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North West Rail Link

Social Impact Assessment

FOR

THE TRANSPORT INFRASTRUCTURE DEVELOPMENT CORPORATION

October, 2006

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C O N T E N T S

1 INTRODUCTION

1.1 Purpose of this report

This Social Impact Assessment (SIA) has been prepared as part of the environmental assessment of the proposed North West Rail Link (NWRL). The Transport Infrastructure Development Corporation is the proponent of the NWRL proposal, and the environmental assessment is being prepared by GHD, in accordance with the requirements of Part 3A of the Environmental Planning and Assessment Act 1979.

This report assesses the potential social impacts of the proposal on the suburbs surrounding the route of the proposed NWRL.

It includes a description and analysis of the existing areas surrounding the proposed NWRL route, an assessment of potential impacts during construction and operation, and recommended measures to mitigate adverse impacts and enhance positive impacts.

It has been prepared to meet the Department of Planning Director General's Requirements for the environmental assessment.

1.2 Project outline

The proposed North West Rail Link would be the principal trunk public transport line in Sydney's North West. It would connect with the Northern Line between Beecroft and Cheltenham Stations and terminate at Rouse Hill Town Centre. The rail link would be twin track, approximately 23 kilometres in length and would include:

- A 2.5 km surface quadruplication of the Northern Line between north of Epping Station and Beecroft Station (including works at Cheltenham Station);
- A 16 km section in tunnel from the Northern Line to north of Norwest Business Park, including four underground stations (Franklin Road Station, Castle Hill Station, Hills Centre Station and Norwest Station);
- A 4 km surface section from north of Norwest Business Park to Rouse Hill, including two underground stations (Burns Road Station and Rouse Hill Station);
- An interim train stabling facility at Rouse Hill;
- Ancillary tunnel support facilities such as tunnel ventilation, transformers and a water treatment plant(s); and Construction work sites, including a large site within the Balmoral Road Release Area.

The location of the proposal is shown in Figure 1.

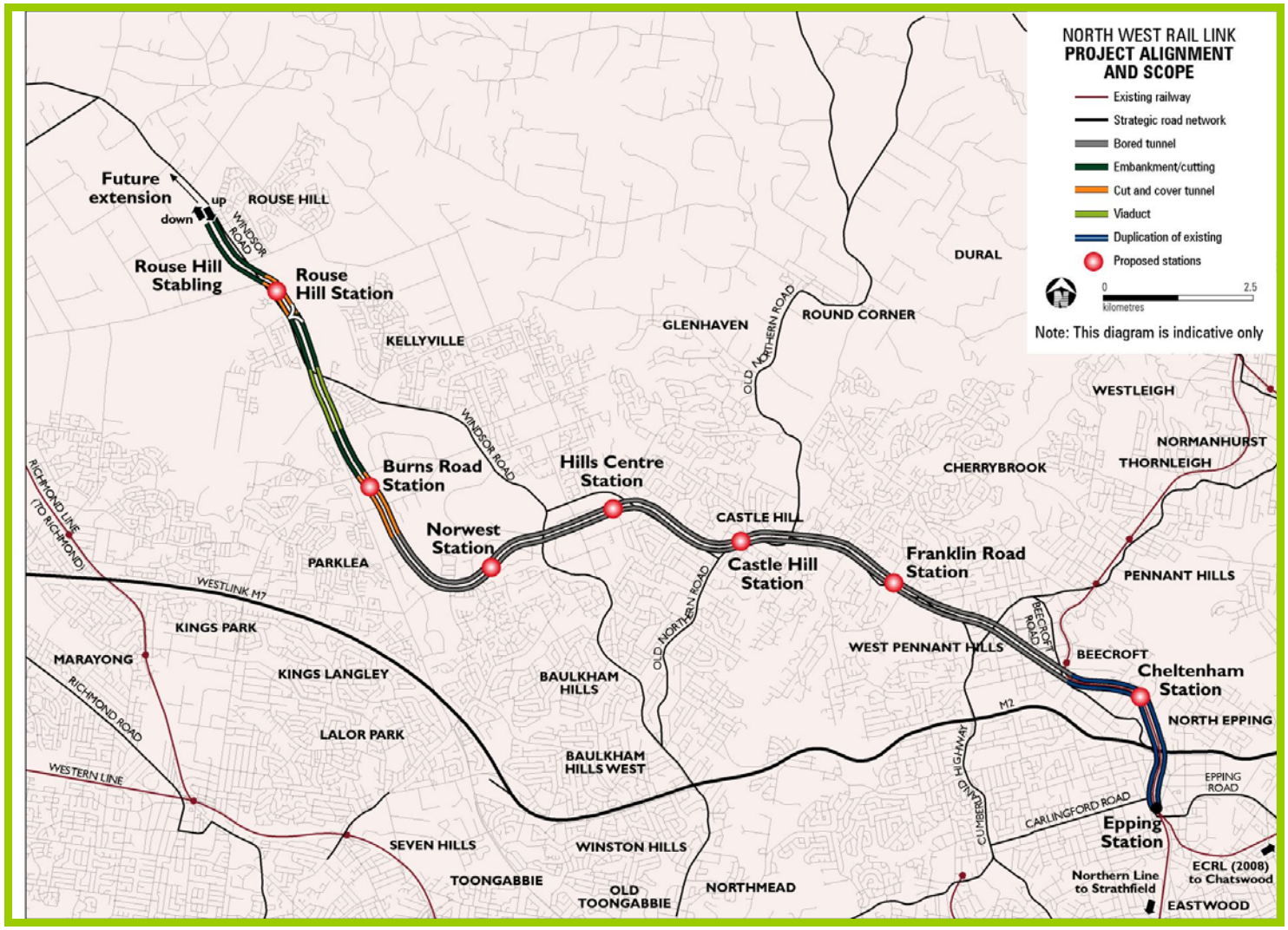

Figure 1: Location of Proposal

1.3 Social Impact Assessment Background

Social impacts associated with major infrastructure projects rarely occur in only one spatial or temporal context. Rather, there is inevitably a variety of receptors in space and time which require assessment and management.

The NWRL is characterised by:

- Its geographical reach;
- Its financial investment;
- Its ability to have direct and indirect impacts on the local communities as well as those throughout the Sydney Metropolitan area;
- The varying communities through which the line will travel – from some of the oldest and most established through to the most recent residential releases;
- The scale of the construction works; and
- The role it plays in integrating the heavy rail system in Sydney to provide cumulative benefits and increased economic return to the other projects.

This Social Impact Assessment has sought to identify social impacts during construction and operation which can be expected to be associated with the project. At present this information is limited however. Social impacts identified include:

- Employment impacts (construction and operation);
- Local business and economic benefits (including Norwest Business Park etc) within the vicinity of new railway stations;
- Achieving social and economic benefits contemplated by the Metropolitan Strategy City of Cities1 including building effective linkages to and through the Global Arc and improving the delivery of the extra 99,000 jobs identified by the strategy for the North West Sector;
- External economic and social benefits through reduced vehicle usage;
- Improved connectivity between communities which can reduce social severance, but also impact on community identities;
- Severance of existing communities by infrastructure;
- Improved access to educational and employment opportunities;
- Improved transport choice and reduced car dependency;

1 Department of Planning, 2006

- Improved health outcomes associated with improved air quality and reduced travel times/car dependency etc;
- Altered journey to work characteristics (and the possibility for impacts to spread well beyond the project area);
- Road closures and traffic impacts (haulage routes during construction and reduced "rat-running" and other impacts during operation);
- Amenity impacts (built form, noise & vibration, air quality etc); and
- Safety and crime implications.

