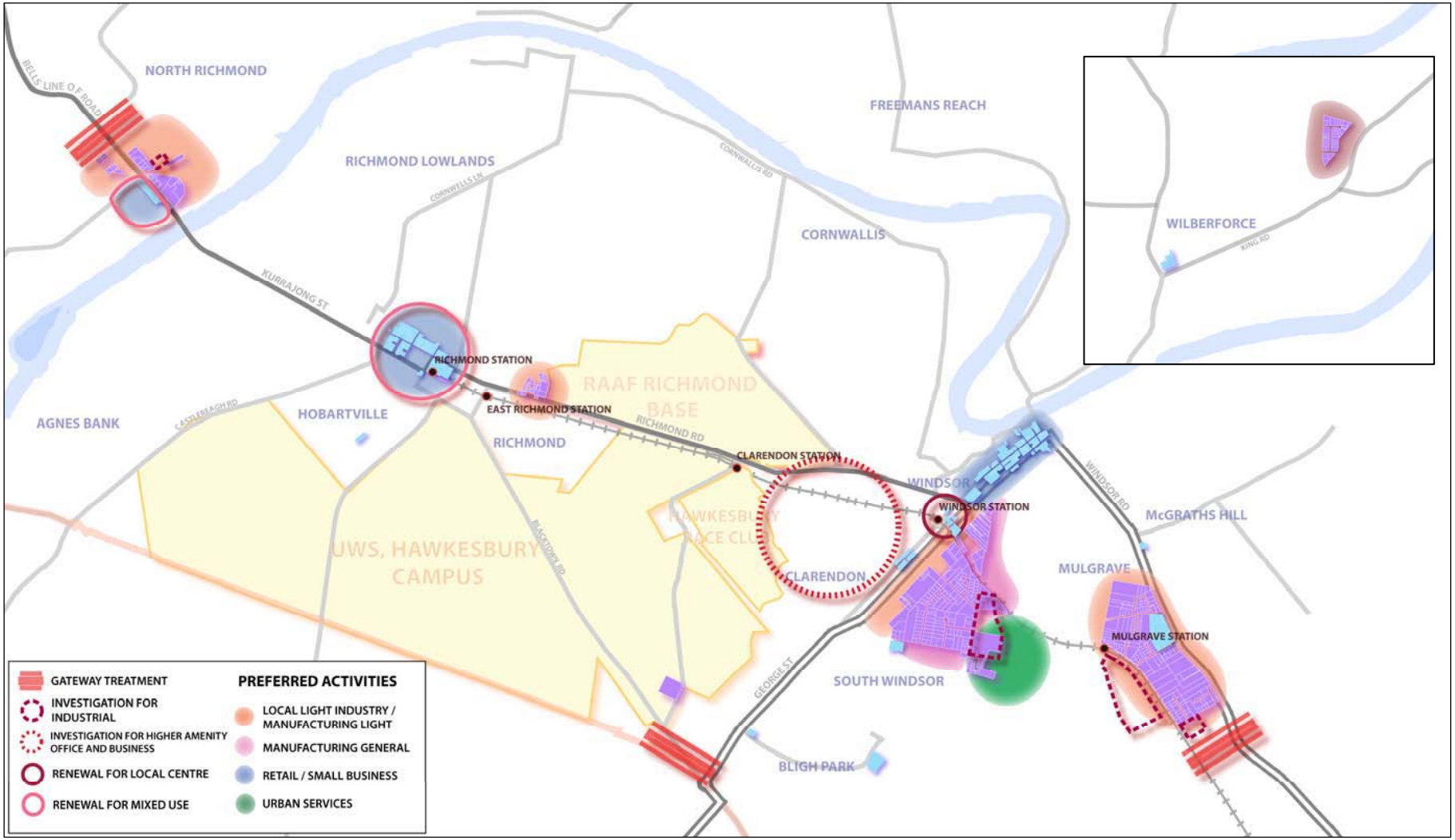
Framework for distribution of employment land uses

SGS has developed broad land use categories, which cover most land uses that exist within an LGA and subregion, and their site requirements. The employment precincts have been assessed against the criteria to assist in the distribution of future land uses. Along with the recommended strategies the identification of suitable precinct/s where such land uses are appropriate are included in the Strategy map.

The key to the preferred activities includes the following:

Local Light Industry/ Manufacturing Light	Manufacturing which is not hazardous or offensive and smaller scale production. Car service and repair; joinery, construction and building supplies; domestic storage. Wide range of businesses that service other businesses (components, maintenance and support) and subregional populations. Needed at local (LGA) to sub-regional level.
Retail / Small Business	The range of retailing formats including main street, 'big box' shopping and bulky goods, and local business and services including office activities and accommodation.
Higher order office and business	Larger format office in high amenity setting, could include business park with integrated warehouse, R&D, 'back-room' management and administration
Urban Services	Concrete batching, waste recycling and transfer, construction and local and state government depots, sewerage, water supply, electricity construction yards. These typically have noise dust and traffic implications and need to be isolated or buffered from other land uses. They are needed in each sub-region.
Manufacturing General	Higher impact manufacturing and industry, which could include transport, warehousing and distribution activities with significant traffic generation

Figure 1. Strategy Map



Source: SGS 2008

1 Introduction

1.1 Introduction to the Study and Methodology

Council is seeking to provide a planning framework to support and enhance the economic competitiveness of the Hawkesbury region. In line with this vision, this Employment Strategy examines employment and employment lands within Hawkesbury LGA and recommends future strategic actions to address this vision. The report provides an overview of analysis which has been completed to date.

The study methodology included the following phases and tasks:

Phase 1 – Project Inception & Baseline Analysis
Task 1: Inception Meeting
Task 2: Strategy & Policy Review
Task 3: Infrastructure Capacity Assessment
Task 4: Drivers of Employment Land Development

Phase 2 – Supply Side Analysis
Task 5: Supply-side analysis
Task 6: Constraints Modelling

Phase 3 – Demand Analysis – Data
Task 7: Economic Baseline and Industry Specialisation
Task 8: Employment and Floor space Forecasting

Phase 4 – Demand Analysis – Consultation
Task 9: Stakeholder Consultation
Task 9B: Industrial Area Survey

Phase 5 - Development of Criteria for Spatial Distribution of Employment Lands
Task 10: Development of Employment Land Assessment Criteria

Phase 6 – Planning & Development Futures
Task 11: Identifying Gaps and Opportunities
Task 12: Implementation Strategy for investigation areas
Task 13: Identify Planning and Development Futures

Phase 7 – Reporting
Task 14: Compile Draft Report with Recommendations
Task 15: Incorporation of Key findings from Submissions
Task 16: Finalise the Strategy

Scope of Employment Land Strategy

The study is also undertaken within the employment lands planning framework set by the Metropolitan Strategy and Draft North West Subregional Strategy. Council is obliged to address employment capacity targets set by these policies as part of their LEP review and as such, employment forecasts and employment capacity targets set by the Department of Planning have been used in this study.

About 40 per cent of the LGAs jobs are outside of the areas zoned for industry, commercial and retail activities which are the focus of this study. Agricultural and rural enterprise jobs in particular are scattered in rural zones. Trends affecting these jobs and associated land use issues are not a major focus of this report.

1.2 Report Structure

The report contains the following Sections:

- Section 2 – Study Area Description and Context
- Section 3 – Policy Context
- Section 4 – Broad Economic Trends and Issues
- Section 5 – Economy and Employment Profile
- Section 6 – The Character and Attributes of Employment Precincts
- Section 7 – Land Demand and Supply Analysis
- Section 8 – Strategic Planning Approach

2 Study Area Description and Context

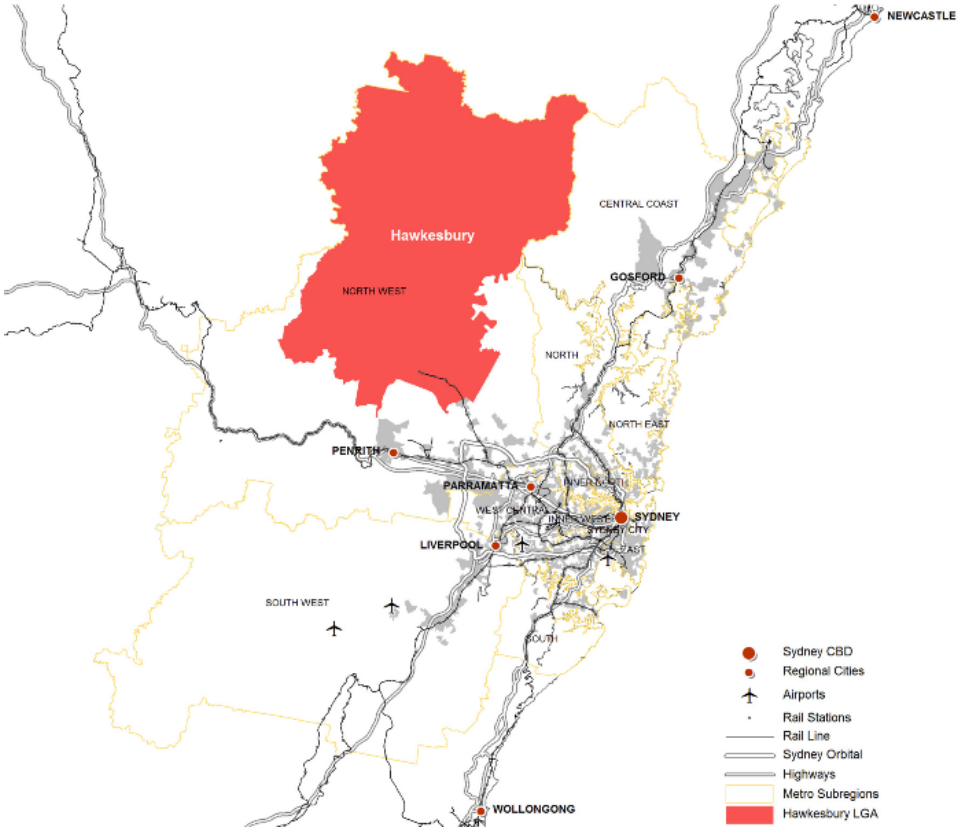
This section provides an overview of the regional and local context and the particular employment precincts examined in this strategy. The population profile of the Hawkesbury LGA has also been provided to give a context of the local community in terms of housing and employment.

2.1 Locational Context

Regional Context

Hawkesbury LGA is located in the North West Sydney Region and is comprised of extensive areas of national park, environmental protection and agricultural land (Figure 2 and Figure 3). The LGA is significantly affected by the flooding regimes of the Hawkesbury River.

Figure 2. Regional Context Map

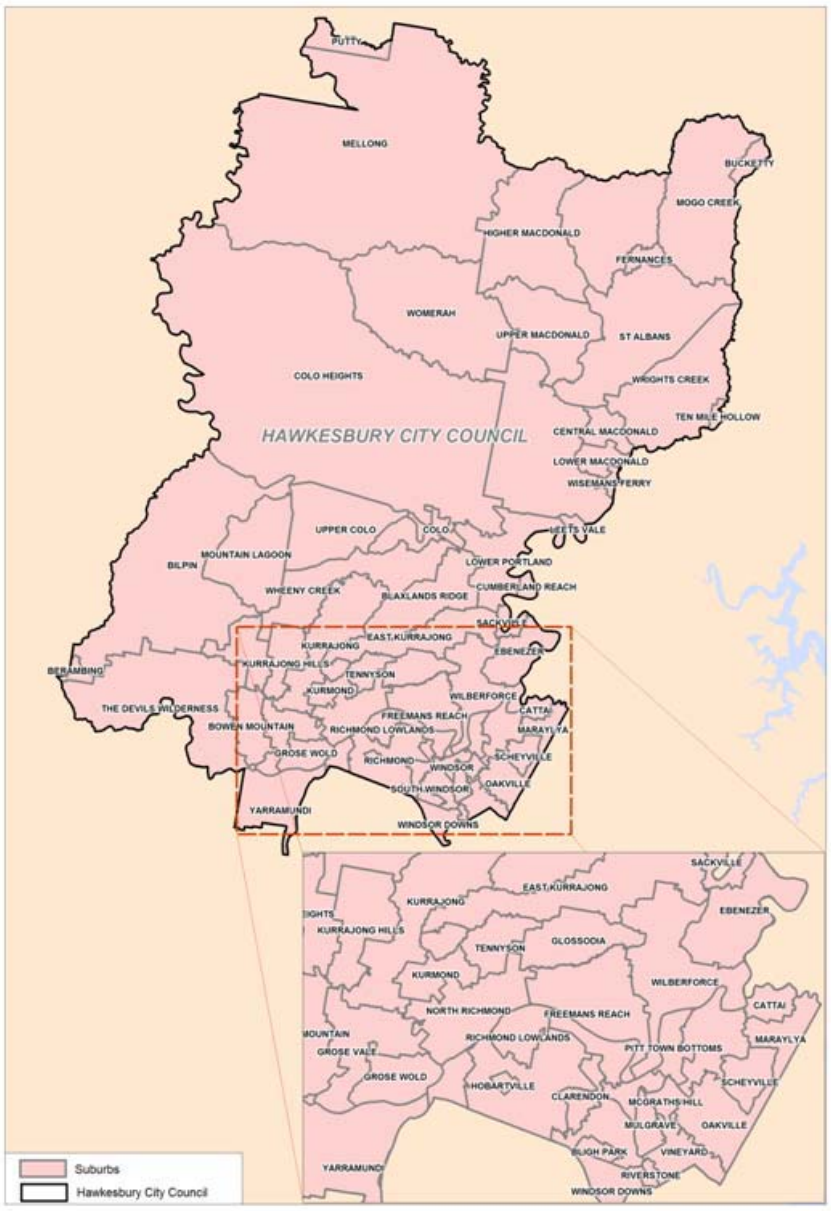


Source: SGS 2008

The study particularly focuses on the employment activity areas located in the southern part of the LGA (Figure 3) including:

- industrial areas at North Richmond, Richmond, South Windsor, Mulgrave, McGraths Hill and Wilberforce;
- the Richmond RAAF base and UWS campus; and
- retail and commercial centres of North Richmond, Richmond and Windsor/South Windsor, and smaller neighbourhood centres.

Figure 3. LGA South Context

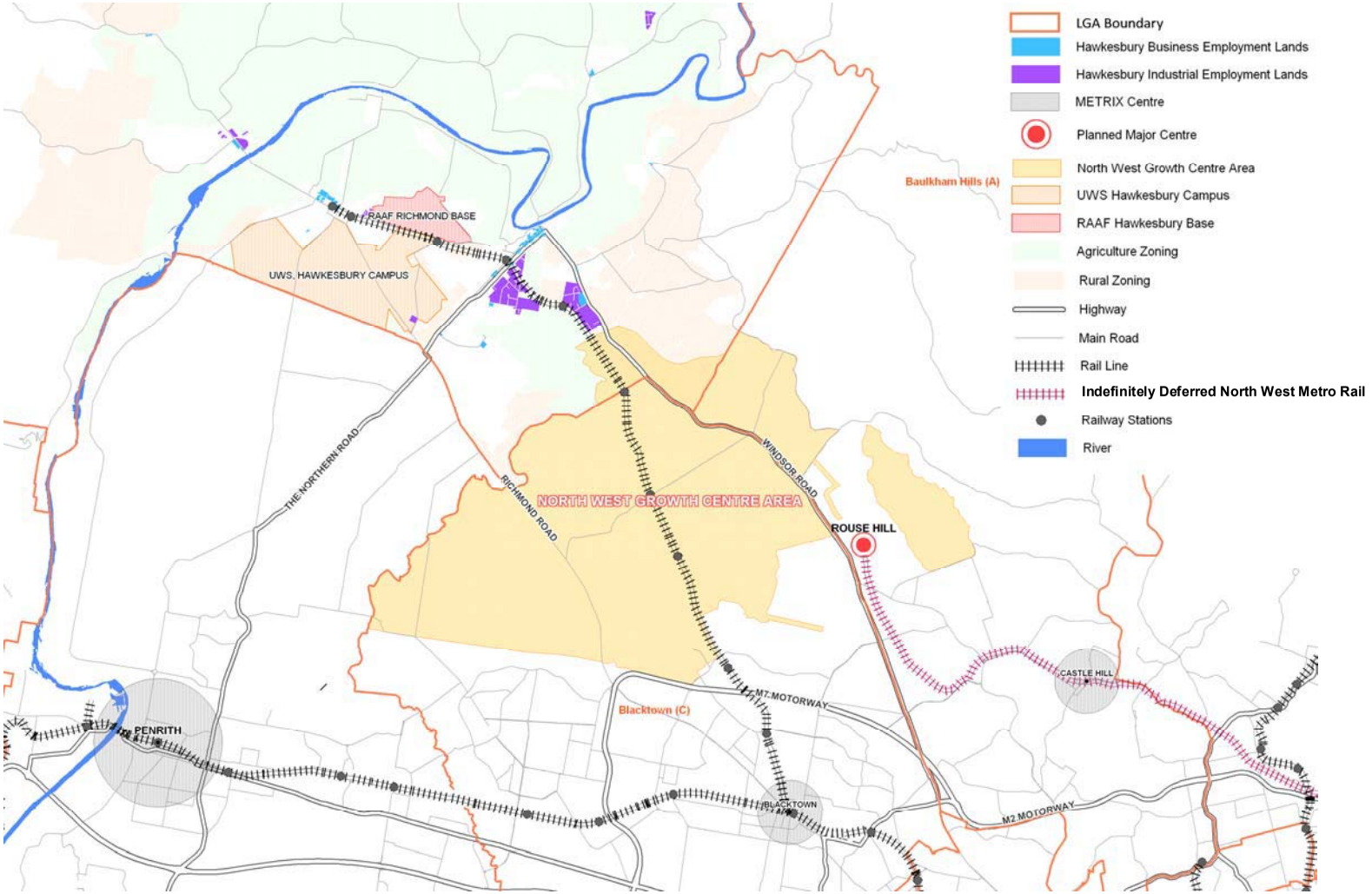


Source: SGS 2008

Figure 4 shows the subregional context of the southern LGA which contains Hawkesbury's industrial, business and special uses zoned lands. This area is bound by the LGAs of Penrith, Blacktown and Baulkham Hills and the Blue Mountains LGA. Land to the south in the Penrith and Blue Mountains LGAs is predominantly rural residential in nature. Lands to the east in Baulkham Hills LGA include the Cattai National Park.

The Penrith Regional centre, major centres of Blacktown and Castle Hill, and the proposed major centre of Rouse Hill are located south and south-east of the LGA South area. The North West Growth Centre is partly located in the suburbs of Vineyard and Mulgrave.

Figure 4. Subregional Context



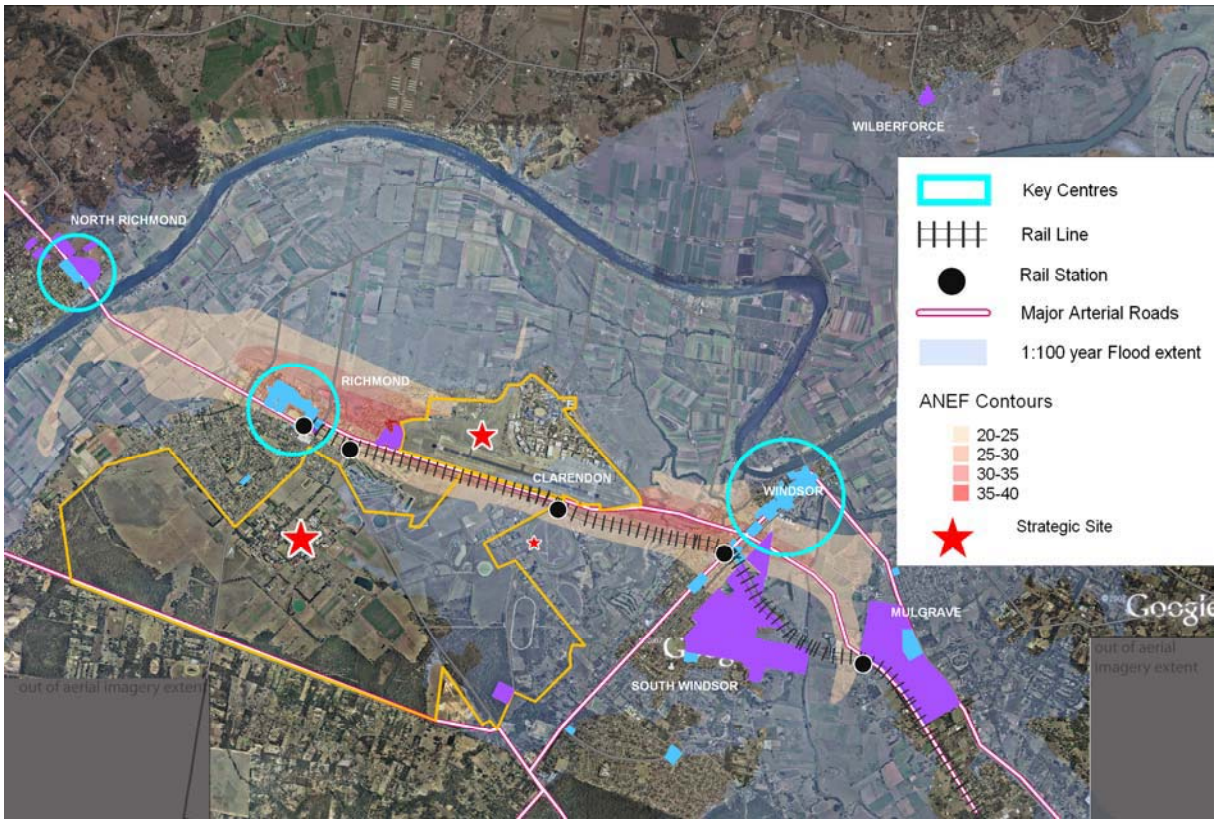
Source: SGS 2008

Study area structure

The LGA is significantly affected by Hawkesbury River flooding with most of the impact in the low-lying southern area. The southern LGA structure reflects this environmental constraint with the traditional urban settlement of Richmond and Windsor on land above the 1:100 flood level, or which was significantly above the 1:100 level at the time of establishment. North Richmond is the other centre and is located north of the Hawkesbury River.

Hawkesbury's industrial, commercial employment lands precincts and strategic sites are located in this southern LGA area. Strategic sites are clustered around Clarendon Station and comprise the Richmond RAAF base (located north of Richmond Road), UWS Hawkesbury Campus (located south of the Richmond Road) and the Hawkesbury Race Club (south of Richmond Road at Clarendon Station) which provide significant employment and recreation opportunities for the LGA and the region.

Figure 5. Southern LGA Structure



Source: SGS 2008

The Richmond rail line connects the southern LGA area to Sydney's western suburbs of Blacktown and Penrith, and the Sydney CBD. There are 6 rail stations in the southern LGA area with the rail line terminating at Richmond. Other rail stations access strategic sites including UWS Hawkesbury and Richmond TAFE (East Richmond Station), Richmond Racecourse (Clarendon Station), South Windsor Industrial and Commercial/retail centres (Windsor Station), Mulgrave Industrial area

(Mulgrave). Vineyard Station is a small unmanned rail station which is located near the boundary of the Hawkesbury and Blacktown LGAs.

Major arterial roads providing access to the area are Bells Line of Road, Windsor Road and Northern Road. Major local roads providing access to employment and residential areas are Wilberforce Road and Richmond Road. Key gateways into the southern LGA area are at the Bells Line of Road at the entrance to North Richmond from the west, the intersection of Blacktown Road/George Street from the south, and the LGA border at Mulgrave on Windsor Road from the southeast.

The major roads are all flood evacuation routes. New residential development must have appropriate flood evacuation routes identified due to some areas of the LGA being cut-off in times of flooding.

Another environmental constraint includes aircraft noise exposure for development located within the RAAF aircraft take-off and landing zones. High ANEF contours principally affect the Richmond centre and Windsor Station areas.

2.2 Resident Population Profile

This section provides an overview of the resident profile of the Hawkesbury LGA and briefly describes the current and expected future housing and employment profile in Hawkesbury. Graphs and sources of data are provided at Appendix A. All of the data is derived from ABS Census data.

Population Change

There were 60,592 persons living in Hawkesbury LGA in 2006. The population was predominantly aged 35-44 and 5-14 years of age indicating an established family profile and a high proportion of working age residents. There has been minimal change in the population since 1996 with only 6 percent growth between 1996 and 2001 and decline in population of 0.2 percent between 2001 and 2006. This growth rate is comparable with Blue Mountains and Penrith however Blacktown and Baulkham Hills have had consistent growth with 14 percent and 6 percent growth between 2001 and 2006 respectively. Population forecasts indicate that the population will continue to age, with a projection of 82,592 in 2031.

In terms of household profile, couple families are the dominate household type in the LGA. Couple family with children comprise 23 percent, couple family without children comprise 39 percent. These household types mostly occupy separate dwellings. The income profile shows that most households have incomes between $500/week and $1,200/week which is comparable to the Sydney SD and Penrith, Blacktown and Blue Mountains. Baulkham Hills has a higher proportion of households earning above $1,700/week.

There were approximately 20,672 dwellings in 2006. Time series analysis finds that additions to dwelling stock have been minor in the last 10 years with approximately 239 dwellings per year.

Table 3. Housing growth and targets, Hawkesbury LGA, 1996 - 2006

	1996	2001	2006	Actual dw. per year 1991 to 2006
Dwellings	18,281	20,355	20,672	239

Source: Dwellings – ABS 2006 Time Series, Occupied Dwellings; Employment – SGS Scaled TDC data.

Education

Approximately 40 percent of the population holds a tertiary qualification. Of this group, 48 percent hold a certificate (III, IV), 19 percent a Bachelor Degree and 18 percent Advanced Diploma or Diploma.

Employment

In terms of employment, activities which employ the most residents are Retail Trade (10 percent), Manufacturing (12 percent), and Construction (12 percent) industry sectors. Secondary sectors include the special uses activities of Government Administration and Safety predominantly comprised of RAAF base jobs (9 percent), Education comprised of UWS, TAFE and public and private schools (8 percent) and Health and Community Services (hospital and nursing homes) (7 percent). Appendix A contains more details on resident employment by sector.

Within these sectors, the highest proportion of professionals and managers are located in the Agriculture, Government Administration, Education, and Health and Community Service sectors. Technicians are predominantly located in the manufacturing and construction sectors.

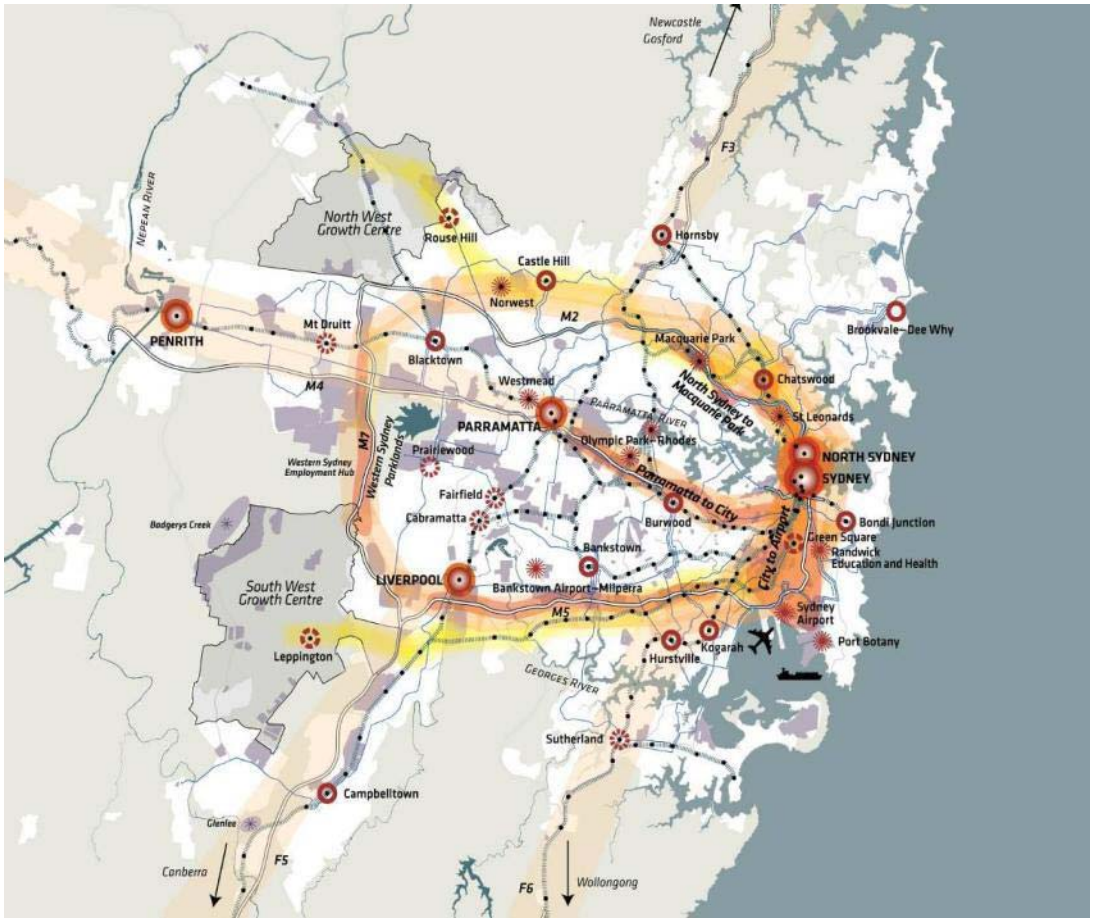
3 Policy Context

3.1 Metropolitan Strategy and Subregional Planning

The Metropolitan Strategy ('*City of Cities*') was released in December 2005. The Strategy identified ten subregions - involving groupings of local government areas - as a focus for more detailed future planning. Housing and employment capacity targets were identified for each of the subregions.

Ten draft subregional strategies have been released by the Department of Planning between 2006 and 2008, including for the North West subregion in which Hawkesbury LGA is located along with Baulkham Hills Penrith, Blacktown and the Blue Mountains LGAs. The North West Draft Subregional Strategy was released in December 2007.

Figure 6. Sydney Metropolitan Strategy



Source: City of Cities: A Plan for Sydney's Future, Department of Planning, 2005.

Key features of the Metropolitan Strategy and Draft NW Subregional Strategy of relevance to employment land planning in Hawkesbury include:

- employment to be concentrated in strategic centres and in well planned employment land;
- the North West Growth Centre to be the focus for new residential development in the North West;
- local centres to support the needs of residents and workers;
- jobs growth to be encouraged in Sydney's west;
- employment containment to be strengthened in Sydney's subregions;
- employment capacity targets for subregions to guide local planning;
- major employment in the NW identified for locations outside the Hawkesbury LGA;
- new rail connections proposed for the North West subregion
- all employment land in the Hawkesbury LGA is to be retained for industry;
- new development must address flooding impacts; and
- agricultural and resource lands must be protected from incompatible uses.

These are discussed below.

Employment to be concentrated in strategic centres and in well planned employment lands

The Metropolitan Strategy (and Draft Subregional Strategies for the North West and South West) and State Plan provide a strong policy platform for employment related issues – particularly in relation to job targets in the wider NW and SW regions, and desirable locational attributes for employment. The aim is to concentrate employment in a series of 'strategic centres', typically on the rail network, or in well planned employment areas with the prospect of being serviced by public transport. Figure 7 overleaf sets out the centre typology from the Metropolitan Strategy for strategic centres.

Figure 7. Strategic Centre Types

TABLE B1 **TYPES OF STRATEGIC CENTRES**

Global Sydney	The main focus for national and international business, professional services, specialised health and education precincts, specialised shops and tourism, it is also a recreation and entertainment destination for the Sydney region and has national and international significance.	Sydney City* North Sydney
Regional Cities**	With a full range of business, government, retail, cultural, entertainment and recreational activities. They are a focal point for regional transport and jobs.	Parramatta Liverpool Penrith
Specialised Centres	Areas containing major airports, ports, hospitals, universities, research and business activities that perform vital economic and employment roles across the metropolitan area. The way they interact with the rest of the city is complex and growth and change in and around them must be	Macquarie Park, St Leonards, Olympic Park/Rhodes, Port Botany, Sydney Airport, Randwick Education and Health, Westmead, Bankstown Airport/Milperra, Norwest
Major Centres**	The major shopping and business centre for the surrounding area with a full scale shopping mall, council offices, taller office and residential buildings, central community facilities and a minimum of 8,000 jobs.	Bankstown, Blacktown, Bondi Junction, Brookvale/Dee Why, Burwood, Campbelltown, Castle Hill, Chatswood, Hornsby, Hurstville, Kogarah

* Sydney City includes the CBD, Sydney Education and Health Precinct, Pyrmont/Ultimo, Kings Cross, the NSW State cultural institutions, the Walsh Bay cultural precinct and the St Vincent's/Darlinghurst Health Precinct.

** Outside the Sydney Metropolitan Area, Wollongong is the regional city for the Illawarra and Newcastle is the regional city for the Lower Hunter. Gosford is the regional city for the Central Coast and Tuggerah is a Major Centre on the Central Coast. Separate but related strategies will guide growth and change in these three regions within the Greater Metropolitan Region; however, Gosford and Tuggerah's employment capacity targets and housing capacity targets are incorporated into the Metropolitan Strategy.

TABLE B2 **EMERGING STRATEGIC CENTRES**

Planned Major Centres	Locations for shopping and services in identified residential growth areas.	Rouse Hill, Leppington, Green Square
Potential Major Centres	These have assets, including transport or open space connections, and potential as shopping and service hubs, in existing areas of the city which may have increased residential development.	Sutherland, Cabramatta, Mt Druitt, Fairfield, Prairiewood

Source: City of Cities: A Plan for Sydney's Future, Department of Planning, 2005.

Further detail on the strategic centres in the North West subregion is provided below:

- ***Specialised Centres – Norwest.*** Norwest is defined as a 'Specialised Centre' within the Metropolitan Strategy. It has developed into a high amenity and successful business park. The 'specialised centre' categorisation implies the centre is to be of strategic significance to the Sydney Metropolitan Region in terms of attracting employment and future investment.
- ***Penrith Regional City.*** The Metropolitan Strategy characterises Penrith as a Regional City. The centre has evolved significantly over the years with an increasing commercial emphasis and a broad range of retail, community and social facilities. It is also an important civic and cultural hub for the North West.

- ***Major Centres and Proposed Major centres.*** Blacktown and Castle Hill have been identified as major centres. Blacktown is identified as an important retail destination with health and education facilities as well as superior access to the M7. A 'planned' major centre is included at Rouse Hill.

No strategic centres have been identified for Hawkesbury LGA in the Metropolitan Strategy (or Draft North West Subregional Strategy).

The North West Growth Centre to be the focus for new residential development in the North West

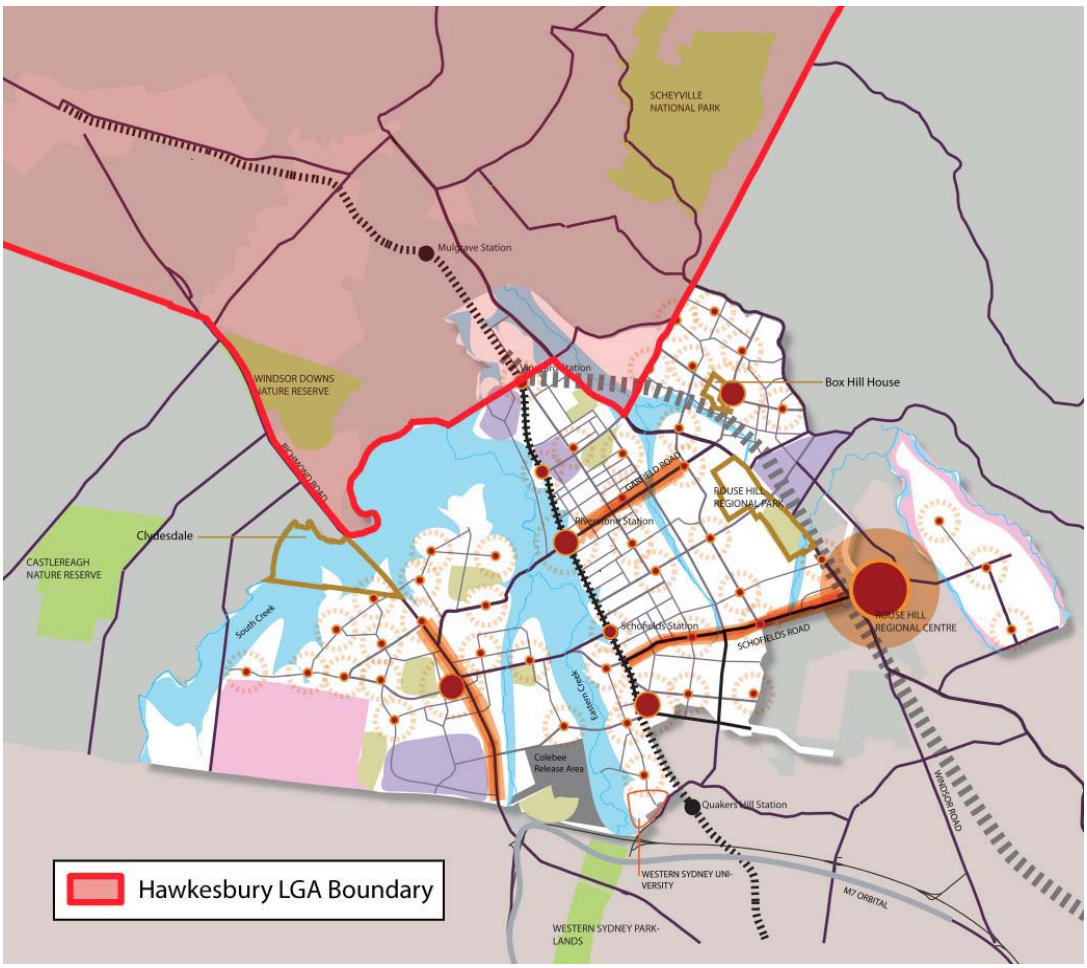
The Metropolitan Strategy aims to accommodate around 30 to 40 percent of new housing over the next 25 to 30 years in new release areas on Sydney's urban fringe. The NW and SW Growth Centres have been identified to accommodate 160,000 new dwellings.

The NW Growth Centre principally falls into the local government areas of Baulkham Hills and Blacktown, but its northern edge is within the Hawkesbury LGA. The NW Growth Centre is to accommodate an estimated 67,000 new dwellings.

In the NW Growth Centre, Rouse Hill has been identified as a 'planned' major centre. Although not within the Growth Centre boundary itself, Rouse Hill will act as a key driver for employment development within the NW Growth Centre. The shopping centre at Rouse Hill recently opened and is trading strongly. Figure 8 shows the extent of the Growth Centre and the key centres planned for it.

As shown in Figure 8 overleaf, part of the northern edge of the Growth Centre falls into the Hawkesbury LGA. Demand for services and some retailing from the population in this area will stimulate economic activity in the Hawkesbury LGA.

Figure 8. North West Growth Centre Structure Plan



Source: Growth Centre Commission, 2005, SGS

Local Centres to support needs of residents and workers

The Draft Subregional Strategy identifies local centres that provide services and needs for residents and workers. The centres typology provided in the North West Subregional Strategy for the Hawkesbury LGA is shown in Table 4.

Table 4. Local Centres - Hawkesbury LGA

Role	Description	Hawkesbury Centres
Town Centres	▪ Large group of more than 50 retail shops and services with one or two supermarkets, sometimes a small shopping mall. ▪ Approximate radius 800 metres. ▪ More a medium or high density residential origin location than employment destination. ▪ Have some community facilities, specialist medical care, schools and restaurants. ▪ Typical dwelling range 4,500–9,500. ▪ Medium and high density housing mixed within the commercial centre and within walking distance of shops, services and transport. Heavy rail and/or strategic bus and local bus networks and some with ferry services. ▪ Need to balance parking, service vehicles and through–traffic with making a pleasant residential and pedestrian environment. ▪ Town square, main street, library, sports facilities, reasonable access to parkland. ▪ Governance body: local government.	Richmond, Windsor
Villages	• 10–50 retail spaces. ▪ May include a butcher, bank, hairdresser, café, restaurants and take–away food and a supermarket. ▪ Child care centres, schools and other compatible activities in the immediate vicinity. ▪ Approximate radius 600 metres. ▪ Strip of shops and residential area within a 5–10 minute walk serving daily shopping needs. ▪ Typical dwelling range 2,100–5,500. ▪ Medium density housing in and around the main street. ▪ Strategic bus, local bus and sometimes ferry services. ▪ Villages need to develop an enjoyable public environment with a mix of uses and good physical links with the surrounding neighbourhood. ▪ Villages need to manage air quality and amenity by locating a block away from very busy roads/enterprise corridors. ▪ Access to a local park, may have a market which shares space in school grounds out of school hours. ▪ Governance body: local government.	North Richmond
Small Villages	▪ 5–30 shops and services. ▪ Similar to village only smaller and without a supermarket. ▪ Approximate radius 400 metres. ▪ A small strip of shops and surrounding residential area within a 5 to 10 minute walk serving daily shopping needs.	Mulgrave, South Windsor

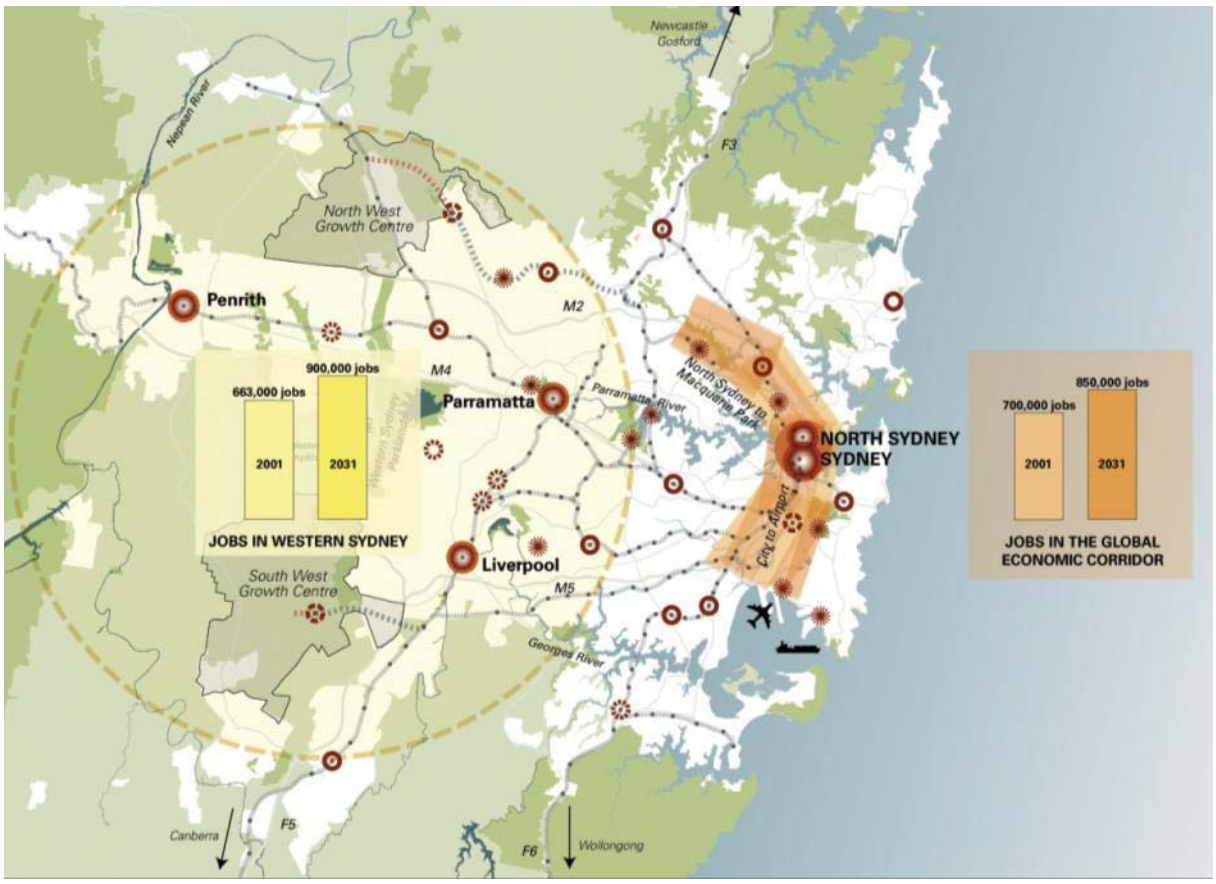
Role	Description	Hawkesbury Centres
	▪ Typical dwelling range 800–2,700. ▪ Medium density housing, including shop–top dwellings in and around the main street. ▪ Local bus network. ▪ Access to pocket parks or small urban outdoor space. ▪ Governance body: local government.	
Neighbourhoods	▪ 1–5 shops and services. ▪ May include a milk bar, corner shop, petrol station/convenience store, café and/or a newsagent. ▪ Approximate radius 150–200 m. ▪ One or a cluster of shops and services supplying daily needs. ▪ Typical dwelling range 150–900. ▪ Some medium density housing e.g. townhouses and villas. ▪ Local bus network. ▪ Not necessarily located near open space or public space. ▪ Governance body: local government.	Kurmond, Kurrajong, Glossodia, Pitt Town, Wilberforce

Source: North West Draft Subregional Strategy, 2007; *Appendix 3: Local Centres*

Jobs growth to be encouraged in Sydney's west

The Metropolitan Strategy aims to facilitate significant employment growth in western Sydney, recognising that as the population in the region grows there is a need to ensure that employment opportunities are also provided. The Strategy originally proposed an increase of around 230,000 jobs in western Sydney (from a total for the metropolitan area of 500,000) in the 2001 to 2031 period, see Figure 9. This has since increased to 280,000, following the release of the Subregional Strategies.