In addition to the specific impacts to be assessed, *Concept Approval* is being sought, and TIDC will not have "all the answers". There is likely to be some residual anxiety and sociological implications as people will not be certain as to the extent of impact (if any) on their lives. This element will be examined as part of the work, primarily so that TIDC can feed the information into project planning/communication risk assessments.

1.4 Study Methodology

This SIA is the result of;

- A desk-top study of maps, photographs, and other relevant sources;
- A number of site inspections along the route;
- Meetings with representatives of Hornsby and Baulkham Hills Shire Councils;
- Enquiries received in response to the June 2006 Planning Update by TIDC.

This report reviews information supplied by TIDC, including;

- LandMark White. May 2006. DRAFT North West Rail Link Project Review Report: Property Report;
- Manidis Roberts for the NSW Government. Overview Report: Connecting Communities;
- Quay Connection. March-June 2002. NWRL Consultation Report; and,
- SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment.

This SIA will heavily rely on a document review as a substantial amount of work has been completed by TIDC, RailCorp, Department of Planning, Department of Transport and the respective councils, which have some implications for social aspects associated with this project.

Data from other TIDC consultants has been integrated into this SIA to ensure that the SIA captures and assesses all social impacts which flow (or may flow) either deliberately or inadvertently from the aspects being examined by these consultants. Such data includes:

- Parsons Brinkerhoff: *Transport and Park and Ride Study;*
- Landmark White: *Property Assessment;*
- Parsons Brinkerhoff, Evans and Peck, Pricewaterhouse: T*echnical/ engineering/constructability advisors;* and
- PPM Consultants/ Kilsby Australia: *Patronage.*

Studies also include specialist studies being undertaken by GHD as part of the Environmental Assessment.

Two site inspections were undertaken on 21 July 2006 and 7 August 2006. Sub-surface section, surface section, potentially affected areas outside the corridor (such as park and ride areas along the Northern Line etc) were inspected and photographed where appropriate.

A demographic profile has been developed for the rail corridor route. A "Social Issues Log"/impact matrix has also been developed. This "log" forms a baseline – a picture in time – of the issues which affect the suburbs along the route. As a result, recommended impact mitigation measures have also been developed.

1.5 Report Structure

The project SIA is a key part of the assessment documentation as it assists stakeholders in understanding the potential impacts created by the project. Because the NWRL is linear project (approximately 26km) and traverses a wide range of demographic, geographic and economic conditions, the potential social impacts at each location along the corridor have been separately identified and assessed. This format does run the risk of some apparent repetition, however from a community perspective it allows the local context to be related directly to the potential impact and to be captured in one part of the report. This provides the SIA with a high level of transparency and also allows it to be "dipped" into easily when required to identify certain, place specific issues.

To provide as complete a picture as possible at this conceptual stage, the potential social impacts have been identified for each location under a number of categories, namely:

1. Metropolitan impacts;
2. Potential local impacts by site/area:
    - Construction phase
    - Operational phase

1.6 Study Limitations

Limitations to this SIA include:

- The fact that the approval being sought is for a Concept only which constrains detailed impact assessment and resultant identification of detailed recommended mitigation control measures;
- The fact that the latest census data is now 5 years old and about to be replaced by new data-sets. This is particularly relevant along the northern end of the corridor route where the last 5 years has seen significant changes in built and social structures;
- External discussions only undertaken with Baulkham Hills Shire and Hornsby Shire Councils; and
- Limited consultation or stakeholder engagement.

2 THE URBAN PLANNING FRAMEWORK

2.1 The Metropolitan Strategy

The Metropolitan Strategy was released in 2005 and aims generally to manage growth of the Sydney Metropolitan Area over the next 25 years. The strategy seeks to start a process to bring the State Government, Local Government, stakeholders and the community together to discuss, review and then make decisions to guide the future of Sydney's economy, environment and communities. [2]

The Metropolitan Strategy covers a geographic area of over 10,000 square kilometres, made up of 43 local government areas including two on the Central Coast. It is too large and complex to resolve all the planning aims and directions down to a detailed local level through one Metropolitan Strategy.[3] Accordingly, the strategy will result in a number of regional and subregional strategies to provide more detailed planning controls.

2.2 Subregions

Subregions are a concept outlined in the Metropolitan Strategy. The Metropolitan Strategy outlines the Subregion concept as being "an intermediate step in translating the Metropolitan Strategy into strategies for each grouping of local government areas and the many communities of Sydney". [4]

The Strategy identifies 10 subregions. Two of these subregions, the North and the North West will be directly affected by the NWRL.

To ensure that redevelopment is not haphazard, local councils will use subregional planning to develop strategies for towns, villages and neighbourhood centres.[5]

The subregions can be seen in Figure 2.

2 NSW Government – Department of Infrastructure, Planning and Natural Resources. 2005. Sydney Metropolitan Strategy – City of Cities. P6.

3 Ibid.

4 Ibid

5 Ibid

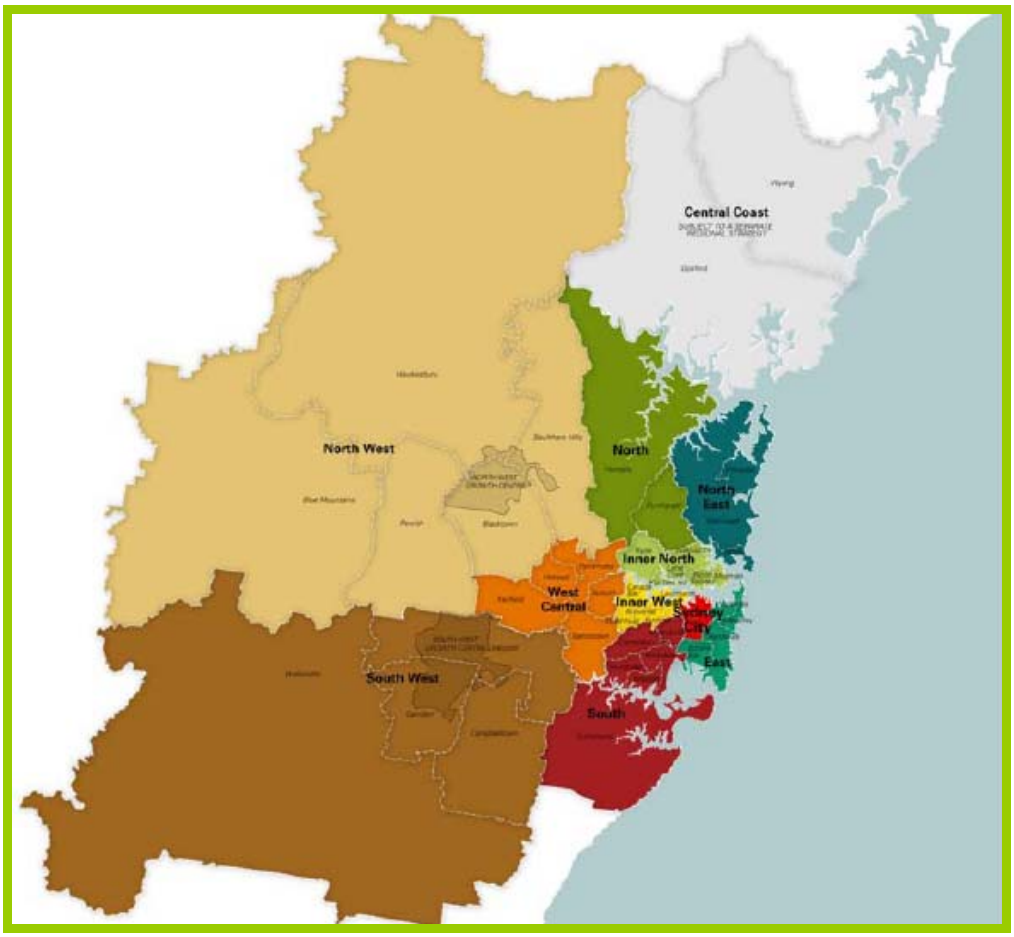

Figure 2: Sydney Subregions[6]

2.2.1 The North and North West Subregions

The subregions involved directly with the North West Rail Link are the North West and North subregions of the Sydney region.