Figure 9. Jobs in Western Sydney



Source: City of Cities: A Plan for Sydney's Future, Department of Planning, 2005.

This policy of 'jobs to the west' is inherently linked with a drive for 'higher quality' jobs in western Sydney. Hence a key action of the NW Subregional Strategy is **Action A1.8** where Councils are asked to consider the feasibility of business parks for the North West. A new business park with good public transport access could encourage a higher skilled workforce to locate in the subregion. It could also attract employment activities not represented in the existing employment areas[1].

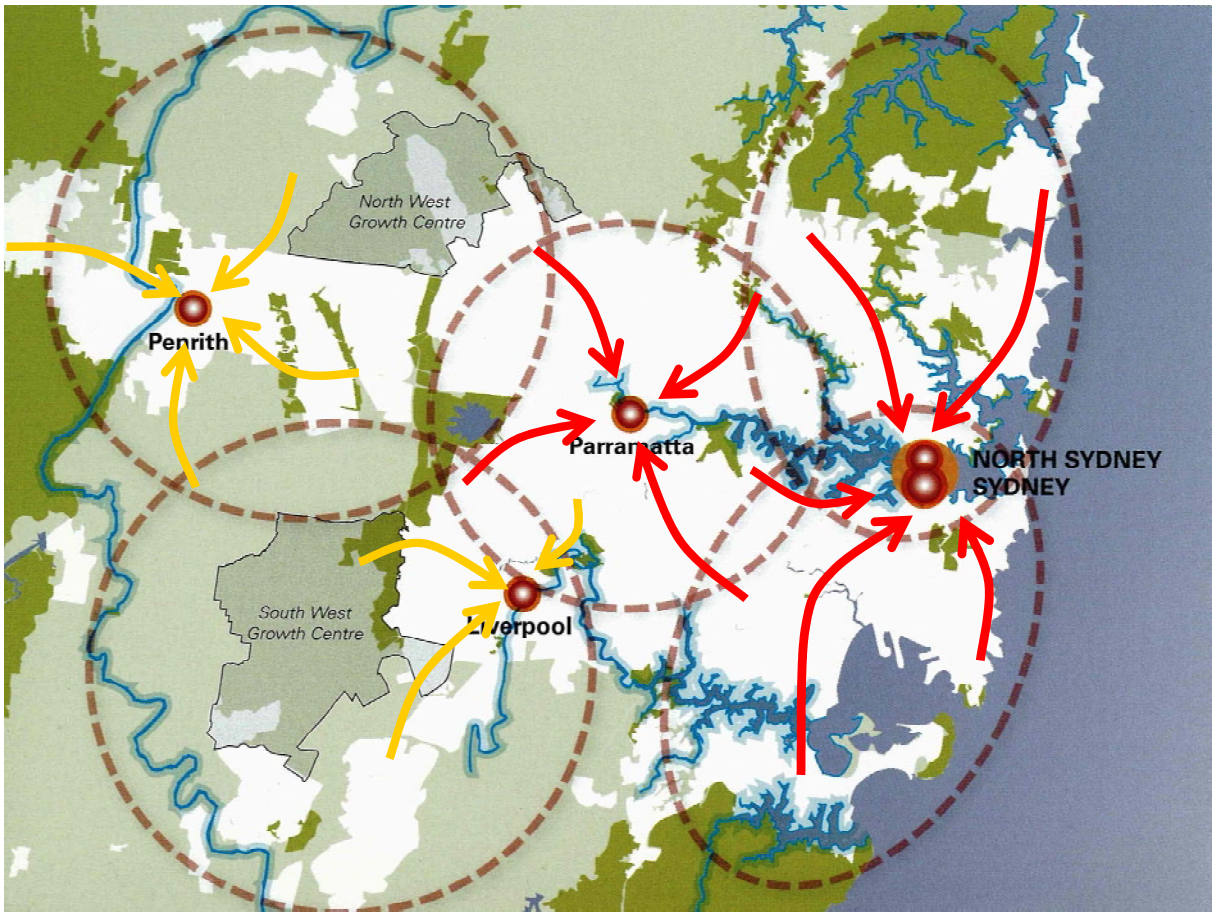
Employment containment to be strengthened in Sydney's subregions

In response to the increasingly westward growth of the metropolitan area, the Metropolitan Strategy identified a need for an adjustment to the concept of regional 'containment'. There is now a focus on accommodating growth in Sydney's outer western subregions (particularly the SW and NW) and strengthening the key regional cities. The rationale for this is to limit travel times for residents on the urban fringe, so that jobs, major shopping and recreational activities would be within a reasonable travel time (usually benchmarked at 30 minutes). Liverpool was identified as the regional city in the SW and Penrith as the regional city for the NW. Other major centres in the

[1] Draft SW Subregional Strategy 2007

NW and SW were also identified to provide local jobs and services as part of the 'containment' objective, including Rouse Hill and Leppington in the Growth Centres.

Figure 10. Regional Cities Concept

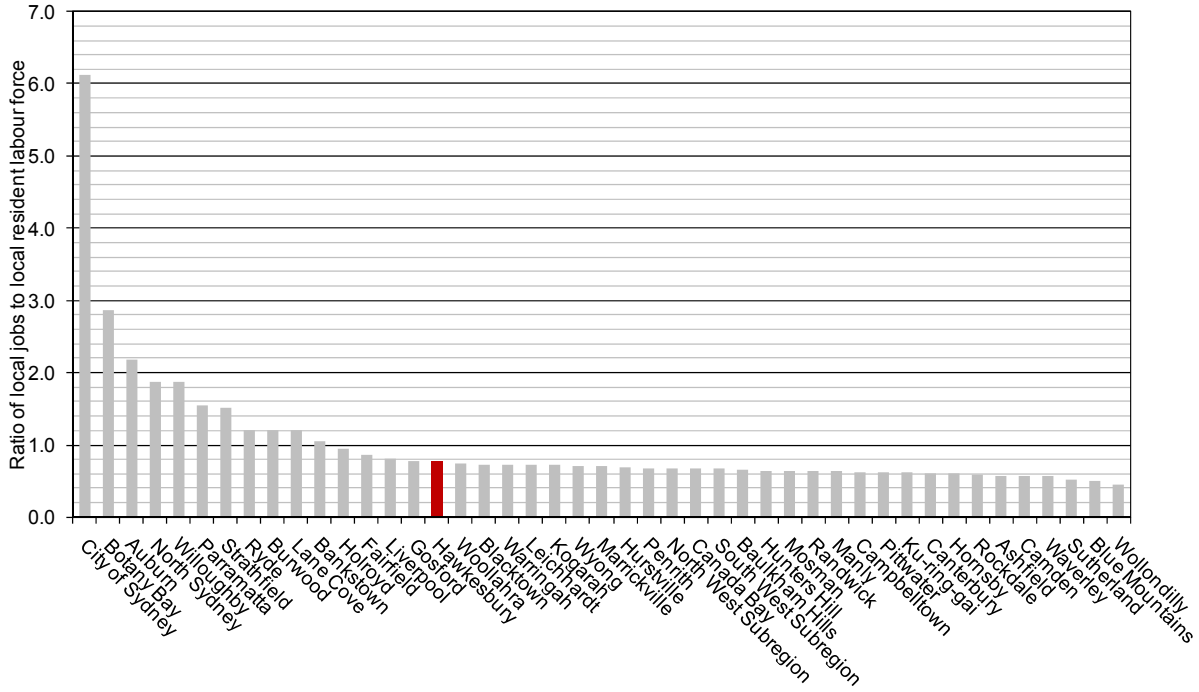


Source: City of Cities: A Plan for Sydney's Future, Department of Planning, 2005.

This understanding of containment, including self containment in relation to jobs, does not necessarily imply that jobs would be found in the absolute immediate vicinity of where local workers live. The aim is to provide sufficient depth of employment across the subregion so that residents have a choice of job opportunities while minimising the need for trip making. Realistically, containment may only provide more jobs across a subregion rather than close to residences given the way labour markets work.

From this understanding of self containment the key indicator is the ratio of local jobs to the local resident labour force. Hawkesbury LGA rates well in this regard, with almost 8 jobs in the LGA for every resident worker based on 2001 figures (see Figure 11 which highlights the share for the Hawkesbury LGA and the NW Metro Strategy Subregion within which the LGA falls) (note that due to delays in the TDC data release schedule 2006 data is not yet available). Typically only very 'job rich' areas rate higher on this measure of self containment.

Figure 11. Ratio of local jobs to local resident labour force, 2001

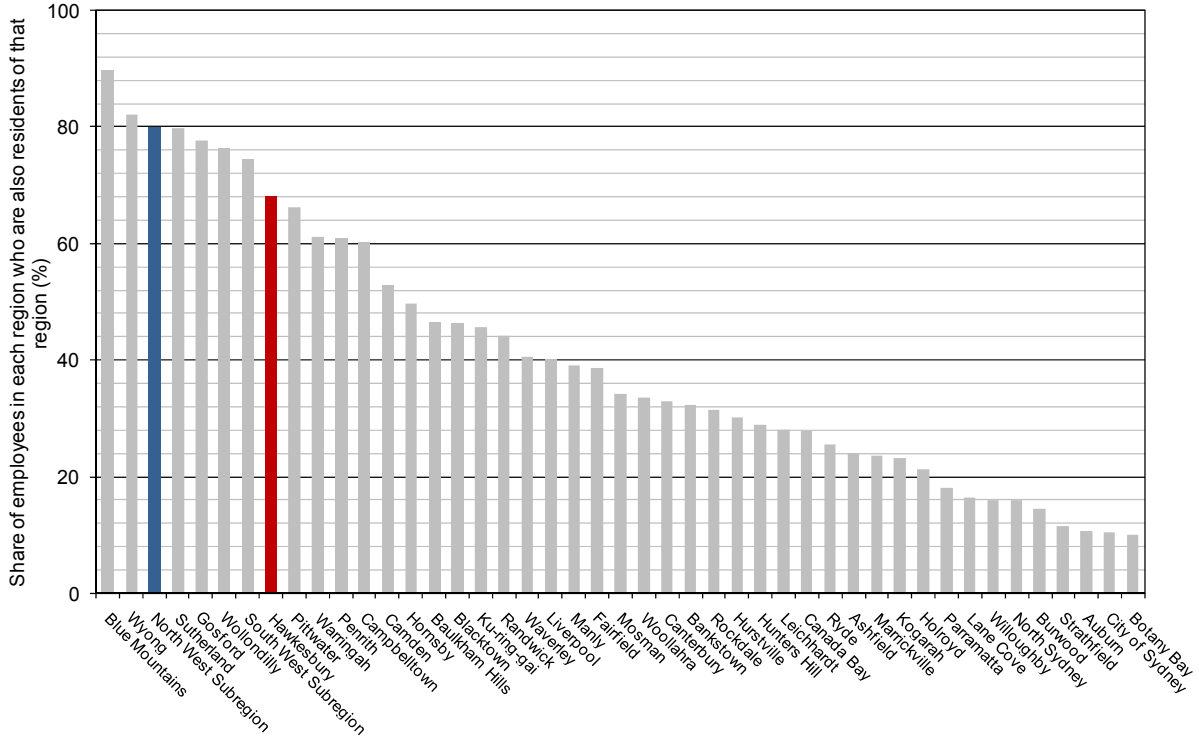


Source: ABS, Journey to Work 2001

Another relevant indicator is employment self sufficiency, which can be measured by:

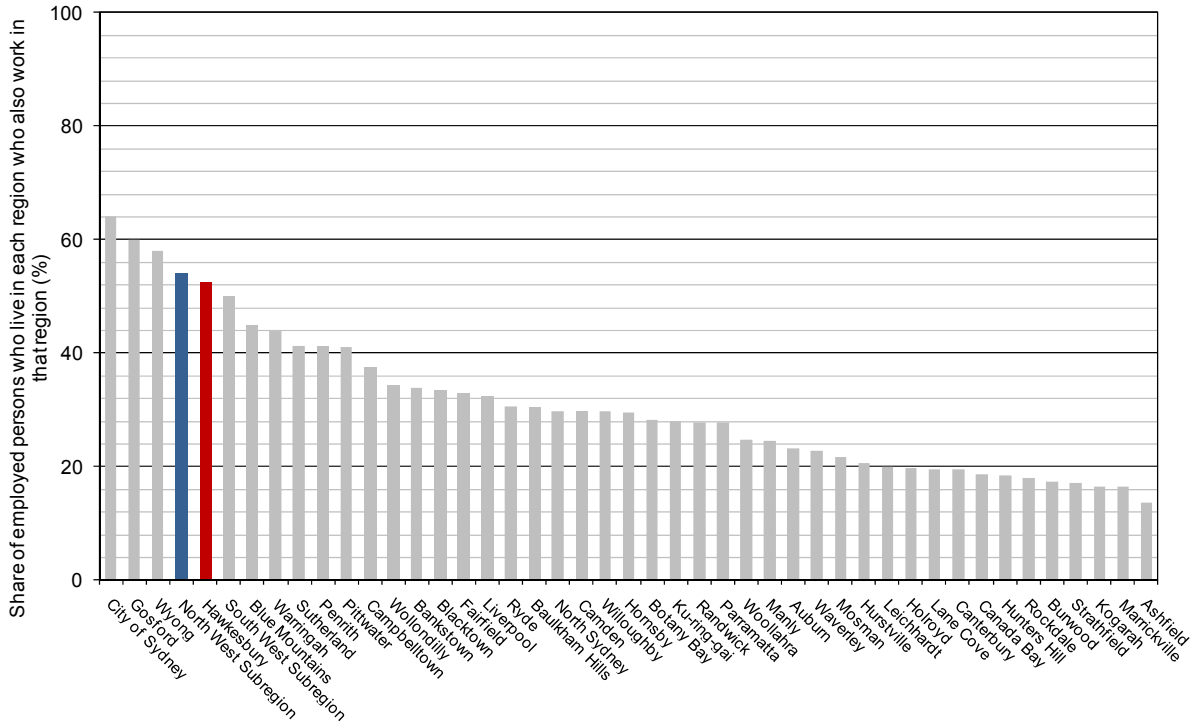
- the share of local jobs occupied by local residents (Figure 12); or
- the share of the local resident workforce working locally (Figure 13).

Figure 12. Employees living and working in the same region, 2001



Source: ABS, Journey to Work 2001

Figure 13. Residents living and working in the same region, 2001



Source: ABS, Journey to Work 2001

The pattern is clear: LGAs further from inner Sydney rate well on this indicator with Hawkesbury, Wyong, and Gosford LGAs resembling 'island' economies (with around 80 percent of local jobs filled by residents and over 50 percent of the resident workforce working locally). LGAs with very large employment concentrations draw their employees from further afield: the City of Sydney, Botany Bay (with the airport and port), Auburn (with Olympic Park), North Sydney and Parramatta are LGAs where less than 20 percent of the workforce is made up of local residents. In the NW subregion it can be seen that jobs are generally filled by residents from the subregion (almost 80 percent).

The aims in relation to employment self containment should be to:

1. have diversity of employment in any subregion, with the actual number of jobs as close as possible to the resident labour force;
2. maximise the share of residents occupying the jobs in the subregion;
3. maximise accessibility for residents to job concentrations.

With its already high employment self-sufficiency, Hawkesbury LGA should aim to address items 1 and 3.

Employment capacity targets for subregions to guide local planning

The NW Draft Subregional Strategy includes capacity targets for the subregion as a whole, for the LGAs and for strategic centres.

Figure 14. Dwelling Targets and Employment Capacity Targets, NW Subregion

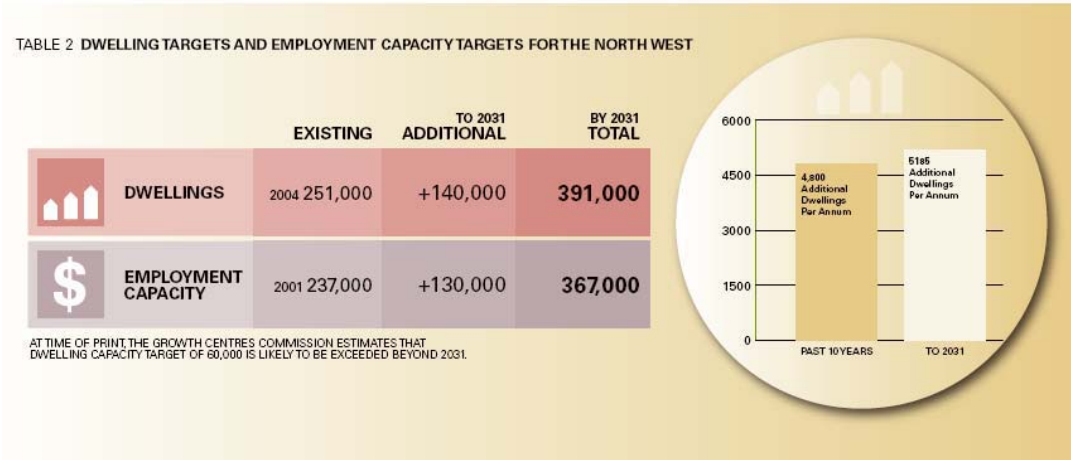


TABLE 2 DWELLING TARGETS AND EMPLOYMENT CAPACITY TARGETS FOR THE NORTH WEST

	EXISTING	TO 2031 ADDITIONAL	BY 2031 TOTAL
DWELLINGS	2004 251,000	+140,000	391,000
EMPLOYMENT CAPACITY	2001 237,000	+130,000	367,000

AT TIME OF PRINT, THE GROWTH CENTRES COMMISSION ESTIMATES THAT DWELLING CAPACITY TARGET OF 60,000 IS LIKELY TO BE EXCEEDED BEYOND 2031.

Source: North West Draft Subregional Strategy, NSW Department of Planning, 2007.

Of the 130,000 jobs and 140,000 dwellings targets identified for the North West subregion, the following distribution by LGA has been provided.

Figure 15. Dwelling and Employment Capacity Targets, NW Subregion

TABLE 4 EMPLOYMENT CAPACITY TARGETS BY LGA FOR THE NORTH WEST SUBREGION (2001–2031)

LGA	2001	2031	GROWTH
BAULKHAM HILLS	53,000	100,000	+47,000
BLACKTOWN	83,000	128,000	+45,000
BLUE MOUNTAINS	19,000	26,000	+7,000
HAWKESBURY	24,000	27,000	+3,000
PENRITH	58,000	86,000	+28,000
TOTAL	237,000	367,000	+130,000

TABLE 9 LOCAL GOVERNMENT AREA 2031 HOUSING TARGETS

LOCAL GOVERNMENT AREA	ADDITIONAL DWELLINGS TO 2031
BAULKHAM HILLS	21,500
BLACKTOWN	21,500
BLUE MOUNTAINS	7,000
HAWKESBURY	5,000
PENRITH	25,000
NORTH WEST GROWTH CENTRE	60,000
TOTAL	140,000

Source: North West Draft Subregional Strategy, NSW Department of Planning, 2007

Hawkesbury LGA will contribute two percent of the employment target and four percent of the dwelling supply. These modest targets provide an insight into the State Government's policy assumptions that employment growth will be tied principally to population growth in the Hawkesbury LGA. Table 5 shows that housing growth targets appear feasible if the rate of growth per annum between 1996 – 2006 continues. The future employment task also appears feasible given the rates of growth between this same period.

Table 5. Housing and Employment growth and targets, Hawkesbury LGA, 1996 – 2006

	1996	2001	2006	Actual per year 1996 to 2006	2031 Employment Capacity and Housing Target*	Required per year to meet target** 2006 to 2031
Dwellings	18,281	20,355	20,672	239	5,000	200
Employment	21,073	23,885	25,230	415	3,000	120

Source: Dwellings – ABS 2006 Time Series, Occupied Dwellings; Employment – SGS Scaled TDC data (see Appendix B).

**From Draft North West Subregional Strategy, 2008*

***Assumes from 2006.*

Major employment in the NW identified for locations outside the Hawkesbury LGA

The Draft NW Subregional Strategy also has specific targets for strategic centres and employment lands. Table 6 identifies the targets in the NW subregion for strategic centres and selected employment lands (with SGS calculations and job estimates for these). In the NW, 86,700 jobs have been allocated to these locations. This serviced land is expected to come online over the life of the strategy (to 2031) and is shown in Table 6.

Table 6. Employment Capacity Targets in NW Strategic Centres and Selected Employment Lands.

Location	Employment Capacity Target	Serviced
In Centres		
Penrith Regional City (Minus North Penrith Urban Area)	8,900	Yes
Norwest Specialised Centre	25,000	Yes
Blacktown Major Centre	5,000	Yes
Castle Hill Major Centre	3,000	Yes
Rouse Hill - Planned Major centre	9,000	Yes
In Centres Total	**50,900**	
Employment Lands		
Western Sydney Employment Hub (in NW)	24,000	No
St Marys / ADI	2,500	Yes
WELL Precinct	7,800	Yes
Penrith Lakes	400	Yes
North Penrith Urban Area	1,100	Yes
Employment Lands Total	**35,800**	
Total		

Location	Employment Capacity Target	Serviced
NW Strategic Centre Subregion and key employment Lands Total	**86,700**	
NW Subregion Target	**130,000**	
NW Unallocated Jobs	**43,300**	

Source: Department of Planning (2007) Draft NW Subregional Strategy; SGS Research and Calculations, 2008

A key implication for Hawkesbury is that it will be surrounded by available, serviced industrial land with superior access to the M7. The regional and major centres and planned major centre at Rouse Hill will also attract a large share of retail and commercial jobs.

Other key directions and actions in the Draft Subregional Strategy that affect employment land planning include:

Rail connections proposed for the North West subregion

The Metropolitan Strategy proposed a North West Rail Link to connect Vineyard on the Richmond line to Rouse Hill and beyond to the metropolitan rail network. This proposition has since been changed, with a fast Metro rail line subsequently proposed. In the November 2008 State mini-budget plans for the North West Metro Rail were deferred indefinitely.

This changing public transport planning creates an uncertain environment for development. Short of abandoning plans for NW fringe area urban growth, it is likely the government will need some form of high quality public transport link for the NW in the future. Ultimately it will be desirable if such a link connected with the existing Richmond rail line to facilitate transfer to a rapid commuter rail network.

All employment land in the Hawkesbury LGA is to be retained for industry

The Draft NW Subregional Strategy identifies that all of the LGA's industrial employment lands must be retained for industrial purposes ('Category 1'). These lands are located at Wilberforce, Richmond, North Richmond, Windsor/South Windsor, and Mulgrave/Vineyard.

New development must address flooding impacts

The Draft NW Subregional Strategy acknowledges that Hawkesbury (south) is predominantly flood affected. Hawkesbury's employment lands are located within flood-affected lands with flood evacuation routes a key requirement of the Hawkesbury–Nepean Floodplain Management Strategy. The strategy identifies that any development proposed for land south of the Hawkesbury River would need to demonstrate appropriate flood evacuation measures.

Agricultural and resource lands must be protected from incompatible uses

The Draft NW Subregional Strategy directs that residential, rural residential and other sensitive urban land uses may be affected by agricultural and extractive industry lands. To ensure the ongoing viability of these lands, they must be protected from such inappropriate land uses.

3.2 Local Planning Context

Strategic Plan 2006/2007

Hawkesbury City Council has adopted the Strategic Plan 2006/2007, which outlines the strategic mission for the LGA:

"To create opportunities for a variety of work and lifestyle choices in a healthy, natural environment"

This will be implemented through directions in the key areas of Planning, Community/lifestyle, Infrastructure, Business development, and Environment. In the area of Business development, the following objectives and strategies are promoted:

- **Objective:** A prosperous community sustained by a diverse local economy that encourages innovation and enterprise to attract people to live, work and invest in the City.

- **Strategies:** Establish operational capacity to foster partnerships that support business innovation and investment; define attributes that distinguish the City and identify opportunities for growing and creating new niche industries.

The outputs of the strategy will provide baseline information about key sectors in the LGA and their local and regional catchment as well as industry specialisations. This information will provide a key input for Council to implement their business development goals.

Hawkesbury Local Environmental Plan 1989 (HLEP 1989)

Local planning policy directs employment land use through the zoning and permissible and non-permissible uses and addressing State Policy directions. The study area precincts are zoned industrial, business or special uses.

Employment also occurs on agricultural and rural zoned land and includes such uses as tourist accommodation, manufacturing (associated with agriculture) and agriculture sector jobs. While it is not within the scope of the current study to investigate these areas, it would be appropriate to undertake further analysis of the nature of and amount of employment that occurs on non-industrial/business zoned lands should be undertaken to get a deeper understanding of the economic profile of the LGA.

Key employment land use zones examined in this study and their intent are provided below:

Table 7. Zoning Table Housing Zones and Key Housing Objectives

Code	Description	Key Objectives
3(a)	3 (a) Business General	▪ Promote the development and expansion of business activities to meet the optimum employment and social needs of the City of Hawkesbury; ▪ Permit non-commercial development within the zone where such development is compatible with the commercial character of the locality.
3(b)	3 (b) Business Special	▪ Promote office development to meet the optimum employment and social needs of the City of Hawkesbury; ▪ Permit non-commercial development within the zone where such development is compatible with the commercial character of the locality.
4(a)	4 (a) Industry General	▪ Set aside certain land for the purposes of general industry within convenient distances of the urban centres of the City of Hawkesbury, ▪ Allow commercial and retail development involving uses ancillary to the main use of land within the zone, and the display and sale of bulky goods, and the day-to-day needs of the occupants and employees of the surrounding industrial area.
4(b)	4 (b) Industry Light	▪ Set aside certain land for the purposes of light industry within convenient distances of the urban centres of the City of Hawkesbury, ▪ Allow commercial and retail development involving uses ancillary to the main use of land within the zone, and the display and sale of bulky goods, and the day-to-day needs of the occupants and employees of the surrounding industrial area.
5(a)	5 (a) Special Uses "A"	▪ Recognise existing public and private land uses and to enable their continued operation, growth and expansion to accommodate associated, ancillary or otherwise related uses.

Source: HLEP 1989

Hawkesbury LEP 1989 does not include specific density controls for industrial and commercial development (such as FSR and height restrictions). Certain provisions allow other land use other than those identified in the land use zoning table. Permissible uses on employment land other than employment land uses include 'units for aged persons' which is permitted on all industrial land. There are no subdivision controls for industrial and commercial lands.

Controls for industrial and commercial development are provided in the comprehensive DCP which provides some guidance on built form elements that must be addressed and which are assessed on merit by Council staff. Controls for industrial development are summarised below. There are no controls for retail/commercial development.

Development Control

Industrial development is assessed on merit with some guidance on the built form elements of:

- Building setback - 15 metres setback from the front property boundary for all buildings on arterial or sub arterial roads, 10 metres on all other streets.
- Building design and construction – design must meet objectives of built form providing a positive contribution to the streetscape with service facilities incorporated into the design.
- Fencing – must be located behind landscaping where required for security purposes.
- Open Storage areas – must be located behind building line and screened.

- Environmental Issues – studies required for developments that will have significant environmental impacts. Certain impacts to environment require agreements with other agencies.

There are no specific development controls for commercial/retail development, apart from car parking. Compliance with Building Code of Australia and amenity issues are part of the merit based development assessment.

Previous studies

The most recent employment land study was a retail study of the LGA undertaken in 2003 as part of the development of a Windsor Economic Development Strategy. The study audited all retail floor space in the LGA and projected the amount of future floor space required. While the projections are dated and have a horizon of 2021, key issues and findings of relevance are:

- The catchment for retail activity in the LGA is local and is expected to remain of this character for some time.
- The study found that there was a net deficiency of 15,000 square metres of GLA[2] entirely in homewares and miscellaneous categories if vacant floor space is used to off-set the deficiency.
- There was a high vacancy rate recorded of 10 percent mostly located at Richmond with the balance located in North Richmond and Windsor.
- There was net escape spending in non-food spending of $5m recorded however there has been significant retail shopping centre development since the study was produced which may have recaptured some of this spending .
- Shopping centre development such as Richmond Market Place had significant impacts on the main street retail activity.
- Tourism is not a significant employer in the centres however it is significant in the Region ('Region' in the Retail study is comprised of all the North West subregion LGAs).

3.3 Key Implications

Hawkesbury River flooding regimes constrain the LGAs employment lands

Most of the LGA's employment lands are affected by the 1:100 year flooding with all of the southern area affected by the Probable Maximum Flood[3]. This will have implications for future dwelling provision which in turn impacts on the potential for the location of jobs, particularly retail and commercial jobs located in centres.

Need to focus planning efforts on potential opportunities in and around centres

The Metropolitan and Draft NW Subregional Strategies place a clear focus on centres as the preferred locations for both growth in dwellings and employment.

[2] GLA is the net selling area including storage space and other areas on which rent is usually paid.

[3] Highest flood levels recorded in 1897.

No significant transport augmentation is identified for Hawkesbury LGA

With the scrapping of the North West Rail Link to Vineyard, Hawkesbury will need to lobby for additional public transport infrastructure – in particular reactivation and an extension of the proposed metro rail line from Rouse Hill to the Richmond line - and maximise the potential of existing transport infrastructure. Current road and public transport links to the regional city of Penrith are poor.

Modest though still significant LGA targets for jobs and housing

Though the dwelling and employment targets are modest, the modest rate of growth of new dwellings in particular in the LGA in the last 10 years implies that reaching the targets will remain a challenge. Planning for employment lands should reflect these targets.

Abundant regional dwelling and jobs growth provides opportunities

Hawkesbury LGA is close to significant planned future populations. Around 70,000 new dwellings are proposed in the North West Growth Centre. The scale of building and construction will be significant and may provide opportunities for Hawkesbury's construction and manufacturing sectors.

Jobs identified for the North West subregion total 130,000 with 86,700 allocated to major centres and employment areas. The majority of the subregional land or centres to host these jobs are serviced and have superior access to the M7 than alternatives in the Hawkesbury LGA. Nevertheless there is an opportunity to build a deeper employment base in the LGA by servicing new residential populations and new businesses elsewhere in the region.

Need to protect existing industrial lands and agricultural lands

The Subregional Strategy directs that all industrial land in the LGA be preserved for industrial land uses. Agricultural land uses must also be protected from inappropriate development including residential development.

Attracting high quality jobs and enhancing self containment

Increasing employment self-containment will mean attracting additional jobs to the LGA, but also higher quality jobs to provide opportunities for a greater share of locals to work locally. The LGA contains strategic assets of the Richmond RAAF, UWS Hawkesbury/Richmond TAFE and the Hawkesbury Race Club and building on these strengths should be part of a self containment agenda.

4 Broad Economic Trends and Drivers

4.1 Regional Assets and Economic Drivers

The Greater Western Sydney (GWS) Region has a number of key regional assets and economic drivers which contribute to the growing success of the region. Table 8 provides a brief overview of these assets and drivers.

Table 8. Regional Assets and Economic Drivers in GWS

Workforce Access	• Access to a growing skilled workforce is a key advantage in the GWS Region • Subregional employment development has an opportunity to capture a 'higher order' jobs pool which is currently lost to the Sydney Central core • Improved accessibility and greater provision of 'high quality' jobs will improve employment self sufficiency
Executive Labour in NW	• Both Hawkesbury and Baulkham Hills LGA are a key source of Executive Labour (i.e. Managers and Professionals) for the North West Subregion • Norwest has capitalised significantly on this labour pool, strengthening the self containment of the region
Strong Western Sydney economy	• The GWS economy generated more than $80 billion in economic value-added in 2006 • GWS is one of the largest and most diverse manufacturing regions in Australia (accounting for around 19 percent of the region's $80 million economy)
M7 Motorway	• Sydney's road infrastructure (Orbital road network) is a key asset for the Greater West • The Westlink M7 has allowed for significant improvements in transport efficiency in GWS as well as strengthened the role of Transport and Logistics and promoted significant employment lands development (in particular the M4/M7 Employment Hub)
University of Western Sydney	• The University of Western Sydney has six campuses located in Greater Western Sydney (GWS) and a mission that links its activities to the development of the region. One of these is the UWS Hawkesbury campus located in Richmond.
Recreation/Parklands	• The volume of land in GWS has created significant opportunity for recreation and parkland development across the region, this is a major advantage for the Greater West • The Western Sydney Regional Parklands links the NW and SW Growth Centres

Source: SGS Research; GWSEDB 2008.

4.2 Regional Issues

There are significant regional issues affecting planning in the Sydney Region and particularly in Sydney's West which have implications for local planning.

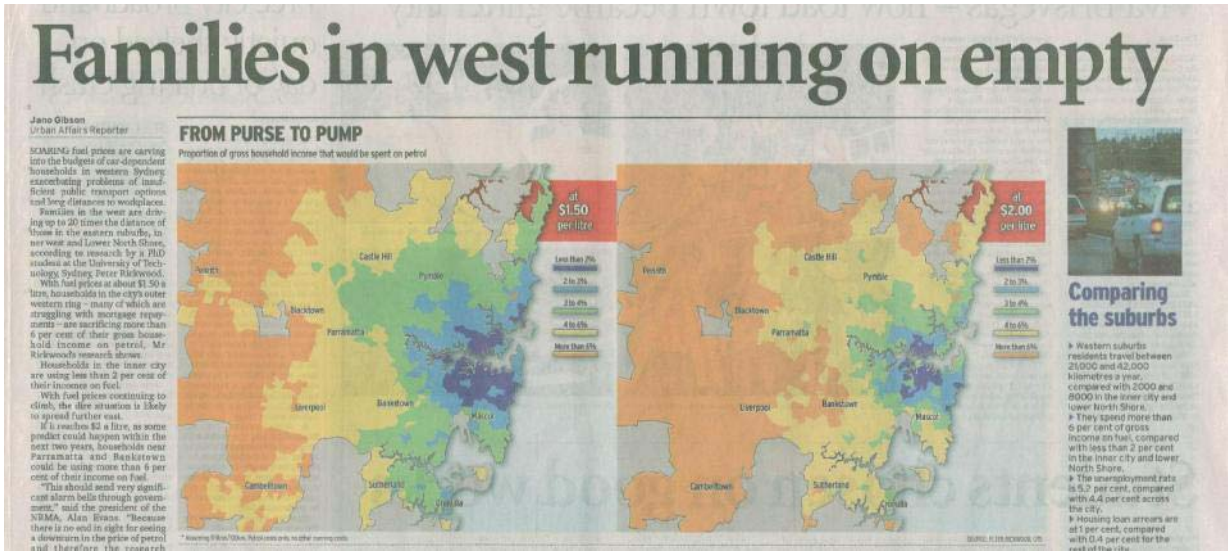
Implications of increasing energy and fuel costs: a new paradigm for planning

The sustainability imperative is a key driver behind the *City of Cities* concept identified in the Metropolitan Strategy. A key feature of high-quality metropolitan planning is to reduce costs (economic, social, and environmental) associated with travel. This is focused on two key goals:

- Minimising trips made in aggregate (by aiming for containment that provides more jobs within easy access to residents and maximising multi-purpose trip-making); and
- Minimising trips undertaken by private vehicles (by clustering activities in centres or locations that can be serviced effectively by public transport).

Recent reports have shown the impact on household budgets from rising fuel prices – with sometimes over six percent on average of a Western Sydney household's budget devoted to fuel costs, compared to less than two percent in inner Sydney where car use and trip making is less (see Figure 16). In addition to the greenhouse gas reduction imperative, there is a clear obligation on planners to be aiming to reduce the need for car based travel.

Figure 16. Rising Fuel Prices



Families in west running on empty

Jano Gibson
Urban Affairs Reporter

SOARING fuel prices are carving into the budgets of car-dependent households in western Sydney, exacerbating problems of inefficient public transport options and long distances to workplaces.

Families in the west are driving up to 20 times the distance of those in the eastern suburbs, inner west and Lower North Shore, according to research by a PhD student at the University of Technology, Sydney, Peter Rickwood.

With fuel prices at about $1.50 a litre, households in the city's outer western ring – many of which are struggling with mortgage repayments – are sacrificing more than 6 per cent of their gross household income on petrol, Mr Rickwood's research shows.

Households in the inner city are using less than 2 per cent of their incomes on fuel.

With fuel prices continuing to climb, the dire situation is likely to spread further east.

If it reaches $2 a litre, as some predict could happen within the next two years, households near Parramatta and Bankstown could be using more than 6 per cent of their income on fuel.

"This should send very significant alarm bells through government," said the president of the NRMA, Alan Evans. "Because there is no end in sight for seeing a downturn in the price of petrol and, therefore, the research

FROM PURSE TO PUMP

Proportion of gross household income that would be spent on petrol

at $1.50 per litre

at $2.00 per litre

Less than 2%
2 to 3%
3 to 4%
4 to 6%
More than 6%

Castle Hill
Pymble
Blacktown
Parramatta
Liverpool
Bankstown
Campbelltown
Sutherland

Comparing the suburbs

- Western suburbs residents travel between 25,000 and 42,000 kilometres a year, compared with 2000 and 8000 in the inner city and lower North Shore.
- They spend more than 6 per cent of gross income on fuel, compared with less than 2 per cent in the inner city and lower North Shore.
- The unemployment rate is 5.2 per cent, compared with 4.4 per cent across the city.
- Housing loan arrears are at 1 per cent, compared with 0.4 per cent for the

Source: Jane Gibson, Sydney Morning Herald, 10 May 2008.

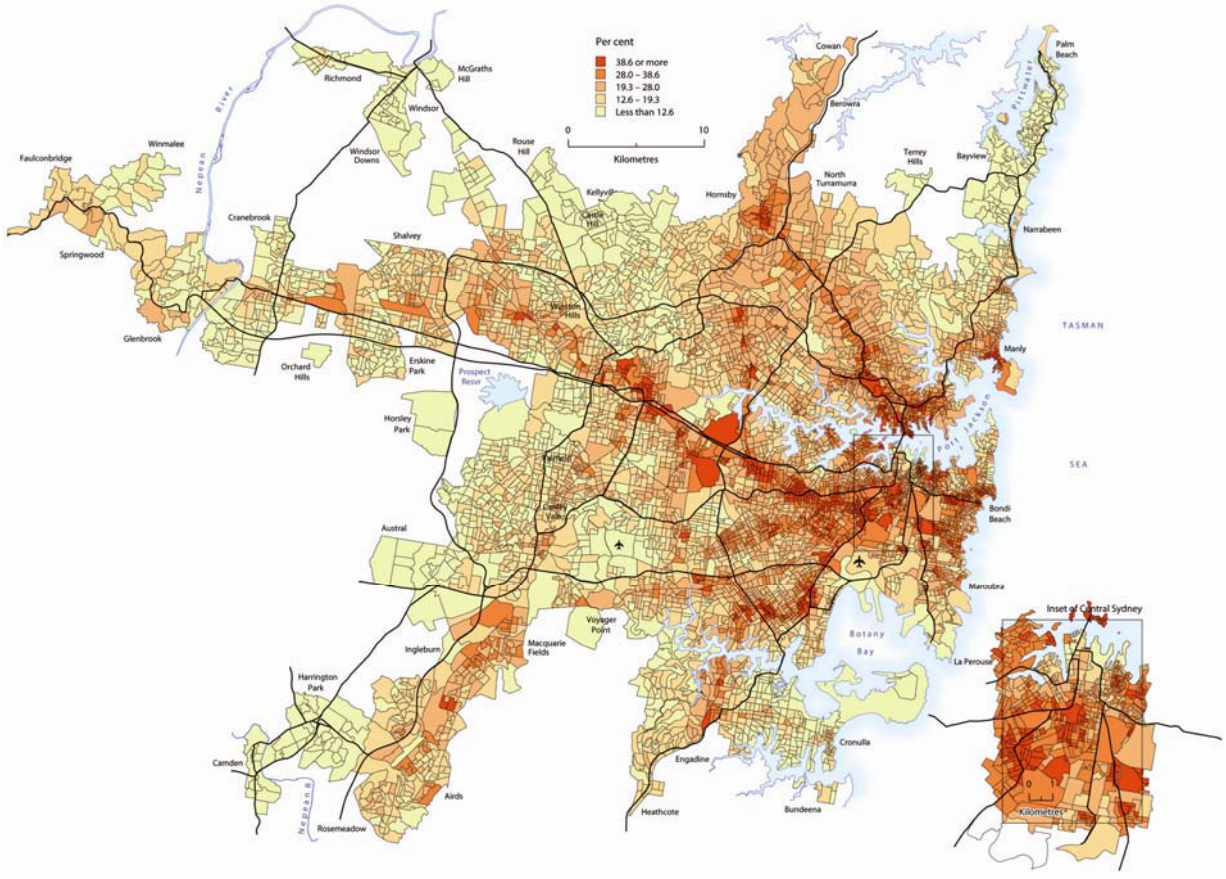
With a price on carbon, and more expensive fuel, industries dependent on oil based transportation may demand greater freight based rail. Rail hubs will need to be serviced by networks of efficient road based freight moving goods around the metropolitan area. Low carbon goods will be in demand and new production opportunities may arise.

A renewed need for public transport and land use integration

In the medium term it would seem apparent that the planning aim of centres based planning, supported by public transport and other integrated transport, will be increasingly important.

Figure 17 clearly shows the importance of proximity to the rail network in reducing the use of cars for the journey to work. This relationship will become even more crucial as oil prices rise and the imperative to reduce greenhouse gas emissions increases.

Figure 17. Journey to Work by Public Transport (Red = Highest Public Transport Use)



Source: Sydney: A Social Atlas, ABS, 2006, p.50-51.

Food security in the Sydney Basin

As the cost of transport rises there will be a need for food to be produced as close as possible to population concentrations. The Sydney basin has excellent soil and climatic conditions for vegetable growing, and contains 18 percent of the total area in NSW being utilised for vegetable growing for human consumption, and *two thirds* of NSW's vegetable production by weight.

Hawkesbury in particular contains 16 percent of vegetable and other crop establishments in the Sydney Basin (ABS, 2006). The growth in boutique/niche food products with local, regional and

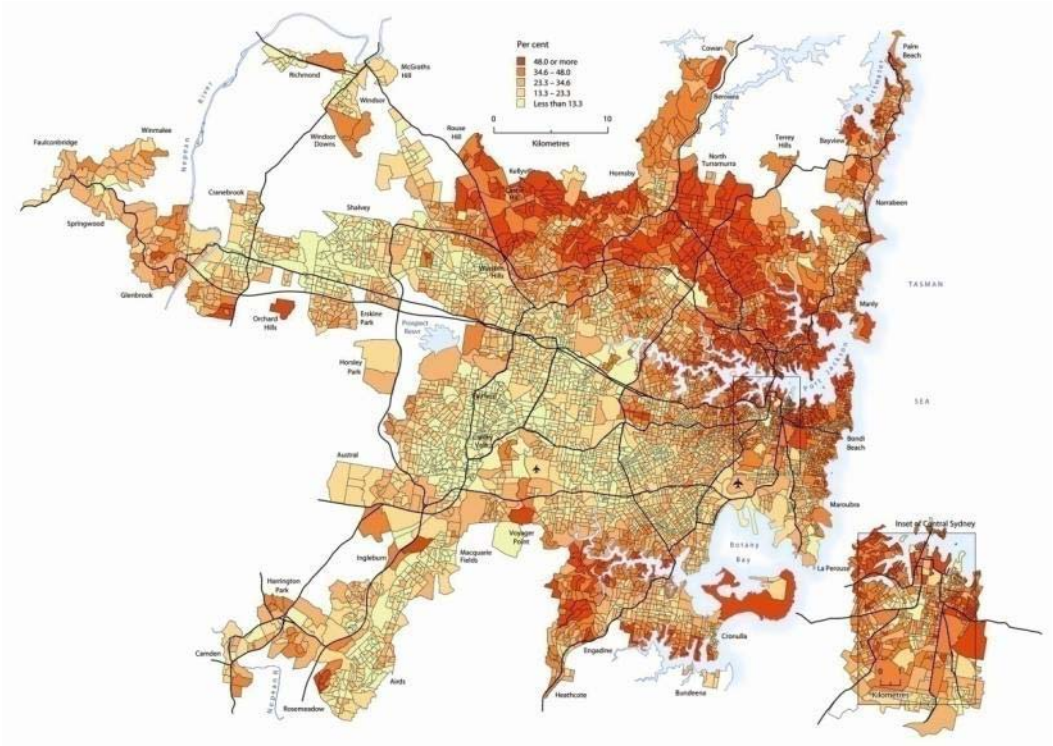
international clients has been supported by the success of the Hawkesbury Harvest Farm Gate Trail and international demand for these products. Additional challenges for agriculture include water sources for irrigation and availability of agricultural land in future as competition from other rural and ancillary uses (e.g. Polo Clubs, rural industries) demands high quality agricultural locations.