The guiding reference material on the North and North West Subregions is from the *TransFigures: Statistics for the Subregional Planning Process* (June 2006) report.

A summary of the indicators within the North and North West subregions can be seen in **Appendix A**. This outlines the Sydney average, North and North West subregion figures to allow comparison.

The key indicators within the North West and North Sectors include:

- The land area of the North (4.5%) and North West (43%) sectors are almost half the area of Sydney;
- The proportion of separate dwellings in the North (76.9%) and North West (82.3%) sectors was significantly higher than Sydney (58.7%);

6 NSW Government Department of Planning – Transport and Population Centre. June 2006. TransFigures: Statistics for the Subregional Planning Process. P 1.

- The proportion of attached dwellings in the North (4.9%) and North West (6.9%) sectors was lower than Sydney (10.5%);
- The proportion of flats in the North (18.2%) and North West (10.8%) sectors was significantly lower than Sydney (30.6%);
- The level of trips undertaken by car was slightly higher in the North (73.5%) and North West (79%) sectors compared to Sydney (69.5%);
- Trips undertaken by public transport (bus or train) in the North was equal to Sydney at 10.4%, where the North West experienced a lower result at 7.2%;
- Average commuting trips for the North (17.2 km) and North West (20.7 km) sectors were higher than Sydney (15.5 km); and
- Average trip distances per person for the North (37.7 km) and North West (43.8 km) sectors were higher than Sydney (35.6 km).

The Metropolitan Strategy indicates that there are to be 321,000 new dwellings in the North West subregion and 108,000 new dwellings in the North Subregion by 2031. This is displayed in Figure 3 below.

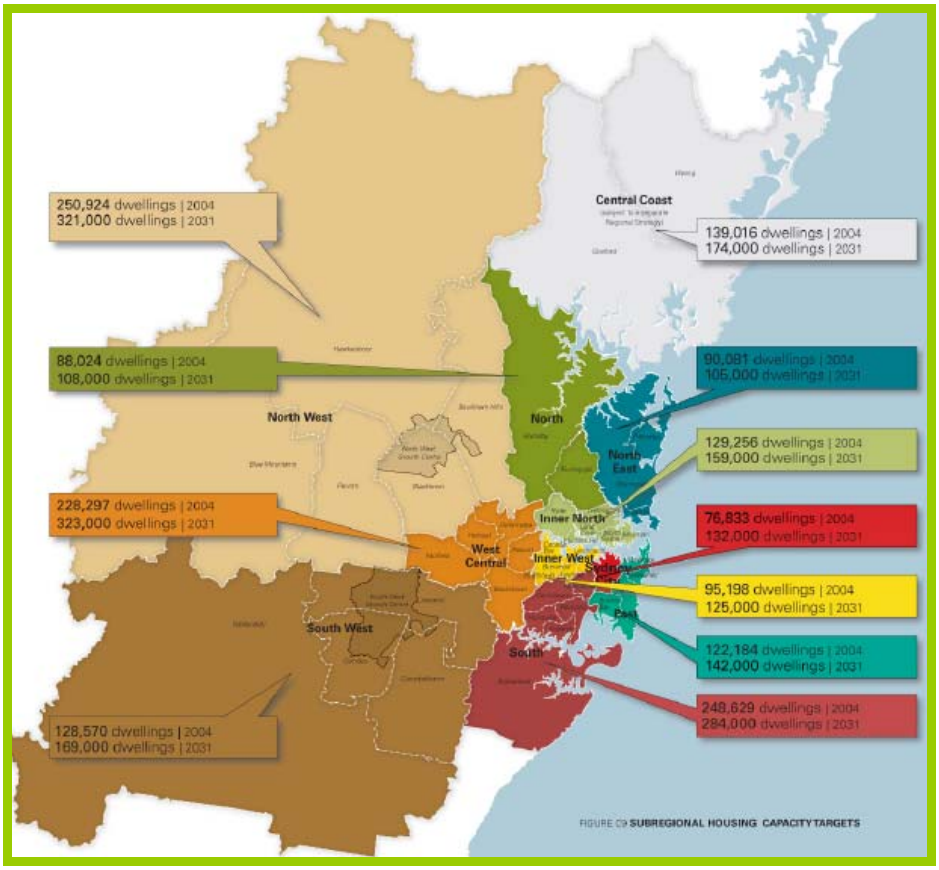

Figure 3: Subregional Housing Capacity Targets[7]

7 NSW Government – Department of Planning. 2005. Sydney Metropolitan Strategy – City of Cities. Figure C9.

2.3 North West Growth Centre Structure Plan

A structure plan has been developed for the North West Growth Centre. This plan contemplates:

- *60,000 new dwellings over 30 years;*
- *Series of self contained towns;*
- *Mix of dwelling types;*
- *Urban capable areas and landscape corridors; and*
- *Network of road and public transport with links to rail lines and amenities.*[8]

The proposal will affect the south-eastern corner of the Structure Plan area, known as Area 20.

The North West Growth Centre Structure Plan can be seen in Figure 4.

2.3.1 Planned Major Centres

Major Centres are the main shopping and business centre for a district, and will be the focus for major institutions, principally serving immediate subregional residential populations.

It is expected that by 2031, these Major Centres will generally contain a minimum of 10,000 jobs.

Castle Hill is one of only two existing Major Centres in Sydney not located on a heavy rail line. The plan identifies improving public transport to these centres as being a high priority.

8 NSW Government. 2005. NSW Government's Metropolitan Strategy – NSW Government's Plan for Managing Sydney's Growth Centres. North west structure plan page