In the past there was less concern about land for horticulture in the Sydney basin being 'turned over' to new urban development, as this was generally considered an economically efficient outcome. Today however, the external benefits of a proximate and accessible food supply (future cost savings from reduced need to transport food) are increasingly a consideration in weighing up the merits of urban development versus protecting agricultural production.

Two Sydneys: The geography of employment related disadvantage

Sydney's geographic wealth and opportunity divide is obvious from a range of indicators. For example, the distribution according to incomes and the distribution of resident labour according to occupation shows how the outer west and south west in particular are relatively less well off. Figure 18 shows the distribution of high income earners across metropolitan Sydney.

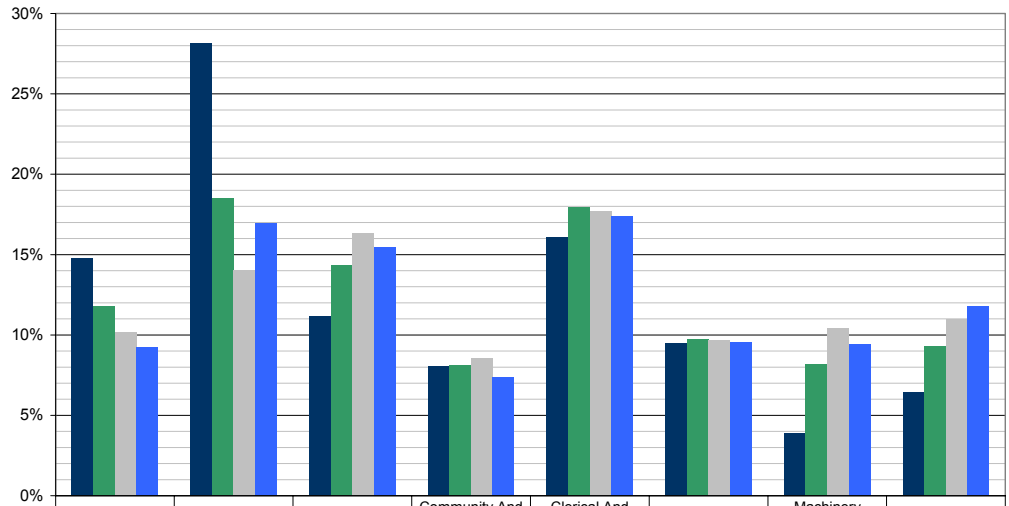
Figure 18. Sydney Incomes, 2006 (Red = Highest Income Households)



Source: Sydney: A Social Atlas, ABS, 2006.

Figure 19 and Figure 20 show the shares of resident labour and jobs in subregions by different occupational classes in eastern Sydney compared to the subregions in the west. The discrepancy is stark though the North West subregion has a 'higher order' occupational profile than the South West, particularly in relation to its resident workforce.

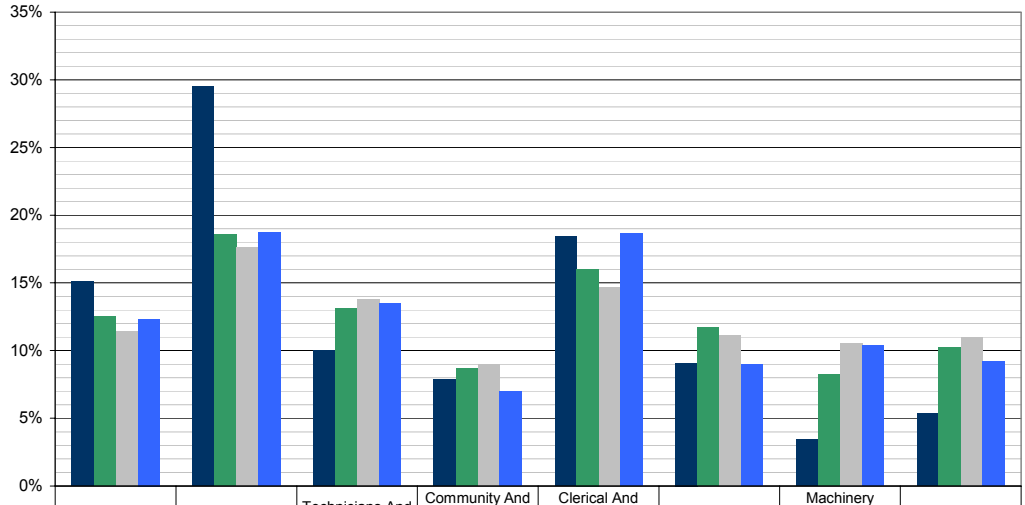
Figure 19. Occupational profile of resident labour force by subregion



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Eastern	15%	28%	11%	8%	16%	9%	4%	6%
North West	12%	19%	14%	8%	18%	10%	8%	9%
South West	10%	14%	16%	9%	18%	10%	10%	11%
West Central	9%	17%	15%	7%	17%	10%	9%	12%

Source: ABS Journey to Work, TDC 2006

Figure 20. Occupational profile of jobs by subregion



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Eastern	15%	29%	10%	8%	18%	9%	3%	5%
North West	12%	19%	13%	9%	16%	12%	8%	10%
South West	11%	18%	14%	9%	15%	11%	11%	11%
West Central	12%	19%	13%	7%	19%	9%	10%	9%

Source: ABS Journey to Work, TDC 2006.

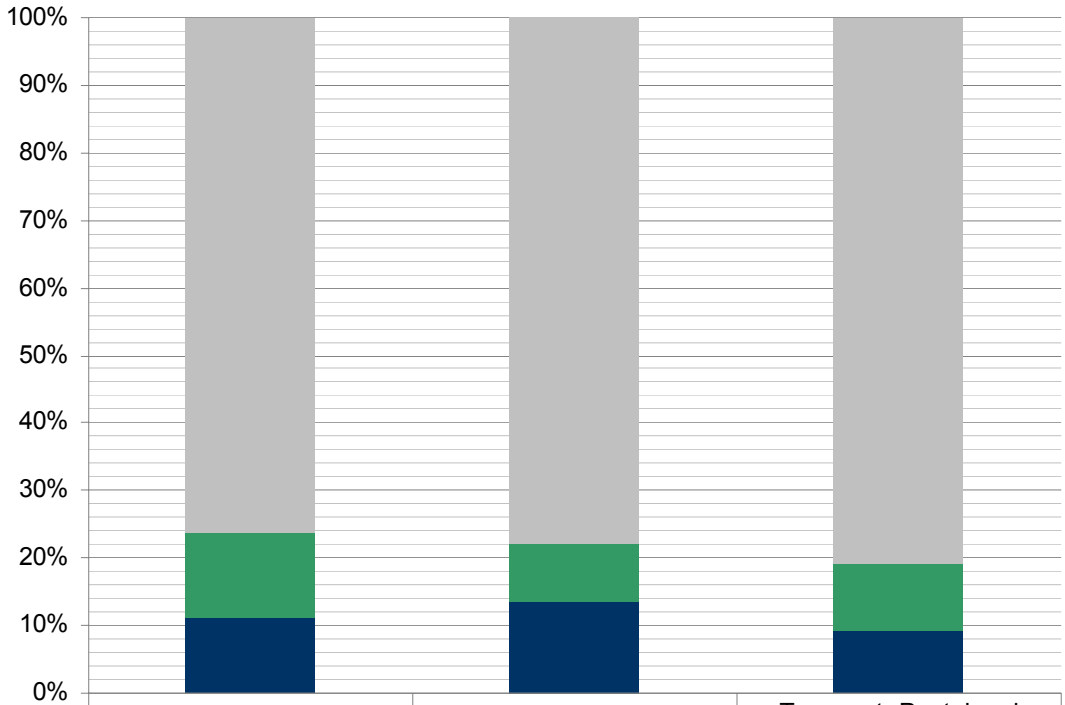
To address this inequality it is not only important to facilitate jobs growth in Western Sydney, it is also critical that good quality jobs are part of the mix. Critics of this idea of enhancing the geographic spread of opportunity argue that transport and access between workers and job

opportunities can solve the problem. However, if there is a lack of good quality jobs in a subregion, there is less chance of generating the nexus of associated support services and activities that provide opportunities for the rest of the labour force.

The increased spread of 'knowledge' workers across the industry sectors

There is a misconception that so called 'knowledge workers' are concentrated in office employment (particularly in finance, insurance and business services). High quality jobs are now spread across many industry types. In 2006, professionals and managers in held more than 24 percent of manufacturing jobs in the Sydney Metropolitan Region, 19 percent in transport (and logistics and 22 percent in construction (see Figure 21).

Figure 21. Employment by Occupation, Selected Sectors, Sydney 2006



	Manufacturing	Construction	Transport, Postal and Warehousing
Other	76%	78%	81%
Professionals	13%	9%	10%
Managers	11%	13%	9%

Source: ABS Journey to Work, TDC 2006.

Achieving high quality jobs growth in Western Sydney is not therefore just about increasing office jobs. The response needs to be more sophisticated, and based around core competitive strengths of the subregions and its workforce. A key aim should be to increase the knowledge component of the value chains in sectors concentrated in the west such as Manufacturing, Transport, Logistics and Warehousing.

This approach is wholly consistent with the State Government's Innovation Statement, which highlights the need to strengthen the innovation component in the value chains of Advanced manufacturing and Trade and logistics. The geographic dimensions of the State's innovation aspirations are perhaps under-recognised, but a focus on infrastructure, skills development, land and research in these sectors in Western Sydney is critical to achieving them.

It would be unlikely for locations in Western Sydney to expect a significant shift in jobs in 'high finance' or advanced business services from Central and Eastern Sydney (i.e. 'Global Sydney'). It is more likely that Western Sydney would host lower order or back office jobs in finance and insurance, as well as third party logistics providers, importers and exporters, headquarters of small production and manufacturing companies related to trade and logistics operations and service providers to these sectors. The 'knowledge' jobs in these sectors, and in support industries, will be located within broad employment areas as well as in centres, and possibly in business parks. The Hawkesbury LGA needs to contemplate what role it can play in this evolving economic context.

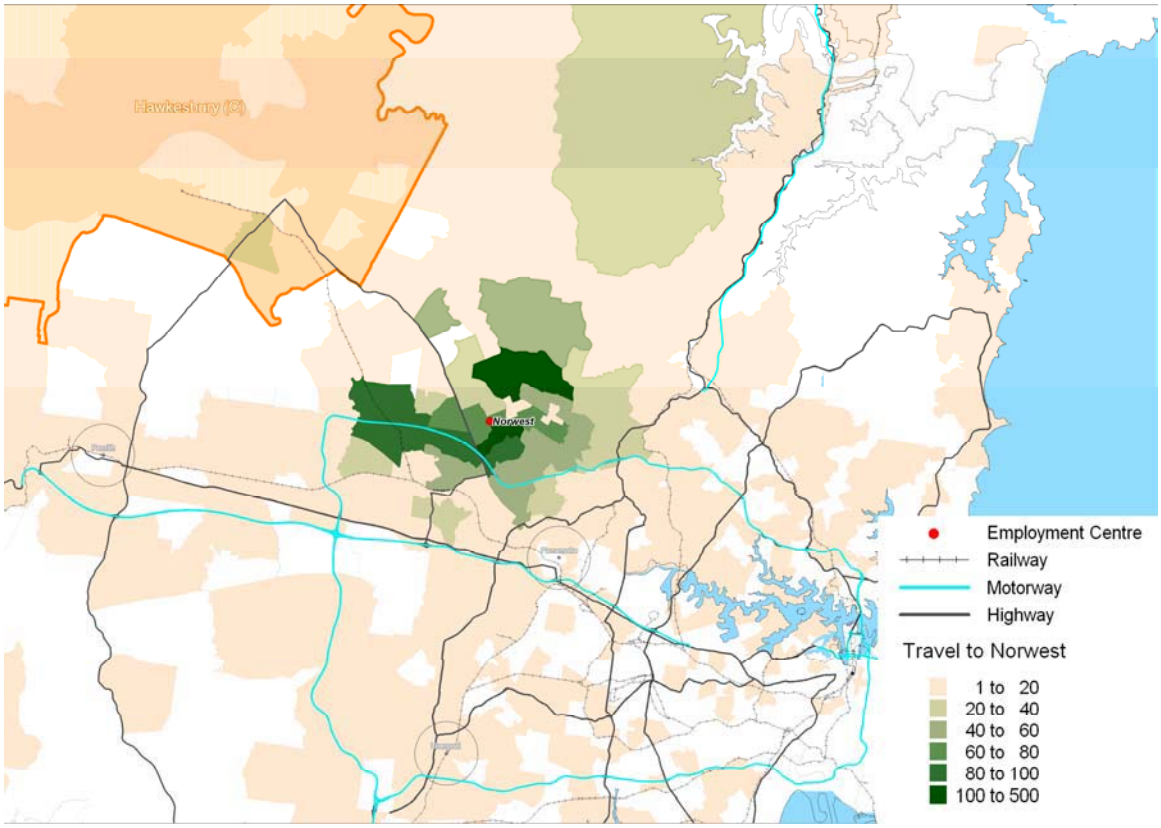
The role and location of Business Parks

The 'high quality' jobs challenge

There is a challenge to attract high quality jobs to the western subregions in the current metropolitan planning framework. With good transport links and access to executive labour the Norwest business park has introduced a higher order jobs node in the North West subregion. Opportunities to develop similar job concentrations elsewhere need to be actively considered. Links to established centres will be critical. Drivers of business park development include relatively cheap land, access to a good quality labour force, good amenity and arterial road links. The workforce in the NW subregion is gradually increasing its skill levels and providing opportunities for this labour within the region is a key challenge.

Particular conditions have underpinned Norwest's development. Good freeway access, particularly via the M2 to lower north shore business centres and the CBD, large lots for large floorplate buildings, a zoning regime which ensures land values are kept modest (by prohibiting residential development), generous car parking rates, high amenity settings and most importantly, proximity to a managerial and well qualified workforce in the surrounding Hills district (see Figure 22 overleaf). The locational advantage of Norwest has been strengthened by the opening of the M7.

Figure 22. Origin of Norwest Employees



Source: TDC, 2001 and SGS Economics and Planning.

New development criteria for Business Parks

The Metropolitan Strategy and Subregional strategies are quite explicit about the conditions and criteria required for the development of new business parks as follows:

Business parks should:

- Support existing centres;
- Have high quality design outcomes;
- Reduce environmental impacts;
- Make better use of existing and proposed public transport infrastructure to reduce car dependence; and
- Build on existing concentrations and clusters of knowledge based activity such as universities or hospitals.

The Metropolitan Strategy also commented that new guidelines will be developed by the Department of Planning for the location or establishment of business parks. Key criteria in these guidelines will include:

- Locating within existing or proposed public transport networks;
- Accessing Sydney's Orbital Motorway Network and economic gateways;
- Complementing established centres;

- Attaining a minimum warehouse component;
- Demonstrating a contribution to subregional economic and job growth; and
- Providing for recreational, cultural and/or learning facilities.

Locations within the Hawkesbury LGA may be able to satisfy these criteria and development framework. The RAAF and UWS represent key assets and there are under-developed station locations and centres which could provide a focus for new investment. The existing labour force is relatively well educated and has a professional and managerial bias. Nevertheless, the conditions which support the development of business parks, and the Metropolitan Strategy criteria, mean that it is not possible or realistic to zone for business parks in any location and expect them to be successful. Further analysis of the Hawkesbury opportunities including a clear understanding of the potential future role of any business park, and whether the pre-requisites for success exist (based on an understanding of the local business and industry fundamentals already outlined) will be necessary.

4.3 Key Implications

Sustainability challenges will increase the importance of effective land use and transport integration

Hawkesbury's centres and employment areas located further from its rail lines imply that residents and workers may remain car dependant. Localised transport networks, increasing attention to the jobs and resident labour force balance and an increased focus on development linked to rail stations will be required into the future. The amenity of the existing retail and commercial centres, and opportunities for new sustainable employment locations, need to be a focus.

Management of Hawkesbury's agricultural lands will gain in importance as food security becomes a more pressing issue

Rising food prices and the related issue of local 'food security' are rapidly increasing as issues. This will require forward planning to assess the scale and nature of land that may become more valuable for food production for the Sydney Basin in the future. Land auditing and an assessment of land use on these lands would be a key requirement of such investigations. This also represents an economic opportunity for the Hawkesbury as other parts of Sydney seek links to the local agricultural economy.

Hawkesbury can build on good rates of employment self sufficiency and provide a wider range of high quality jobs

Hawkesbury is identified as having already good rates of self-containment. It has a high share of its residents in the Hawkesbury jobs market. Deepening the supply of high quality jobs presents a further opportunity to deepen employment self sufficiency. The opportunity for a business park or other higher amenity office and business centre should be investigated, ensuring it addresses the Metropolitan Strategy criteria.

5 Economy and Employment Profile

This section of the report seeks to understand Hawkesbury's economic profile and the local and subregional linkages its industries may have. The analysis draws on detailed assessment of 2006 Journey to Work (JTW) data and Transport data Centre (TDC) employment projections.

5.1 Employment and Industry Profile

In 2006, there were 25,230 jobs[4] located in Hawkesbury LGA. This represents a jobs growth of 6 percent since 2001 or approximately 1340 jobs. TDC employment projections predicted a growth of 592 jobs (or 2 percent increase) between 2001 and 2006.

The Subregional employment target for Hawkesbury LGA of 3,000 implies a rate of 66 jobs per year to 2031 to meet the target. Over the last 10 years jobs growth has averaged 415 per year. Given these recent growth rates, it appears that the target rate will more than likely be achieved and surpassed should the trend continue. This may result in Hawkesbury providing more jobs than the employment capacity target.

Table 9. Housing and Employment growth and targets, Hawkesbury LGA, 1996 - 2006

	1996	2001	2006	Actual per year 1996 to 2006	2031 Employment Capacity and Housing target*	Required per year to meet target** 2006 to 2031
Employment	21,073	23,885	25,230	415	3,000	120

Source: Employment – SGS Scaled TDC data.

**From Draft North West Subregional Strategy, 2008*

***Assumes from 2006.*

5.1.1 Industry Sector Analysis

Hawkesbury LGA

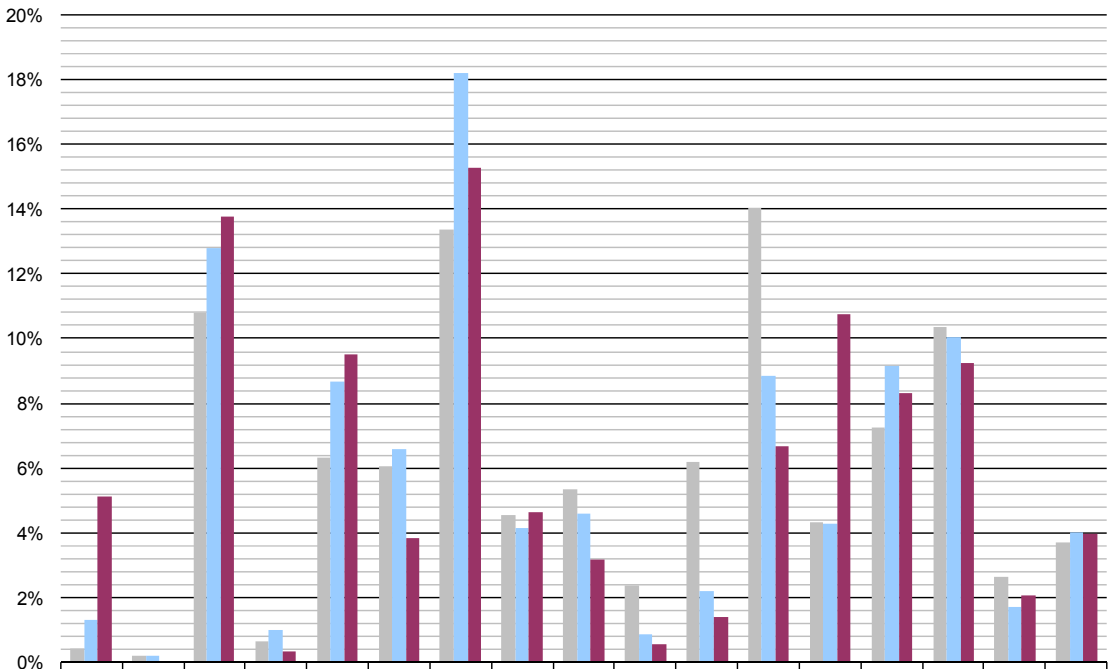
In terms of industry sector activity, industries with the highest recorded employment share in 2006 were Retail Trade (15 percent), Manufacturing (14 percent) and Government, Administration and Defence sectors (11 percent). This is followed by comparable proportions in Construction, Health and Community Services, and Education sectors (10 percent, 9 percent and 8 percent respectively). The sector share analysis is shown in Figure 23 (against the benchmark regions of metropolitan Sydney and the NW subregion).

[4] SGS scaled employment data – see Appendix B for scaling factor details.

The comparison shows the relative strength of the agricultural industry sector to the Hawkesbury LGA. Manufacturing has held its share of the LGA's jobs and continues to be an important sector. Not surprisingly, construction is a key sector while the share of local jobs in the tourism activities of cafes, accommodation and restaurants is higher than in the benchmark regions. The importance of the RAAF base to the local employment base is shown in the very large share of jobs in the Government administration and defence sector.

This has a somewhat distorting effect on the share of jobs in other sectors. Notwithstanding this there is a very modest share of jobs in the higher value sectors of finance and insurance and property and business services compared to the benchmark regions.

Figure 23. Industry Sector Share, Hawkesbury LGA and Benchmark Regions (Sydney SD and NW Subregion) (Percentage Share)



	Agr. For'try & Fishing	Mining	Manuf.	Utilities	Constr.	Wh'sale Trade	Retl. Trade	Acc. Cafes & Rest.	Transp & Stor	Comm. Serv.	Fin. & Ins.	Prop'ty & Bus Serv	Govt. Admin. & Def.	Educat.	Health & Com'ty Serv.	Cult & Recr. Serv.	Pers & Other Serv
Sydney SD	0%	0%	11%	1%	6%	6%	13%	5%	5%	2%	6%	14%	4%	7%	10%	3%	4%
North West Subregion	1%	0%	13%	1%	9%	7%	18%	4%	5%	1%	2%	9%	4%	9%	10%	2%	4%
Hawkesbury	5%	0%	14%	0%	10%	4%	15%	5%	3%	1%	1%	7%	11%	8%	9%	2%	4%

Source: Adjusted TDC JTW data, 2006.

As shown in Figure 24 employment change between 2001 and 2006 shows variation across sectors, with the sharpest declines occurring in the sectors with the smallest base numbers. Since 2001, the key sectors of Retail Trade, Manufacturing and Government, Administration and Defence all experienced modest growth of between 5 percent and 9 percent. Secondary sectors of Construction and Health and Community Services experienced the highest growth rate of 28 percent and 26 percent respectively. The Education sector had a growth rate of less than 1 percent.

Other sectors which had smaller recorded employment values but which had strong growth include Transport and Storage (23 percent), Finance and Insurance (14 percent) and Personal and Other Services (18 percent).

Figure 24. Industry Sector Share, Hawkesbury LGA (Percentage Share change 2001-2006 change)

	Agr. For'try & Fishing	Mining	Manuf.	Utilities	Constr.	Wh'sale Trade	Retl. Trade	Acc. Cafes & Rest.	Transp & Stor	Comm. Serv.	Fin. & Ins.	Prop't y & Bus Serv	Govt. Admin. & Def.	Educat.	Health & Com't y Serv.	Cult & Recr. Serv.	Pers & Other Serv
Change 2001-2006	-14%	-39%	9%	-26%	28%	-10%	5%	1%	23%	-15%	14%	5%	7%	0%	26%	-14%	18%

Source: Adjusted TDC JTW data, 2001 and 2006.

The construction and manufacturing sectors will remain important to Hawkesbury's economy given the proposed 67,000 dwellings in the North West Growth Centre and the building trade activity that will result.

Detailed examination of key industries

A closer analysis of the composition of employment in the top five industry sectors (Retail Trade, Manufacturing and Government Administration and Defence, Construction, Health and Community Services and Education) was undertaken. This analysis utilised 2006 ABS Journey to work data at the 3 digit level[5]. Key findings are presented in Table 10.

The analysis shows the importance of a few key players in the manufacturing sector. Jobs at Rural Press (in publishing) and Hannapak in 'wood product manufacturing' and in some significant Transport Equipment manufacturers dominate. The dominance of Defence in the Government Administration and Defence highlights the importance of the RAAF base. A range of sub-sectors contribute to the strength of the Construction sector which services the outer western parts of

[5] 3 digit ANZSIC – these are subsets of the key industry sector categories.

Sydney. Hospitals are important in the health sector, while secondary schools and staff at UWS and TAFE are key job locations in the Education sector.

Table 10. Key industry sub-sectors, 3 digit ANZSIC 2006

Industry Sector	Key sub-sectors
Retail Trade	▪ Specialised Food Retailing (22%) ▪ Supermarket and Grocery Stores (18%) ▪ Motor Vehicle Services (14%) ▪ Other Personal and Household Good Retailing (11%) ▪ Furniture, Houseware and Appliance Retailing (10%)
Manufacturing	▪ Publishing (11%) – Rural Press is located in the LGA and contributes to this jobs total. Fairfax now owns Rural Press. ▪ Other Transport Equipment manufacturing (11%) ▪ Other wood product manufacturing (7%)
Government Administration and Defence	▪ Government Administration (18%) ▪ Defence (81%) - The Richmond RAAF base comprise most of all of these jobs.
Construction	▪ Building Construction (28%) ▪ Non-Building Construction (8%) ▪ Site Preparation Services (8%) ▪ Building Structure Services (11%) ▪ Installation Trade Services (23%) ▪ Building Completion Services (10%) ▪ Other Construction Services (9%)
Health and Community Services	▪ Hospitals and Nursing Homes (30%) – Hospitals in Hawkesbury include the Hawkesbury Private Hospital (a private Catholic Health Care Hospital which take public patients) and St John of God Hospital. Veterinary Hospital also contribute to these jobs. ▪ Community Care Services (16%) ▪ Medical and Dental Services (13%) ▪ Child Care Services (13%)
Education	▪ School Education (62%) – Hawkesbury contains 56 schools with approximately 36% catering to pre-school and day care needs, 44% are public schools and the remainder a range of private schools and collages. ▪ Post School Education (21%) – UWS Hawkesbury (Richmond campus) and Richmond TAFE comprise most to all of these jobs.

Source: ABS 2006 JTW 3 digit ANZSIC.

Industry Specialisation

The capacity of a region to provide more goods and services than required, and to then export the products of these industries to other regions is known as industry specialisation and can be illustrated by Location Quotient Analysis (LQ). This involves dividing the share of jobs in an industry in the study region (in this case Hawkesbury LGA) by the share of that industry in a benchmark region.

- Where the ratio, or LQ value is close to, or equal to, 1 it suggests that the local industry sector produces just sufficient to satisfy local demand for the products of that industry;
- An LQ value less than 1 suggests the local industry produces less than sufficient to satisfy local demand and that such products must be imported into the community;
- An LQ value greater than 1 assumes that the local industry produces well above the amount to satisfy local demand and that some goods and services will be exported to other regions and communities. A high LQ will normally be one in which the community will have clearly developed as a specialist industry.

Analysis of the Hawkesbury LGA finds that it has two clear specialisations in Agriculture, Forestry and Fishing sector and in the Government, Administration and Defence Sectors. This specialisation is over both the Sydney Region and the North West Subregion as shown in Table 11.

As rural activities have declined elsewhere in the metropolitan region (and notwithstanding some job declines in this sector) , the LGA's specialisation in Agriculture, Forestry and Fishing Sector has grown against the North West Subregion and the Sydney Region since 2001. This is further evidence of the key role the local agricultural sector could play into the future for metropolitan Sydney and NSW as a whole as the price of importing and transporting food increases. One of the key local agricultural sectors is mushroom farming. Almost a quarter of Australia's mushrooms are produced in the Hawkesbury LGA (see Appendix C for further detail).

The LGA's specialisation in Government, Administration and Defence has slightly reduced against the Sydney Region and North West subregion since 2001.

Table 11. Location Quotient Analysis, Hawkesbury LGA against Sydney Region and North West Subregion, 2001 and 2006.

	2006		2001	
Industry Sector	Sydney Region	North West Subregion	Sydney Region	North West Subregion
Agr. For'try & Fishing	11.3	3.9	9.8	3.4
Mining	0.3	0.3	0.7	0.8
Manuf.	1.3	1.1	1.1	0.9
Utilities	0.5	0.3	0.8	0.5
Constr.	1.5	1.1	1.5	1.1
Wh'sale Trade	0.6	0.6	0.7	0.6
Retl. Trade	1.1	0.8	1.1	0.8
Acc. Cafes & Rest.	1.0	1.1	1.0	1.1
Transp & Stor	0.6	0.7	0.6	0.8
Comm. Serv.	0.2	0.7	0.3	0.7
Fin. & Ins.	0.2	0.6	0.2	0.7
Prop'ty & Bus Serv	0.5	0.8	0.5	0.7
Govt. Admin. & Def.	2.5	2.5	3.0	2.6
Educat.	1.2	0.9	1.4	1.0
Health & Com'ty Serv.	0.9	0.9	0.9	0.9
Cult & Recr. Serv.	0.8	1.2	0.9	1.3
Pers & Other Serv	1.1	1.0	1.0	0.9

Source: TDC 2006 and 2001 JTW data.

The ability of the local planning regime to support or manage growth in these sectors varies due to the ownership of the land where the activity occurs. The RAAF base is on Commonwealth government land, where state and local planning controls do not reach. Decisions about jobs and activity here will typically be made without regard to local issues but this should not stop Council having a strong opinion about the strategic future of the site.

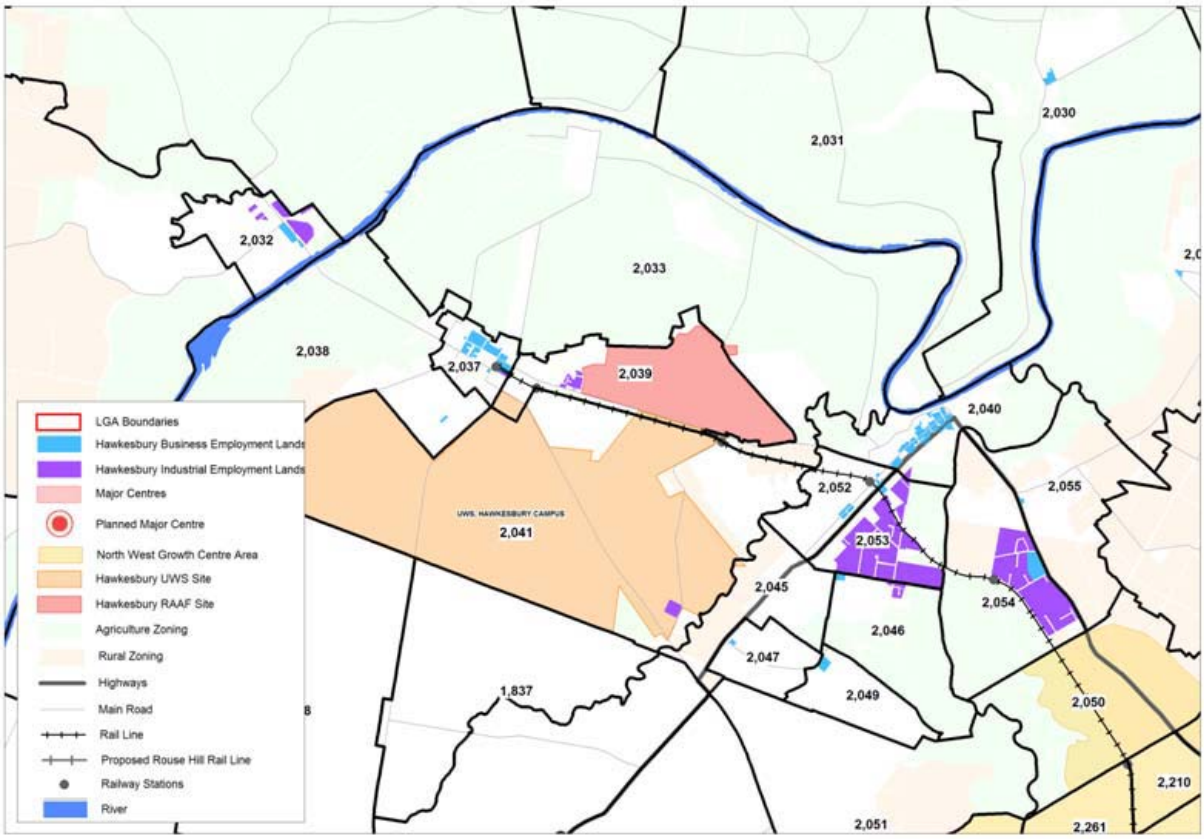
Agricultural sector jobs however are located on generally privately owned land and therefore the ability to at least influence change is possible through local land use planning. Consultation with the Department of Primary Industries finds that additional to the food security issues there is significant pressure for the use of prime agricultural lands for non-agricultural activities such as recreation clubs (e.g. Polo Clubs) and residential development. There is also conflict between preserving land for agricultural land uses and mining. There is an urgent need for a meaningful and effective strategic approach to metropolitan wide rural land use which includes an assessment of the contribution of agricultural production and manufacturing to the NSW econonomy.

5.1.2 Employment Concentrations

Geographies of Analysis

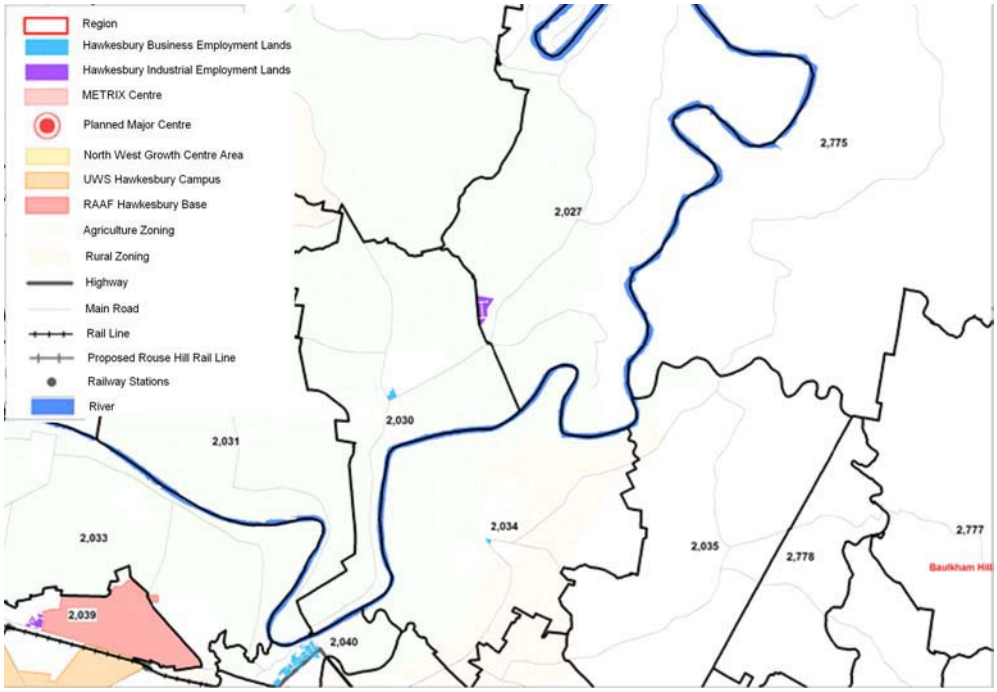
The location of job concentrations has been derived from travel zone data produced by the Transport Data Centre (TDC within the Ministry of Transport). A travel zone is the smallest unit of for which spatial employment data is reported. ABS census employment data have been allocated to 'travel zones' developed by TDC. Figure 25 below shows the travel zones according to the 2006 census. Comparison of the growth rates in travel zone employment between 2001 and 2006 is difficult because the travel zone geographies have changed significantly for the 2006 release.

Figure 25. LGA South 2006 Travel zones



Source: SGS 2008

Figure 26. LGA South with 2001 Travel zones – Wilberforce focus



Source: Ministry of Transport JTW data 2001

The data includes information about jobs within travel zones by industry sector. The employment precincts are generally located within these travel zones however many contain significant non-industrial/business zoned land also hosting employment. The travel zones with the employment precincts (not including small neighbourhood centres) are shown in Table 12. As expected the highest concentrations of jobs are in the Richmond and Windsor centre areas.

Table 12. LGA South Travel Zones and jobs

TZ	Precinct	Jobs	% of LGA
2039	Richmond (Industrial and RAAF)	2122	10%
2037	Richmond (Centre)	2105	10%
2053	South Windsor (industrial)	1975	9%
2040	Windsor (centre and tip of industrial)	1548	7%
2052	South Windsor (centre)	1253	6%
2054	Mulgrave	1086	5%
2032	North Richmond	947	5%
2055	McGraths Hill	893	4%
2041	UWS	588	3%
2027	Wilberforce (Industrial)	387	2%
Total		**12904**	**62%**

Source: TDC 2006 by Travel zone

Some further detail regarding the split of jobs is provided in Table 13.

Table 13. LGA South Travel Zones and industry sector share

TZ Code	Precinct Name and correlation factor	Key sectors in the travel zone
2039	Richmond (Industrial and RAAF)	• Manufacturing (13%) • Public Administration and Safety (54%)
2037	Richmond (Centre)	• Retail Trade (34%) • Accommodation and Food Services (15%) • Health Care and Social Assistance (16%)
2053	South Windsor (industrial)	• Manufacturing (29%) • Retail Trade (10%) • Public Administration and Safety (9%)
2040	Windsor (centre and tip of industrial)	• Retail Trade (16%) • Public Administration and Safety (13%) • Health Care and Social Assistance (36%)
2052	South Windsor (centre)	• Manufacturing (29%) • Retail Trade (10%) • Public Administration and Safety (9%)
2054	Mulgrave	• Manufacturing (25%) • Construction (15%) • Retail Trade (17%) • Accommodation and Food Services (9%)
2032	North Richmond	• Manufacturing (19%) • Retail Trade (24%) • Accommodation and Food Services (10%) • Education and Training (10%)
2055	McGraths Hill	• Manufacturing (26%) • Construction (15%) • Retail Trade (17%) • Accommodation and Food Services (9%)
2041	UWS	• Education and Training (57%) • Health Care and Social Assistance (13%)
2027	Wilberforce	• Agriculture, Forestry and Fishing (10%) • Manufacturing (22%) • Electricity, Gas, Water and Waste Services (2%) • Construction (18%) • Wholesale Trade (9%) • Retail Trade (8%)

Source: SGS 2008

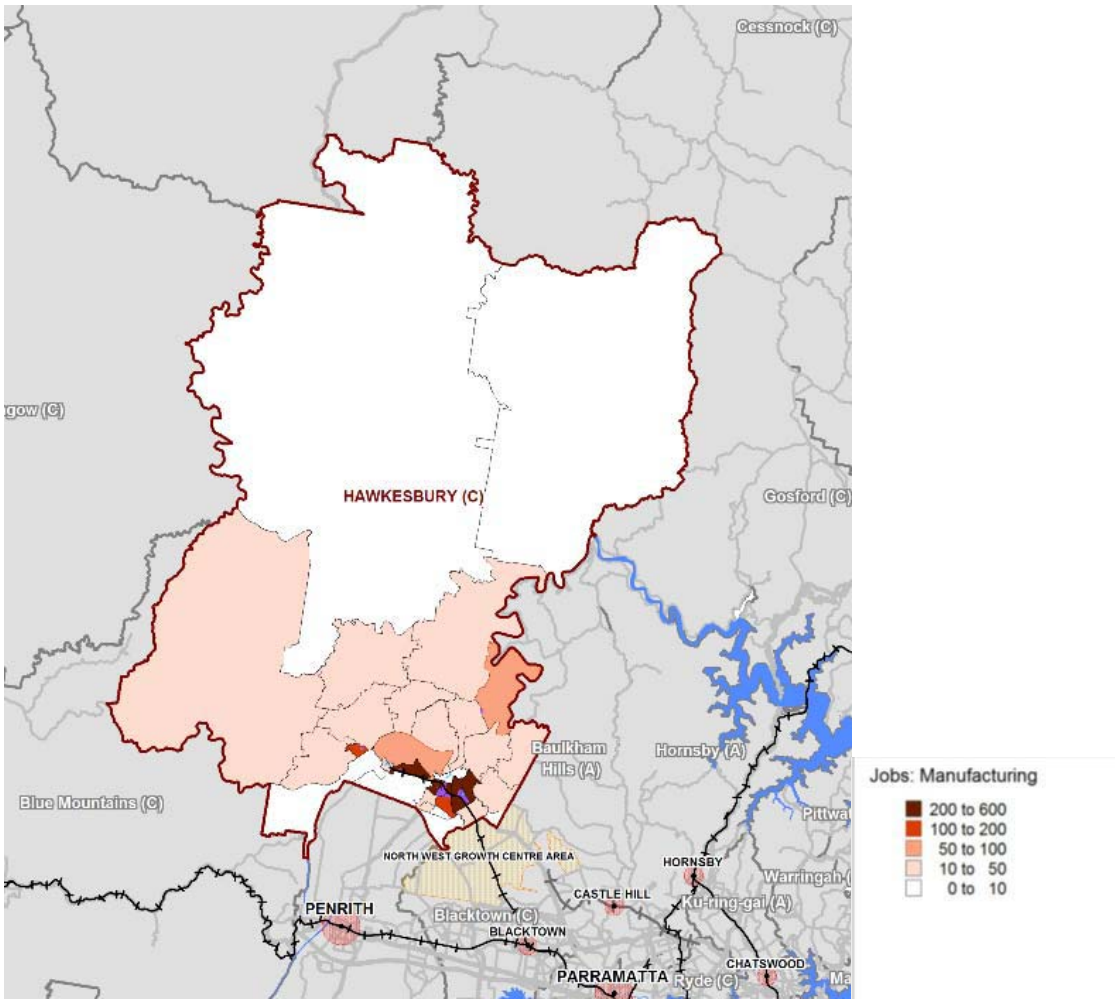
Non-industrial/business zoned land jobs

Jobs in the travel zones within the southern LGA study area make up 62 percent of the LGA's employment. This means that at least 38 percent of jobs in the LGA are located outside the study area. This is a significant proportion of jobs. These uses are predominantly non-industrial/business zoned land such as Mixed Agriculture. For example, Rural Press, a significant employer in the LGA, is located on Mixed Agriculture land.

Further analysis should be undertaken into this part of the LGA's economy. An analysis of travel zone employment density outside the study area by key industry sectors highlights this finding.

Figure 27 shows significant manufacturing job concentrations in the travel zones containing the employment precincts of Mulgrave and South Windsor, and the centres of Richmond and North Richmond. However there are also manufacturing jobs in all travel zones outside of the study area travel zones.

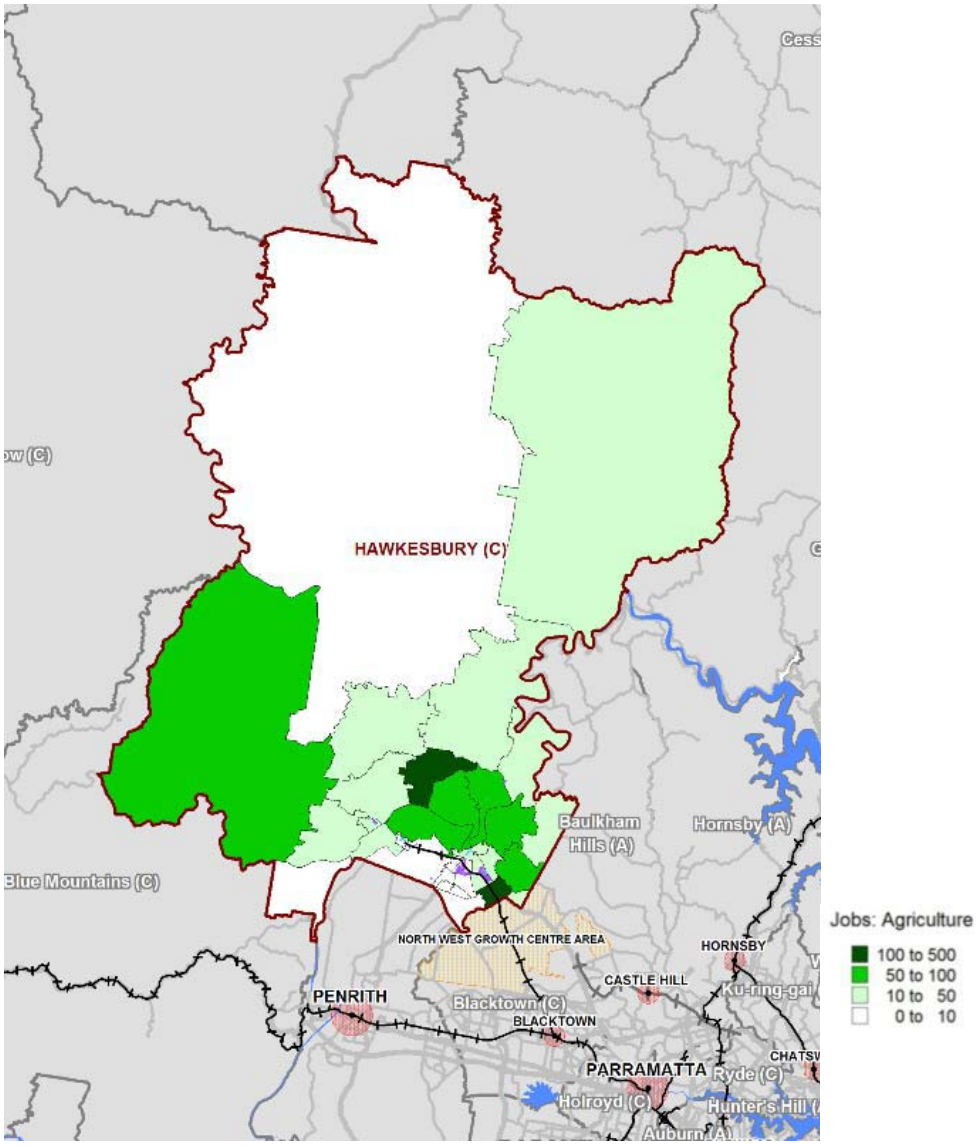
Figure 27. Manufacturing Jobs by travel zone



Source: Ministry of Transport JTW data 2001

Figure 28 shows the distribution of agricultural jobs in the LGA. There are significant concentrations in the southern LGA area and north of the Hawkesbury River.

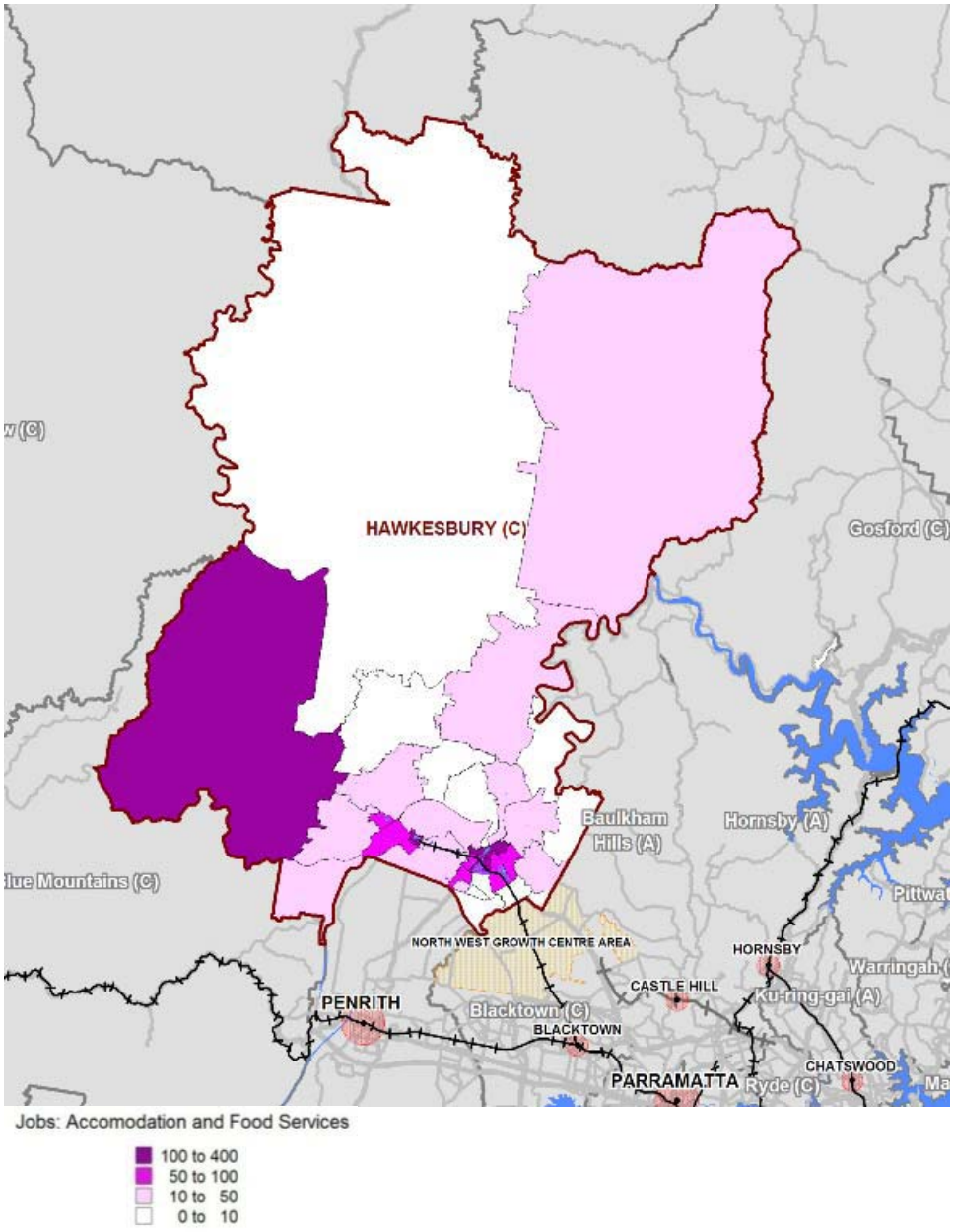
Figure 28. Agricultural Jobs by travel zone



Source: Ministry of Transport JTW data 2001

Figure 29 shows the distribution of Accommodation jobs in the LGA. There are significant jobs located outside the study area travel zones.

Figure 29. Accommodation Jobs by travel zone



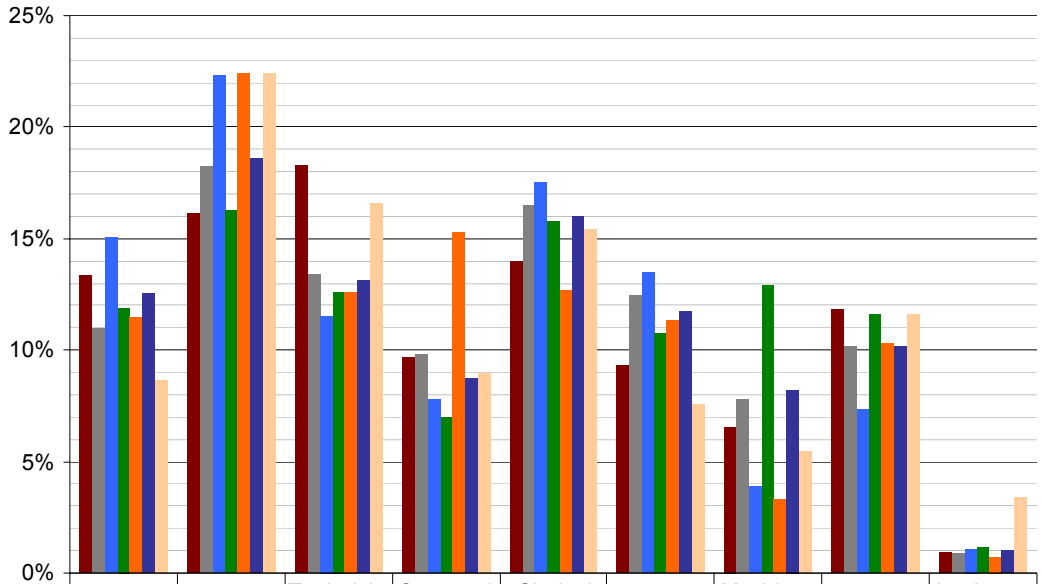
Source: Ministry of Transport JTW data 2001

This brief analysis highlights the need to investigate further the employment outside industrial/business zoned land and take a broader view of the Hawkesbury economy. Large employers are located on rural, agricultural and environmental protection land and an analysis of these uses is a key aspect of a comprehensive economic strategy for the LGA.

5.1.3 Occupation Profile

A comparison of the occupational profile of jobs within the Hawkesbury LGA against benchmark regions is provided at Figure 30. High quality occupations can be considered occupations as Professionals, Managers and Technicians. These jobs are the focus of key business interactions and negotiations, and generate employment in the support occupations of administrative, clerical, labourer and sales jobs.

Figure 30. Occupation Profile, Hawkesbury LGA and benchmark regions, 2006



	Managers	Professionals	Technicians & trades	Community and Personal	Clerical and Administr	Sales workers	Machinery Operator	Labourers	Inadequately described
Hawkesbury	13%	16%	18%	10%	14%	9%	7%	12%	1%
Penrith	11%	18%	13%	10%	17%	12%	8%	10%	1%
Baulkham Hills	15%	22%	12%	8%	17%	14%	4%	7%	1%
Blacktown	12%	16%	13%	7%	16%	11%	13%	12%	1%
Blue Mountains	11%	22%	13%	15%	13%	11%	3%	10%	1%
North West	13%	19%	13%	9%	16%	12%	8%	10%	1%
Sydney (UD)	9%	22%	17%	9%	15%	8%	5%	12%	3%

Source: ABS 2006 Place of Work data, 2006

There is a spread of occupations amongst the jobs in the LGA with a maximum share of 18 percent in Technicians & Trades Workers and the lowest share in Machinery Operators & Drivers. Managers and Professionals combined make up 29 percent of total jobs indicating a reasonably skilled local workforce (remembering that many of the managers in particular will be in agricultural enterprises).

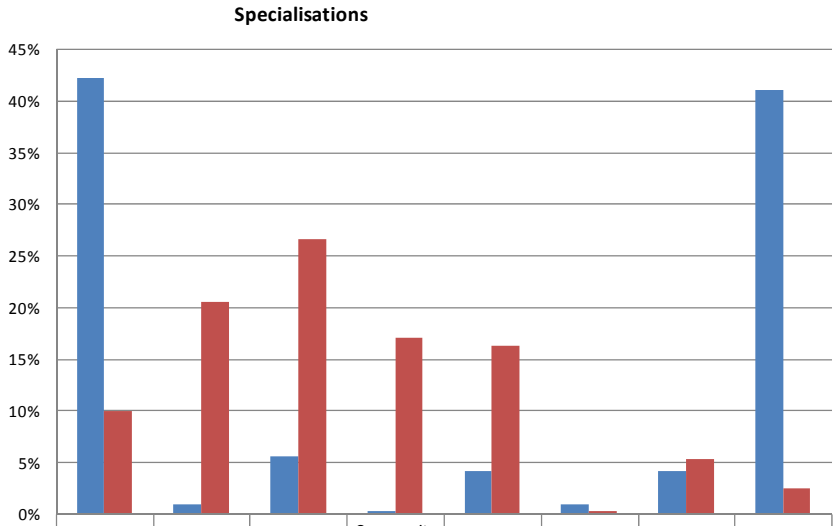
Hawkesbury LGA's occupation profile is comparable with the benchmark regions falling within 2 to 6 percentage points of the proportional shares in the region for all occupation types. In terms of Professionals, Hawkesbury is comparable with Blacktown (both at 16 percent) with both LGAs

performing lower than the benchmark regions. In terms of managers, Hawkesbury provides the second highest proportion (13 percent) after Baulkham Hills LGA (15 percent) but performs poorly against the subregion in terms of Sales Workers (9 percent). Hawkesbury has higher proportions than the benchmark regions in regard to Technicians & Trades Workers (18 percent) and Labourers (12 percent). All LGAs in the subregion perform better than Sydney in proportions of Managers and Sales Workers.

Industry by occupation analysis

Analysis of employment by occupation for key industry sectors shows that there are significant proportions of Managers and Professionals in the specialised industry sectors of Government Administration and Agriculture, and in Manufacturing and special uses such as Education and Health. Figure 31 to Figure 35 show the proportion of occupations in key sectors benchmarked against the North Sector and the Sydney Region.

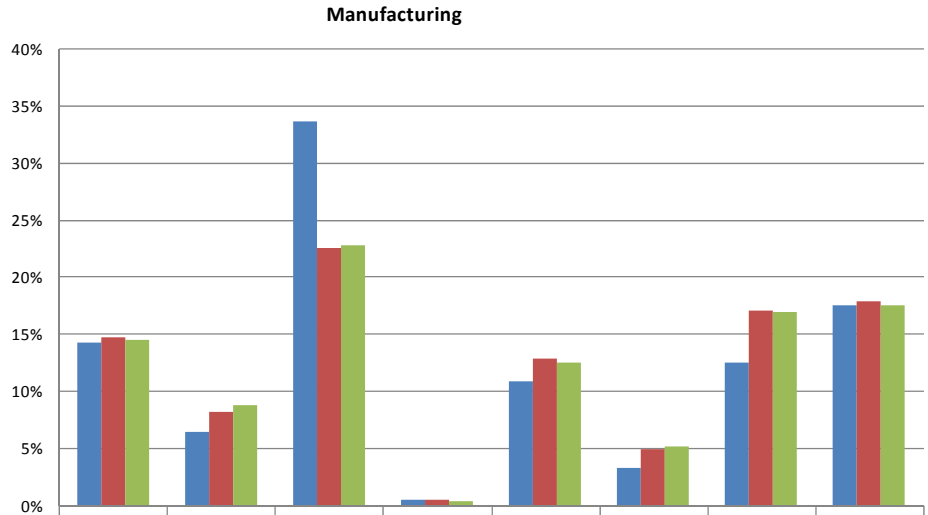
Figure 31. Industry by Occupation Profile, Hawkesbury LGA – Specialised



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Agriculture	42%	1%	5%	0%	4%	1%	4%	41%
Public Administration and Defence	10%	21%	27%	17%	16%	0%	5%	3%

Source: SGS 2008

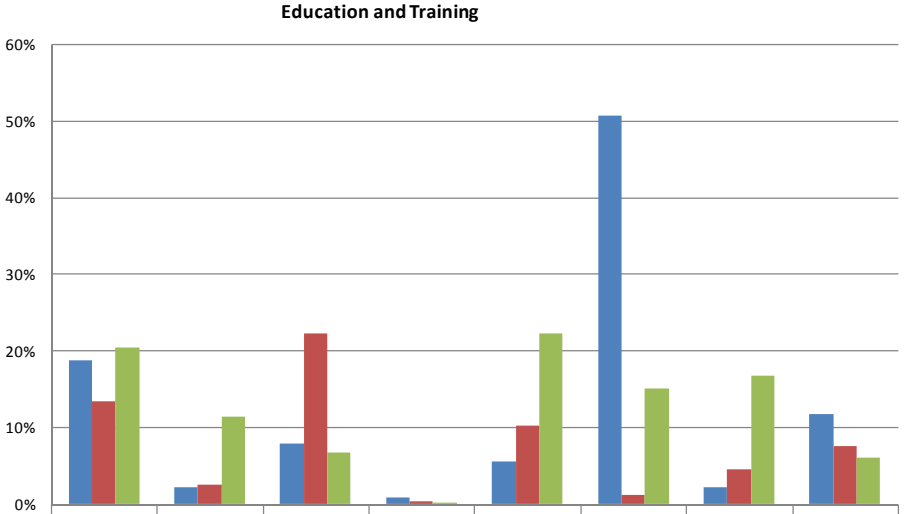
Figure 32. Industry by Occupation Profile, Hawkesbury LGA and benchmark regions, 2006 – Manufacturing



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Hawkesbury	14%	6%	34%	0%	11%	3%	12%	17%
North West Subregion	15%	8%	23%	0%	13%	5%	17%	18%
Sydney Region	14%	9%	23%	0%	12%	5%	17%	18%

Source: SGS 2008

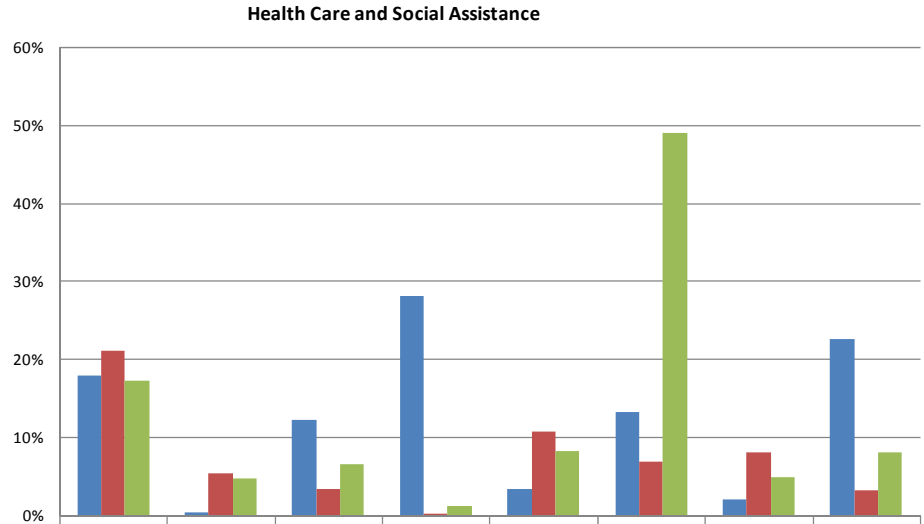
Figure 33. Industry by Occupation Profile, Hawkesbury LGA and benchmark regions, 2006 – Education and Training



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Hawkesbury	19%	2%	8%	1%	5%	51%	2%	12%
North West Subregion	13%	2%	22%	0%	10%	1%	5%	8%
Sydney Region	20%	11%	7%	0%	22%	15%	17%	6%

Source: SGS 2008

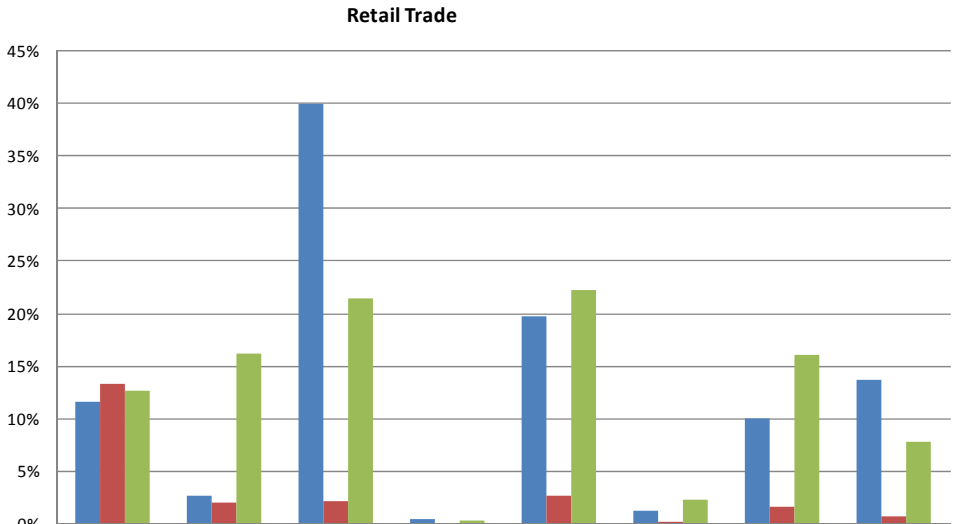
Figure 34. Industry by Occupation Profile, Hawkesbury LGA and benchmark regions, 2006 – Education and Training



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Hawkesbury	18%	0%	12%	28%	3%	13%	2%	23%
North West Subregion	21%	5%	3%	0%	11%	7%	8%	3%
Sydney Region	17%	5%	6%	1%	8%	49%	5%	8%

Source: SGS 2008

Figure 35. Industry by Occupation Profile, Hawkesbury LGA and benchmark regions, 2006 – Education and Training



	Managers	Professionals	Technicians And Trades Workers	Community And Personal Service Workers	Clerical And Administrative Workers	Sales Workers	Machinery Operators And Drivers	Labourers
Hawkesbury	12%	3%	40%	0%	20%	1%	10%	14%
North West Subregion	13%	2%	2%	0%	3%	0%	2%	1%
Sydney Region	13%	16%	21%	0%	22%	2%	16%	8%

Source: SGS 2008

5.2 Key Implications

Hawkesbury has a growing economy

Hawkesbury's employment has consistently grown in the last 10 years though at a reduced rate since 2001. Recent employment growth over the last 10 years may lead to higher employment by 2031 than that required by the Draft North West Subregional Strategy employment capacity target should the trend continue.

Hawkesbury has strong local and regional industry sectors

Agriculture and Government Administration sectors are key sectors which connect Hawkesbury to regional and international markets. The LGA also has some significant firms and businesses which underpin the local manufacturing sector. Manufacturing and Construction sectors should benefit from the southern LGAs proximity to the North West Growth centre and its expected 67,000 new dwellings.

Employment in the LGA is spread further than southern LGA employment lands

The economic analysis found that around 40 percent of employment in the LGA is located outside the employment land precincts of the southern part of the LGA. This is a significant finding and suggests that further investigation is required to uncover the nature of employment land uses on non-employment land. Such land uses include 'rural industries' on mixed agricultural land (ie. Rural Press, Mushroom composting at Mulgrave) and also accommodation jobs which are elements of the Agricultural and Tourism economies. Given the identified high specialisation of the Agricultural industry sector, this further analysis is considered an important part of supporting and enhancing the economic competitiveness of the LGA.

High Quality jobs exist in the manufacturing, special uses activities and agriculture

Professionals and Managers are located within the key sectors of Manufacturing and the special use activities of Education, Health and Community sector and the specialised industry sectors of Agriculture and Government Administration. Growing these jobs is important to increasing the employment self-containment – and self sufficiency - in the LGA (as defined in this report).

6 The Character and Attributes of Employment Precincts

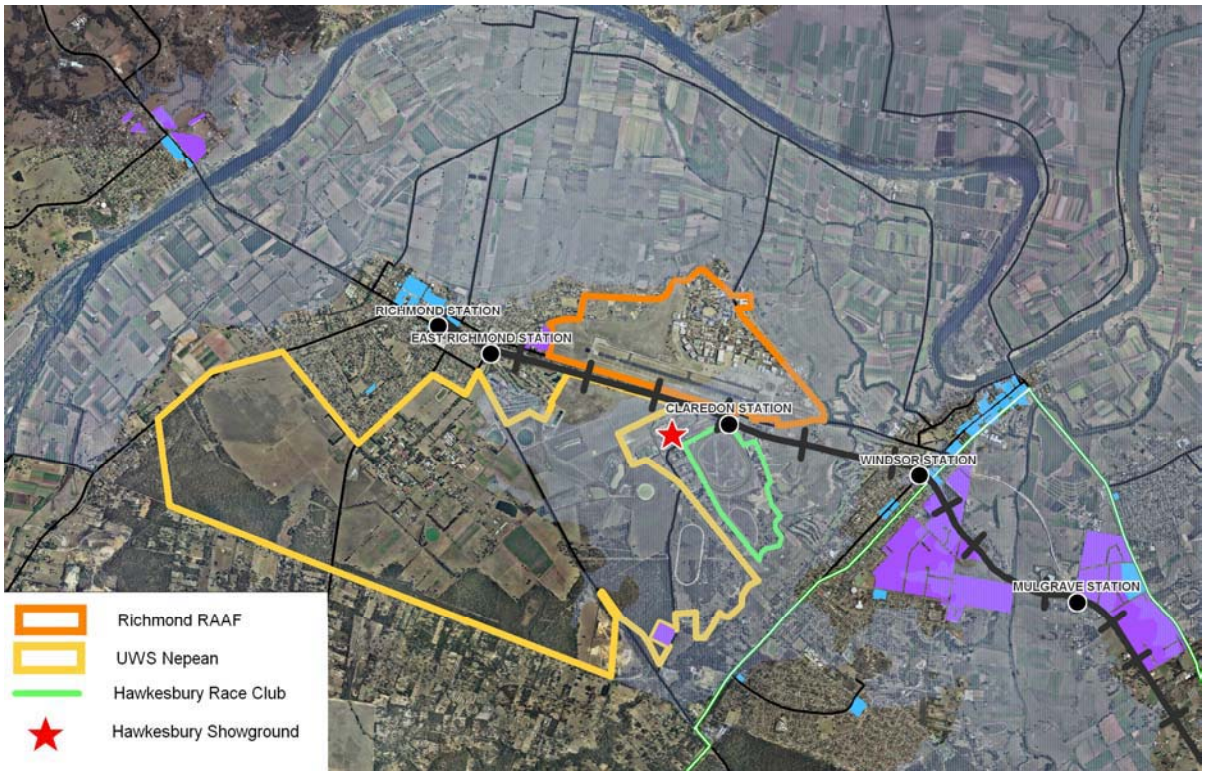
6.1 Supply by Precinct

6.1.1 Strategic Sites

UWS Hawkesbury (Richmond campus)/Richmond TAFE and Richmond RAAF sites comprise significant generators of employment which are located on special uses land. The Hawkesbury Race Club is also a strategic site providing recreation and tourist opportunities. It is located adjacent to the Hawkesbury Showgrounds that is located adjacent to the UWS site. All sites are affected by flooding with only the south eastern part of the UWS sites outside the flood level. Figure 36 shows the location of these sites. The Windsor Golf Club is located to the east of the Race Club.

Figure 36. Strategic Sites

Source: SGS, 2008.



These sites are discussed in more detail below.

UWS Nepean – Hawkesbury Campus/Richmond TAFE

The UWS Hawkesbury (Richmond campus) has been a location for higher education since 1891 when it was founded as the Hawkesbury Agricultural College (HAC) providing agricultural education and research services to support the then growing Colony of N.S.W[6]. A Federal Act created the University of Western Sydney in 1989 which saw the importation of the HAC into the University. Given this history, much of the built form on the campus is comprised of building from this early era of construction with many of these heritage listed in the Hawkesbury Local Environmental Plan. The Campus offers courses in the key areas of Natural Sciences, Education and Nursing. The key streams of study and associated research and development are provided in Table 14.

Table 14. Areas of expertise within key UWS Hawkesbury faculties

Teaching Areas	Research and Development
Natural Science	
▪ Biological and chemical sciences ▪ Medical science ▪ Forensic science ▪ Animal science ▪ Food nutrition and biotechnology ▪ Environmental health, management and science ▪ Agriculture and horticulture.	▪ The Centre for Plant and Food Science is a research centre (which is an internationally recognised centre). ▪ The peri-urban node of the Cooperative Research Centre for Irrigation Futures is also a school and is developing innovative approaches to the management of scarce water resources in Sydney (including water capture and re-use).
Education	
▪ Primary Education ▪ Secondary Education	▪ Centre for Education Research which deals with the theme areas of *Politics and Policy; Individuals, Families and Communities and their Social and Cultural Contexts; and Learning, Pedagogy and Practice.*
Nursing	
▪ Primary Education ▪ Secondary Education	▪ Family and Community Health Research Group (FaCH). Deals with two streams of *Support for Vulnerable Families* and *Chronic and Complex Care*.

Source: http://www.uws.edu.au/about/acadorg, accessed April 2008

Student enrolments at UWS Hawkesbury have declined slightly between 2004 and 2006 however have remained in the 7 percent range as shown in Table 15. Table 16 shows a slight decline across the UWS campuses occurred in Education, Natural and Physical Science and Agriculture, Environmental and Related Studies.

[6] UWS Hawkesbury Campus Tour Guide and Map, www.uws.edu.au, accessed April 2008

Table 15. UWS Student Enrolments, 2004-2006

Campus	2004	%	2005	%	2006	%
Bankstown	5,479	15.0%	5,886	16.6%	6,424	18.3%
Blacktown	2,833	7.8%	2,984	8.4%	3,155	9.0%
Campbelltown	4,893	13.4%	4,990	14.1%	4,867	13.9%
Hawkesbury	2,679	7.4%	2,614	7.4%	2,531	7.2%
Parramatta	8,185	22.5%	8,241	23.3%	8,847	25.2%
Penrith	7,364	20.2%	7,954	22.5%	7,708	22.0%
Off campus, offshore and Other	4,986	13.7%	2,703	7.6%	1,528	4.4%
Total	**36,419**	**100.0%**	**35,372**	**100.0%**	**35,060**	**100.0%**

Source: University of Western Sydney Annual Report 2006

Table 16. UWS Hawkesbury Enrolments by field of study, 2004-2006

Broad Field of Education	2004	%	2005	%	2006	%
Management And Commerce	11,217	30.8%	10,665	30.2%	10,610	30.3%
Society And Culture	6,829	18.8%	7,167	20.3%	7,727	22.0%
Health	4,545	12.5%	4,314	12.2%	4,349	12.4%
Creative Arts	2,677	7.4%	2,639	7.5%	2,508	7.2%
Education	2,653	7.3%	2,593	7.3%	2,391	6.8%
Natural And Physical Sciences	1,871	5.1%	2,189	6.2%	2,179	6.2%
Information Technology	2,256	6.2%	1,963	5.5%	1,512	4.3%
Engineering And Related Technologies	1,590	4.4%	1,414	4.0%	1,190	3.4%
Agriculture, Environmental And Related Studies	765	2.1%	720	2.0%	656	1.9%
Architecture And Building	475	1.3%	504	1.4%	581	1.7%
Other	1,541	4.2%	1,204	3.4%	1,357	3.9%
Total	**36,419**	**100.0%**	**35,372**	**100.0%**	**35,060**	**100.0%**

Source: University of Western Sydney Annual Report 2006

The Hawkesbury Showground is located on UWS Hawkesbury Campus land adjacent to the Hawkesbury Race Club at Clarendon Station. The showground site is the location of the yearly Hawkesbury Show which showcases the regions produce and livestock. The site contains the facilities of the Hawkesbury Sheep Dog Trialling Club, Hawkesbury Equestrian Centre, Hawkesbury Polocrosse Club and the Sydney Show Jumping Club.

The 50ha Richmond TAFE site is located immediately north of the University campus and is one of ten Western Sydney group of TAFE campuses. In 2006 Western Sydney Institute delivered programs to more than 85,000 students in 1000 vocational areas[7]. The Richmond campus offers training and assessment services in Information Technology, Business and Administration Services, General Education, Animal Care, Equine Studies, Sustainable Agriculture, Aquaculture, Floristry, Horticultural and Environmental Studies[8].

The following opportunities and constraints for the UWS Richmond campus site were found through consultation with UWS.

[7] TAFE Western Sydney Institute Annual Report, 2007

[8] http://wsi.tafensw.edu.au/colleges/richmond/welcome.aspx?mid=1242, accessed April 2008

Table 17. Opportunities and Constraints associated with UWS Richmond

Opportunities:	Constraints
• The campus is a large land parcel held by a single owner. • The expansion of Sydney's western suburbs (especially new residential) is generating demand for courses offered at Hawkesbury campus. • The campus benefits from being only a 10 minute walk from the East Richmond railway station. • Double capacity for rail route from Blacktown to Schofields may be extended to Hawkesbury in the future (Although car travel is still the main method of transport to the University as there is plenty of parking available).	• Land is in held by the Crown and therefore UWS is restricted to offering ground leases for a maximum of 20 years. New South Wales Treasury would have to transfer Crown land to the University for development to occur. • Much of the land is covered by flood plain and woodland. • Around 75 percent of the university buildings are heritage listed which restricts development and increases maintenance costs (eg. cost of repairs and compliance with fire and safety standards). • The campus is on the outer boundary of the Sydney region so expansion beyond this boundary is limited (this constraint also provides opportunity – see below)

Richmond RAAF Base

RAAF Base Richmond is one of the most active in the Royal Australian Air Force (RAAF) and a site of early aviation attempts in Australia[9]. The site is currently listed on the Register of the National Estate and the Commonwealth Heritage List due to this association with military and defence aviation history. The site comprises the main runway, a core precinct, adjacent huts hangars and cottages and landscape elements. The site also contains a combat Hospital known as the No.3 RAAF Hospital.

In the second half of the twentieth century, the Richmond base has become the centre of the RAAF's air transport operations, in particular C130 Hercules aircraft, which operated in conjunction with the No.3 RAAF hospital at Richmond during emergencies. The No3 RAAF hospital, redeveloped in the 1990s, has now become one of the leading medical establishments in the Australian Defence Force[10].

In 2001, the site was considered a potential low-cost site to handle charter, air cargo and some regional traffic aircraft in support of Kingsford Smith Airport[11]. Given the increasing concern with international security, the RAAF base is now considered an important part of Australia's strategic defence capability, as well as providing significant economic benefits to the local community[12]. These economic benefits are estimated as follows:

[9] Australian heritage database, http://www.environment.gov.au, accessed April 2008.

[10] ibid

[11] A Second Sydney Airport at RAAF Richmond? Matthew L. James, Science, Technology, Environment and Resources Group, 28 August 2001, http://www.aph.gov.au, accessed April 2008

[12] *Richmond RAAF base will remain open: Govt*, Aug 11, 2007, www.abc.net.au, accessed April 2008

- $401 million to the economy annually and approximately $390 to the annual house consumption in the NSW region.
- Employment to approximately 3,000 people.
- Approximately 14 percent of total gross regional product and over 9 percent of total regional employment comes from the base.
- Directly and indirectly contributes to over 6,000 jobs in the NSW region[13].

With regard to aircraft noise impacts, complaints regarding RAAF activities are dealt with by the RAAF and are often resolved by discussion with the complainant and provision of an explanation of what is occurring and its duration. The RAAF has set voluntary curfews to minimise disturbances to residents, curfews are only exceeded in emergencies[14].

Consultation with Richmond RAAF was unable to be secured for inclusion in this report. Operational issues and such queries require submission to the Minister for Defence. This has been sought however no response has been provided to date.

Hawkesbury Race Club

The Hawkesbury Race Club provides a variety of conference, meeting and event facilities. The Club contains convention facilities a 4 star motel which includes 34 rooms. It holds two race meetings per month. The Club provides approximately 400 jobs in hospitality, clerical, and labouring (related to horse keeping activities). The Club has recently renewed its 99 year lease on the land and seeks to attract more patrons to its race meetings through expansion of its accommodation facilities.

6.1.2 Industrial Precincts

Industrial land precincts in the LGA are located at Mulgrave, South Windsor, Wilberforce, Richmond and North Richmond. Further detail of the character and constraints affecting these lands are provided below.

Mulgrave

The Mulgrave precinct is bound by Windsor Road (east), Railway Road (west), Park Road (south) and Mulgrave Road (North) and zoned predominantly for general industrial land use 4(a) with sections of light industrial land use zones 4(b) located in the north-western and eastern parts of the precinct. There is an area of business zoned land 3(b) in the centre of the precinct on Windsor Road. Windsor Road is part of the Flood Evacuation Route for this area.

Mulgrave Rail Station is located in the most western part of the precinct. The McGrath's Hill residential area is located northeast of the precinct with the northern tip of the North West Growth Centre located to the south. Other land uses surrounding the precinct are predominantly agricultural land uses (Mixed Agriculture, Environmental Protection – Mixed Agriculture). The

[13] *Richmond RAAF Base Is Here To Stay*, (MP Press Release) Saturday, 11 August 2007,Louise Marks, Federal Member for Greenway http://www.louisemarkus.com.au, accessed April 2008.

[14] Hawkesbury State of Environment Update Report 2006-2007, Hawkesbury City Council

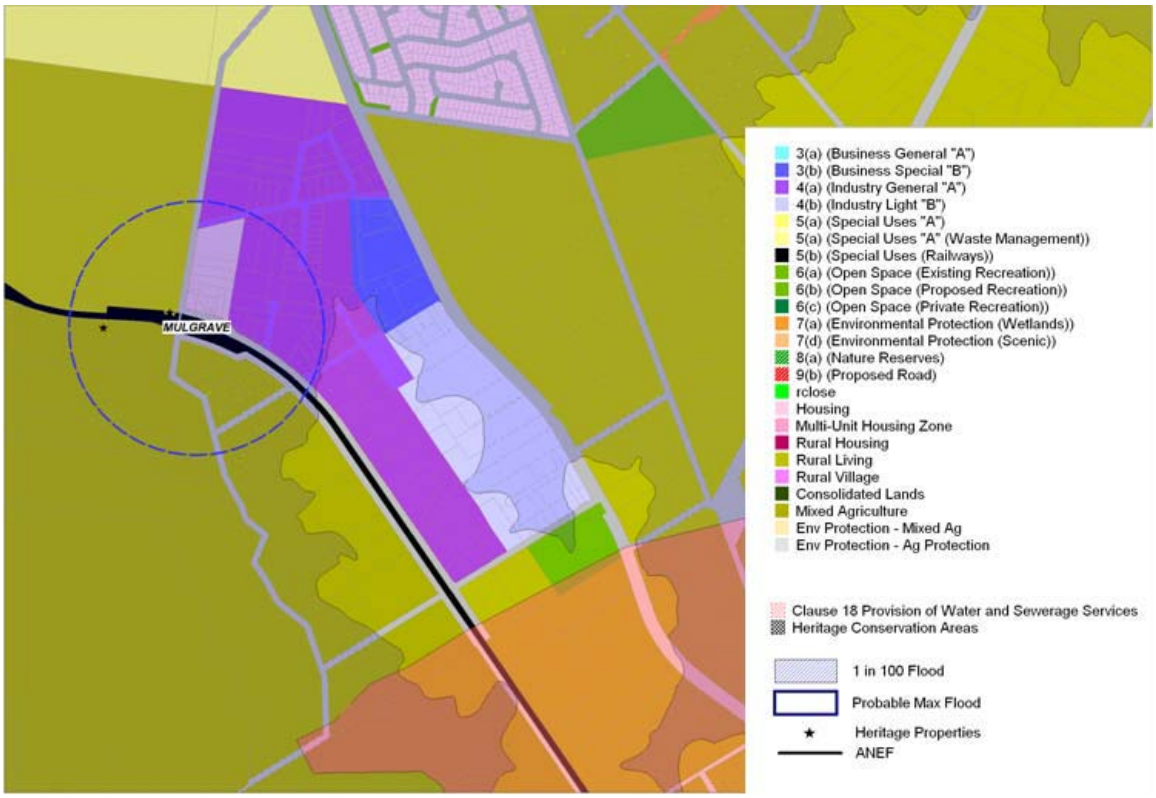
recently completed Windsor Road South Creek Crossing (Hawkesbury Valley Way) provides access to the industrial lands from South Windsor.

Most of the precinct is affected by the 1:100 flood level. Clause 18 of HLEP 1989 requires referral of development on certain land in the precinct to Sydney Water to ensure adequate water utility servicing due to capacity issues.

These areas contain industrial park developments and stand alone light industrial businesses. Industries include steel manufacturing, auto repair and servicing, warehousing and storage and other local light industry. The 3B land contains retail bulky goods development (Bunning's warehouse; HOME) on land which has been filled to raise the ground level above the 1:100 year flood level.

The precinct contains predominant larger lots greater than 10,000 square metres with smaller lots up to 5,000 square metres dispersed throughout the northern and southern part of the precinct. The subdivision pattern shows that subdivision of large lots into smaller lots with cul-de-sac road access is common. GIS mapping identified significant vacant land in the Mulgrave precinct generally located on large lots.

Figure 37. LEP Zoning, 1:100 flood level and Clause 18 – Mulgrave Precinct



Source: SGS 2008, HLEP 1989

1. Car repair businesses, Mulgrave. Source: SGS 2008

2. Steel manufacturer, Park Road, Mulgrave. Source: SGS 2008

3. New industrial development at Mulgrave. Source: SGS 2008

4. Large vacant site for sale (53,000sqm), Mulgrave. Source: SGS 2008

5. Elevated entrance to Bunnings at Mulgrave. Source: SGS 2008

6. Mushroom Composting operation Mulgrave. Source: SGS 2008

Figure 38. Lot Size, Mulgrave

Source: SGS 2008, HLEP 1989

Figure 39. Vacant Land Mulgrave

Source: SGS 2008, Hawkesbury Aerial maps, 2003

South Windsor

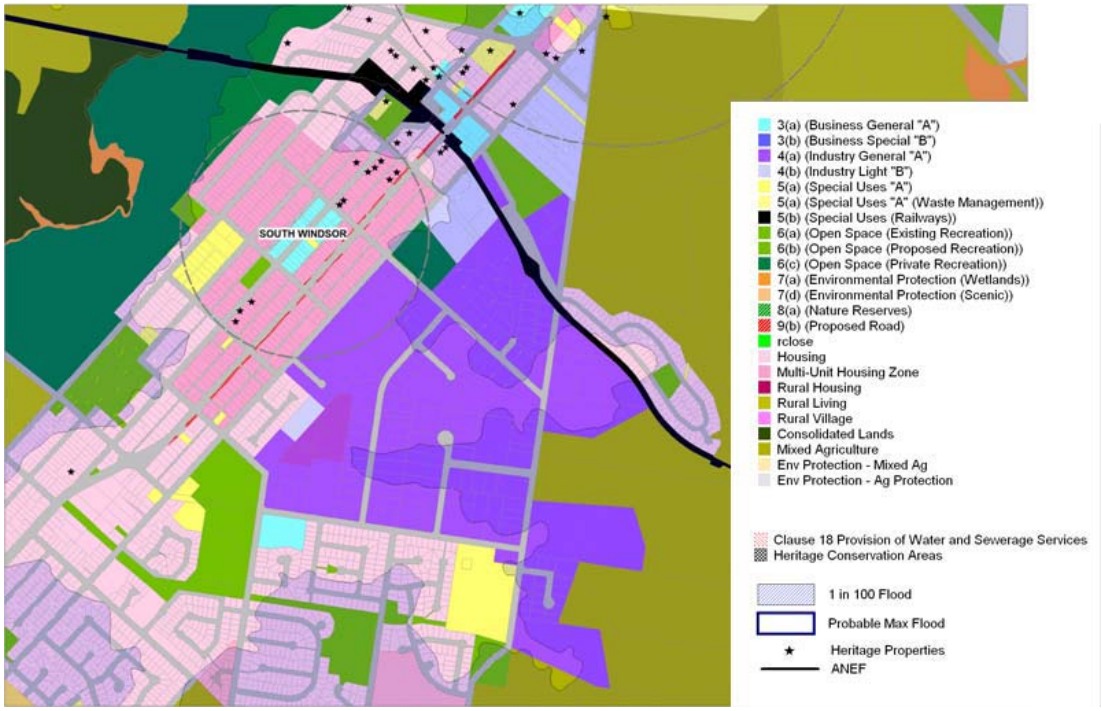
The South Windsor industrial precinct is located east of the South Windsor residential area. It is bound by the western rail line, residential development to the west and south and agricultural/rural land uses to the east. Key roads through the site are Argyle Street, Walker Street and Blackman Crescent which provide access to industrial development on various cul-de-sac roads. Windsor Station is located north west of the precinct.

The South Windsor industrial precinct is predominantly zoned 4(a) general industrial with some 4(b) light industrial land at the northern tip of the precinct adjacent to residential development.

The precinct contains a variety of general and local light industrial land uses and high proportion of strata industrial units of generally good quality built form. Eastern parts of the precinct are affected by the 1:100 year flood level. There is an area of land affected by Clause 18 of the HLEP 1989 where development requires referral to Sydney Water due to water servicing capacity constraints.

The precinct contains predominantly smaller lot sizes up to 10,000 square metres with few larger lots. The subdivision pattern clearly shows a policy of subdividision of large lots into smaller lots with cul-de-sac road access. GIS mapping identified significant vacant land in the South Windsor precinct generally located on large lots adjacent to the railway corridor.

Figure 40. LEP Zoning, 1:100 flood level and Clause 18 – South Windsor Precinct



Source: SGS 2008, HLEP 1989

1. Concrete Batching Plant, South Windsor. Source: SGS 2008

2. Local Light Industry, South Windsor. Source: SGS 2008

3. Industrial built form, South Windsor. Source: SGS 2008

4. Supplies storage (timber pallets), South Windsor. Source: SGS 2008

Figure 41. Lot Size, South Windsor

Source: SGS 2008, HLEP 1989

Figure 42. Vacant Sites, South Windsor

Source: SGS 2008, Hawkesbury Aerial maps, 2003

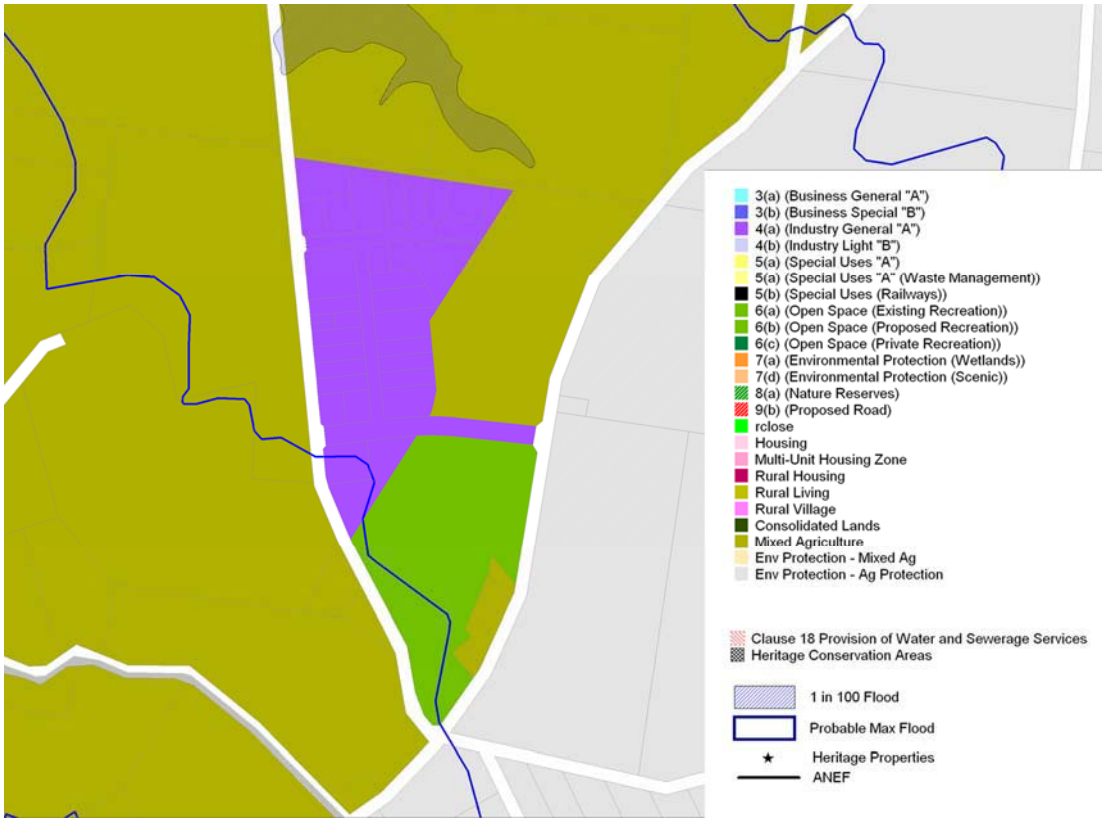
Wilberforce

The Wilberforce industrial employment land precinct is a concentration of 4(a) general industrial zoned employment land approximately 2.5km north east of the Wilberforce residential area and is known as the Woodlands Industrial Estate.