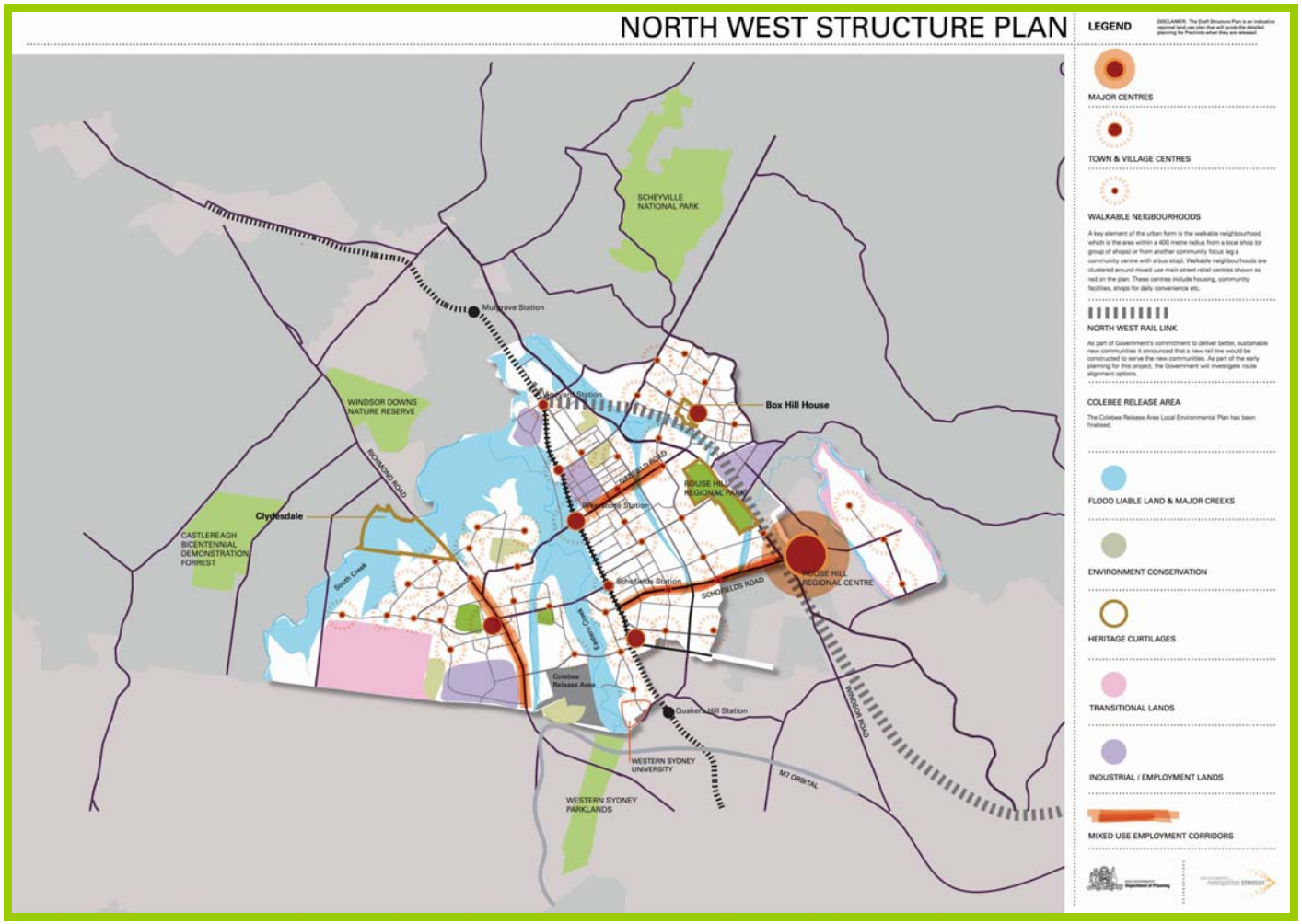

Figure 4: North West Structure Plan[9]

9 NSW Government – Department of Planning. 2005. Sydney Metropolitan Strategy – Website; www.metrostrategy.nsw.gov.au.

2.3.2 Rouse Hill Regional Centre

The Rouse Hill Regional Centre is a partnership between Lendlease, General Property Trust, Department of Planning and Landcom.

The North West Structure Plan indicates that the Rouse Hill Regional Centre will provide higher order retail and commercial services, community facilities, education and other specialised businesses, whilst servicing residents across the whole North West Growth Centre.[10] 1500 residential lots are to be provided within the centre.

The Rouse Hill Regional Centre will be developed during a 10 year period, with the first phase of the Rouse Hill Regional Centre having already commenced. A Masterplan has been developed for the site which can be seen in Figure 5.

Figure 5: Rouse Hill Masterplan[11]

2.4 Land Release and SEPP

The NSW Government is committed to the managed and planned release of land in both the North West and South West Sectors. Land release in the North West is to cover an area of approximately 10,000 hectares, divided into 16 precincts. 66,000 dwellings will be released in the North West within the next 25 to 30 years.

10 NSW Government. 2005. NSW Government's Metropolitan Strategy – NSW Government's Plan for Managing Sydney's Growth Centres. North west structure plan page – centres hierarchy.

11 Bovis Lend Lease. 2006. Reshaping out future – Rouse Hill Case Study. http://www.bovislendlease.com/

The NSW Government's Plan for Managing Sydney's Growth Centres outlines that the land release program will provide:

- *Better public transport with frequent buses that link into the rail system;*
- *A range of land uses to provide the right mix of houses, jobs, open and recreational space and green spaces;*
- *Easy access to major town centres with a full range of shops, recreational facilities and services along with smaller village centres and neighbourhood shops;*
- *Jobs available locally and within the region, reducing the demand for transport services into the CBD and cutting travel times;*
- *Streets and suburbs planned so that residents can walk to shops for their daily needs;*
- *A wide range of housing choices to provide for different needs and different incomes. 'Traditional' houses on their own block of land will be available along with smaller, lower maintenance homes, units and terraces for older people and young singles or couples; and*
- *Conservation land, in and around the development sites, will help to protect the region's biodiversity and provide clean air for Western Sydney as well as provide open space for recreation*[12]*.*

The State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the Growth Centres SEPP) has been developed to provide objectives and framework for a more simplistic yet effective planning process. The Growth Centres SEPP is the first instance of an environmental planning instrument for the growth centres. Further more detailed controls will be included on completion of the planning process in precincts released for urban development.

The proposal would traverse part of the precinct in the North West Growth Centre known as Area 20. Area 20 is part of the first release phase of North West Growth precincts.

This SEPP aims to:

- *Co-ordinate the release of land for urban and employment development in the North West and South West growth centres of the Sydney Region;*
- *Enable the Minister from time to time to designate land in those growth centres as ready for release for development;*
- *Provide for comprehensive planning for those growth centres;*

12 NSW Government. 2005. NSW Government's Metropolitan Strategy – NSW Government's Plan for Managing Sydney's Growth Centres. P1.

- *Enable the establishment of vibrant, sustainable and liveable neighbourhoods that provide for community well-being and high quality local amenity;*
- *Provide controls for the sustainability of land in those growth centres that has conservation value;*
- *Provide for the orderly and economic provision of infrastructure in and to those growth centres;*
- *Provide development controls in order to protect the health of the waterways in those growth centres;*
- *Protect and enhance land with natural and cultural heritage value; and*
- *Provide land use and development controls that will contribute to conservation biodiversity.*[13]

13 NSW Government. 2006. State Environmental Planning Policy – Sydney Region Growth Centres

3 DEMOGRAPHY OF THE PROJECT AREA

3.1 Local Government Area Snapshot

The two local government areas (LGAs) affected by the NWRL are Hornsby Shire Council and Baulkham Hills Shire Council. A snapshot of these LGAs is presented in this section.

This information has been sourced from:

- Australian Bureau of Statistics (ABS) Basic Community Profiles;
- 2004 Hornsby Community Analyst; and
- Baulkham Hills Shire Demographic Profile.

3.1.1 Hornsby Shire

The Hornsby Shire LGA comprises 510 square kilometres, located in the North of Sydney (Figure 6).

Figure 6: Hornsby Shire LGA[14]

14 Hornsby Shire Council Website. http://www.hornsby.nsw.gov.au/. Accessed – 7th July 2006.

In 2001, the population of the Hornsby Shire Local Government Area (Hornsby LGA) had reached 145,968, comprising 3.7% of Sydney's total.

447 (0.3%) of this population are of an indigenous background, less than the Sydney average of 1%. Of the total Hornsby LGA population, 65% were born in Australia and 35% born overseas, namely Hong Kong, Malaysia, South Korea and Sri Lanka. 20% speak a language other than English at home within the Hornsby LGA compared to the Sydney Average of 27.3%.

At last census, 45% of men and 36% of women were in managerial or professional occupations. Epping, Castle Hill, and Pennant Hills had the highest proportions of males with a managerial or professional occupation within the LGA. 59% of the population (15 years and over) had a post school qualification[15].

The 2004 Hornsby Community Analyst identifies that 50% of Hornsby's population is employed, with the main industries including Property/Business Services (18%), Retail (13%) and Health and Community (11%).