This precinct contains a range of general industrial uses which have large outdoor storage areas including timber pallet making businesses which use extensive open areas for storage of the timber pallets and provide heavy vehicle access. There is a small food outlet to service workers in this estate. The industrial area is adjacent to agricultural land uses and the Woodlands Park open space area to the south. The estate is accessed from Sackville Road off Wilberforce Road.

The entire site is above the 1:100 year flood level. Lots within this precinct are generally between 2,500 and to 5,000 square metres with 2 lots between 5,000 square metres and 10,000 square metres. GIS mapping identified vacant land in the Wilberforce precinct. Some areas of the precinct are unserviced particularly for sewer infrastructure.

Figure 43. LEP Zoning, 1:100 flood level and Clause 18 – Wilberforce Industrial Precinct



Source: SGS 2008, HLEP 1989

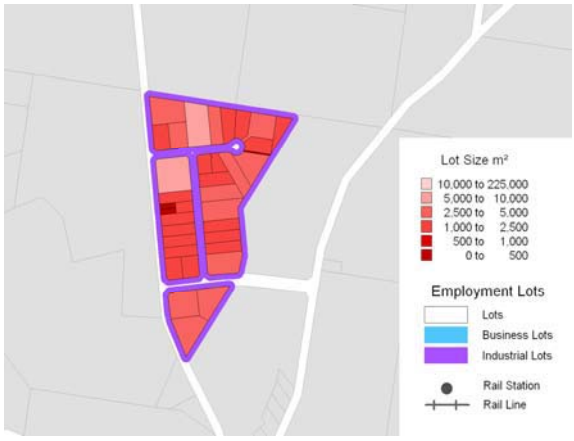
1. Woodlands Industrial Estate Signage. Source: SGS 2008

2. Woodlands Industrial Estate Tenants. Source: SGS 2008

3. Woodlands Industrial Estate Tenants. Source: SGS 2008

4. Woodlands Industrial Estate Tenants – Timber pallet storage. Source: SGS 2008

Figure 44. Lot Size, South Windsor



Source: SGS 2008, HLEP 1989

Figure 45. Vacant Sites, Wilberforce

Source: SGS 2008, Hawkesbury Aerial maps, 2003.

North Richmond

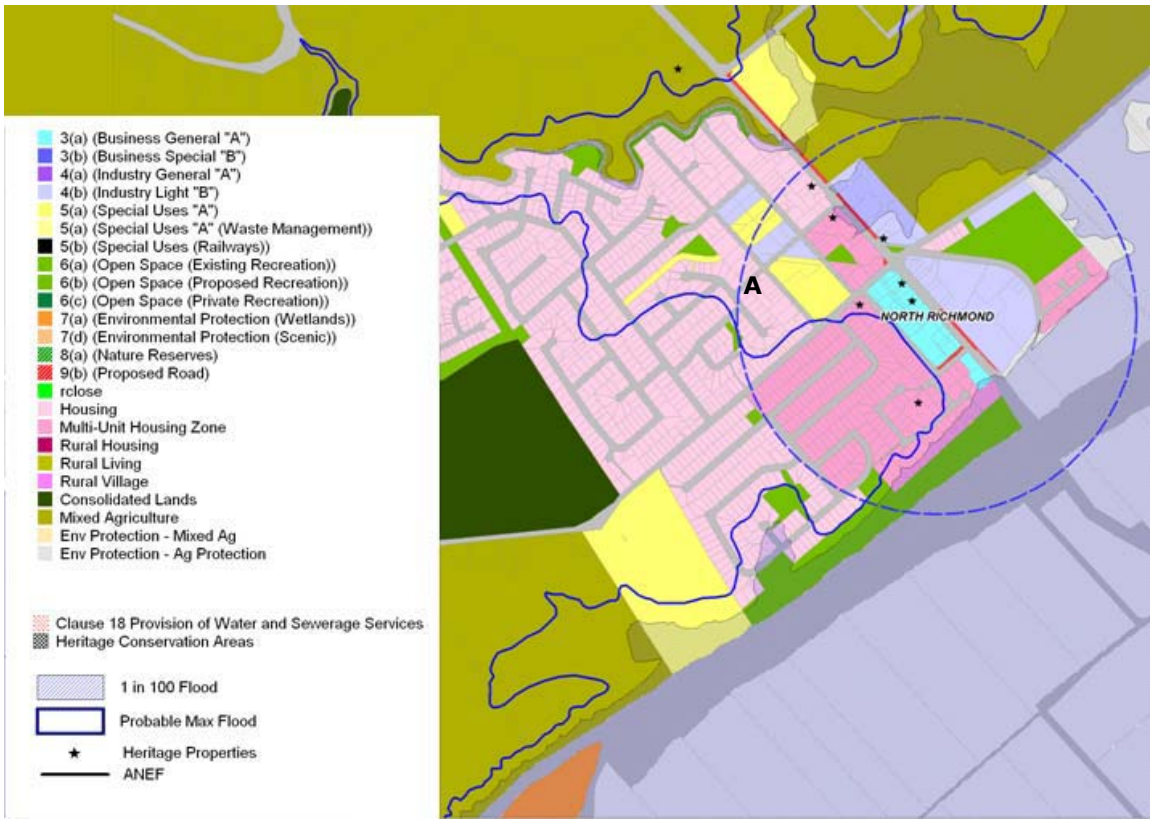
The North Richmond Industrial Precinct centre is wholly zoned 4(b) industrial and is made up of a core area of irregular-shaped lots with frontage to Bells Line of Road and an area of land on Terrace Road. The irregular shape of the core area lots is due to an old railway easement. The Hannapak operation is located on a group of large lots in the core area. There is also a small area of light industrial land located north east of the core area between William and Elizabeth Streets This land is broken up by community land uses including a community centre and child care centre.

The core area industrial land is predominantly unaffected by the 1:100 year flood level however the area of land north of Terrace Street is affected. Lots are generally greater than 5,000 square metres with some larger lots of over 10,000 square metres. Vacant land has been identified through GIS aerial mapping on land north of Terrace Road and at the northern edge of the business zoned land block.

The core area land is adjacent to seniors living housing to the north, open space and low density residential. Seniors living (termed 'Units for Aged Persons' in HLEP 1989) development is permitted on industrial land and with one of the lots on the core area (designated with 'A') having been approved for seniors housing.

Land north of Terrance Road is surrounded by agricultural zoned lands. Land to the west is surrounded by low density residential development.

Figure 46. LEP Zoning and 1:100 flood level, North Richmond

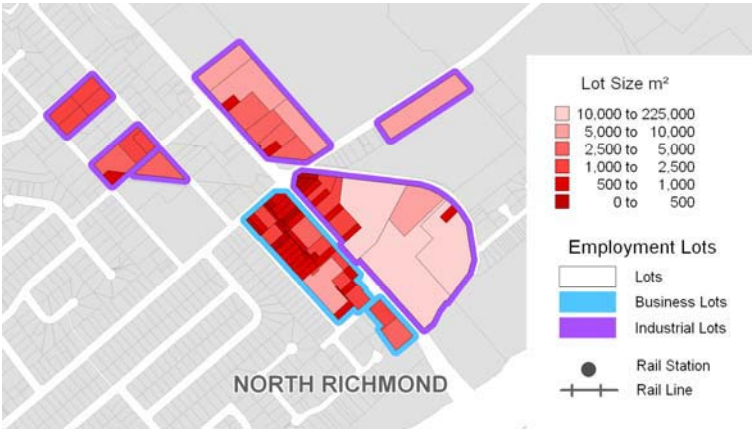


Source: SGS 2008, HLEP 1989

1. Hannapak. Source: 2008

2. North Richmond centre, Bells Line of Road. Industrial on right. Source: SGS 2007

Figure 47. Lot Size, North Richmond



Source: SGS 2008, HLEP 1989

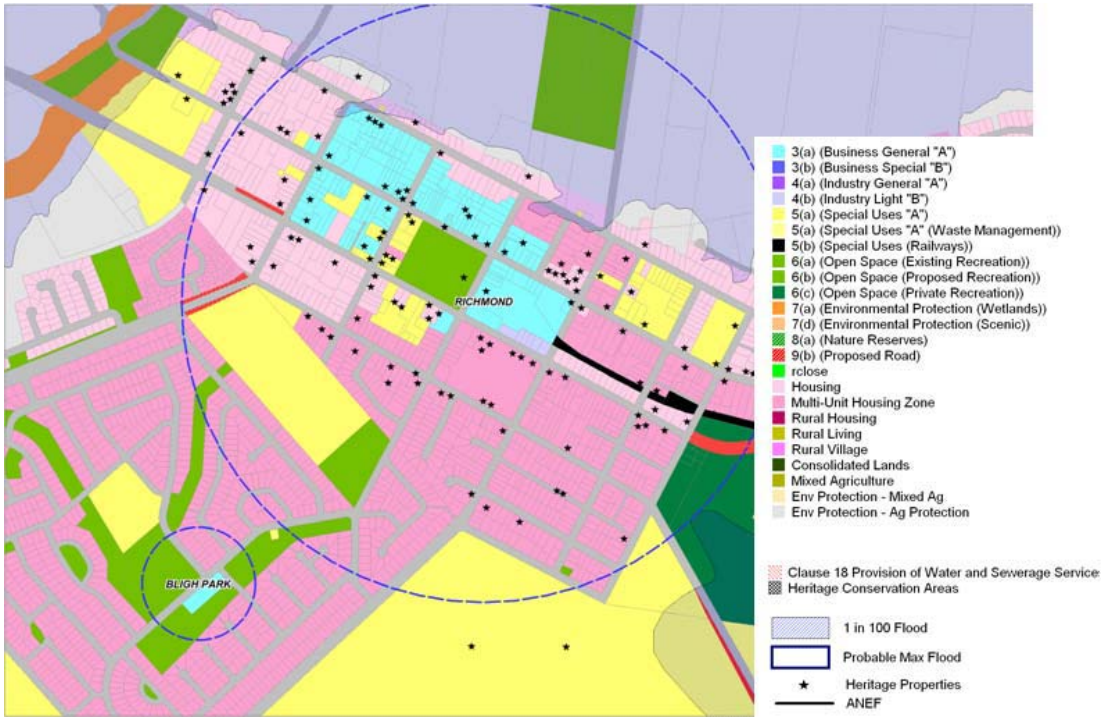
Figure 48. Vacant Sites, North Richmond

Source: Google Earth 208

Richmond

The Richmond industrial precinct is a concentration of 4(b) light industrial zoned employment land located west of the Richmond RAAF base. This precinct contains a range of light industrial uses within predominantly strata unit developments. The precinct is outside the 1:100 year flood level. Lots within this precinct are generally between 2,500 and 5,000 square metres. No vacant land was identified through GIS aerial mapping analysis. The precinct is located within the 30-35 ANEF contour. The precinct has secondary access to Richmond Road through residential Bourke Street.

Figure 49. LEP Zoning, 1:100 flood level and Clause 18 – Richmond Industrial Precinct

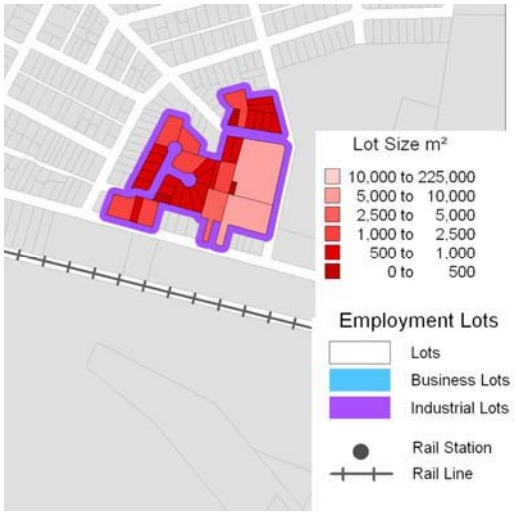


Source: SGS 2008, HLEP 1989

1. Light Industrial land uses on lands adjacent to RAAF base, Richmond. Source: SGS 2008

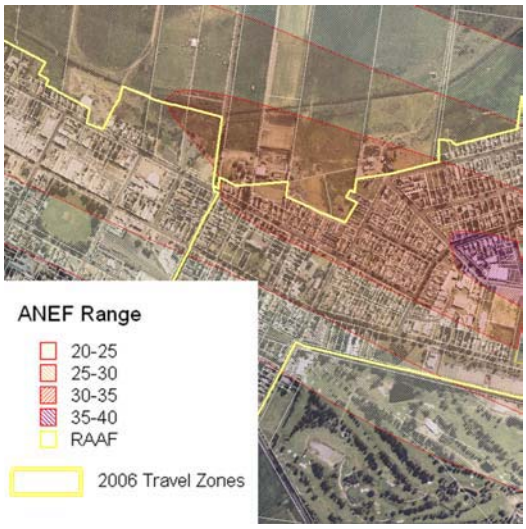
2. Light Industrial land uses adjacent to RAAF base, Richmond. Source: SGS 2008

Figure 50. Lot Size, Richmond



Source: SGS 2008, HLEP 1989

Figure 51. ANEF and Richmond Industrial



Source: SGS 2008, HLEP 1989

6.1.3 Commercial and Retail Centres

Hawkesbury's main commercial/retail centres are located at Windsor and Richmond. Smaller centres are located at Windsor Station, South Windsor and North Richmond. Small neighbourhood shopping centres can be found at Hobartville, Pitt Town, Bligh Park, Wilberforce, South Windsor, McGraths Hill, Kurmond and Glossodia. Some detail about the character of each of these centres is provided below. Local shops within residential zones can be found in Kurrajong and Kurrajong Heights .

Windsor

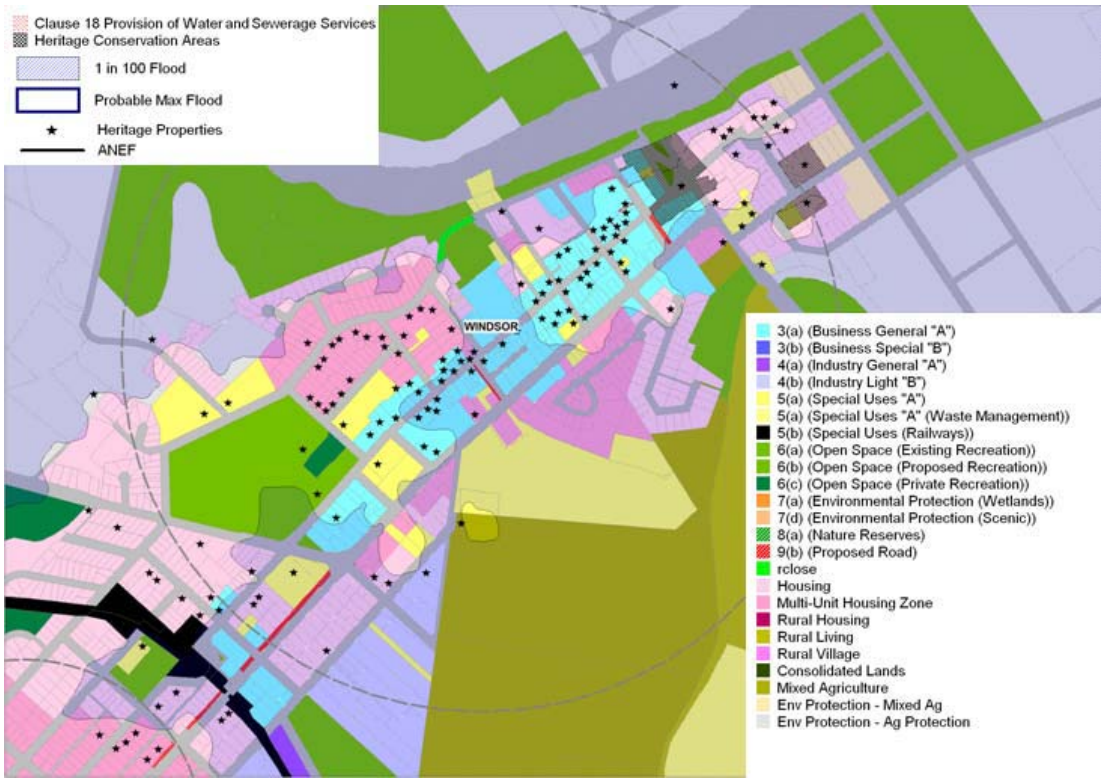
The core part of the Windsor centre is located on the southern bank of the Hawkesbury River between Bridge Street and Richmond Road. It is the LGA's historic and traditional retail main street centre (with frontage to George Street), with predominantly two storey built form with at-grade parking at the rear. It has been identified as a Town Centre in the Draft NW Subregional Strategy centres typology. The centre contains 550 of the LGA's heritage items, and heritage conservation areas at Thomas Square and North Street. There is a smaller centre located at Windsor Station.

In some parts, the building line setback from the street is modest giving the appearance of the buildings being quite close to the street. The Windsor centre extends for 1.5km and contains a pedestrian mall between Baker and Fitzgerald Streets. Windsor Station is located further south of the core main street retail and commercial land uses.The Windsor centre contains the Windsor Riverview Shopping centre which is currently comprised of 8,000m2 of Net Lettable Area (NLA) including Coles Supermarket (3,800m2), Target (1,800m2 NLA) and 35 specialty shops[15].

The centre is significantly affected by the 1:100 year flood level. Lots within this precinct are generally up to 1,000 square metres with few large lots greater than 10,000 square metres. There are no vacant lots identified in the core precinct however there are two small lots of vacant land in the Windsor Station area.

[15] Details provided by Pirasta Pty Ltd on behalf of Windsor Riverview, 2008

Figure 52. LEP Zoning, 1:100 flood level and Clause 18 – Windsor Centre Industrial Precinct



Source: SGS 2008, HLEP 1989

1. Windsor Riverview Shopping centre entrance. Source: SGS 2008

2. Part of Windsor Main street. Source: SGS 2008

3. Pedestrian Mall. Source: DoP 2007

4. Windsor Station. Source: SGS 2008

5. Shops at Windsor Station. Source: DoP 2007

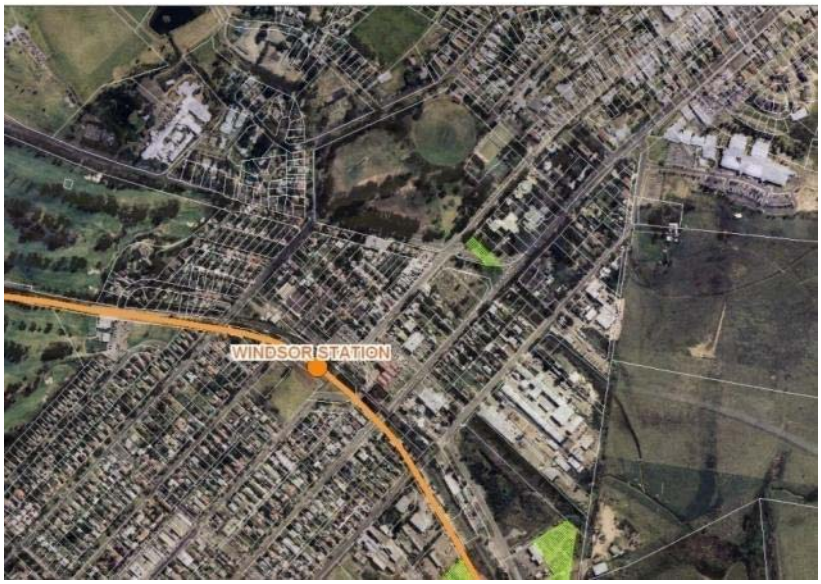
Figure 53. ANEF Contours and Windsor Centre (south)

Source: SGS 2008, HLEP 1989

Figure 54. Lot Size, Windsor centre

Source: SGS 2008, HLEP 1989

Figure 55. Vacant Sites, Windsor Station Area



Source: SGS 2008, Hawkesbury Aerial maps, 2003.

Richmond

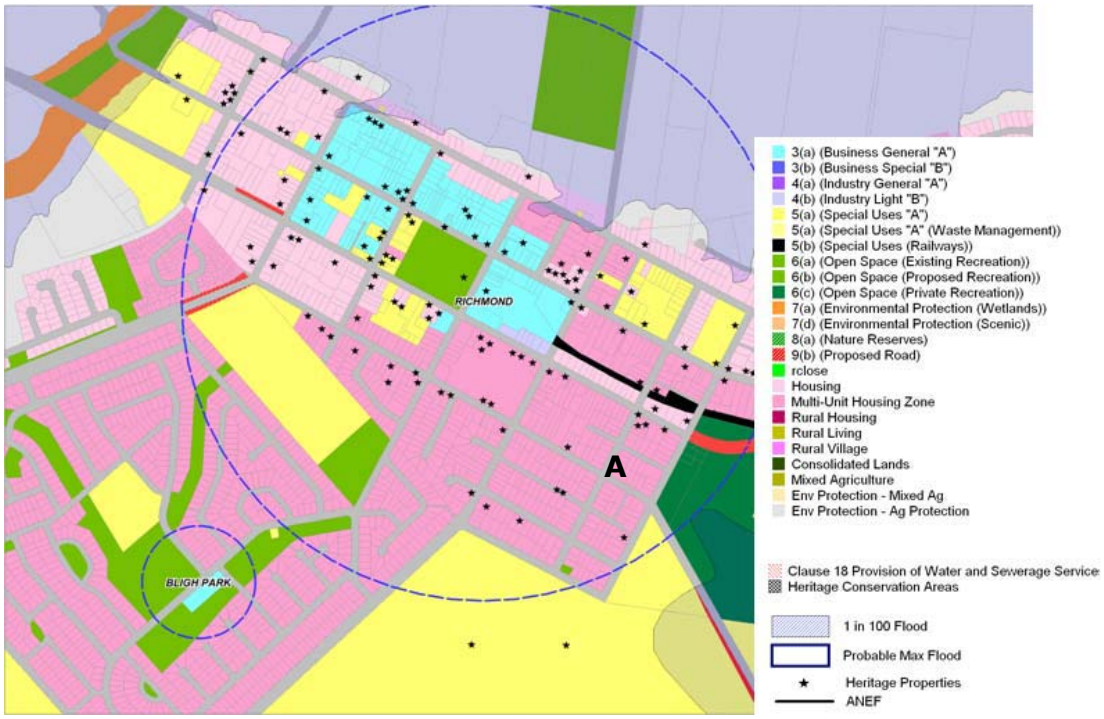
Richmond is located south of the Hawkesbury River and is principally a traditional main street centre located at the terminus of Richmond railway station. It has been identified as a Town Centre in the Draft NW Subregional Strategy centres typology. The Richmond main street (located on Windsor Street) is predominantly two-storey built form with a large park in the centre of the main street known as Richmond Park. There are many heritage buildings in the main street and in the centre area. There is a large area of off-street carparking to the rear of the main street properties which provides rear access to some of the businesses including the Coles shopping centre.

The centre is zoned 3(a) Business with retail uses also undertaken on certain residential land south of the rail station area (identified by 'A' in Figure 56). There is a small group of anomalous industrial lots south of the rail station.

All of Richmond centre is above the 1 in 100 flood level. The Richmond RAAF base located to the east of the centre generates aircraft noise with the centre located within the 25-30 ANEF contour north of Windsor Street areas and within the 20-25 ANEF contour between this area and Kurrajong Road.

Lot size analysis shows that most lots are up to 5,000 square metres with few lots larger than 5,000 square metres. No vacant sites were identified through GIS aerial mapping analysis.

Figure 56. LEP Zoning and 1:100 flood level, Richmond



Source: SGS 2008, HLEP 1989

1. Regent Theatre, Richmond. Source: SGS 2008

2. Richmond Main street. Source: SGS 2008

3. Richmond Park. Source: SGS 2008

4. Richmond Main street. Source: SGS 2008

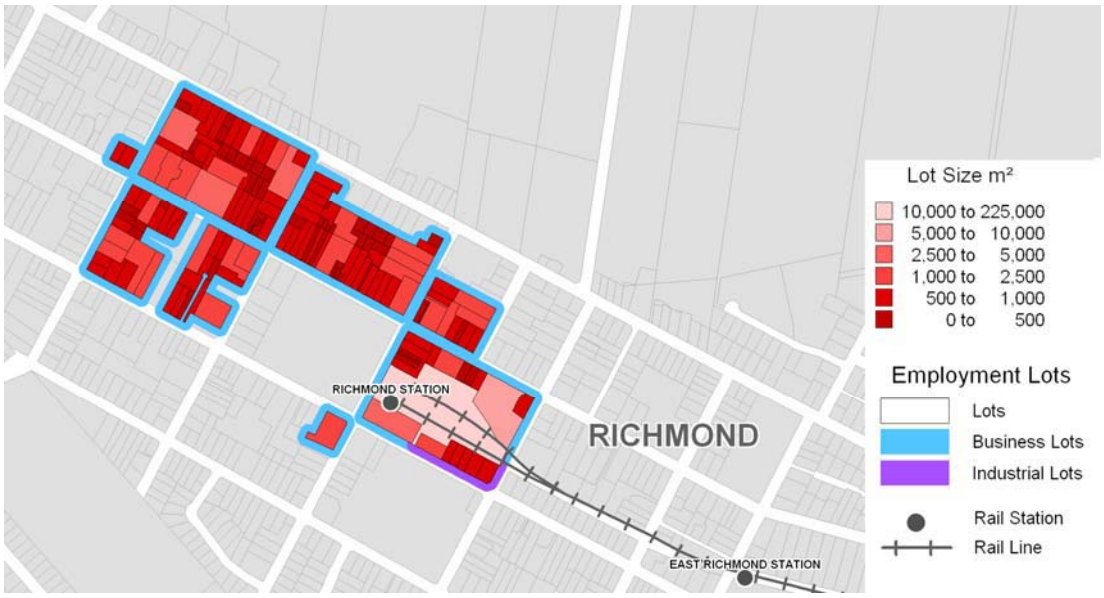
5. Rear entrance to Richmond Mall, Richmond. Source: SGS 2008

6. Carparking rear of main street retail, Richmond. Source: SGS 2008

Figure 57. ANEF Contours and Richmond Centre

Source: SGS 2008, HLEP 1989

Figure 58. Lot Size, Richmond



Source: SGS 2008, HLEP 1989

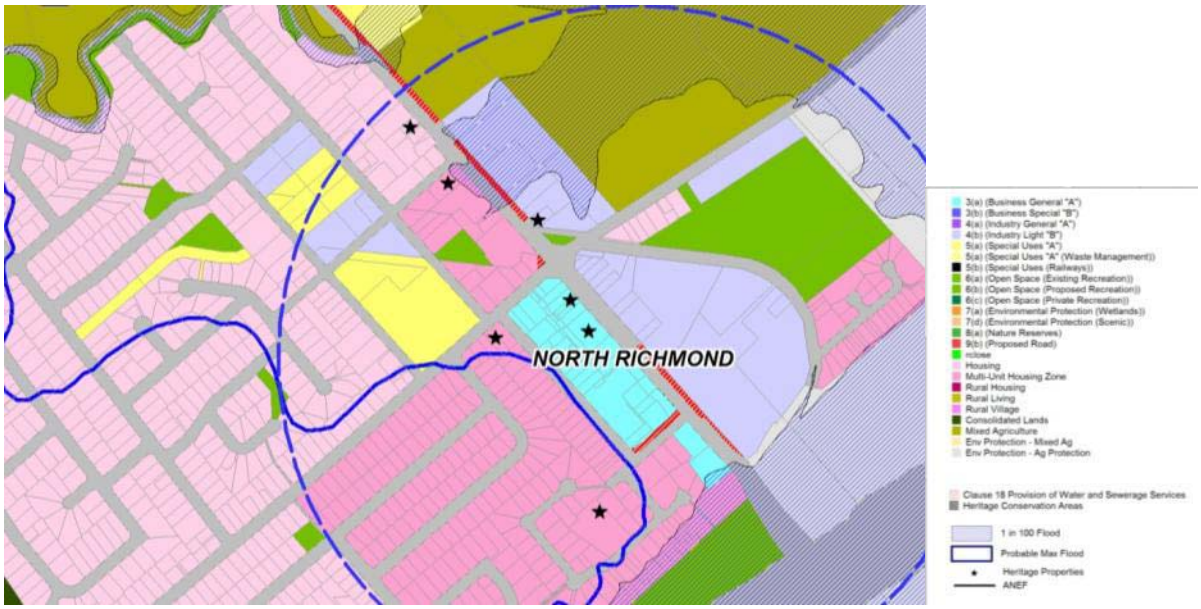
North Richmond

The North Richmond centre is a 3A business zoned land use block located south of Bells Line of Road and bound by Bells Line of Road, Riverview Street, Pitt Lane and Grose Vale Road with a small area of retail/commercial land west of Pitt Lane on Bells Line of Road. It has been identified as a village in the subregional centres typology.

The centre contains the North Richmond Shopping centre has recently undergone a $10 million upgrade, including construction of a new Coles supermarket, expanded car park facilities, pedestrian access and a full refurbishment of both the interior and exterior of the centre[16]. The northern part of Bells Line of Road is comprised of industrial development. The street frontage does not posses particular main street properties. The Bells Line of Road frontage has an inconsistent set-back from the street with car parking in the front setback. Riverview Street and Grose Vale Road have similarly inconsistent set backs with minimal public domain features such as street tree plantings and landscaping.

The centre is unaffected by the 1:100 year flood level. Lots in the centre are generally up to 1,000 square metres square metres with some larger lots of up to 5,000 square metres square metres. The shopping centre site is between 5,000 and 10,000 square metres. Vacant land has been identified in the northern part of the centre.

Figure 59. LEP Zoning and 1:100 flood level, North Richmond



Source: SGS 2008, HLEP 1989

[16] http://www.homehound.com.au/

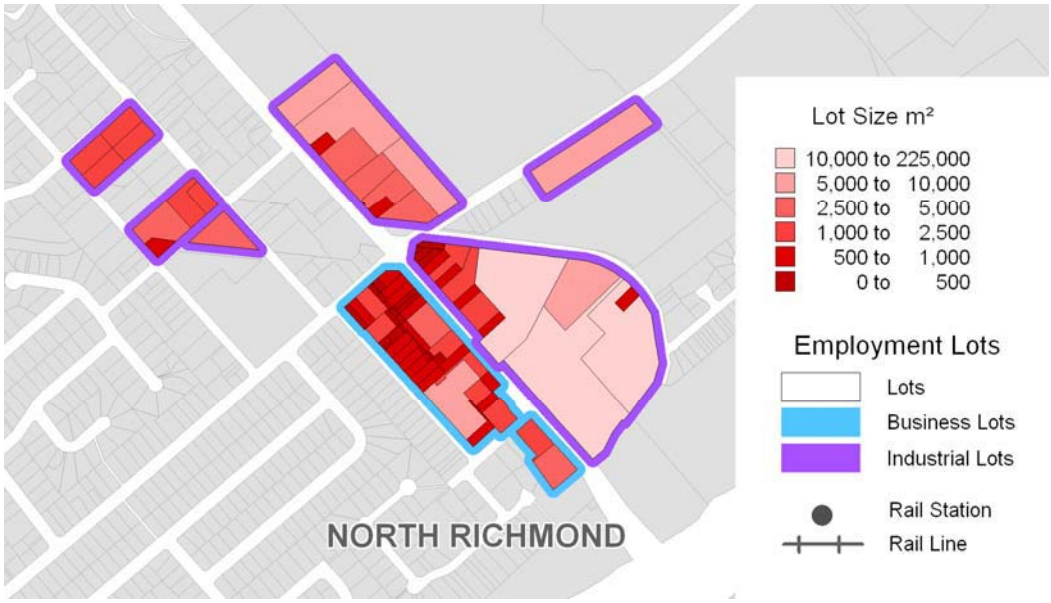
3. North Richmond Shopping Centre. Source: http://www.seniorshousingonline.com.au. Accessed June 2008

4. North Richmond centre, Bells Line of Road. Industrial on right. Source: SGS 2007

Figure 60. Vacant Sites, North Richmond

Source: Google Earth 2008

Figure 61. Lot Size, North Richmond



Source: SGS 2008

South Windsor

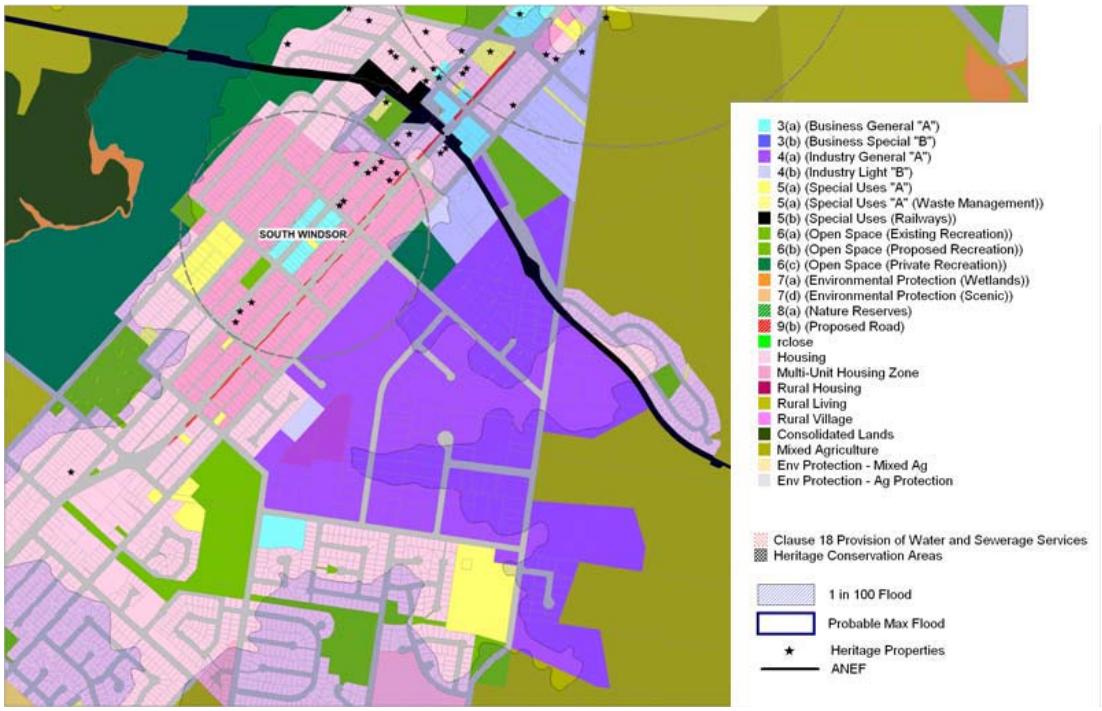
The South Windsor centre is a small main street centre comprised of the lots with frontage to George Street between Argyle and Campbell Street. There is at-grade parking along Mullinger Lane. The centre is predominantly 1 and 2 storey built form. The centre is surrounded by low density residential development and is located above the 1:100 flood level. No vacant lots were identified through GIS aerial mapping analysis however, a group of 7 lots in the centre of the main street on the southern side of George Street contain detached residential development. Lots are small up to a maximum of 1,000 square metres.

The centre has been identified as a small village in the subregional centres typology.

Figure 62. South Windsor Aerial

Source: Google Earth, 2008.

Figure 63. LEP Zoning and 1:100 flood level, South Windsor

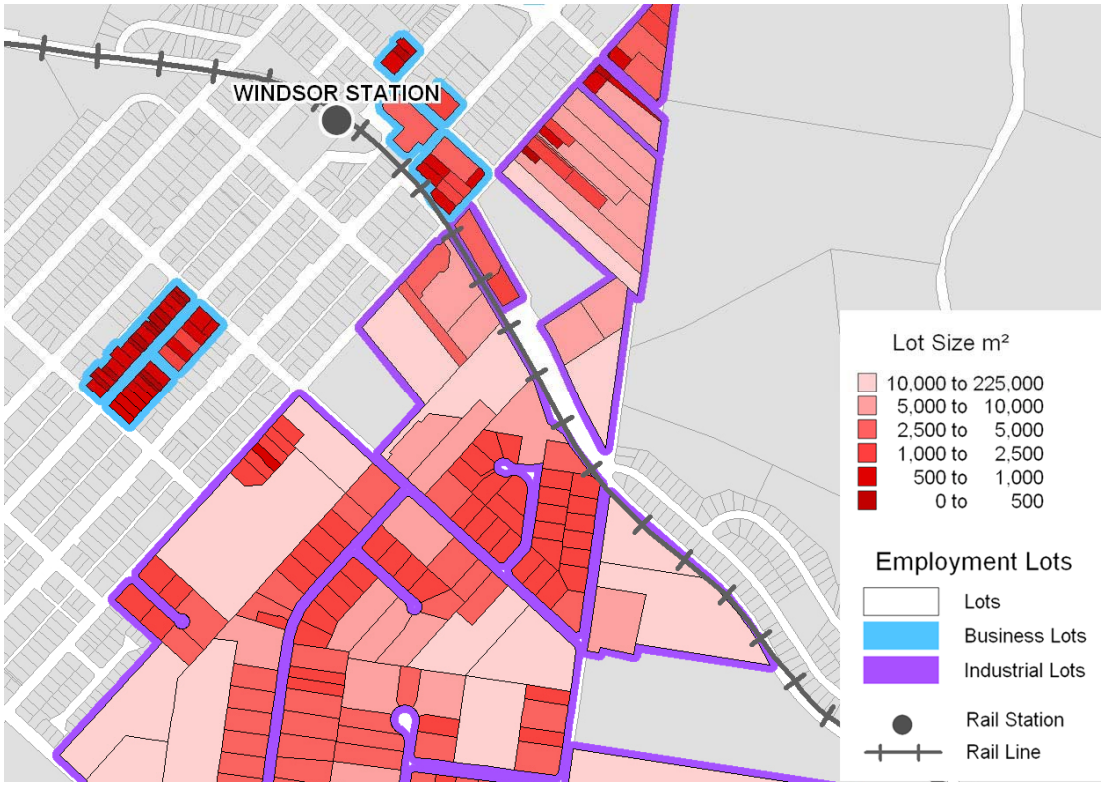


Source: SGS 2008, HLEP 1989

5. South Windsor main street. Source: SGS 2008

6. South Windsor main street . Source: SGS 2008

Figure 64. Lot Size, South Windsor



Source: SGS 2008, HLEP 1989

6.1.4 Neighbourhood Centres

Smaller neighbourhood centres located at Kurmond (north of North Richmond centre) and within the low density detached residential areas of Pitt Town, Bligh Park, Wilberforce and McGraths Hill generally serve their local catchments. They are predominantly one storey shopping centres with at-grade car parking to the street except for Kurmond which is located on the Bells Line of Road. There is also a small local shopping centre at Glossodia. The largest centre is the Wilberforce centre.

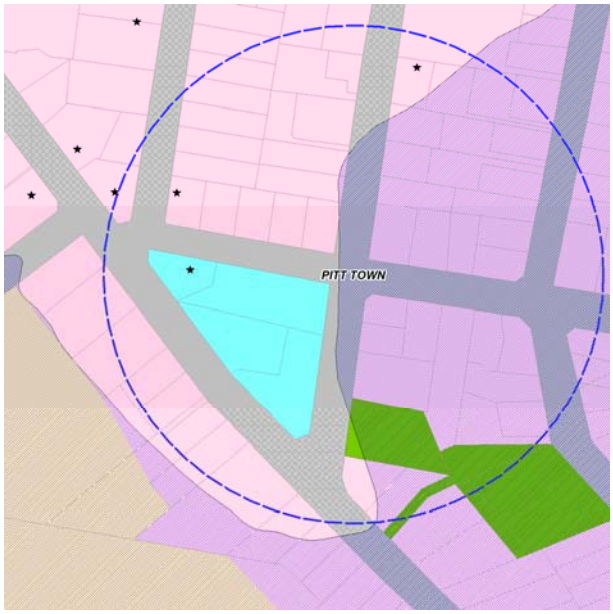
These centres are identified as neighbourhood centres (rural) in the subregional centres typology.

These centres are zoned 3(a) and the centres are all located on main roads. Kurmond and Pitt Town centres are located outside 1:100 flood level. Wilberforce, McGraths Hill, and Bligh Park centres are located within the 1:100 flood level.

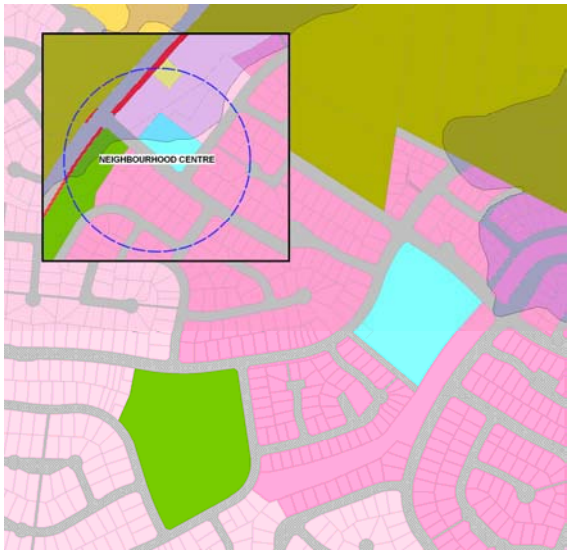
Kurrajong and Kurrajong Heights contain local shops in residential zones and are not included in the analysis below.

Figure 65. LEP Zoning and 1:100 flood level, Neighbourhood Centres

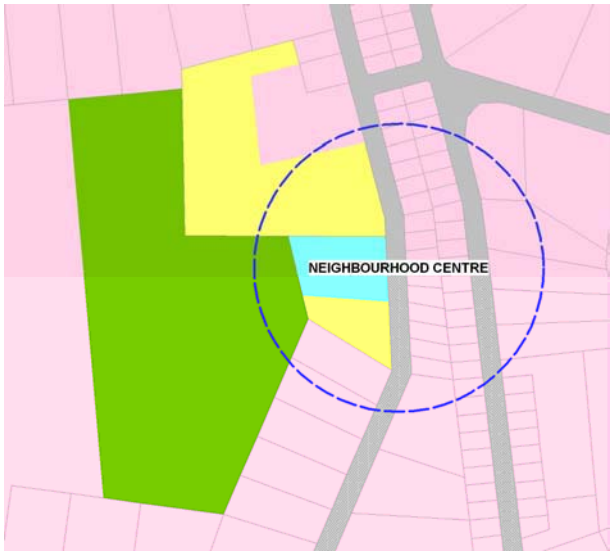
Wilberforce



Pitt Town

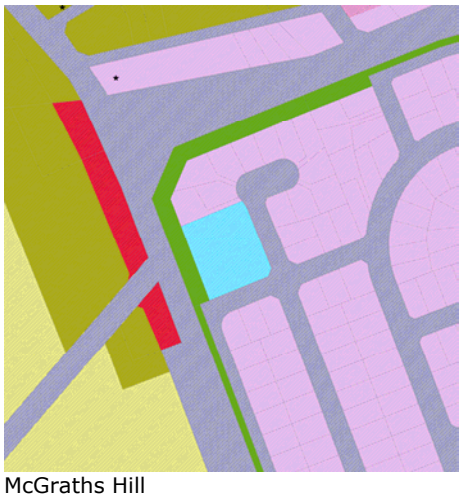


Bligh Park



Glossodia

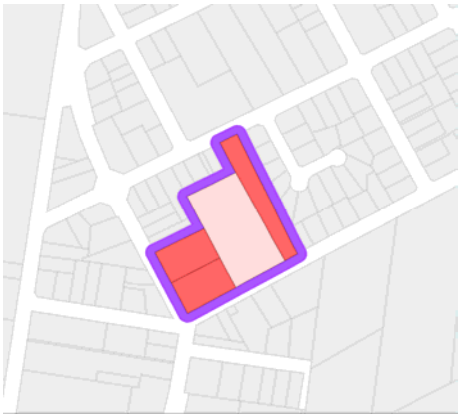
Kurmond



McGraths Hill

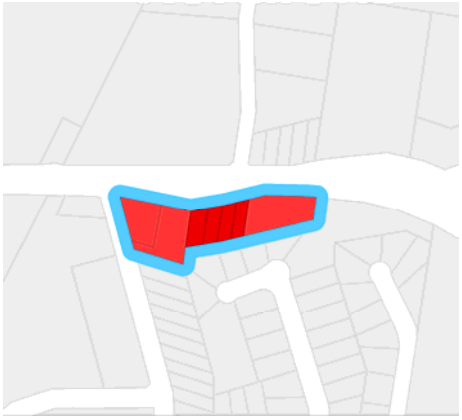
Source: SGS 2008, HLEP 1989

Figure 66. Lot size, Neighbourhood Centres

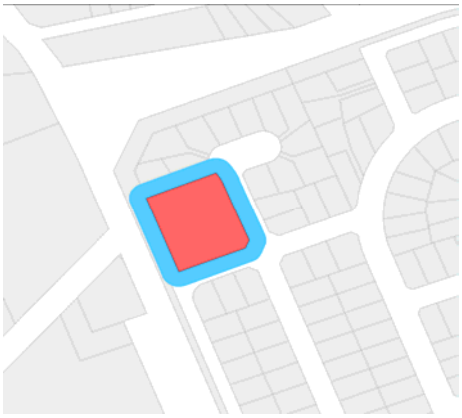


Wilberforce

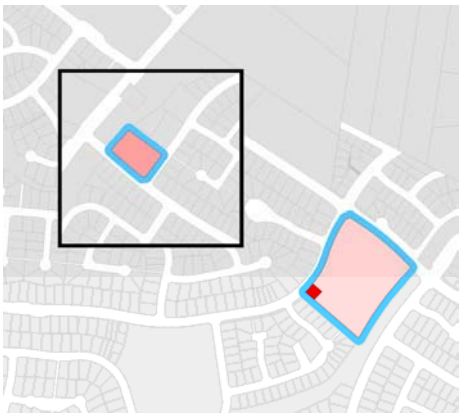
Pitt Town



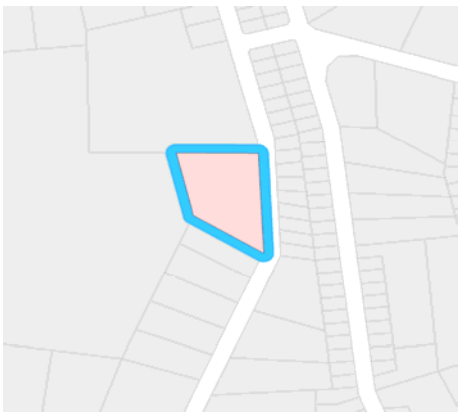
Kurmond



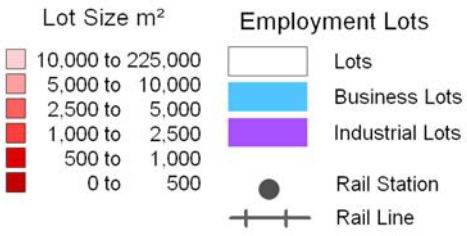
McGraths Hill



Bligh Park



Glossodia



Source: SGS 2008, HLEP 1989

6.2 Current Intensity of Employment Land Use

The current intensity of land use was assessed using GIS mapping data to derive existing FSR, site coverage, land area and current floor space for business and industrial zoned land. The following methodology was employed for this analysis.

Land Intensity Analysis Methodology

The land intensity analysis was undertaken by utilising GIS aerial mapping to estimate land area, FSR, Site Coverage and Floor space of industrial and business zoned land as follows:

- Building footprints were digitised by tracing around the outline of buildings from aerial and marking this outline on GIS aerial mapping layers.
- Building storeys were estimated in consultation with Hawkesbury Council staff. And this information added to the GIS building footprint data.
- Building storey, precinct location, zoning and other attributes were added to the GIS building and lot GIS layers. Each lot and building had the following information attached as relevant:
    a. Precinct
    b. Land use zone
    c. Heritage item status
    d. Environmental constraint
    e. Vacant land
    f. Car Parking areas
- The GIS data associated with the digitised footprint areas and the lots were then exported to excel for calculations to be made.

Calculations involving the following and were organised by zoned land and by precinct.

- Total Land area - This was derived from the lot size area information contained in the cadastre layer. This did not include vacant land parcels.
- Total floor space - This was derived by multiplying the building footprint area by the number of storeys.
- FSR - This was derived by dividing the floor space by the land area.
- Site coverage - This was derived by dividing the building footprint by the land area.

These calculations were applied to each building and its associated land/lands and then averaged by precinct for all values except total land area.

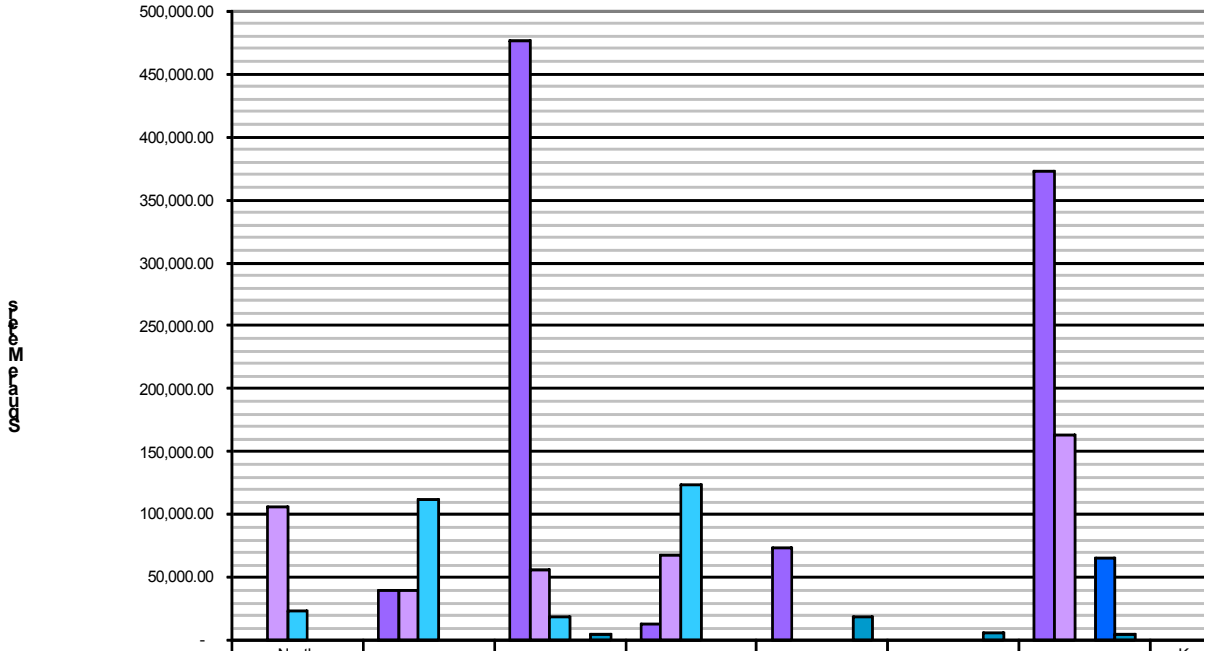
Business land has been split into Business 3(a), 3(b) and Business 3(a) land comprised of stand alone neighbourhood centres (comprised of small neighbourhood centres). The key findings are summarised in Table 18 below with associated graphs following.

Table 18. Land, Floor space, FSR and Site Coverage Analysis, 2008.

Zoned Land	Key findings
Industrial 4(a)	▪ Total of 976,888 square metres in the LGA with most of the supply at South Windsor (49%) and Mulgrave (38%). ▪ Average FSR and Site Coverage are under up to 0.5:1 at Mulgrave and South Windsor and 0.2:1 at Wilberforce and Windsor. Mulgrave has the highest average FSR and site coverage reflecting the higher proportion of industrial strata development. ▪ There is currently 358,829 square metres of 4(a) floor space predominantly in South Windsor (54%) and Mulgrave (40%). ▪ There were 46.5 ha of vacant land recorded for the 4(a) zoned land which is 83 percent of total vacant land. It is predominantly located at Mulgrave.
Industrial 4(b)	▪ Total of 432,581 square metres in the LGA with most of the supply at Mulgrave (38%) and North Richmond (25%). ▪ Average FSR and Site Coverage are up to 0.5:1 at Richmond and 0.3: 1 at North Richmond, Windsor and Mulgrave. Richmond's higher average FSR and site coverage reflects the higher proportion of industrial strata development. ▪ There is currently 137,924 square metres of 4(b) floor space predominantly located at Mulgrave (36%) and North Richmond (27%). ▪ There were 8.2 ha of vacant land recorded for the 4(b) zoned lands mostly located at Mulgrave which is 15% of total vacant land.
Business 3(a)	▪ Total of 283,527 square metres in the LGA with most of the supply at Windsor (43%) and Richmond (39%). ▪ Average FSR up to 0.8:1 in Richmond, South Windsor and Windsor. North Richmond has an average FSR of 0.6:1 and reflects shopping centre land use which has low FSR and Site coverage. ▪ Site coverage is around 0.6:1 for North Richmond, Richmond and Windsor with a site coverage close to 0.5:1 at South Windsor. ▪ There is currently 183,108 square metres of 3(a) floor space predominantly located at Windsor (49%) and Richmond (35%). ▪ There was 0.3 ha of vacant land recorded for the 3(a) zoned lands located at Windsor. This represents less than 1 percent of total land supply.
Business 3(b)	▪ Total of 51,874 square metres located wholly in Mulgrave Precinct. ▪ Average FSR and Site Coverage at 0.2:1 with 8,734 square metres of 3B floor space. ▪ There were 0.72 ha of vacant land recorded for the 3(b) zoned lands. This represents 2 percent of total vacant land supply.
Business 3(a) (Stand-alone neighbourhood centres)	▪ Total of 34,439 square metres predominantly located Wilberforce (55%). ▪ Stand-alone neighbourhood centres and commercial land uses have a low FSR and site coverage values of up to 0.35:1. ▪ There was no vacant land identified in the stand-alone neighbourhood centres.
Special Uses – RAAF/UWS/TAFE	▪ Land areas approximately 277 ha for Richmond RAAF and 1406 ha for UWS/TAFE site. ▪ Special uses land has low intensity usage with 50% of the RAAF Base site developed (including runways) and only 3% of the UWS site. ▪ The UWS site contains significant undeveloped land. The Richmond RAAF site contains vacant land however as a working airport this undeveloped land is a necessary part of the operation of the RAAF base.

Source: SGS 2008

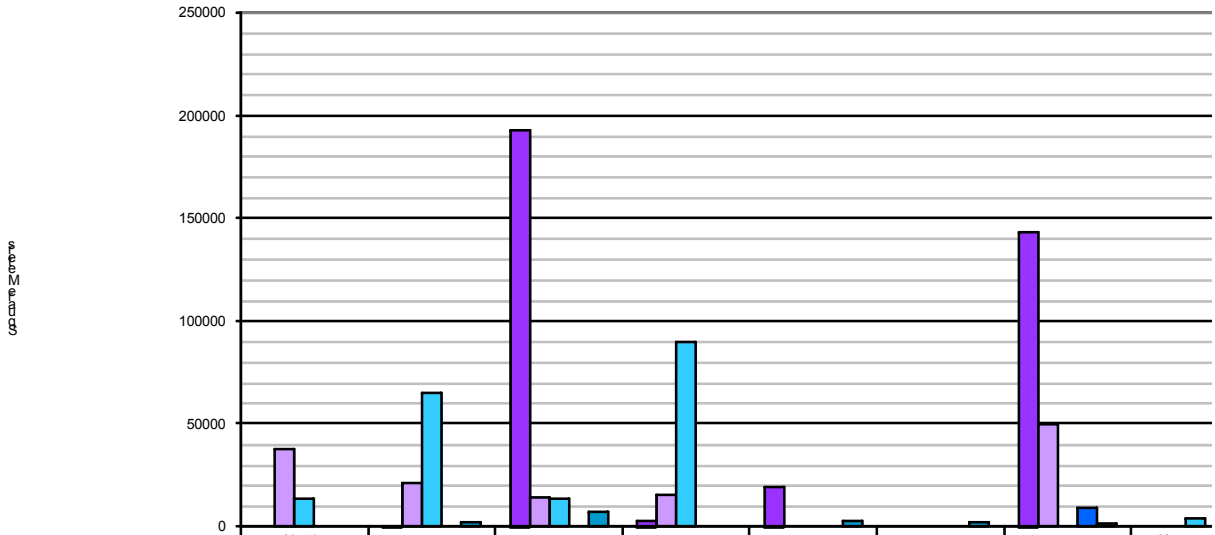
Figure 67. Total Land Area by Zone by Precinct (square metres)



	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kur Glo
Industrial 4(a)		39,923.86	476,997.22	12,808.02	73,905.09		373,253.38	
Industrial 4(b)	106,470.47	39,101.19	56,010.25	67,748.85			163,249.84	
Business 3(a)	23,438.69	111,393.54	19,015.22	123,989.24				18,
Business 3(b)							65,613.35	
Business 3(a) - Stand Alone NC			4,880		19,085	6,370.04	4,104	

Source: SGS 2008

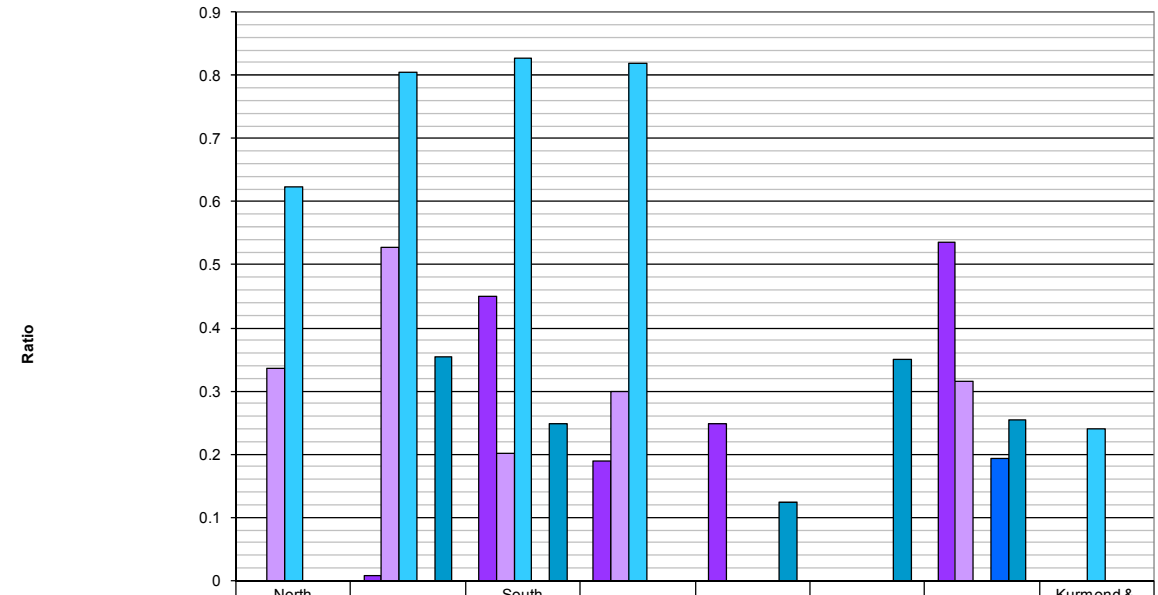
Figure 68. Total Floor space by Zone by Precinct (square metres)



	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond Glossod
Industrial 4(a)		359	193,135	2,676	19,280		143,380	
Industrial 4(b)	37,702	21,127	14,300	15,406			49,390	
Business 3(a)	13,556	64,699	13,141	89,810				3,563
Business 3(b)							8,734	
Business 3a) - Stand Alone NC		1,645	7,059		2,599	2,103	1,041	

Source: SGS 2008

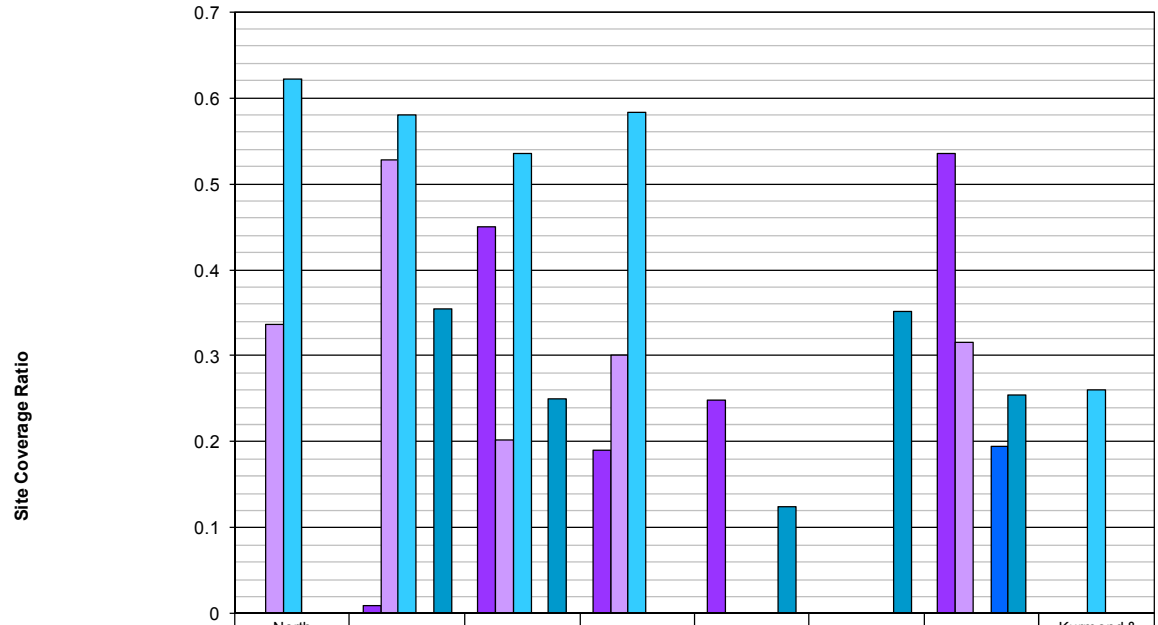
Figure 69. FSR (Average) Ratio by Zone by Precinct



	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia
Industrial 4A		0.01	0.45	0.19	0.25		0.54	
Industrial 4B	0.34	0.53	0.20	0.30			0.32	
Business 3A	0.62	0.80	0.83	0.82				0.24
Business 3B							0.19	
Business 3A -Stand Alone NC		0.35	0.25		0.12	0.35	0.25	

Source: SGS 2008

Figure 70. Site Coverage Ratio (Average) by Zone by Precinct



	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia
Industrial 4A		0.01	0.45	0.19	0.25		0.54	
Industrial 4B	0.34	0.53	0.20	0.30			0.32	
Business 3A	0.62	0.58	0.54	0.58				0.26
Business 3B							0.19	
Business 3A - Stand Alone NC		0.35	0.25		0.12	0.35	0.25	

Source: SGS 2008

Current supply analysis shows that employment land generally has a low intensity of use for industrial and business zoned land outside the Windsor and Richmond centres. This is expected given the lack of drivers to stimulate intensification. The LGA has had consistently modest population growth and is relatively unconstrained from a land supply perspective.

6.3 Summary of attributes and constraints

A summary of attributes and constraints has been provided at Figure 71. These can be used as assessment criteria to inform the distribution of employment related land uses in the LGA South centres and employment lands. Key items are graphically represented on Figure 72.

Figure 71. Summary of attributes and constraints[17]

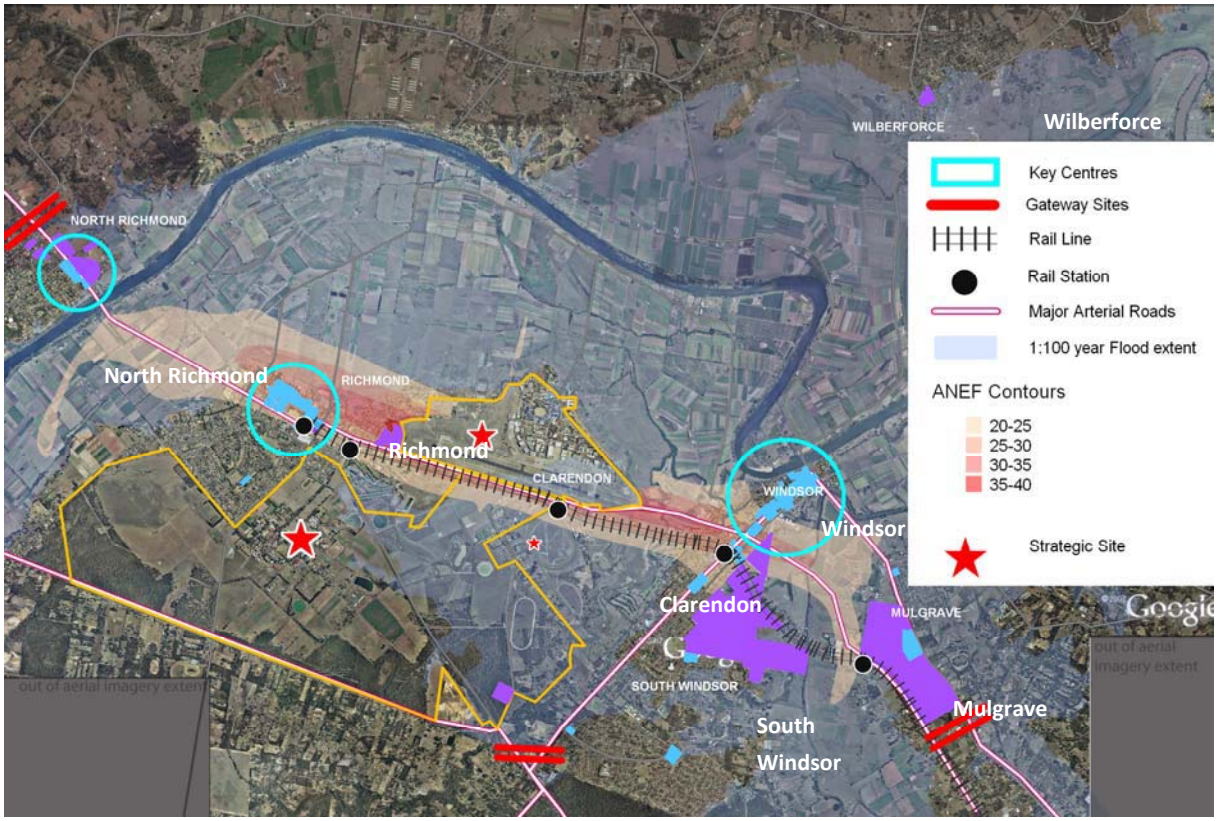
Precinct	Within Centre	Direct access to major road	Direct or proximate access to freeway/motorway	1:100 Flood	PMF	Proximity to Rail (within 800m)	Bushfire prone land	ANEF <30	ANEF <40	Heritage Items	Proximity to NWGC (within 800m)
North of River											
North Richmond Industrial											
North Richmond centre											
Wilberforce (Industrial)											
Wilberforce (Stand alone NC)											
South of River											
Windsor Centre											
Windsor Station											
South Windsor (Centre)											
South Windsor (Industrial)											
Richmond (Centre)											
Richmond (Industrial)											
Mulgrave											
Bligh Park (Stand alone NC)											
Mc Grath's Hill (Stand Alone NC)											
Pitt Town (Stand Alone NC)											
RAAF											
UWS											

Yes / not affected
Partly
No / Substantially affected
Minimally affected

Source: SGS 2008

[17] See Appendix D for glossary and details regarding attributes and criteria presented in Table.

Figure 72. LGA Structure and key elements



Source: SGS 2008

This analysis highlights:

- **The extent of flood affected areas in the LGA**. This severely constraints residential development but is not an absolute constraint for employment related land uses.

- **The clustering of strategic employment and recreational assets in the vicinity of Clarendon station, including the RAAF, Hawkesbury Racecourse and UWS**. There is potential to leverage some higher order employment related activity in this area over the medium term.

- **The key traffic carrying arterials**. Where these are near existing retail centres, employment areas or concentrations of population they could be the focus for additional enterprise activities or 'highway' related businesses. Sites at Mulgrave and North Richmond may be appropriate.

- **The areas where nearby population growth pressures are the greatest**. Additional service industry land may be required near these areas.

- **'Gateway' locations at North Richmond, Mulgrave and South Windsor**. These locations can be developed to build on the character of nearby areas or strategic assets.

6.4 Key Implications

Hawkesbury's employment lands are mainly occupied by light industry, light manufacturing and urban services with local markets

Apart from Wilberforce which is isolated from urban areas the LGA's industrial precincts are adjacent to urban centres. They tend to host local service, light manufacturing and urban services with local or subregional markets.

The employment lands are not intensively developed

The LGA contains approximately 140 hectares of land zoned industrial (4(a) and 4(b)). In the order of 55 ha is vacant (or underdeveloped). The analysis shows that employment land generally has a low intensity of use with average FSRs typically less than 0.5. This is to be expected given the lack of drivers to stimulate intensification. The LGA has had consistently modest population growth and is relatively unconstrained from a land supply perspective

Configuration of key centres limits certain retail and commercial uses

The LGA currently contains approximately 37 ha of land zoned business (3(a), 3(b) and 3(c)). Richmond and Windsor which contain most of the business zoned land are historic and attractive town centres but have development limitations.

Richmond's current configuration is problematic and contributes to a mismatch of supply and demand identified in previous studies. A restructuring of the centre would be required to unlock the capacity for a wider range of uses. North Richmond similarly has a poor configuration, relationship to adjoining land uses, and public domain on interface streets.

Significant heritage items and conservation areas, flooding impacts and its distance from Windsor Rail station make Windsor a poor candidate for restructuring to allow a wider range of office and retail uses. The area around Windsor station is also constrained due to flood evacuation issues and ANEF (aircraft noise) impacts.

Most employment land is constrained by flooding.

All employment lands are affected in some way by the 1:100 flood level although the extent varies. It is possible to 'fill' sites and develop them for industrial uses as long as the development form reflects the flood risk.

Hawkesbury LGA has key strategic assets to build on.

The strategic site cluster around Clarendon Station provides an opportunity to provide 'higher order' office functions around an underused heavy rail asset. There are significant undeveloped land areas in the vicinity of Clarendon Station that would be suitable for investigation for such a development.

Key employment precincts lack road and service infrastructure

While Mulgrave and South Windsor are accessible by rail, Mulgrave is the only employment precinct with superior access to a major road (Windsor Road). South Windsor has secondary road access via residential roads. There is no provision in the subregional strategy for upgrades or extensions major roads into the LGA.

Sites within these precincts lack servicing. Servicing industrial land for power and water has become a barrier to development as the first developer of an unserviced area must provide the upfront costs that will benefit subsequent developers.

7 Land Demand and Supply Analysis

7.1 Employment Floor Space Demand

Employment land demand has been derived from estimating the number of jobs that will exist in the LGA by industry sector in 2031, the nature of employment land uses in 2031 and what floor space and land area will be required as a result of these jobs. Qualitative messages from consultation with stakeholders are also provided to fill out the data analysis.

Employment in 2031

Data inputs used to calculate the number of jobs in 2031 for Hawkesbury include:

- ***Transport Data Centre (TDC) journey to work data.*** This is employment by industry data collected from ABS Census which is then allocated to specific travel zones generated by TDC. These data sets are provided following ABS census data release.
- ***Subregional employment targets.*** These are the employment targets set for each LGA from a 2001 base.
- ***TPDC Projections.*** These are employment projections generated by the Department of Planning for 5 year periods from 2001 to 2031.
- ***SGS Scaling factors.*** To account for undercounting of ABS census data and industry specific data errors, SGS has generated scaling factors which are applied to the available data to get a more realistic picture of how many jobs exist in a given region (see Appendix B for detail).

Table 19 overleaf summarises the calculation of jobs in the Hawkesbury LGA in 2031. Notwithstanding the increase in jobs between 2001 and 2006 which should theoretically be subtracted from the employment capacity target, the land demand has used the 3,000 target as the reference figure for the demand calculations. The 3,000 has been added to the adjusted reported 2006 figure to assume a total employment demand of **28,226** jobs in 2031 - up from the 27,000 figure in the Draft North West Subregional Strategy. This upward adjustment is reasonable given greater than anticipated recent growth.

Future employment floor space demand has been calculated by applying different floor space to job ratios to the jobs within each industry sector. A *floor space to job* ratio is the average amount of floor space occupied by a worker in any particular industry. Office jobs will generally occupy less space than a worker in manufacturing, due to, for example, the space requirements of machinery, manoeuvring areas and loading bays in the latter case. The *floor space to job* ratio has been derived from an analysis of the existing ratio in Hawkesbury's employment precincts where correlation between the employment precinct area and travel zone boundary is moderate to high[18], supplemented by SGS Research

[18] This was to ensure reduced 'noise' from other land uses on non-industrial/business zoned land.

An assumption has been made that existing land uses will not change significantly and as such, the floor space demand has been undertaken by looking at how much floor space is generated by the net additional jobs between 2006 and 2031 only. Table 19 also shows the results of multiplying the net additional jobs by a notional floor space to job ratio. .

Table 19. Net Additional Jobs in 2031 and Future Floor Space Demand

Industry Sectors	Adj. TDC 2031 % Share	2006 jobs	2031 jobs	Net additional jobs to 2031	Average floor space to job ratio	Floor space by industry
Agr. For'try & Fishing	4.5%	1314	1,270	-44	-	-
Mining	0.1%	16	14	-2	-	-
Manuf.	14.0%	3513	3,952	439	100	43,864
Utilities	0.2%	88	56	-32	100	-3,155
Constr.	10.0%	2431	2,823	392	100	39,160
Wh'sale Trade	3.0%	978	847	-131	100	-13,122
Retl. Trade	16.0%	3900	4,516	616	35	21,566
Acc. Cafes & Rest.	6.0%	1182	1,694	512	35	17,905
Transp & Stor	4.0%	809	1,129	320	200	64,008
Comm. Serv.	1.0%	150	282	132	100	13,226
Fin. & Ins.	1.3%	362	367	5	25	123
Prop'ty & Bus Serv	8.0%	1708	2,258	550	25	13,752
Govt. Admin. & Def.	7.9%	2744	2,230	-514	35	-17,995
Educat.	8.0%	2128	2,258	130	40	5,203
Health & Com'ty Serv.	10.0%	2360	2,823	463	35	16,191
Cult & Recr. Serv.	2.0%	526	565	39	25	963
Pers & Other Serv	4.0%	1015	1,129	114	25	2,851
	100.0%	**25224**	**28,213**	**3,000**	**-**	**204,540**

Source: SGS 2008
** Note: SGS research*

The analysis finds that there will be a demand for approximately **204,500 square metres** of additional floor space. The forecast land demand has been arranged into likely zoned land to provide demand by land use zone. For this analysis, it has been assumed that industry sectors are generally located in industrial, business or special use land use zones. Further analysis of jobs on non-employment zoned land will need to be undertaken to refine this analysis.

- Industrial Land – Manufacturing, Utilities, Construction, Wholesale Trade sectors.
- Business Land – Retail Trade, Accommodation Cafes and Restaurants, Finance and Insurance, Property and Business Services, and Personal and Other Services sectors.
- Special Uses land - Education, Health and Community Services, Culture and Recreation Services, and Government, Administration and Defence.
- Communication Services jobs occur across land uses and have has been divided equally across industrial, business and special uses land.

This grouping provides floor space demand by land use as follows:

Table 20. Additional floor space demand

Land use zone	Floor space (square metres)
Industrial	130,755
Business	56,197
Special Uses	17,588
TOTAL	**204,540**

Source: SGS 2008

7.2 Potential Floor Space and Land Supply

The potential for industrial land and business land to accommodate employment related floor space varies. As such, the potential floor space supply has been derived for each of these land uses using slightly different methodologies. Calculation tables are provided at Appendix E.

Industrial supply

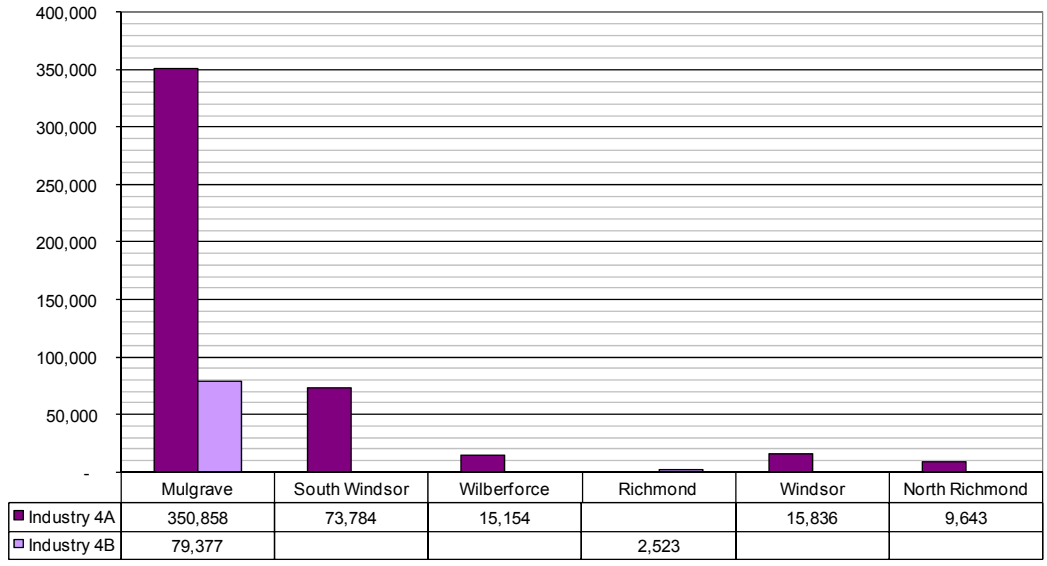
Additional potential for industrial floor space comes from:

- increased intensity of use of existing occupied but underutilised industrial land;
- the take-up of vacant industrial land; and
- the provision and development of new industrial land.

Capacity from intensification is not considered likely for the LGA South industrial employment lands given the lack of drivers for intensification and the abundance of more well-accessed industrial employment land in the subregion. Future floor space will therefore need to be accommodated on vacant industrial zoned land or new industrial employment land.

Figure 73 below shows the amount of vacant land in the employment land precincts, which in total was around 54.7 ha.

Figure 73. Vacant Industrial Land by Zone by Precinct (square metres)



	Mulgrave	South Windsor	Wilberforce	Richmond	Windsor	North Richmond
Industry 4A	350,858	73,784	15,154		15,836	9,643
Industry 4B	79,377			2,523		

Source: SGS 2008

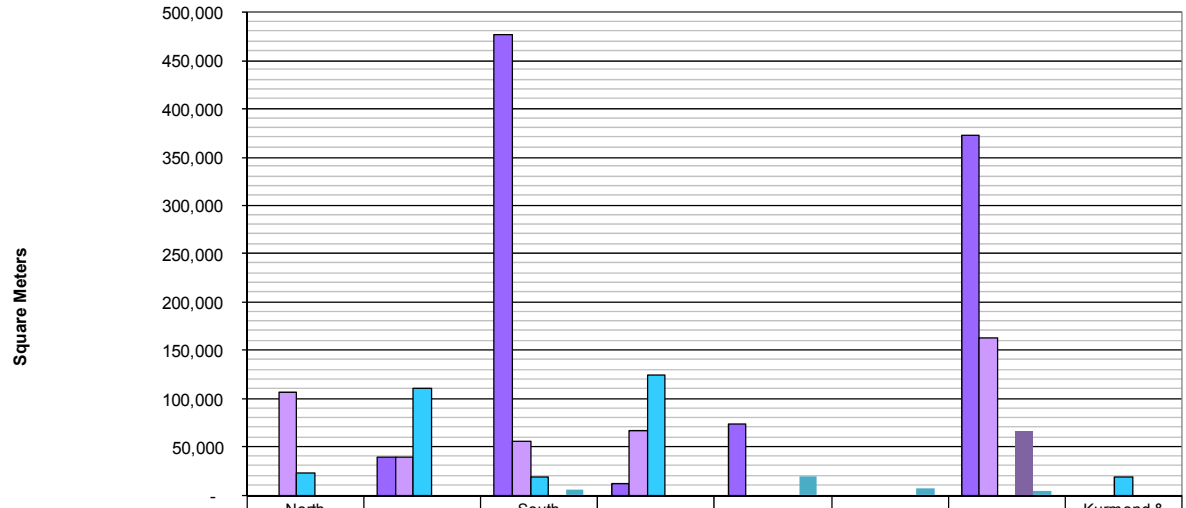
Assuming that this vacant 4(a) and 4(b) industrial land would develop at a notional FSR of 0.5:1 (which is somewhat above the average rate in the existing areas) there is potential supply of around **273,588 square metres** in the existing industrial areas.

Business supply

In the case of commercial/retail land uses, there is more scope for intensification of land use through renewal of existing areas (which may include new mixed use development) as well as from the development of new sites. Potential business floor space supply was derived by:

- identifying the area of all business land, (see Figure 74) excluding sites with a heritage use (9.5 ha) (see Figure 75); (this yielded 97,456 square metres).
- applying an aspirational FSR of 1:1 (slightly higher than the average 0.8:1 in the Richmond and Windsor centres) to non-heritage constrained business 3(a) land (including any vacant land and half of the land used for car parking in Richmond[19]) and 0.5:1 to business 3A stand-alone neighbourhood centres lands and the 3(b) land at Mulgrave as these were not expected to intensify (this yielded a total of 335,864 square metres); and
- subtracting existing floor space (206,289 square metres) from the total potential.

Figure 74. Business Land by Zone by Precinct – Including vacant and car park lots (square metres)

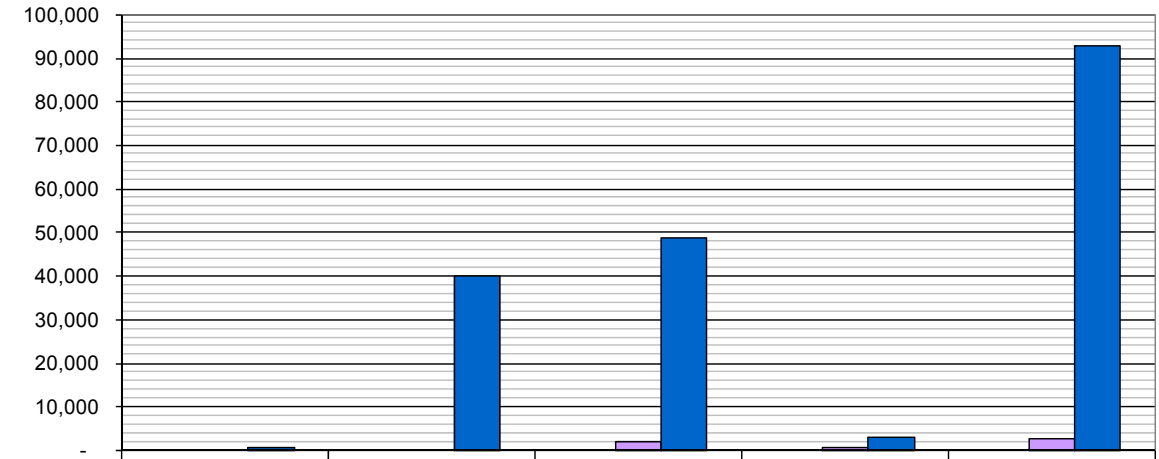


	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia
Industrial 4(a)		39,924	476,997	12,808	73,905		373,253	
Industrial 4(b)	106,470	39,101	56,010	67,749			163,250	
Business 3(a)	23,439	111,394	19,015	123,989				18,715
Business 3(b)							65,613	
Business 3(a) - Stand Alone NC			4,880		19,085	6,370	4,104	

Source: SGS 2008

[19] This was considered the centre with the most potential for renewal. Car Parking in other centres was not applied.

Figure 75. Heritage lots by Zone by Precinct (square metres)

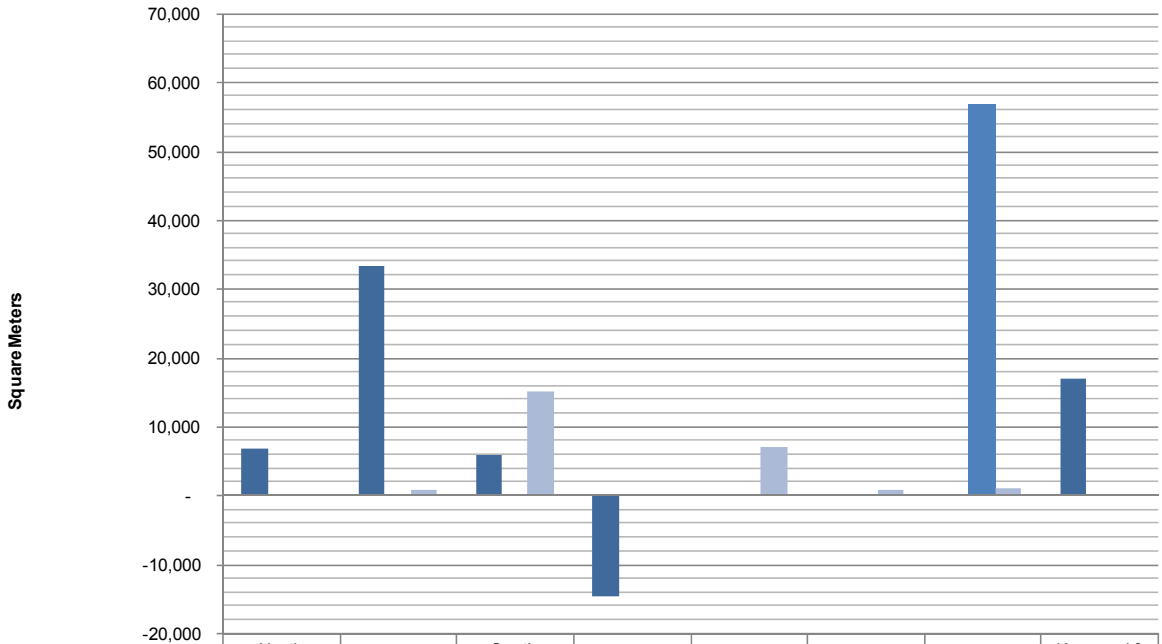


	Pitt Town	Richmond	Windsor	North Richmond	Total
Industry A					
Industry B			1,882	751	2,633
Business	786	40,038	48,889	3,071	92,783

Source: SGS 2008

Based on these assumptions, the total potential notional supply in the existing business zoned lands is **129,574 square metres** of floor space. Figure 76 highlights the spread of supply, or lack of it, across the business zoned precincts. Full calculations are provided at Appendix E.

Figure 76. Notional supply by Precinct (Business zoned land)



	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia
Business (a)	6,812	33,415	5,874	-14,710	-	-	-	16,813
Business (b)	-	-	-	-	-	-	56,879	-
Business Stand Alone	-	862	14,985	-	6,943	689	1,011	-

Source: SGS 2008

The analysis highlights a key finding that there is no theoretical capacity in the Windsor centre under the current controls. Additionally, any further expansion of demand within the Windsor catchment would create the need for additional retail/commercial floorspace (either by an increase of densities, or more likely, an increase in the areas zoned for business use). Other centres show some notional capacity. Mulgrave shows a surplus of Business (b) floorspace due to the low intensity of use on all lots within that area.

7.3 Consultation messages on employment supply constraints and opportunities.

7.3.1 Market messages

Consultation was undertaken with real estate agents working in the area and local business land owners (through an industry survey) to gain insights into employment land supply. Market sales were also assessed for a period of 5 years from 2003 to 2008. The key messages are provided as follows.

Lack of prime commercial floor space

Commercial land is in demand and it is considered that there are significant impediments to new business due to the lack of prime commercial floor space in the LGA.

Unserviced land not taken up

Consultation with real estate agents generally found there to be an oversupply of industrial land. This needs to be qualified somewhat because part of this is seen to be related to the lack of serviced land (with power and water) as well as a lack of access to main roads.

Minimal sales in last 5 years compared to North West subregion

Compared to the North West subregion, employment land sales in Hawkesbury LGA were significantly lower than in the subregion generally. With regard to commercial land sales, Hawkesbury had only 77 sales in the last 5 years, or 6 percent, of the total sales in the North West subregion. The majority of sales in the subregion during this period were in the LGAs of Baulkham Hills, Penrith and Blacktown. In the better performing LGAs of Baulkham Hills, Penrith and Blacktown, median sale prices and the cost per sqm have decreased in the last 5 years. Across the board sales in the North West subregion were stronger in 2007 than in previous years with the exception of Baulkham Hills which recorded slightly lower sales in 2007.