Journey to work characteristics have been identified as follows:

- 63% of the population drive to work;
- 27% using public transport;
- 5% walked/cycled;
- Trains are the most popular variety of public transport; and
- 5% of the population works from home.[16]

The percentage of the population with car reliance is less than the Sydney average of 74.2%. As a result, the percentage of the population reliant on public transport is higher in the Hornsby LGA than the Sydney average of 16.3%.

At the 2001 census, 49,700 dwellings were occupied, a total of 3% of the Sydney occupied dwelling total. Of these, detached houses were most prevalent (78%), followed by flats (14%) and attached dwellings (7%)[17]. Detached dwellings within Hornsby LGA represent a higher proportion of overall dwellings than the Sydney average of 58.7%. Flats also represented a higher proportion than the Sydney average of 10.5%. However, at 7% the percentage of attached dwellings was less than the Sydney average of 22.2%.

15 Hornsby Shire Council. 2004. 2004 Hornsby Community Analyst. "Education Levels".

16 Ibid. "Travel and vehicles".

17 Ibid. "Types of dwellings".

The occupancy rate was 2.85 persons per dwelling, which is greater than the Sydney average of 2.5%. It is expected that an additional 10,000 dwellings will be located within the LGA by 2010.

46% of dwellings are fully owned, 17% are privately rented and public housing consists of 1.2%[18]. Compared to the Sydney average (39%), Hornsby LGA has a greater percentage of fully owned dwellings. However, the Sydney average (23.6%) of private rental is greater than that of Hornsby LGA, as is the percentage of public housing (5.1%).

Age structures within the Hornsby LGA are undergoing a change as a result of generational alterations. The 2004 Hornsby Community Analyst found that:

The fastest growing age-group is 40 to 54 year-olds, whose share of the population rose by 9.8 people per 1000 [since 1996], followed by 55 to 74 year-olds, up 6.4 per 1000. Offsetting these rises were falls in the 25 to 39 year-olds, whose share fell by 10.4 per 1000, and 18 to 24 year-olds, down 5.5 per 1000 people.[19]

Projections

The Department of Planning: Transport and Population Data Centre has produced population projections for each NSW local government area (Table 1,2 and Figure 7).

The total population within the Hornsby LGA is presently estimated to be 158,720. In the year prior to the expected opening of the North West Rail Link (2017), this population is expected to reach 165,370. By 2031, the population is projected to have grown to 176,970.

Table 1: Projected population and selected characteristics - Hornsby[20]

Projected population and selected characteristics - Hornsby (A)

	Population:						
Year	Males	Females	Persons	Sex ratio	% aged 0-14	% aged 65+	Depend-ency ratio
2001	74,710	78,490	153,200	95	20%	12%	49
2006	77,800	80,920	158,720	96	19%	13%	47
2011	79,510	82,250	161,760	97	18%	13%	47
2016	81,500	83,870	165,370	97	18%	15%	48
2021	83,630	85,670	169,300	98	17%	16%	50
2026	85,740	87,500	173,230	98	17%	18%	53
2031	87,720	89,240	176,970	98	17%	19%	55

Sex ratio is the number of males per 100 females.
Dependency ratio is the number of people aged 0-14 and 65+ per 100 people aged 15-64.

18 Hornsby Shire Council. 2004. 2004 Hornsby Community Analyst. "Owning and renting".

19 Ibid. "Changes in Age Profile".

20 Department of Planning - Transport and Population Data Centre. 2004. NSW SLA Population Projections, 2004 Release - SLA Summary, Version 1.0 – Hornsby (A).

The Hornsby 65+ population is expected to age steadily over the projected period, from 13% in 2006 to 19% in 2031. The percentage of the population aged between 0 and 14 is projected to fall, from 19% in 2006 to 17% in 2031.

In the year of the expected opening of the North West Rail Link (2017), the largest age brackets are the 40-49 and the 15-24. This trend is similar to that projected for 2031.

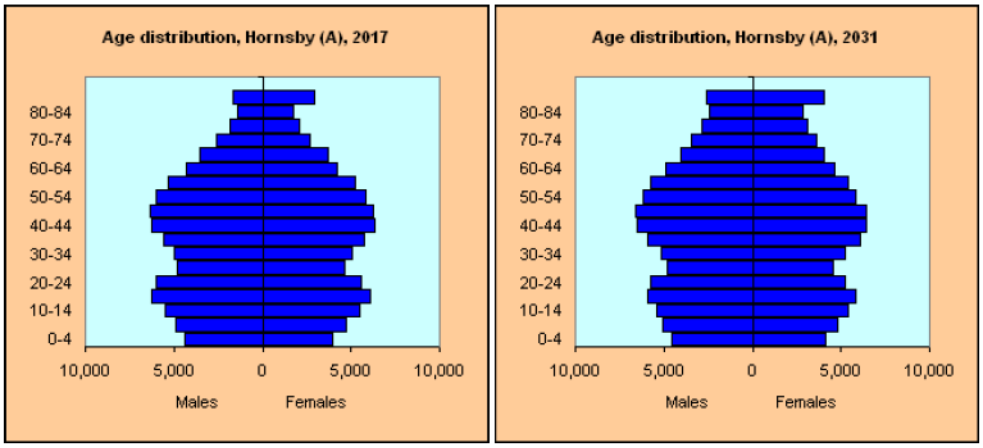

Figure 7: Age Distribution, Hornsby, 2017 and 2031[21]

Table 2: Projected age distribution - Hornsby[22]

Projected age distribution - Hornsby (A)							
Age	Persons						
	2001	2006	2011	2016	2021	2026	2031
0-4	9,420	8,860	8,490	8,410	8,600	8,760	8,790
5-9	10,430	10,480	9,950	9,660	9,630	9,810	9,940
10-14	11,460	11,540	11,460	11,040	10,800	10,780	10,940
15-19	11,670	12,480	12,520	12,440	12,090	11,830	11,790
20-24	10,150	11,150	11,530	11,670	11,610	11,310	11,050
25-29	9,270	8,930	9,180	9,500	9,670	9,630	9,450
30-34	10,000	10,350	9,780	10,110	10,370	10,520	10,480
35-39	11,820	11,510	11,710	11,340	11,680	11,920	12,070
40-44	12,560	12,650	12,460	12,750	12,460	12,800	13,020
45-49	11,700	12,560	12,700	12,690	13,000	12,730	13,060
50-54	11,100	10,990	11,730	11,960	12,020	12,300	12,060
55-59	8,480	10,010	9,910	10,630	10,880	10,990	11,240
60-64	6,250	7,270	8,600	8,580	9,240	9,490	9,610
65-69	4,800	5,240	6,100	7,300	7,330	7,920	8,200
70-74	4,590	4,160	4,590	5,370	6,500	6,580	7,150
75-79	3,950	3,890	3,620	4,060	4,800	5,870	6,010
80-84	2,800	3,260	3,320	3,190	3,650	4,360	5,360
85+	2,750	3,380	4,120	4,670	4,990	5,640	6,730
Total	153,200	158,720	161,760	165,370	169,300	173,230	176,970

21 Department of Infrastructure Planning and Natural Resources - Transport and Population Data Centre. 2004. NSW SLA Population Projections, 2004 Release - SLA Summary, Version 1.0 – Hornsby (A).