In terms of lots sizes, the majority of subregional commercial sales between 2003 and 2008 were for larger lots (>2000sqm). However, Hawkesbury and Blue Mountains show concentrations in the smaller lot sizes. Again, this highlights the different nature of the commercial market in these LGAs. Consultation messages from real estate agents found that most sales are for local businesses.

In regards to industrial land sales, Hawkesbury, Baulkham Hills and Blue Mountains have significantly fewer industrial land sales than Penrith and Blacktown with Hawkesbury LGA contributing 6 percent of total sales in the subregion. Like Baulkham Hills and the Blue Mountains, Hawkesbury comprises significant national park and environmental protection land uses and has

environmental issues that affect the ability of land to be developed. These include flooding, bushfire prone land and the potential for mineral resources on undeveloped land.
There have been fewer industrial sales in absolute terms, and a lower median sales price. This reflects the consultation messages of an 'oversupply' of industrial land which generally refers to an excess of industrial land not taken up due to it being unserviced for water and power. Analysis of the trends in sales by lot size in the last 5 years shows that Penrith and Blacktown have the highest recorded sales. Hawkesbury has higher sales in lots less than 4000 square metres which reflects the bias in the stock of available serviced lots, and the relatively higher strength of more locally oriented demand.

7.3.2 Industry Survey

Survey Catchment

An Industry Survey was sent out to owners of land in the study area who were asked to pass on the survey to their tenants if they were not the business operator. Of the 1200 surveys sent out there were 123 respondents with 69 percent (84 respondents) of business locations stated as being on within the study area. Of this group, most were from Richmond, Windsor and South Windsor. Of the respondents surveyed, 67 percent were located on industrial/business zoned land.

Attributes of the Hawkesbury business location

Businesses were asked about the importance of certain attributes to their business. The responses suggest that the following attributes have the following rates of importance:

High importance (more than 60 percent of the respondents):
- Availability of appropriate premises
- Access to M2, M7, Windsor Road
- Attractive land and rent values

Moderate importance (40-55 percent):
- Proximity to the local market
- Availability of large land parcels
- Proximity to homes for workers

Low importance (les than 40 percent):
- Proximity to suppliers
- Historical connections to the area
- Access to distribution destinations
- Access to public transport

The responses suggest that employment in the study area has a generally local catchment where goods are produced and sold in the LGA and immediate subregion.

Future Intentions

Most businesses surveyed are not intending to expand or take on new staff (6o to 70 precent) with a high proportion stating that they expect to remain in their current location for the next 3 years (92 percent).

Areas for improvement

Key areas for improvement suggested by respondents included:

- Promotion of the area and improving tourism;
- Improving access and traffic flow along main roads; and
- More efficient development application assessment.

7.4 Demand and Supply Comparison

The consultation with agents and Council, and data from sales does not imply a significant shortfall in supply given demand. Nevertheless, the configuration and location of current sites may constrain the market. Furthermore, there may be latent and untapped potential demand. It should be remembered the demand side figures are derived from the Department of Planning's employment capacity target (of 3,000). Recent rates of employment growth in the LGA have been reasonable and if these continue the demand – supply balance might have to be reconsidered.

The demand / supply analysis identifies whether the identified land or floor space demand can be accommodated given the identified potential supply. Ultimately, future land uses and floor space should be broadly distributed according to different requirements in terms of the attributes discussed earlier, including road access, proximity to centres and proximity to population concentrations.

7.4.1 Industrial supply/demand analysis

Overall demand

Net additional industrial floor space demand (130,755 square metres) was compared to the net potential supply (273,588 square metres) to reveal a supply surplus of 143,000 square metres or around **28 hectares** (at a notional FSR of 0.5:1).

Table 21. Industrial Land Supply/Demand Analysis, Floor space (square metres).

Type	Demand (square metres)	Supply (square metres)	A. Gap/Surplus (square metres)	B. Notional FSR	A ÷ B Gap Land (ha)
Industrial	130,755	273,588	142,833	0.5:1	28.6

Source: SGS 2008

It should be noted that this is an indicative figure, indicating a moderate supply 'buffer'.

The buffer could be eroded quickly by a couple of big occupiers and a surge in development.

It should also be noted that it assumes all industrial land–related jobs will be accommodated in the LGA's Southern employment land areas. As discussed earlier in this report, it is apparent that industrial land uses termed 'rural industries' can exist on mixed agriculture zoned land. Further analysis of this aspect of employment in the LGA could allow some indication of the proportion of industrial jobs on these lands and allow for a refinement of this supply/demand analysis. Certain employment land uses may be redirected to surplus employment lands, while others may continue in the non employment land areas, implying a greater supply buffer.

Population-driven industrial employment land uses

The growth in population creates a demand for a range of activities including local light industry and urban support and urban services which need to be accommodated in employment land areas. Future employment land will need to accommodate the population driven industrial land uses of local light industry and urban services. These land uses are characterised as:

- Local light industrial and urban support:
  - Car service and repair; joinery, construction and building supplies; domestic storage.
  - Wide range of businesses that service other business (components, maintenance and support) and subregional populations. Needed at local (LGA) to sub-regional level.

- Urban Services:
  - Concrete batching, waste recycling and transfer, construction and local and state government depots, sewerage, water supply, electricity construction yards. These typically have noise dust and traffic implications and need to be isolated or buffered from other land uses. They are needed in each sub-region.

Notwithstanding the fact that there is unlikely to be a 'linear' relationship between population growth and demand for land for these activities, it is possible to get a sense of the absolute upper end of future demand that might need to be accommodated in the employment lands of LGA South. This is undertaken by applying an SGS-derived ratio of land take for these activities to future growth in households. The following table works through the logic of a future estimate.

Table 22. Theoretical Demand for 'Population-Related' Industry Land

Inputs for modelling	Value	Unit	Source
1. Existing local light industry land ratios per household	5.55*	sqm/h'hld	SGS Research
2. Existing urban services land ratios per household	16.16*	sqm/h'hld	SGS Research
3. Future households 2006 - 2031	5,000	h'hlds	Subregional Strategy
Land Demand			
Theoretical demand for local light industry land 2006 - 2031	2.8	ha	1 x 3
Theoretical demand for urban services land 2006 - 2031	8.0	ha	2 x 3
TOTAL	**11**	**ha**	

Source: SGS 2007, East Subregional Strategy 2007, ABS 2006, **SGS Research*

The table indicates future demand of 11 ha of local light industry and urban services land to service the additional households to be accommodated in the Hawkesbury LGA. This is a 'subset' of the total additional demand identified above. This land demand can be accommodated within the existing vacant land totalling 56.4 ha and the surplus land identified.

7.4.2 Business land supply/demand analysis

Overall demand

Estimated future business floor space demand (56,197 square metres) was subtracted from the estimated net supply (129,574 square metres) to identify a supply surplus of approximately **73,400 square metres** within existing controls.

Table 23. Business land Supply/Demand Analysis, Floor space (square metres).

Type	Demand (square metres)	Supply (square metres)	A. Gap/Surplus (square metres)
Business	56,197	129,574	73,377

Source: SGS, 2008

However, consultation messages and previous analysis of retail supply and demand has shown that there is a mismatch in the type of commercial floor space demand and the supply potential within existing controls. Prime commercial floor space remains in demand and some sites with additional notional potential under the controls are unlikely to develop further (even beyond heritage sites).

Retail Demand

The growth in population creates a demand for retail capacity in business zoned employment areas. Typically there is significant scope for additional retail development in commercial/retail areas (though not always for 'Big-Box' retailing that requires large building footprints).

SGS has estimated the total additional retail expenditure associated with additional dwellings in Hawkesbury LGA and converted this to floor space by centre types. Retail expenditure generated by an additional 5,000 dwellings would be in the order of $172m (2007 dollars). At a range of retail turnover densities for different types of centres, SGS estimates this would support a further 28,000 square metres of retail floor space in the LGA. The split by centre type is shown in Table 24 with input and calculations provided at Appendix E.

Table 24. Future retail floor space by centre type

CENTRE TYPE	Supportable Floor space (sqm)
Outside Region eg. Sydney	NA
Major	10,452
Town	7,342
Village	5,236
Small Village	3,735
Neighbourhood	1,339
Totals	**28,104**

Source: SGS 2008

Approximately 10,452 square metres of this floor space is to be directed to a major centre. Hawkesbury does not have a designated major centre (in the Metropolitan and Subregional Strategy) but due to the distance to alternative retail opportunities it is considered that a good share of this 'major centre' floor space will be need to be accommodated locally.

Leaving this figure 'in', an additional **28,104 square metres** of retail floor space would need to be accommodated in the business zoned land. This is a subset of the total business floor space related demand identified above. The broad estimate of the location of this floor space, based on where future residential and commercial development should be concentrated should be reviewed as part of Council's housing capacity analysis and any review of the centres typology that results from this analysis. It is considered that this modest amount of floor space could mostly be accommodated within the existing centres through minor expansion or a renewal of the commercial/retail areas. Windsor appears to be the exception with little or no additional potential under the existing controls.

Higher Order Office and Business Development

A significant proportion of floor space will be for office-based commercial floor space. Small floor space office uses will typically be accommodated within existing centres, however any demand for large format commercial or business floor space will need to be accommodated in 'new' locations. Given the constraints of the existing centres to supply such floor space, a catalyst site that could capitalise on the special uses cluster of education and government administration and on existing

public transport infrastructure may be appropriate for such a use. Undeveloped land around Clarendon Station, UWS and Richmond RAAF could meet the criteria and should accommodate this floor space in a larger floorplate format, perhaps with a proportion of industrial or warehouse floor space.

7.5 Key Implications

Modest employment capacity target and related floor space

Notwithstanding growth since the base year of 2001, the demand assessment has been based on the full employment capacity target of 3,000 from 2001 to 2031. It is estimated that the floor space demand associated with this employment is in the order of 204,000 square metres. The examination of the employment land precincts shows total existing floorspace at around 700,000 square metres.

Given the growth in employment between 2001 and 2006, the employment capacity target of 3,000 jobs could be met well before the 2031 horizon. Medium to long-term land demand should be re-examined for the next LEP cycle.

The quantitative demand/supply analysis reveals a surplus of capacity in existing industrial and business zones – but qualitative constraints may limit development potential

The potential floor space supply of industrial and business zoned floor space has been derived by using slightly different methodologies for industrial and business land use zones.

For industrial land it is estimated there is a moderate supply buffer of about **28 hectares** after demand is accounted for. This is indicative only but implies there is no prima facie urgency to rezone land for industrial activities – assuming there are no key constraints to developing the existing vacant supply.

The type, servicing and configuration of the existing industrial land may not be appropriate given demand. Furthermore recent employment growth has been somewhat higher than anticipated by TDC employment forecasts. Provision of new well serviced, appropriately located new industrial land may satisfy demand earlier than forecasts currently indicate.

In the case of commercial/retail land uses, there is some scope for intensification of land use through renewal of existing areas (which may include new mixed use development) as well as from the development of new sites. Based on these assumptions, the total potential available supply in existing controls in business lands is **74,000 square metres** of floor space. Again, this is notional supply and the existing configuration of available sites or the inertia associated with existing uses may limit short to medium term potential. There is a case for an early review of the controls to augment existing supply of business zoned land particularly in the Windsor centre catchment.

Unserviced land development costs are a barrier to development.

Unserviced land is difficult to develop given the up-front costs confronted by the developer. Real estate agents tend to see this as an over-supply issue however it may be more of an infrastructure coordination and provision issue. A more coordinated approach to infrastructure provision and servicing in industrial areas is warranted.

8 Strategic Planning Approach

8.1 Key Finding

A key finding of this study is that there is no immediate shortage of industrial or business zoned land in the Hawkesbury LGA. Nevertheless, constraints to development are apparent. In industrial areas vacant land is often unserviced, with threshold costs limiting development, or has poor access to key transport routes. In commercial / business areas existing lot configurations, heritage and existing development constrains the potential for renewal and reinvestment.

8.2 Recommended Strategies

Based on this finding and the other strengths and challenges identified in the report, it is recommended Council pursue the following strategies to address the economic prosperity of the LGA. An indicative timing is identified but this should be adjusted depending on new findings or an un-anticipated development that requires an earlier resolution of the issue. While some strategies are immediate, and can be considered in the short term (for the next LEP), most will be medium to long term strategies underpinned by further investigation.

Table 25. Proposed Strategies Summary

Strategy	Indicative Timing
1. Investigate and facilitate the servicing of vacant industrial lands to unlock existing supply	Immediate
2. Capitalise on underutilised transport infrastructure and lobby for improved servicing .	Immediate
3. Facilitate renewal of existing centres with capacity for growth whilst ensuring high quality urban design and structure planning. • Richmond (around Richmond station and by redeveloping between Windsor Street and Bosworth Street to provide a 'forum' space and mixed use opportunities) • North Richmond (investigate scope to create a high amenity and mixed use main street along Riverview Road) • Windsor Station (identify opportunities for minor commercial and retail development for local populations)	Short term (within 3 years) Short to medium term (within 5 years) Short to medium term (within 5 years)
4. Capitalise on the LGAs strategic assets to provide high quality jobs, by considering the future of land at Clarendon for a high amenity office and business development.	Short term (within 3 years)

Strategy	Indicative Timing
5. Investigate additional industrial land supply to address future employment growth • Mulgrave (south of Park Road and on the western side of the rail line) • South Windsor (the areas east of Fairey Road not currently zoned industrial) • North Richmond (near the corner of Terrace Road and Bells Line of Road for service industry currently on Bells Line of Rd)	 Short to medium term (within 5 years) Short to medium term (within 5 years) Medium to long term (5 to 10 years)
6. Investigate the nature of employment activities on non-employment zoned lands and their contribution to agriculture and tourism sectors	Short term (within 3 years)
7. Support specialised industry sectors of Agriculture and Government, Administration and Defence (Richmond RAAF).	On-going
8. Identify appropriate development treatments for gateway areas. • George Street and Blacktown Road (for low impact visitor and tourist uses with complementary residential and community activities) • Windsor Road, Mulgrave (boulevard treatment with higher amenity showrooms and larger format retailing) • Bells Line of Road, North Richmond (boulevard treatment with higher amenity showrooms and larger format retailing)	 Short term (within 3 years) Short term (within 3 years) Short to medium term (within 5 years)

Source: SGS 2008

The proposed strategies are discussed in more detail below.

Strategy 1: Investigate and facilitate servicing of existing employment lands

Further analysis of land owner interest and the cost of servicing should inform future development of vacant industrial land. A coordinated infrastructure servicing plan should be developed for all these areas to identify water, sewer and power needs and apportion costs across potential beneficiaries. The current approach is an inequitable burden on the first developer and deters development. Sydney Water and other agencies need to be part of this approach.

Strategy 2 Capitalise on underutilised transport infrastructure and lobby for improved servicing

The precincts around the stations in the LGA should be considered for additional development. Prospects for these station locations would be considerably enhanced if any future rail link to the North West was extended to the existing Richmond line. Council should lobby the state government on this issue. From the state's perspective it will enhance connectivity for the new residential developments in the NW Growth Centre which should be a policy aspiration.

Strategy 3: Facilitate renewal of existing centres to allow wider scope of business floor space activity and mixed use development whilst ensuring high quality urban design and structure planning.

A surplus of business floor space was identified, however given the growth in the LGA between 2001 and 2006 and constraints to further intensification in existing areas it is appropriate to investigate expanding capacity. This would also create opportunities for mixed use development to address the Draft NW Subregional Strategy housing targets.

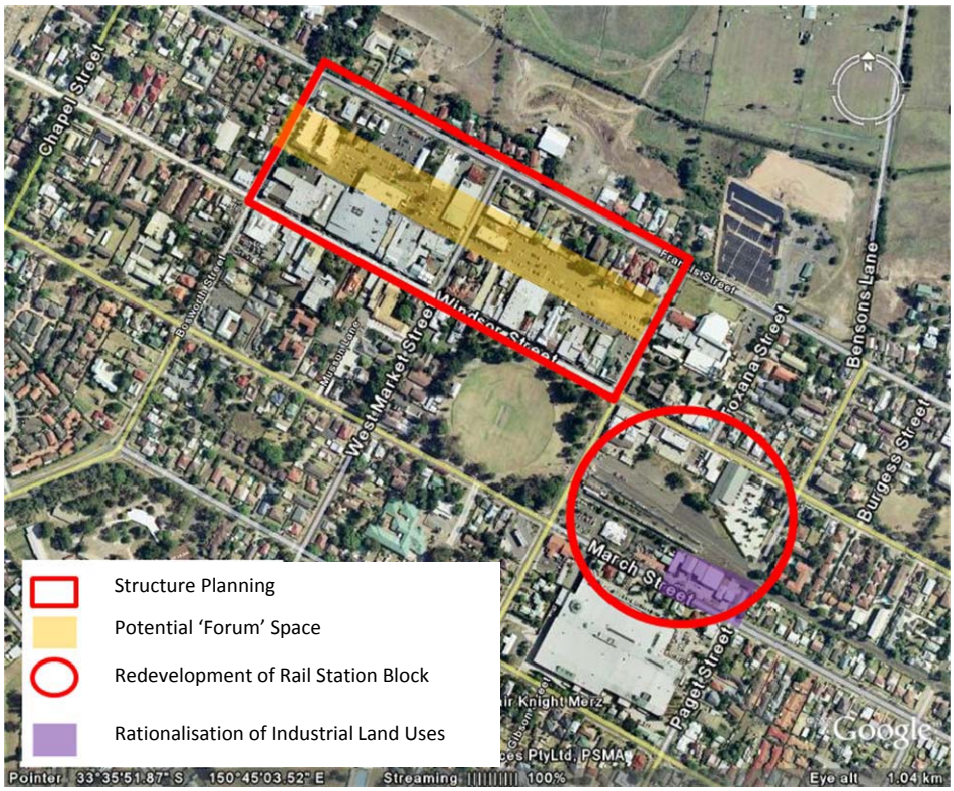
Richmond and North Richmond centres may have opportunities for growth due to lower flood impacts. Both are minimally affected by the 1:100 year flood level. In terms of infrastructure however, Richmond is accessible by rail while North Richmond is only accessible by road. Structure planning is required to reconfigure the existing business zoned land to increase the opportunity for additional floor space. Windsor Station is a key infrastructure asset which could benefit from structure planning to enhance the public domain while remaining a smaller local hub, though it is severely constrained by flood risk and is affected by aircraft noise (it is within the 25 ANEF contour).

Villages and neighbourhood centres such as Kurrajong, Kurmond, Pitt Town, Bligh Park, Wilberforce and McGraths Hill should be supported by allowing additional residential intensification in their immediate vicinity where environmental constraints allow. This might require an accompanying increase in business and retail development capacity.

Figures and detail for proposed strategies for Richmond, North Richmond and Windsor Station are provided below. In all locations, future planning should prioritise high quality urban design which promotes the existing heritage and amenity values of the LGA.

Richmond Centre

Figure 77. Area of investigation – Richmond Centre

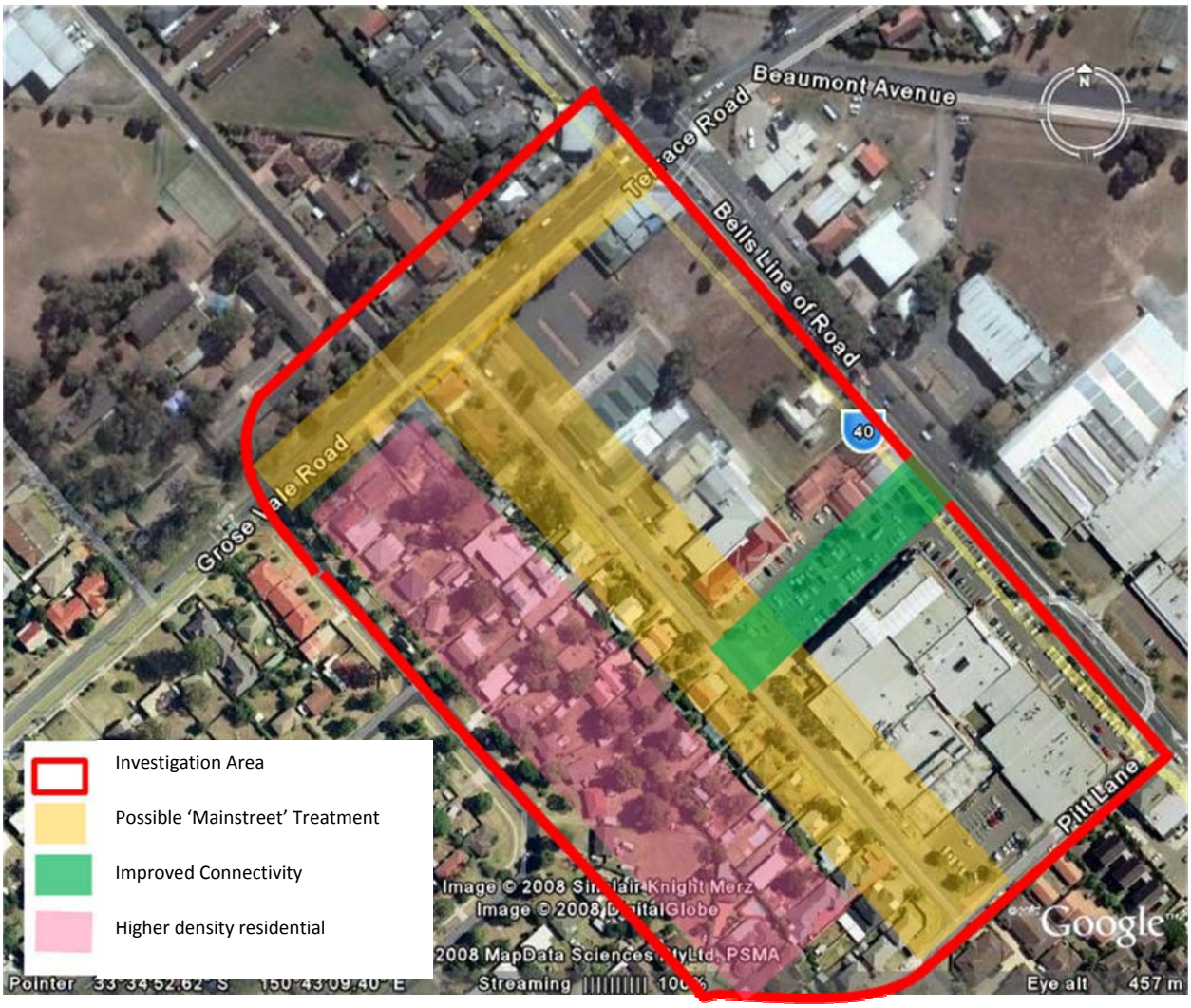


Source: Google Earth, 2008

- Redevelopment of Richmond Station block. This would include rationalising anomalous land uses such as the small cluster of light industrial land south of Richmond Station, by re-zoning this to commercial and allowing ground floor retail with upper story commercial. A mixed use zoning might be appropriate provided the amenity of any residential land at this location was not affected by road and rail noise impacts.
- Structure planning the area between Windsor Street and Francis Street, and Market Street and Bosworth Street, including considering this area for an appropriate mixed use commercial and residential development. The recent development on the corner of Francis and Bosworth Streets indicates the quality and form that this whole precinct might develop. The car parking areas to the rear of the existing shops could be reorganised to provide for a 'forum' space. Pedestrian permeability through the block should be a priority.
- Providing high quality, pedestrian friendly main streets, particularly those providing connections to the station.

North Richmond

Figure 78. Area of investigation – North Richmond Centre



Source: Google Earth, 2008

- Investigate options for creating a 'main street' for the centre. This could involve shifting the focus of the centre along Grose Vale Road to the corner of Riverview Road near the school. Riverview Road could be a new main street.
- Pedestrian connectivity and the public domain between Bells Line or Road and Riverview Road and within this block should be a priority.
- Additional medium density residential. Sites fronting Riverview Road could be mixed use with ground floor retail/commercial and upper storey residential. Town house and other medium density residential could be considered further west
- Such a renewal and redevelopment would be dependent on additional residential population in or near the centre.

Windsor Station

Figure 79. Area of investigation – Windsor Station

Source: Google Earth, 2008

- Investigate options for redevelopment of the Windsor station precinct to enhance its offer as a local hub providing a mixture of retail and commercial floor space to service current and potential populations. This strategy would serve to provide some additional retail and commercial floorspace in South Windsor to off-set the limited capacity at Windsor centre identified in the gap analysis.

Strategy 4: Capitalise on the LGA's strategic assets and provide high quality jobs by considering the future of land at Clarendon for a high amenity office and business development

The Richmond RAAF, UWS Hawkesbury and Richmond TAFE are a 'knowledge' and government cluster in the LGA. The economic analysis also found that there is a significant proportion of the resident population has tertiary qualifications and is employed as managers or professionals.

Investigation of an office, research and higher technology development, in a location with access to these assets and which also capitalises on existing public transport infrastructure, should be undertaken. A suitable investigation area would be the rural lands at Clarendon (Figure 80). Implementation will require dialogue with adjoining land owners including the Hawkesbury Race Club, Richmond RAAF and UWS Hawkesbury. Such a development might also partly accommodate industrial land and business floor space demand.

Figure 80. Area of investigation – Clarendon

Source: Google Earth, 2008

A business park zoning could be appropriate, though a more pedestrian, public transport and public domain friendly type of Business Park than those at Macquarie Park and Norwest is desirable. Key principles for any such development at this location would include the development of a permeable street network, high quality public domain which preserves the setting and character of the surrounding area (including the distinction between the two centres of Windsor and Richmond), excellent pedestrian and cycle connectivity to Clarendon station, a small retail and service centre

with public and community facilities (such as child care centre), and ground level activation of streets. Servicing of the site is also a key environmental consideration that must be addressed.

The draft NW subregional strategy notes that Councils should consider the feasibility of business parks and identifies relevant higher level development criteria as shown in Figure 81.

Figure 81. Business Park Development Criteria from the Draft NW Subregional Strategy

A1.8	ESTABLISH A FRAMEWORK FOR THE DEVELOPMENT OF BUSINESS PARKS
NW A1.8.1	**Councils to consider the feasibility of Business Parks for the North West.**

The Metropolitan Strategy sets out new criteria for establishment of business parks. Any future business parks should:

- support existing centres;
- have high quality design outcomes;
- reduce environmental impacts; and
- make better use of existing or proposed public transport infrastructure to reduce car dependence; and
- build on existing concentrations and clusters of knowledge–based activities such as universities and hospitals.

The commercial attraction of business parks is a key driver of employment growth outside Global Sydney. In order to attract higher skilled jobs to the North West Subregion, business park format offices may be an appropriate built form for future development, however further work would be required to consider the feasibility of additional business parks in the subregion. In planning for new business parks consideration would be given to public transport accessibility.

Source: City of Cities, A Plan for Sydney's Future: Metropolitan Strategy, 2005

Development of a business park at this location may take many years. An early planning exercise is necessary but a long term development perspective should be adopted. To preserve the long term prospect a minimum lot size of 2 ha should be established in the planning controls.

Strategy 5: Investigate additional industrial land supply to address potential future employment growth

The demand-supply analysis showed a notional quantitative surplus of 28ha of industrial land (if planning for a 25 year horizon). Nevertheless, recent employment growth has been stronger than anticipated by TDC employment forecasts, and an even stronger indication of demand may emerge in the coming years if latent potential is realised and stronger demand persists.

Additional land could be zoned industrial where demand is identified and conditions are met. Areas that would be appropriate for such investigations include South Windsor and North Richmond, which are close to current population concentrations, and Mulgrave which is close to McGraths Hill and to the North West Growth centre (expected to accommodate up to 67,000 new dwellings), and can also service the growing Pitt Town area. Further analysis of land owner interest and the cost of servicing should inform development and staging. There is currently no urgency to rezone all the proposed areas though sites at Mulgrave represent the short term candidates for consideration.

Structure planning and appropriate design and development controls will be necessary if any of these locations are ultimately zoned for development.

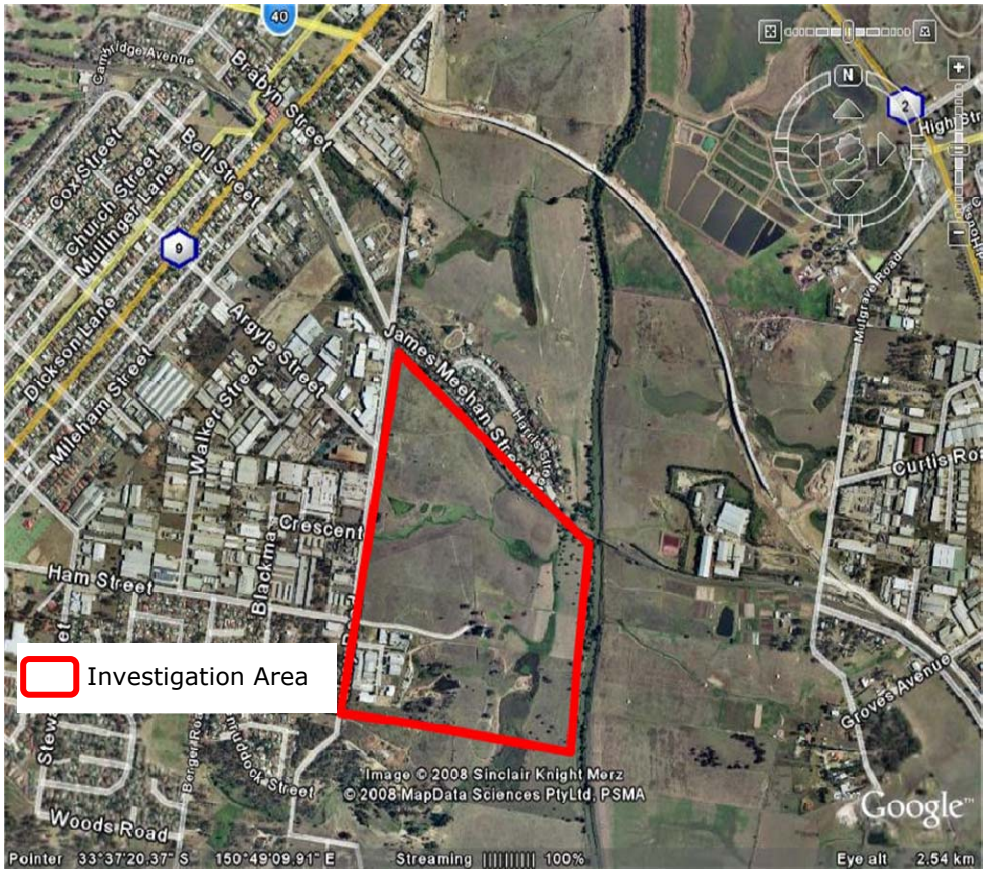
- At Mulgrave two areas are under consideration (Figure 82). The area south of Park Road to the Growth Centre boundary is an appropriate location for service and light industry. The catalyst for the development of this area will be precinct planning for the adjacent area in the Growth Centre. The second area is that to the west of the rail line between Mulgrave Road and Park Road South. This area may be a short to medium term prospect. For the area to the south of Groves Avenue South there should be a restriction on further subdivision below the current lot size.

Figure 82. Areas of investigation – Mulgrave

Source: Google Earth, 2008

- At South Windsor areas to the east of Fairey Road not currently zoned for industrial land uses should be considered for industrial (Figure 83).

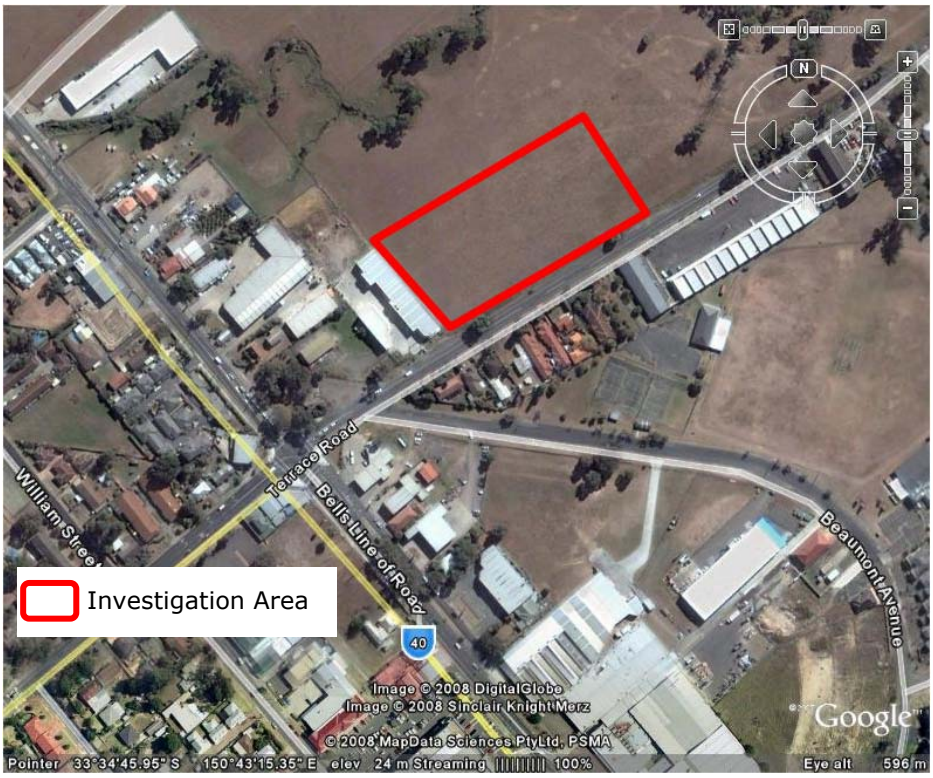
Figure 83. Area of investigation – South Windsor



Source: Google Earth, 2008

- At North Richmond an area near the corner of Terrace Road and Bells Line of Road opposite the Baptist Church is a longer term candidate for service industrial development, dependent on additional residential development occurring north of the river (Figure 84). This would provide an opportunity to 'rationalise' service industry activity and 'tidy up' the appearance of Bells Line of Road as a gateway location (see dot point below).

Figure 84. Area of investigation – North Richmond (Industrial)



Source: Google Earth, 2008

Strategy 6: Investigate the nature of employment activities on non-employment zoned lands and their contribution to agriculture and tourism sectors.

The economic analysis found that there are a significant number of jobs located outside the LGA south area and on agriculturally zoned land. Manufacturing and accommodation and other tourism related jobs are additional to agriculture jobs. A deeper picture of the LGAs economy can only be gained through comprehensive analysis of all aspects of employment. This should include a detailed analysis of industrial activities on non-industrial zoned land such as 'rural industries' on mixed agricultural land.

Strategy 7: Support specialised industry sectors of Agriculture and Government, Administration and Defence (Richmond RAAF)

Agriculture and Government Administration and Defence were identified as Hawkesbury's specialised industry sectors.

The agriculture sector in particular allows Hawkesbury to export produce to the subregion, the Sydney metropolitan area and even internationally. Further investigation of the nature of land uses associated with agricultural activities should be undertaken to provide guidance on planning for these lands and to identify economic development initiatives that can assist the sector. There is an urgent need for a consistent state government approach to fringe area rural lands. The Draft North West Subregional Strategy supports such an approach through **Actions 4.1.1** and **4.1.2** which seek to identify and protect significant rural and resource lands.

Initiatives to build on the presence of the RAAF base and its activities could be developed in cooperation with the Department of Defence.

Strategy 8: Identify appropriate development treatments for gateway areas

There is a mix of experiences on the current gateways to the LGA. Appropriate land uses and urban form should guide development at these important locations and provide a higher level of amenity in terms of better presented streets, appropriate signage structures and good quality buildings and landscaping. The gateways and potential treatments are identified as:

- At North Richmond, on Bells Line of Road the amenity is poor, with a collection of lower value industrial uses and shopping centre related car parks. A boulevard treatment is appropriate here, with some higher amenity highway activities such as showrooms and larger format retailing more appropriate. Landscaping and treatments to the street will be important. (Opportunities for service industry uses would be provided in the 'new' industrial area suggested for Terrace Road)

- At Windsor Road, Mulgrave visitors to the LGA from the south now tend to wind through Groves Avenue and the Flood Evacuation Route on their way into or through Windsor. This corridor is again appropriate for highway related enterprise activity of a higher amenity that builds on the existing light industry activities. Similarly to North Richmond gateway areas, a boulevard treatment is appropriate here, with some higher amenity highway activities such as showrooms and larger format retailing. Landscaping and treatments to the street will be important.

- At George Street and Blacktown Road a low impact visitor or tourist use (motel, produce showroom, market) is appropriate, though in keeping with the character of the area and Bligh Park nearby, lower density and lower impact residential or community activities would complement these uses. Significant retail is not consistent with the government's centres policy, nor with supporting the Windsor centre for these sorts of activities. The other gateway locations discussed above, are more appropriate for such uses.

8.3 Framework for distribution of employment land uses

SGS has developed broad land use categories, which cover most land uses that exist within an LGA and subregion, and their site requirements. The employment precincts have been assessed against the criteria to assist in the distribution of future land uses. These are provided at Table 26 with the identification of suitable precinct/s where such land uses are appropriate.

Table 26. Criteria and precincts for employment land uses

Broad Land use	Key activities	Key Requirements/Criteria	Suitable Precinct
Manufacturing Heavy	Large scale production activity. Likely to be characterised by high noise emission, emission stacks, use of heavy machinery and frequency of large trucks.	• Major road access • Preferably away from residential areas or with light industrial buffer to residential areas	• Requires further investigation of heavy manufacturing taking place on mixed agriculture land.
Manufacturing Light	Manufacturing which is not hazardous or offensive and smaller scale production.	• Major and/or local road access • Range of lot sizes and can use strata industrial units • Can be located adjacent to residential land uses • Proximity to rail/public transport	• South Windsor, Mulgrave, Richmond, North Richmond
Local Light Industry	Car service and repair; joinery, construction and building supplies; domestic storage. Wide range of businesses that service other businesses (components, maintenance and support) and subregional populations. Needed at local (LGA) to sub-regional level.	• Proximity to populations • Can be located adjacent to residential land uses • Proximity to rail/public transport	• South Windsor, Mulgrave, North Richmond, Richmond (Industrial precinct)
Retail Main street	Retailing services traditionally found in main street locations including small supermarkets and small clusters or strips of stores located next to a street or road.	• Locations with good public transport to increase activity • Range of floor space offer • Adjacent to residential areas	• Richmond and Windsor (town centres); South Windsor and North Richmond (Villages) • Potential in Small Villages that are not shopping centre complex formats
Retail Big Box	Large shopping complexes with one or more anchor food/grocery retailers.	• Large lots for at-grade carparking • Does not require in-centre location • Major road access	• N/A
Retail Bulky Goods	Typically large, one-storey buildings surrounded by car parking, usually located out of centre and with high exposure, main road, locations.	• Large lots • Does not require in-centre location • Major road access	• Mulgrave 3B land
Office	Administration, Clerical,	• Proximity to transport to allow	• Small office land use

Broad Land use	Key activities	Key Requirements/Criteria	Suitable Precinct
	business services, research. May be small offices in centres or large stand-alone buildings with significant number of staff	access for workers • Preferably within centres	can be accommodated within existing centres; 'New' site required for large format office land uses.
Business Park	Integrated warehouse, storage, R&D, 'back-room' management and administration with up to 40% office component.	• Support existing centres • High quality design • Reduced environmental impacts • Utilise public transport infrastructure and reduce car dependence • Build on concentration and clusters of knowledge based activity such as universities and hospitals • Attain minimum warehouse component • Contribution to subregional economic growth • Recreational/cultural or learning facilities.	• 'New' site required.
Urban Services	Concrete batching, waste recycling and transfer, construction and local and state government depots, sewerage, water supply, electricity construction yards. These typically have noise dust and traffic implications and need to be isolated or buffered from other land uses. They are needed in each sub-region.	• Proximity to large populations • Medium to large lots with access to major roads	• South Windsor, Mulgrave
Accommodation	Hotels, motels (not including pubs) bed and breakfasts, backpacker establishments.	• Within the Hawkesbury Context these land uses are dispersed throughout areas of high environmental quality, on highways, and in centres	• Further investigation of accommodation land uses on rural and environmental protection land.
Freight and Logistics	Warehousing and distribution activities. Includes buildings with a number of docking facilities and hard-stand areas	• Access to major roads. • Large lots • Up to 24 hour access	• Not a significant land use in the LGA however any commercial activity at the RAAF base could drive need to preserve

Broad Land use	Key activities	Key Requirements/Criteria	Suitable Precinct
			land for this land use.
Special Activities	Universities, Hospitals, Government (Defence) sites	• Large land areas	• Existing sites have capacity for growth.

Source: SGS 2008

Proposed land use zones based on the distribution of employment land uses are provide below:

- B2 - Local Centre. For use in the retail and commercial core of centres to focus a 'town centre' heart as retail but to also allow mixed use (e.g. shop top housing). This is suggested in the heart of the town centres of Richmond, Windsor and North Richmond and the neighbourhood centres.

- R3 – Medium density residential. This zone is suggested for land south of the proposed Riverview Road main street area to allow for medium density residential redevelopment to complement and support future additional adjacent retail and commercial floorspace.

- B6 – Enterprise Corridor. The purpose of this zone is to provide land on busy roads for a range of business uses not requiring a commercial context. Such uses can include land uses such as some large floor-plate retail. This zone is proposed for the existing 3B zoned land at Mulgrave.

- B7 – Business Park. This zone applies to business uses typically requiring larger floorplate configurations and areas of high amenity and access to, or location within, specialised centres. This zone may be appropriate for the site at Clarendon near the strategic assets of UWS and the RAAF base. However, large-scale retail and other industrial land uses must be limited to preserve the role of the existing centres and established industrial areas (where other growth strategies are identified).

- IN1 – General Industrial. Suitable for general industrial uses and land uses such as warehousing, transport, freight and logistics, and large scale manufacturing that require large lot areas and good road access. This zone is proposed for Wilberforce and parts of South Windsor.

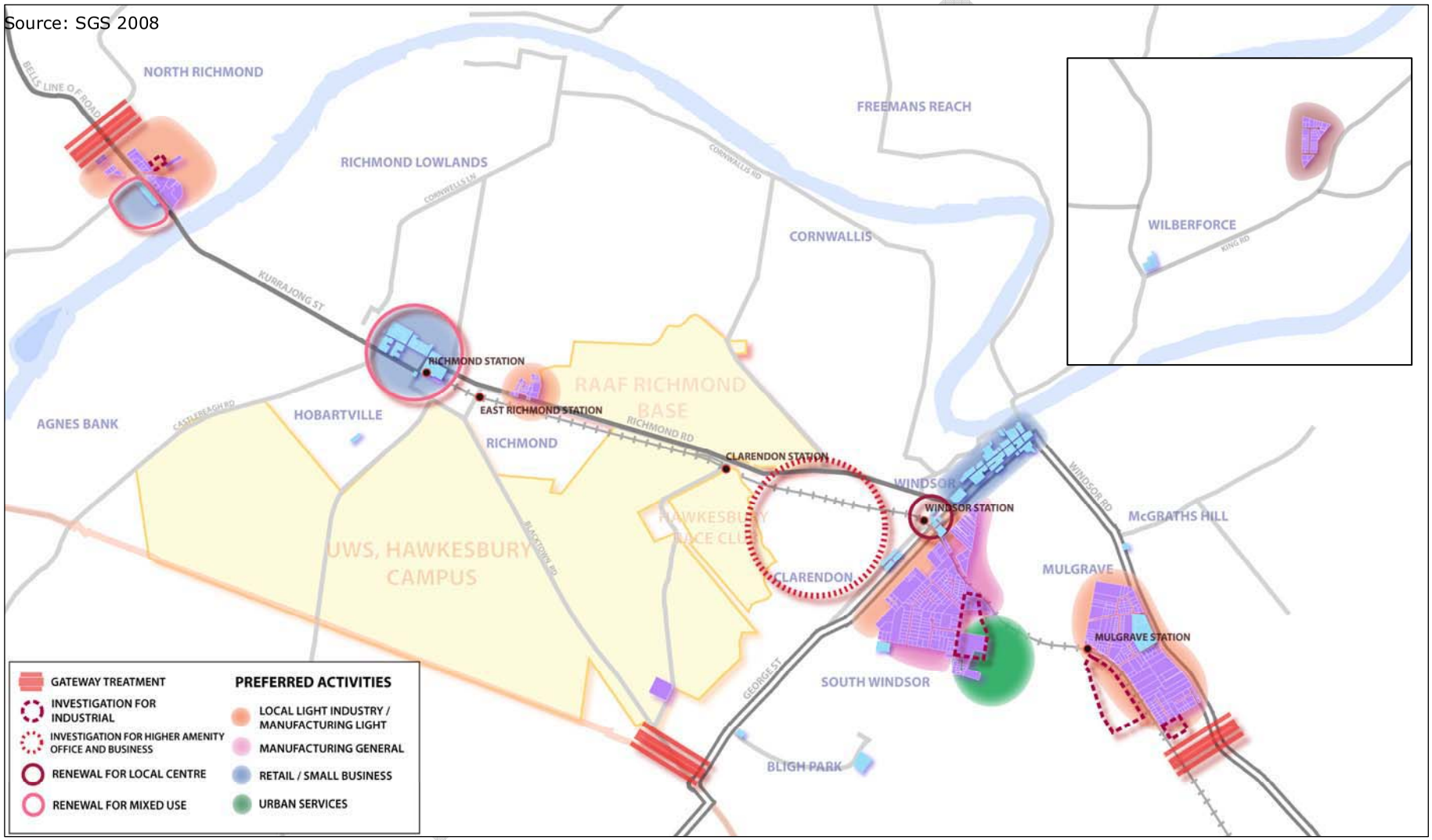
- IN2 – Light Industrial. This zone is appropriate for local light industry and urban support and urban services land uses. It is proposed in South Windsor to provide a buffer between residential land and general industry, and the industrial precincts at Mulgrave, Richmond (adjacent to Richmond RAAF), and North Richmond.

- IN3 – Heavy Industrial. This zone applies to land used for offensive and hazardous industry. In Hawkesbury LGA these land uses are generally undertaken on non-industrial/business zoned land.

8.4 Strategy Map

The following Strategy Map summarises the key aspects of the strategy.

Figure 85. Strategy Map



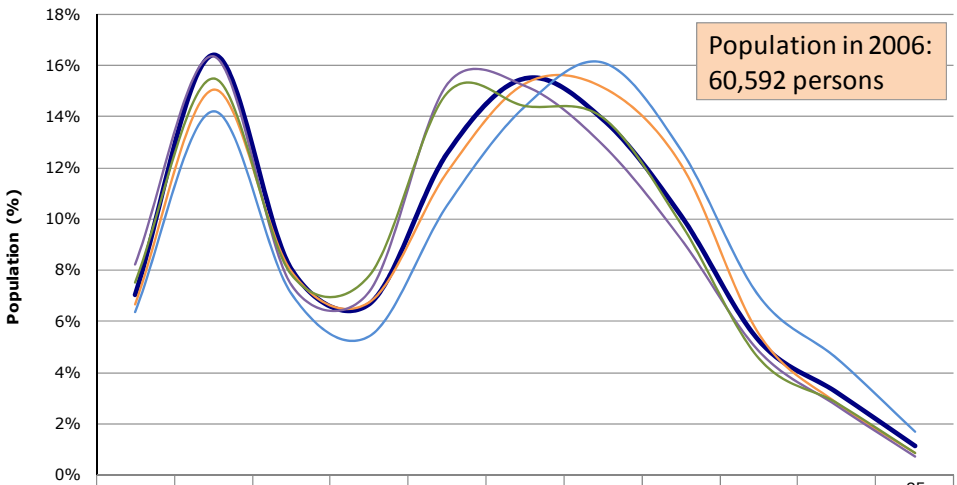
The key to the preferred activities includes the following:

Local Light Industry/ Manufacturing Light	Manufacturing which is not hazardous or offensive and smaller scale production. Local Light industry such as car service and repair; joinery, construction and building supplies; domestic storage. Wide range of businesses that service other businesses (components, maintenance and support) and subregional populations. Needed at local (LGA) to sub-regional level.
Retail / Small Business	The range of retailing formats including main street, 'big box' shopping and bulky goods, and local business and services including office activities and accommodation.
Higher order office and business	Larger format office in high amenity setting, could include business park with integrated warehouse, R&D, 'back-room' management and administration
Urban Services	Concrete batching, waste recycling and transfer, construction and local and state government depots, sewerage, water supply, electricity construction yards. These typically have noise dust and traffic implications and need to be isolated or buffered from other land uses. They are needed in each sub-region.
Manufacturing General	Higher impact manufacturing and industry, which could include transport, warehousing and distribution activities with significant traffic generation

Appendices

Appendix A: Resident Profile

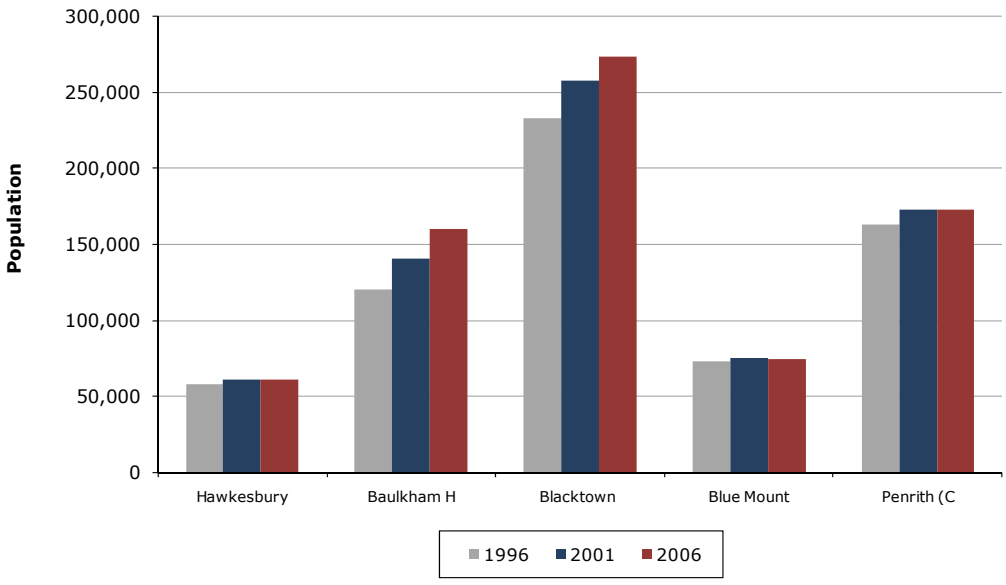
Figure 86. Age Profile 2006



	0-4 years	5-14 years	15-19 years	20-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75-84 years	85 years and over
Hawkesbury	7%	16%	8%	7%	13%	16%	14%	10%	5%	3%	1%
Baulkham H	7%	15%	8%	7%	12%	15%	15%	12%	5%	3%	1%
Blacktown	8%	16%	7%	7%	15%	15%	13%	9%	5%	3%	1%
Blue Mount	6%	14%	7%	5%	11%	14%	16%	13%	7%	5%	2%
Penrith (C	8%	16%	8%	8%	15%	14%	14%	10%	5%	3%	1%

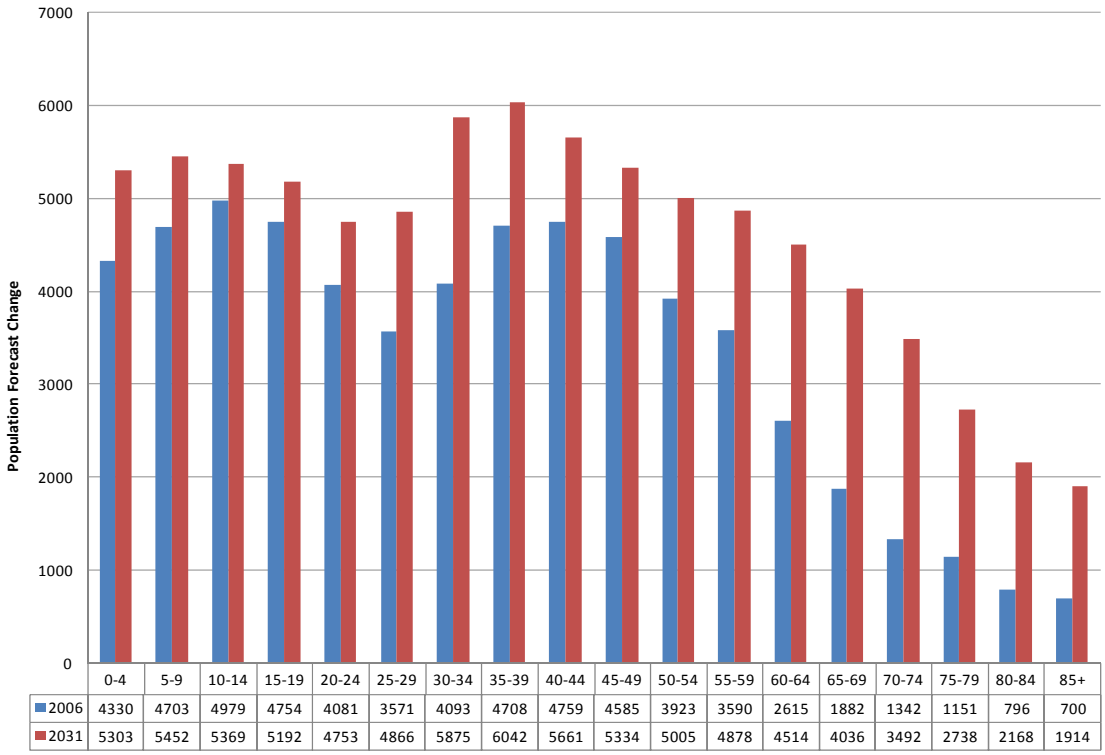
Source: SGS 2008

Figure 87. Age Profile Change, 1996 – 2006. Hawkesbury and benchmark LGAs



Source: SGS 2008

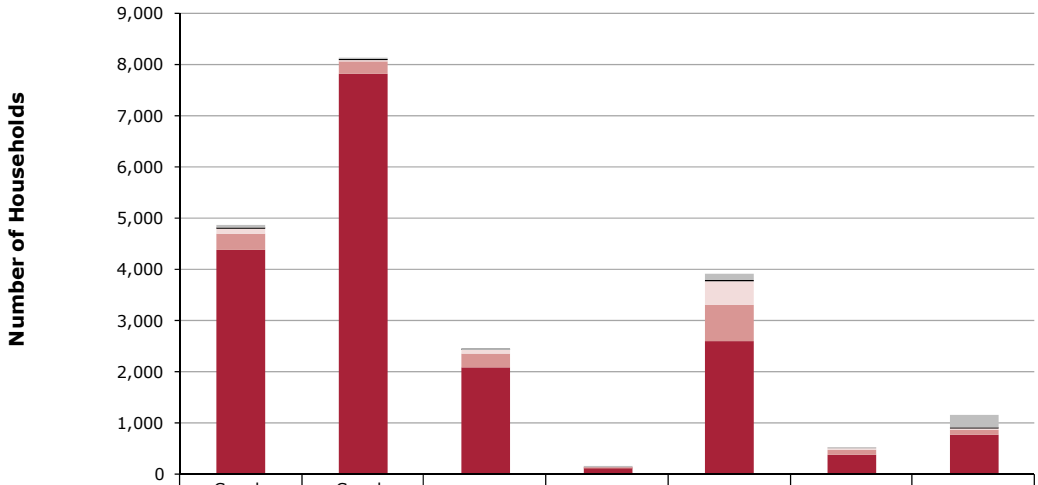
Figure 88. Projected Population, 2006 – 2031



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
2006	4330	4703	4979	4754	4081	3571	4093	4708	4759	4585	3923	3590	2615	1882	1342	1151	796	700
2031	5303	5452	5369	5192	4753	4866	5875	6042	5661	5334	5005	4878	4514	4036	3492	2738	2168	1914

Source: SGS 2008

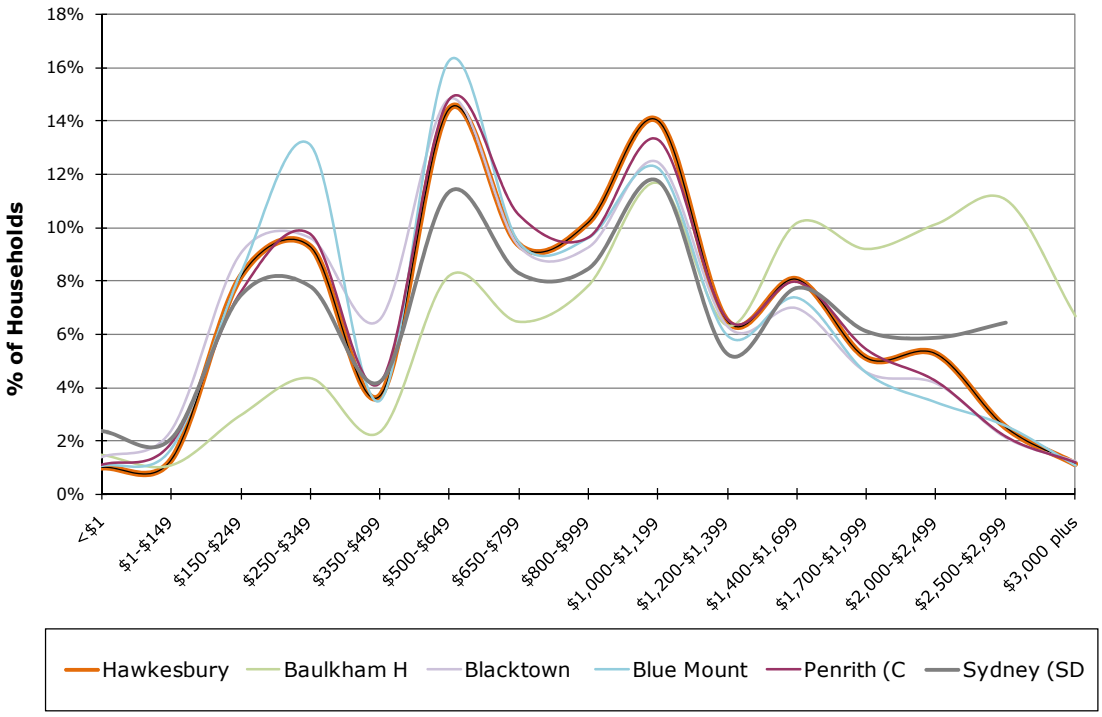
Figure 89. Dwelling and Household Structure, 2006



	Couple family with no children	Couple family with children	One parent family	Other family	Lone person household	Group household	Other household
Other	30	25	11	3	111	7	224
Attached to shop/office	8	4	8	0	25	0	7
Apartment	123	47	83	14	478	45	59
Semi-detached	324	242	256	15	688	93	82
Separate house	4,363	7,810	2,091	119	2,598	370	771

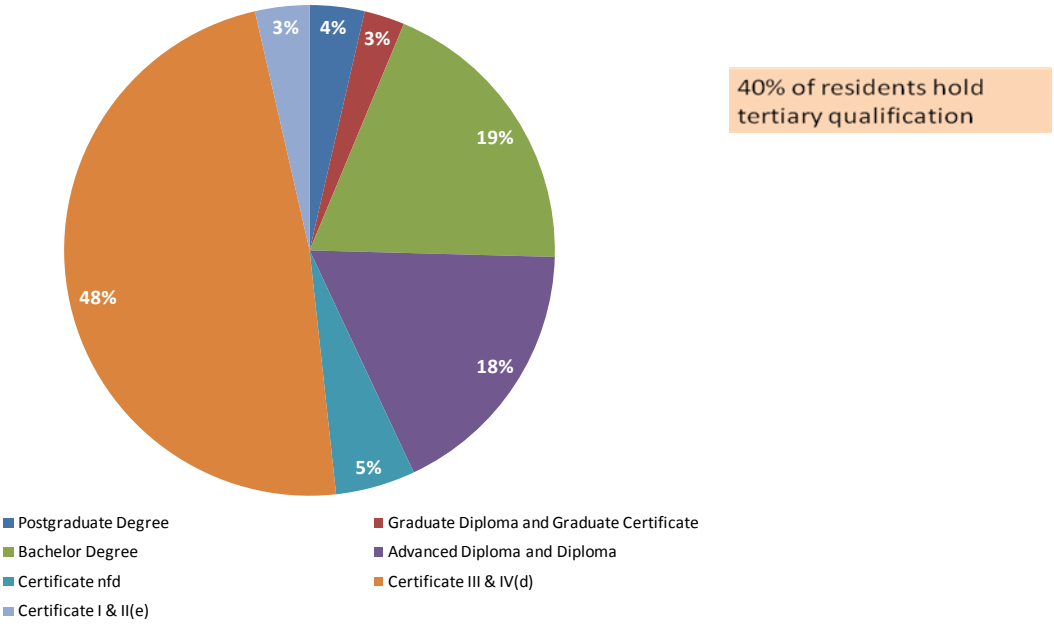
Source: SGS 2008

Figure 90. Household Income Profile, 2006 - Hawkesbury and Benchmark Regions



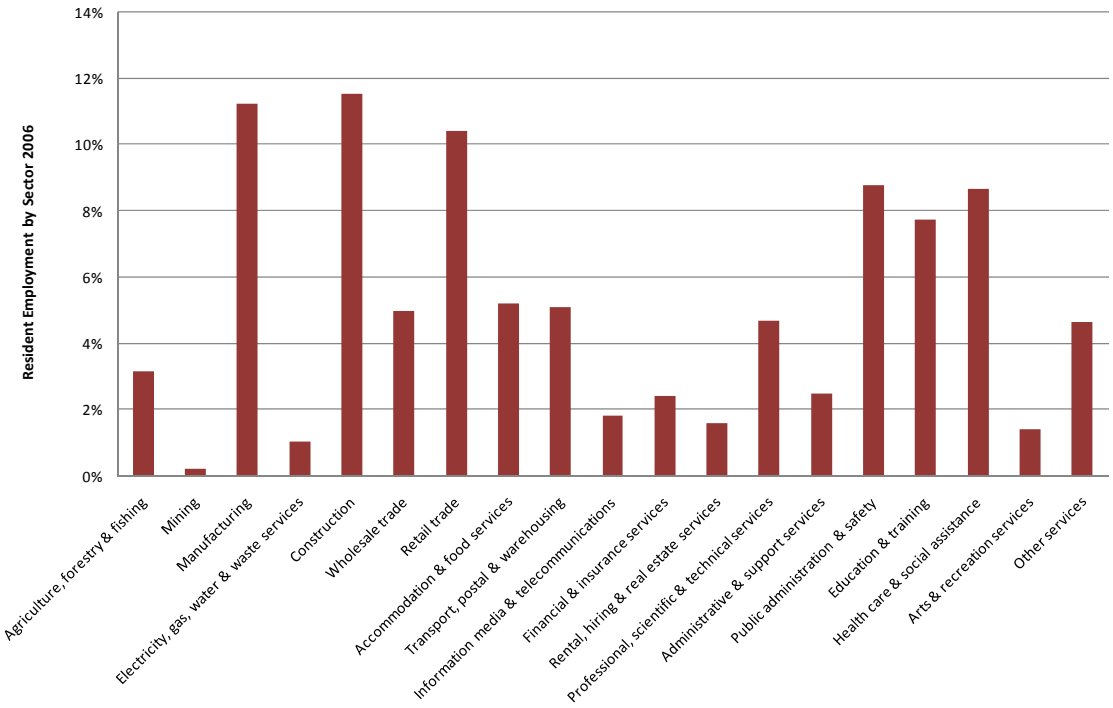
Source: SGS 2008

Figure 91. Tertiary Qualification 2006



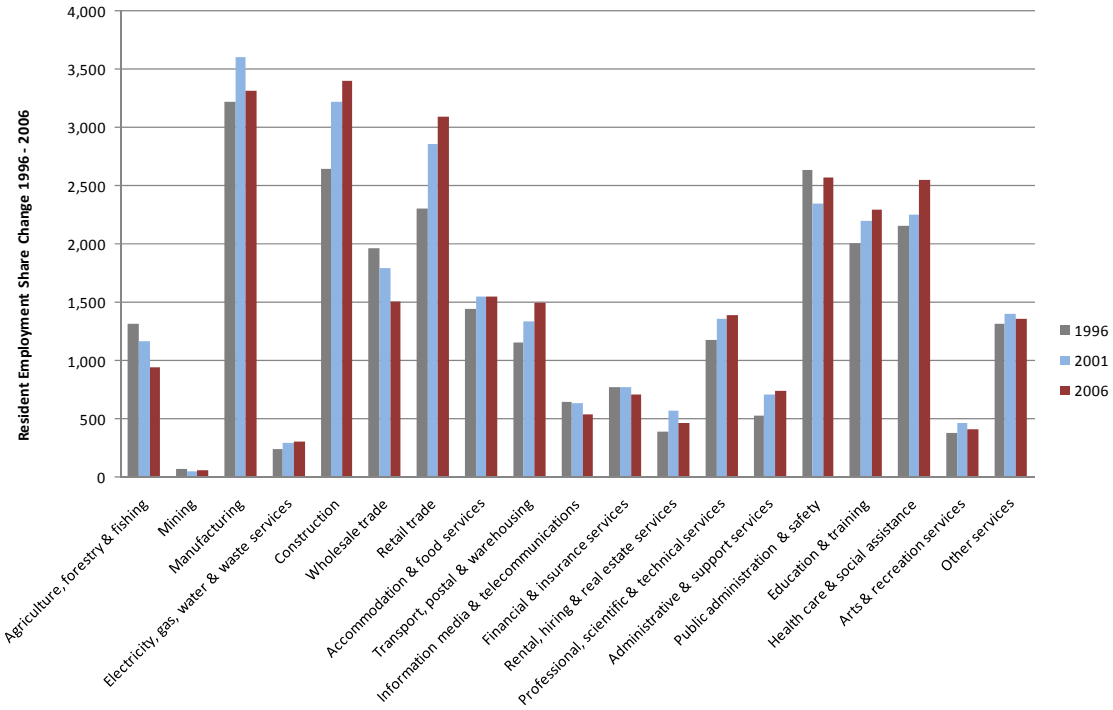
Source: SGS 2008

Figure 92. Resident employment sector share, 2006.



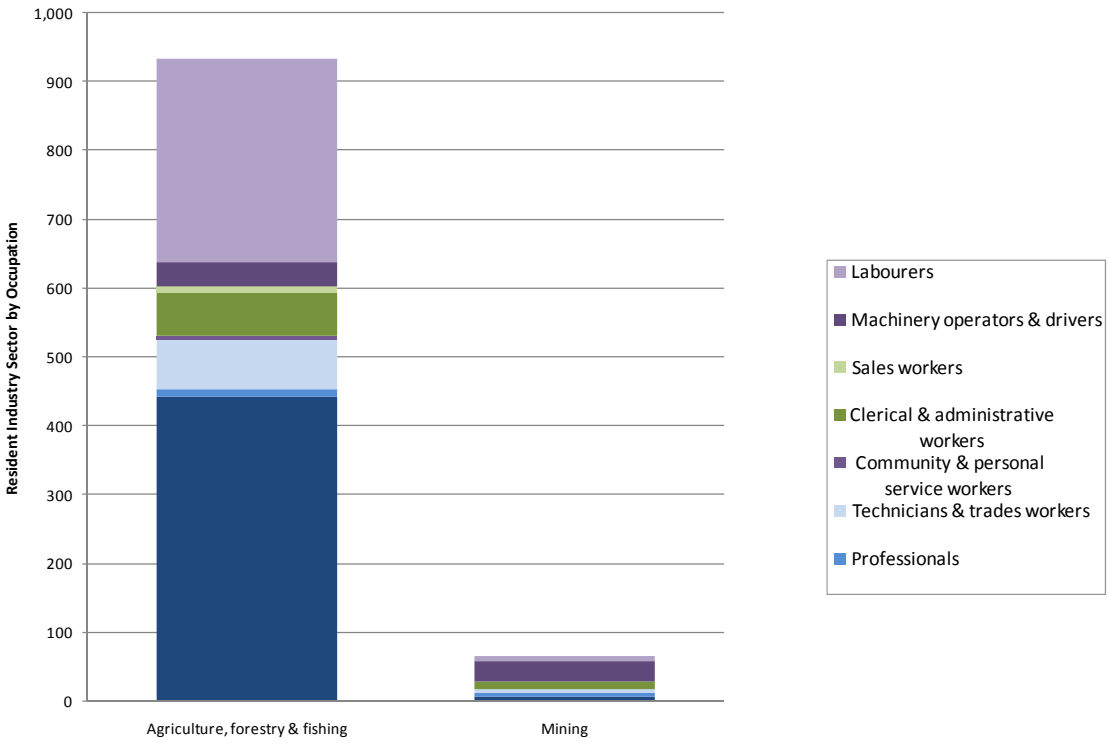
Source: SGS 2008

Figure 93. Resident employment sector share change, 1996 - 2006.



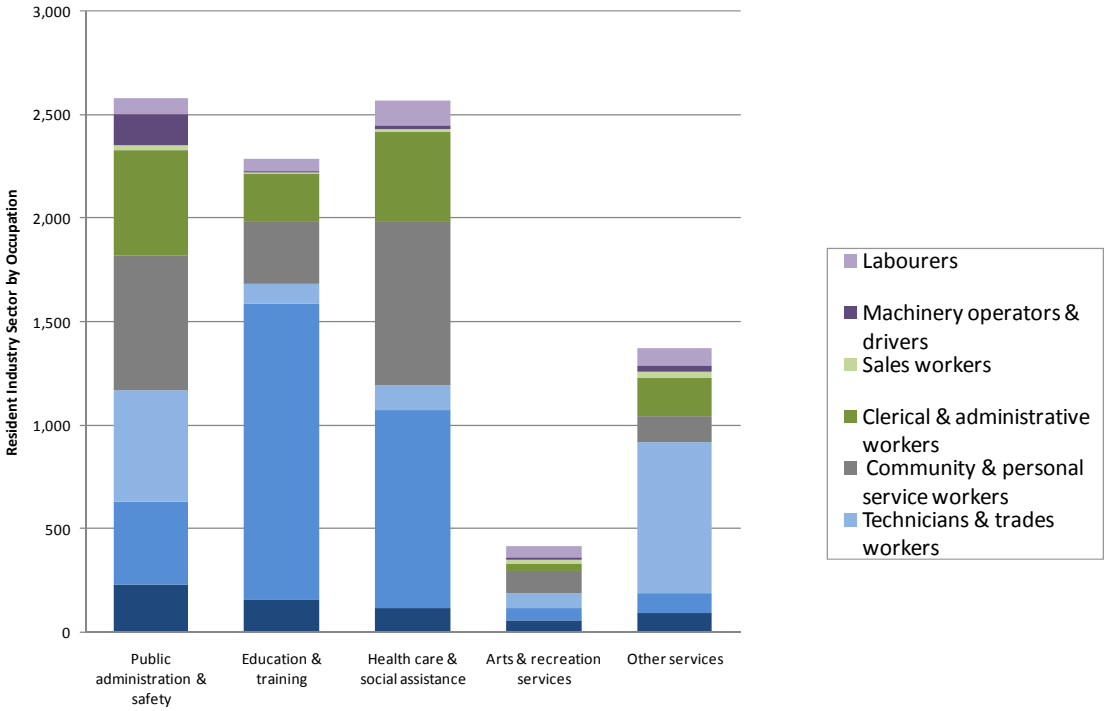
Source: SGS 2008

Figure 94. Occupation Share by Industry, 2006.



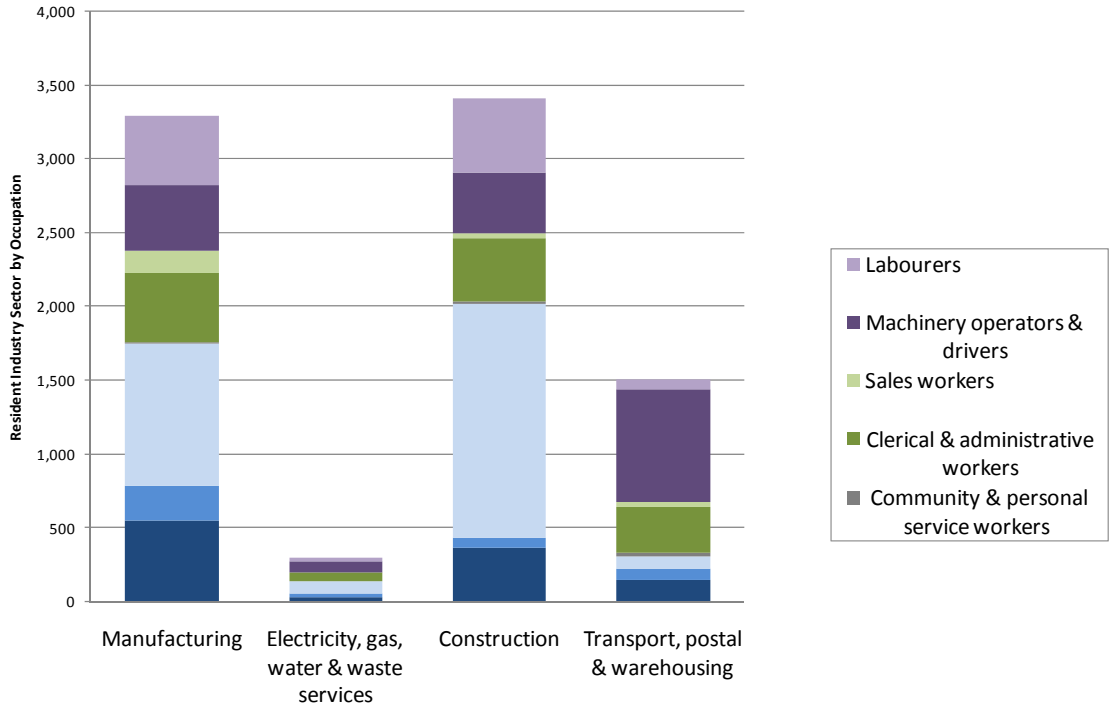
Source: SGS 2008

Figure 95. Occupation Share by Industry, 2006.



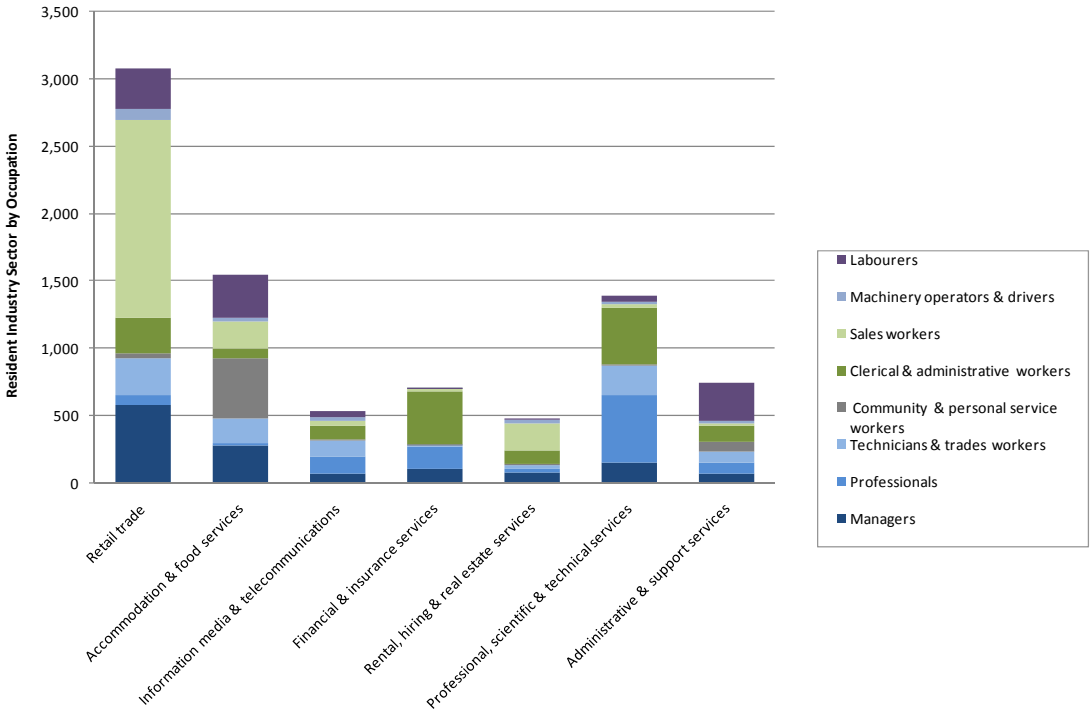
Source: SGS 2008

Figure 96. Occupation Share by Industry, 2006.



Source: SGS 2008

Figure 97. Occupation Share by Industry, 2006.



Source: SGS 2008

Appendix B: SGS Adjustment of Employment Data

ABS Journey to Work (JTW) employment data which is allocated to smaller areas known as travel zones by the Transport Data Centre (TDC). This dataset provides employment by industry sector by travel zone. The TDC also use available ABS JTW data in their employment projections. The Transport Data Centre (TDC) scale ABS Journey to work (JTW) data in their forecasting dataset to account for the following statistical errors:

- Census population falls short of estimated resident population (people are overseas or don't fill out the form); and
- People don't state their labour force status;

SGS has adjusted the raw 2006 JTW data in a similar way that TDC adjusts the data for their projections. SGS has applied the TDC scaling described above and additional scaling factors to account for additional census statistical errors that SGS considers skews ABS employment data as follows:

- Scale up for non-specified destination: + 5.16% (SGS scale factor)
- Scale up for no fixed address or address undefinable at the local level: + 5.7% average or individual sector scaling factors (SGS scale factor)

These are described below as follows.

Scale up for non-specified destination. Nationally about 4.85 percent of all persons counted at the census that reported they were employed did not report where they worked. Accordingly they will not be reported in any destination zone and are under reported in JTW counts.

There is no information on the likely pattern of non-reporting of location of work by industry.

The amount of non-reporting of location of work for each state can be estimated by comparing the total numbers employed as reported in the Basic Community Profile (BCP) with the total number reported by JTW/POW statistics for the state. This assumes very little (or at least balanced) commuting to work between states. This is generally valid except for the ACT/NSW where there is substantial net commuting into the ACT. Allowing for this, non-reporting varies only slightly for most states, from 4.5 percent (Tas) to 5.0 percent (Vic). The NT is an outlier at 2.78 percent.

SGS has derived an a scaling factor of 5.16 percent to reported JTW figures to account for this.

Scale up for no fixed address or address undefinable at the local level. The likelihood of this varies by industry sector. Sectors reporting high levels of no fixed address include agriculture (itinerant farm workers and others), hunters, loggers, fishermen, construction trades and services to construction, transport and some personal service workers.

This 'undefined' and 'no fixed address' groups are allocated at the state level, but not at the local level (travel zone or statistical local area). For error adjustment purposes the two are combined.

Of all JTW employment allocated at the state level, 5.4 percent is not allocated at the local level. However, for the vast majority of sectors, the proportion not allocated at the local level is much less, about 3 percent. 30 percent of sectors account for about 70 percent of those not allocated to a local area. If grossing up using the average, this would require an increase of 5.71 percent.

The following table summarises sectors (ANZSIC93 classifications) with high proportions of workers not allocated to a local area and significant numbers employed in the sector at the one, two and three digit level. Apart from sectors A, B, E and I, the average percentage not allocated is 3 percent.

Table 27. SGS Scaling factors

Industry Sector Code	Industry Sector	Scaling factor
A	Agr. For'try & Fishing	7.5%
B	Mining	7.4%
C	Manuf.	2.4%
D	Utilities	4.7%
E	Constr.	26.1%
F	Wh'sale Trade	3.0%
G	Retl. Trade	2.2%
H	Acc. Cafes & Rest.	2.1%
I	Transp & Stor	8.1%
J	Comm. Serv.	5.7%
K	Fin. & Ins.	1.1%
L	Prop'ty & Bus Serv	4.8%
M	Govt. Admin. & Def.	2.0%
N	Educat.	2.5%
O	Health & Com'ty Serv.	2.5%
P	Cult & Recr. Serv.	5.2%
Q	Pers & Other Serv	5.9%

Source: SGS 2008

Ideally to estimate total employment at the local level, JTW figures should be 'grossed up' by sector, particularly for the sectors with a high proportion unallocated, as the employment mix will vary by location.

Given this scaling, the adjusted employment figures are as follows:

Table 28. SGS employment data 1996, 2001, 2006.

	2006	% of total	2001	change to 2006	1996	change to 2001
Agr. For'try & Fishing	1,314	5%	1,545	-15%	1,500	3%
Mining	16	0%	27	-39%	33	-20%
Manuf.	3,513	14%	3,263	8%	2,767	18%
Utilities	88	0%	121	-27%	64	89%
Constr.	2,431	10%	1,927	26%	2,110	-9%
Wh'sale Trade	978	4%	1,096	-11%	1,050	4%
Retl. Trade	3,900	15%	3,777	3%	2,926	29%
Acc. Cafes & Rest.	1,182	5%	1,189	-1%	979	22%
Transp & Stor	809	3%	664	22%	421	58%
Comm. Serv.	150	1%	179	-16%	149	21%
Fin. & Ins.	362	1%	322	13%	325	-1%
Prop'ty & Bus Serv	1,708	7%	1,645	4%	1,205	37%
Govt. Admin. & Def.	2,744	11%	2,590	6%	2,695	-4%
Educat.	2,128	8%	2,160	-1%	2,039	6%
Health & Com'ty Serv.	2,360	9%	1,890	25%	1,733	9%
Cult & Recr. Serv.	526	2%	621	-15%	466	33%
Pers & Other Serv	1,015	4%	868	17%	616	41%
TOTAL	**25,226**	**100%**	**23,885**	**6%**	**21,081**	**13%**

Source: TDC Projections 2001, TDC with SGS Scaling factors 1996 and 2006.

Appendix C: Agricultural Sector - Mushroom Farming in the Hawkesbury.

Mushrooms are the second most valuable fresh vegetable crop in Australia, after potatoes. The mushroom industry has been identified as one of the three fastest growing crop industries established in Australia since the 1950's. Domestic production expanded at an average annual rate of 10% per annum from the mid 70's to the mid 90's and still continues to grow. In 2004/05 the rate of expansion was 3%, while growth rates are estimated to be 3-5% over the next 5 years.[20]

Imports have fallen from approximately 50% of the market in the mid 1970's to 10% in 2006/07. However, during the same period the annual per capita mushroom consumption increased from 0.6kg to almost 3.0kg.[21] The Australian Mushroom Growers Association commented in 2007 that industry expansion is likely to be from existing growers utilising new technology and advanced management to achieve increased production capacity.

The Hawkesbury region has the greatest concentration of mushroom growers in Australia and is the birthplace of the modern mushroom industry. It has 15 of the State's 23 growers, producing 11,335 tonnes of mushrooms per year. This amounts to 78% of NSW mushroom production and nearly quarter of the national figure.

The Hawkesbury mushroom industry is worth $45 million at farm gate; $90 million at retail and economic value to the community of around $450 million each year. It is a significant employer, employing 600 people directly in the industry.

[20] Australian Mushroom Growers Association – 2007 Statistics quoted in information provided by The Tolson Group.

[21] Ibid

Appendix D: Attributes and Constraints Glossary

Table 29. Glossary for Summary of attributes

Term	Description
Within Centre	A 'centre' refers to the centre buffer designations for the LGAs centres as expressed in the Draft North West Subregional Strategy. This implies proximity to residential dwellings located within that centre as well as the provision of goods and services.
Direct access to major road	Major Roads include Blacktown Road, Bells Line of Road/Kurrajong/Richmond Road, Wilberforce Road.
Direct or proximate access to freeway/motorway	Windsor Road/M2, Blacktown Road /M7
1:100 Floor affected	Affected by the 1:100 Flood level as provided by Council mapping.
PMF	Affected by the Probable Maximum Flood (PMF) level as provided by Council mapping.
Proximity to rail (800m)	
Bushfire prone land	Land identified as Bush Fire prone as directed by Council's Bushfire Prone land Map (dated 19/05/2005)
ANEF >30-35	Aircraft Noise Exposure Forecast (ANEF) level >30-35. (See text below)
ANEF >35-40	Aircraft Noise Exposure Forecast (ANEF) level >35-40. (See text below)
Heritage Items	Precincts which contain heritage items listed in Hawkesbury LEP 1989.
Proximity to NWGC (within 800m)	Proximity to North West Growth Centre as identified by Department of Planning. This is important as up to 60,000 new dwellings are proposed for this area.

Source: SGS 2008

Australian Noise Exposure Forecast

Australian Noise Exposure Forecast (ANEF) is a single number index for predicting the cumulative noise exposure levels in communities near an airport during a specified time period. It is based on a forecast of aircraft movement numbers, aircraft types, destinations and a given set of runways at an airport for a particular year. Guidance on development controls for ANEF affected areas is provided by *Australian Standard (AS) 2021-2000 - Acoustics - Aircraft Noise Intrusions - Building Siting and Construction*, which provides guidance to various authorities associated with environmental planning and building construction as to the location and construction of new buildings and on the acoustic adequacy of existing buildings in areas near airports

The Standard identifies acceptable, conditional and unacceptable ANEF environments for particular development as shown in Table 30.

Table 30. ANEF environments and development thresholds

Building Type	ANEF zone of site		
	Acceptable	Conditional	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25-30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Source: Australian Standard (AS) 2021-2000 - Acoustics - Aircraft Noise Intrusions - Building Siting and Construction

Appendix E: Potential Land Supply Calculations

Table 31. Industrial Land Supply (square metres)

VACANT LAND (m2)								
	Mulgrave	South Windsor	Wilberforce	Richmond	Windsor	North Richmond	Kurmond	Total
Industry 4A	350,858	73,784	15,154		15,836	9,643		465,275
Industry 4B	79,377			2,523				81,900
TOTALS	430,235	73,784	15,154	2,523	15,836	9,643	-	**547,175**
0.5:1 APPLIED TO VACANT LAND (m2)								
	Mulgrave	South Windsor	Wilberforce	Richmond	Windsor	North Richmond	Kurmond	Total
Industry 4A	175,429	36,892	7,577	-	7,918	4,822	-	232,637
Industry 4B	39,689	-	-	1,262	-	-	-	40,950
TOTALS	215,117	36,892	7,577	1,262	7,918	4,822	-	**273,588**

Source: SGS 2008

Table 32. Business Floor space Supply Calculations (square metres)

Existing minus Heritage plus carparking (Richmond only)	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia	Totals
Business A existing & vacant	23,439	111,394	19,015	123,989				18,715	
Business A Heritage	3,071	40,038		48,889					
Business (a) Total	**20,368**	**71,356**	**19,015**	**75,101**				**18,715**	**204,554**
Carparking Total		**53,516**							**53,516**
Business (b) Total							**65,613**		**65,613**
Business Stand Alone		5,015	44,088		19,085	6,370	4,104		
Business Stand Alone Heritage						786			
Business Stand Alone Total		**5,015**	**44,088**		**19,085**	**5,584**			**73,772**
								Total	**397,456**

Total Potenial	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia	Totals
Business A (land x1)	20,368	71,356	19,015	75,101	-	-	-	18,715	
Carparking (land x 0.5)		26,758							
Businesss (a) Total	**20,368**	**98,114**	**19,015**	**75,101**	**-**	**-**	**-**	**18,715**	**231,312**
Business (b) (land x 0.5)	**-**	**-**	**-**	**-**	**-**	**-**	**65,613**	**-**	**65,613**
Business Stand Alone (land x 0.5)	**-**	**2,508**	**22,044**	**-**	**9,543**	**2,792**	**2,052**	**-**	**38,938**
								Total	**335,864**

Existing Developed Floorspace	North Richmond	Richmond	South Windsor	Windsor	Wilberforce	Pitt Town	Mulgrave	Kurmond & Glossodia	Totals
Business (a)	13,556	64,699	13,141	89,810				1,901	**183,108**
Business (b)							8,734		**8,734**
Business Stand Alone		1,645	7,059		2,599	2,103	1,041		**14,448**
								Total	

									206,289
Notional Supply	**North Richmond**	**Richmond**	**South Windsor**	**Windsor**	**Wilberforce**	**Pitt Town**	**Mulgrave**	**Kurmond & Glossodia**	**Totals**
Business (a)	6,812	33,415	5,874	-14,710	-	-	-	16,813	48,205
Business (b)	-	-	-	-	-	-	56,879	-	56,879
Business Stand Alone	-	862	14,985	-	6,943	689	1,011	-	24,490
								Total	**129,574**

Source: SGS 2008, HLEP 1989

Appendix F: Potential Retail Floor space Demand

Table 33. Retail Model

	RETAIL MODEL FOR ADDITIONAL DWELLINGS	dwellings 5000		People per dwelling 2.82
	Retail Floorspace Potential Analysis,			
A	**Persons in Catchment:**	14,100	people dwellings x people per dwelling	
B	**Annual Personal Expenditure on Shopfront Retailing (NSW Ave.)**	$12,185	(inflated to 2007 dollars)	
C	**Total Annual Catchment Expenditure on Shopfront Retailing**	$171,808,500	people x annual personal expenditure	

CENTRE TYPE	D. Percent Share of Total Expenditure*	E. Expenditure Capture C x D	F. Retail Turnover Density ($/sqm)	G. Supportable Floorspace (sqm) E/F	Floorspace Differential (sqm)	Typical Centre Size (sqm)
Outside Region eg. Sydney	9.5%	$16,321,808	NA	NA	NA	NA
Major	36.5%	$62,710,103	$6,000	10,452	10,452	80 to 130,000
Town	25.0%	$42,952,125	$5,850	7,342	7,342	40,000 to 80,000
Village	16.0%	$27,489,360	$5,250	5,236	5,236	15,000 to 40,000
Small Village	10.0%	$17,180,850	$4,600	3,735	3,735	3,000 to 15,000
Neighbourhood	3.0%	$5,154,255	$3,850	1,339	1,339	Under 3,000
	100.0%				28,104	

Source: SGS 2008