22 Ibid.

3.1.2 Baulkham Hills Shire

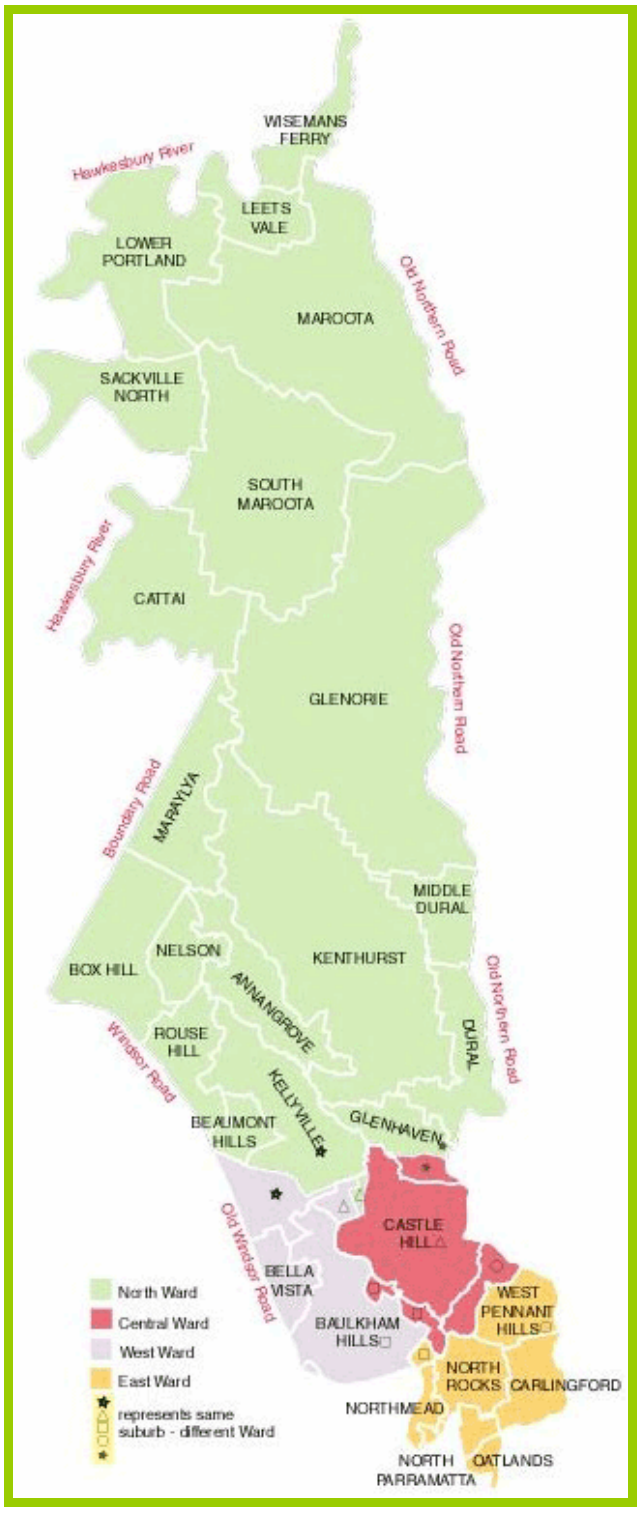

Figure 8: Baulkham Hills LGA[23]

23 Baulkham Hills Shire Council Website. www.baulkhamhills.nsw.gov.au. Accessed – 7th July 2006.

In 2001, the population of the Baulkham Hills LGA (Figure 8) had reached 139,404, comprising 3.5% of Sydney's total.

372 (0.3%) of this population are of an indigenous background, less than the Sydney average of 1%. Of the total Baulkham Hills LGA population, 67.8% were born in Australia and 32.2% born overseas, primarily in Hong Kong, United Kingdom and China (Sydney average [61.4%]) of population born in Australia). 20.6% speak a language other than English at home within the Baulkham Hills LGA compared to the Sydney average of 27.3%[24].

The education, qualifications and industry within the LGA has been comprehensively outlined in the Baulkham Hills Shire Demographic Profile[25]. This profile identifies:

- 40,683 people (29.2%) from the Baulkham Hills Shire were attending an educational institution in 2001 (higher than that of the Greater Sydney (25.0%)).
- Of this 29.2%, 11.7% were attending pre-school or infants/primary school, with a further 9.1% attending secondary school (higher proportions than those recorded for both Greater Sydney (10.1% and 6.7% respectively)).
- TAFE and University students make up 7.6% of the population.
- The highest representation of qualified persons from Baulkham Hills Shire is in the fields of Management and Commerce (13.9%), and Engineering and related technologies (10.4%).
- The Shire also has relatively higher proportions of people qualified in the fields of Health, Education, Architecture & Building, and Society & Culture.
- The suburbs with the highest proportion of people qualified in the field of Management and Commerce were West Pennant Hills (16.2%), Glenhaven (15.8%), Bella Vista (15.7%), Rouse Hill (15.1%), and Castle Hill (14.6%).
- 47% of the population (15 years and over) had a post school qualification.

The Baulkham Hills Shire Demographic Profile identifies that 72.1% of Baulkham Hill's population is employed. The main industries within the LGA include:

Property and business services (14.9%), retail trade (14.7%), and manufacturing (11.2%). These three industries alone made up over 40% of the Shire's employed population in 2001.[26]

24 Baulkham Hills Shire Council. Baulkham Hills Shire Demographic Profile. P75.

25 Ibid. P118, 122, 126.

26 Ibid. P106.

The Baulkham Hills Shire Demographic Profile identifies that:

- 63.7% of the Baulkham Hills employed population travelled to work by car as driver.
- 5.0% travelling by car as a passenger.
- 1.7% travelled by train.
- 3.0% travelled by bus.[27]
- 90% of the Shire's dwellings had at least one motor vehicle, much higher than the rates for Greater Sydney (78.8%).[28]

The percentage of the population with car reliance is less than the Sydney average of 74.2%. However, the percentage of the population with public transport reliance is also lower in the Baulkham Hills LGA than the Sydney average of 16.3%.

At the 2001 census, 49,700 dwellings were occupied, a total of 3% of the Sydney occupied dwelling total. Of these, detached houses were most prevalent (84.3%), followed by flats (2.5%) and attached dwellings (7.5%). Detached dwellings within Baulkham Hills LGA are significantly higher than the Sydney average of 58.7%. Flats were recorded as lower than the Sydney average of 10.5%. The attached dwellings within the Baulkham Hills LGA were also less than the Sydney average of 22.2%.

47.8% of dwellings are fully owned and 12.5% comprise privately rented dwellings and public housing. Compared to the Sydney average (39%), Baulkham Hills LGA has a greater percentage of fully owned dwellings. However, the Sydney average (28.7%) of private rental and public housing combined was greater than that of Baulkham Hills LGA.

Baulkham Hills LGA is undergoing a change in age as a result of generational alterations. The Baulkham Hills Shire Demographic Profile identifies that:

- The population increased by 16.6% between 1996 and 2001.
- Specific age groups experienced more significant increases (0-9, 30-39, 50-59, 60-69, 70-79, 80-89 and 90+ years) indicating considerable population growth in the lower and upper sections of its age profile.[29]

27 Baulkham Hills Shire Council. Baulkham Hills Shire Demographic Profile. P113.

28 Ibid. P111.

29 Ibid. P12.

Projections

The Department of Planning: Transport and Population Data Centre has produced population projections for each NSW local government area (Table 3, 4 and Figure 9).

The total population in the Baulkham Hills LGA is estimated to be 169,730. In the year prior to the expected opening of the NWRL (2017), this population is to expected reach 200,100. By 2031, the population is projected to have grown to 249,080.

Table 3: Projected population and selected characteristics - Baulkham Hills[30]

Projected population and selected characteristics - Baulkham Hills (A)

	Population:						
Year	Males	Females	Persons	Sex ratio	% aged 0-14	% aged 65+	Depend-ency ratio
2001	72,780	73,270	146,050	99	21%	8%	41
2006	85,320	84,410	169,730	101	21%	9%	42
2011	91,950	90,660	182,610	101	20%	11%	45
2016	100,920	99,180	200,100	102	19%	13%	46
2021	109,470	107,460	216,930	102	19%	14%	48
2026	117,400	115,250	232,650	102	18%	15%	50
2031	125,670	123,410	249,080	102	18%	16%	52

Sex ratio is the number of males per 100 females.

Dependency ratio is the number of people aged 0-14 and 65+ per 100 people aged 15-64.

The percentage of those aged 65+ within the Baulkham Hills population is steadily increasing over the projected period, from 9% in 2006 to 16% in 2031. The percentage of the population aged between 0 and 14 is projected to fall, from 21% in 2006 to 18% in 2031.

In the year of the expected opening of the NWRL (2017), the largest age brackets will be the 40-49 and the 15-20. This trend is similar to that projected for 2031.

30 Department of Infrastructure Planning and Natural Resources - Transport and Population Data Centre. 2004. NSW SLA Population Projections, 2004 Release - SLA Summary, Version 1.0 – Baulkham Hills (A).

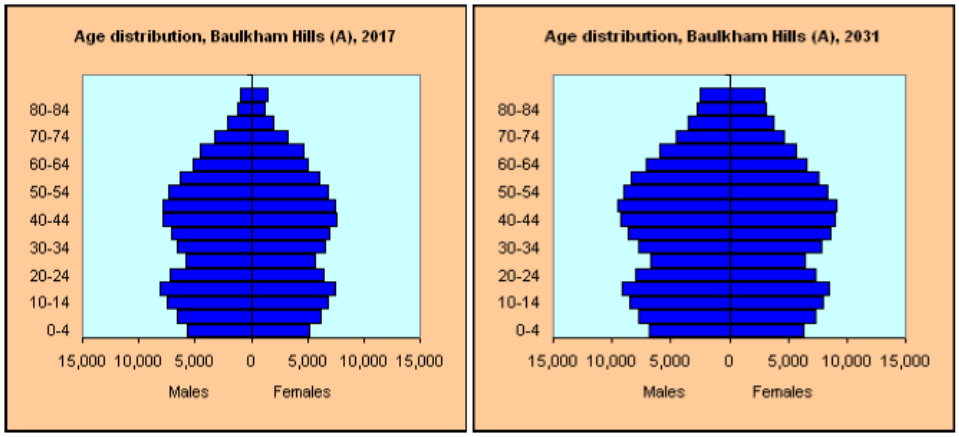

Figure 9: Age Distribution, Baulkham Hills, 2017 and 2031[31]

Table 4: Projected age distribution - Baulkham Hills[32]

Projected age distribution - Baulkham Hills (A)							
Age	Persons						
	2001	2006	2011	2016	2021	2026	2031
0-4	9,230	10,400	10,380	10,940	11,810	12,550	13,230
5-9	10,260	12,030	12,310	12,800	13,440	14,310	15,210
10-14	11,360	12,770	13,730	14,380	14,900	15,560	16,560
15-19	11,890	13,670	14,570	15,770	16,430	16,930	17,700
20-24	10,290	11,850	12,640	13,760	14,630	15,050	15,480
25-29	9,510	10,230	10,420	11,590	12,430	12,940	13,370
30-34	9,680	12,550	12,000	13,200	14,240	15,040	15,740
35-39	10,860	12,540	13,870	14,170	15,350	16,350	17,340
40-44	11,560	13,060	13,960	15,600	16,000	17,180	18,320
45-49	11,680	13,180	14,240	15,480	17,080	17,510	18,790
50-54	12,200	11,840	13,050	14,280	15,500	16,940	17,400
55-59	9,590	11,530	11,190	12,510	13,670	14,790	16,120
60-64	6,200	8,740	10,370	10,360	11,600	12,650	13,700
65-69	3,860	5,780	7,770	9,410	9,550	10,710	11,700
70-74	3,100	3,430	4,870	6,570	8,080	8,300	9,400
75-79	2,300	2,760	3,000	4,210	5,700	7,110	7,420
80-84	1,410	1,910	2,230	2,480	3,440	4,680	5,980
85+	1,080	1,490	2,020	2,570	3,080	4,060	5,620
Total	146,050	169,730	182,610	200,100	216,930	232,650	249,080

31 Ibid

32 Department of Infrastructure Planning and Natural Resources - Transport and Population Data Centre. 2004. NSW SLA Population Projections, 2004 Release - SLA Summary, Version 1.0 – Baulkham Hills (A).

3.2 Description of works and affected areas

The general areas that may be affected most by the NWRL are the suburbs surrounding the proposed rail route. These areas are described below.

3.2.1 Epping – Beecroft

Locality Description

Beecroft is a very established residential area and enjoys a high level of residential amenity characterised by high quality housing, the reserve itself, established vegetation and gardens, and a general level of tranquillity. Housing stock generally comprises large detached dwellings.

The Beecroft Village Green and the Beecroft Lawn Tennis Club are located between the Northern Line to the north east and Beecroft Road to the west/south west. The Beecroft Community Centre is located to the north of the Village Green. The Beecroft Village Green has numerous associated uses and facilities such as toilets, play equipment, BBQ facilities, seating areas and walking tracks. The Green is well established, with significant levels of vegetation, which is well maintained. The area is well utilised by people of all ages, throughout the day.

Figure 10: South Easterly view over Beecroft Village Green[33]

33 GHD. November 2005.

Figure 11: South easterly view over the Beecroft Village Green (not play equipment)[34]

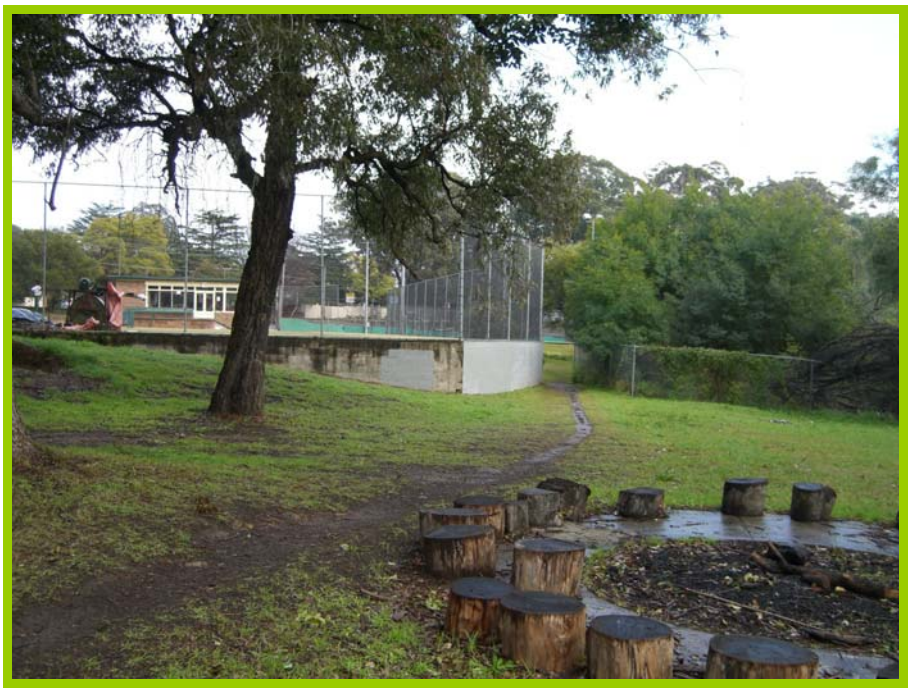

Figure 12: North westerly view from Scout/Guide Hall to Tennis Courts (note campfire area in foreground)

34 Ibid

Figure 13: Looking north west to Tennis Courts

The Scouts and Guide Hall is located between the Northern Line to the north east and The Crescent to the south/south west. A dirt pathway connects the Village Green/Tennis Courts to the Hall. Associated with the Hall is an established campfire area.

Key Project Aspects
The quadruplification of the Northern Line between Epping and Beecroft would have the potential to create social impacts in Epping, North Epping, Cheltenham and Beecroft. This part of the project would be entirely above ground and would involve vegetation removal, cutting, filling, construction of retaining and noise walls and the construction of two additional (one north bound and one southbound) railway lines (see Figure 10).

The NWRL would be located on the inner lines and (heading north) enter the tunnel portal structure south of the Village Green in Beecroft.

Outlined in correspondence from TIDC:

> *Property within the rail corridor would be required on the east side of Beecroft Road for permanent works and a Work Site associated with the tunnel dive structures. Cut and cover construction would occur adjacent to The Crescent resulting in demolition of the existing Scout Hall building. The scout facilities would be relocated or replaced. At this stage of design it is envisaged that some temporary work during construction such as an access road, staff/worker accommodation and the storage of plant may encroach outside of the rail corridor into*

the road corridor of The Crescent and/or into Beecroft Village Green. The extent of this possible encroachment would be clarified during future design work and would be planned to protect access along The Crescent and protect the Tennis Courts.[35]

3.2.2 Beecroft Interface

The NWRL branches off the Northern Line between Cheltenham Station and Beecroft Station. The tunnel portal, which establishes the commencement of the underground section of the railway, would be located within the existing rail corridor, north-east of the tennis courts on The Crescent at Beecroft. The rail link would pass beneath Beecroft Village Green and Devlin's Creek, head west towards Thompson's Corner and then proceed to the first proposed station at Franklin Road.[36]

3.2.3 Franklin Road Station

Franklin Road Station is to be the first new station, heading west from the existing Northern Line.

Franklin Road Station would be an underground station, in the town centre, located to the north of Castle Hill Road, west of Franklin Road and east of Robert Road. This station would service the population catchments of Cherrybrook and West Pennant Hills. The station in this area represents an opportunity to provide convenient bus access and potential park-and-ride facilities.[37]

3.2.4 Castle Hill Station

Castle Hill Station would be an underground station, located within the Town Centre beneath Castle Hill Park. Castle Towers Shopping Centre is located immediately to the north-west of the proposed station location. The opportunity exists to provide underground walk-ways for direct access into the shopping centre and the south side of Old Northern Road. Castle Hill Station would be a central hub for feeder bus services including non-transitway local bus services. Bus services using the Blacktown to Castle Hill arm of the North West Transitway are proposed to terminate adjacent to the station. Commuter parking facilities would not be provided at this station.[38]

The station would be excavated from underground and the material substantially removed via the tunnels. Surface work would be kept to a minimum.

35 Email from TIDC, 5th September 2006.

36 Ibid.

37 SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment. P30-31.

38 Ibid. P31.

3.2.5 Hills Centre Station

Hills Centre Station would be an underground station, located adjacent to the Hills Centre and the Castle Hill Showground. The station has good access to key surrounding roads and could serve as a potential park-and-ride station. The station could also provide quality pedestrian links to the Castle Hill employment area to the west of the station.[39]

3.2.6 Norwest Station

Norwest Station would be located underground within the Norwest Business Park, adjacent to the existing Hillsong Church complex and retail shopping centre, and would be a short walk from the centre of the Norwest Business Park's commercial development. It is likely that there would be additional bus services in this area. No park-and-ride facilities are proposed at this location. However, there is potential to investigate shared use of parking.[40]

Norwest Station would be located in the central part of the business park with easy access to residential and commercial areas. Further detailed investigations are required to refine the location of the station.[41]

3.2.7 Burns Road Station

The Burns Road and Sunnyholt Road intersection with Old Windsor Road is the crossing point of two of the proposed rapid bus transitways being provided in the North West. The proposed site for the Burns Road station coincides with this location and hence maximises the opportunity for interchange between modes and future transit supportive land use development. There are opportunities for this station to realise land use integration benefits.[42]

Burns Road Station would be located immediately to the south of Burns Road within the Balmoral Road Release Area. A station location is provided for in the Draft LEP for the Balmoral Road Release Area. The station would form a major transport interchange for the NWRL with the bus transitways connecting Blacktown to Castle Hill and Parramatta to Rouse Hill, and it would be located in a deep cutting. Further design work is required at this station to ensure that it integrates effectively with the bus transitways and surrounding landuse. Potential park-and-ride locations are being considered as part of the design at Burns Road.[43]

39 SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment. P31.

40 Ibid.

41 Manidis Roberts for the NSW Government. Overview Report: Connecting Communities. P17

42 Ibid.

43 SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment. P31.

3.2.8 Viaduct Section between Balmoral Road and Rouse Hill

After Burns Road Station, the alignment passes beneath Burns Road and continues in open cut or on slight embankment before proceeding onto a viaduct over Samantha Riley Drive. The alignment continues on the viaduct from Samantha Riley Drive and over the Windsor Road / Old Windsor Road intersection to minimise impacts on the Elizabeth Macarthur / Caddies Creek floodplain. The viaduct would be located adjacent to the route of Old Windsor Road and the Parramatta to Rouse Hill arm of the North West Transitway. From the overbridge at the intersection of Windsor Road and Old Windsor Road, the alignment transitions from viaduct to cut and cover tunnel and follows Windsor Road and the alignment of the North West Transitway to Rouse Hill Station in the proposed Rouse Hill Town Centre.[44]

3.2.9 Rouse Hill Station

Rouse Hill Station would be the most north-westerly station on the NWRL. The 2017 Reference Scheme is for an underground station parallel to Windsor Road, situated within an area that will be the focus of the new Rouse Hill Town Centre being developed by Bovis Lend Lease in partnership with the NSW Government. A Property Development Agreement between the developer and the NSW Government was executed in November 2005 and provides for the NWRL corridor and transit centre within the Rouse Hill Town Centre. Stage 1 of the town centre development is planned for completion by early 2008 and it is anticipated that the total project would take approximately 12- 15 years to complete. This could result in modifications to the station design and the vertical alignment of the rail line. The merits of this alternative will assessed as part of the design development.[45]

3.2.10 Rouse Hill Stabling

After Rouse Hill Station, the alignment passes beneath the dual carriageway of Windsor Road in cut and cover tunnel, to a stabling facility located in cutting west of, and roughly parallel to, Windsor Road.[46]

A train stabling facility, which would be positioned in cut, would be provided to the west of Windsor Road at Rouse Hill on an alignment that could be utilised in any future extension of the proposed NWRL to the Richmond Line. The stabling yard would be located within Area 20 (an area that has been earmarked for future residential development within the North West Growth Centre). [47]

44 SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment. P31.

45 Ibid. P31-32.

46 Ibid. P30.

47 Ibid. P32.

4 SOCIO-ECONOMIC ASPECTS

The socio economic analysis is based on the 2001 Census. There will be substantial changes encountered in the 2006 Census due to development during the inter-Census period.

4.1 Population

Total population

The population within the suburbs that will be directly affected by the NWRL totals 163,433. This figure has been recorded from the 2001 Census and comprises 4.1% of Sydney's total population.

Figure 14 reveals the 2001 population across affected suburbs. Baulkham Hills and Castle Hill have the highest population of the directly affected areas, 33,661 (20.6%) and 31,768 (19.4%) respectively. Parklea and Cheltenham have the lowest population of the directly affected areas, 1,289 (0.8%) and 1,988 (1.2%) respectively.

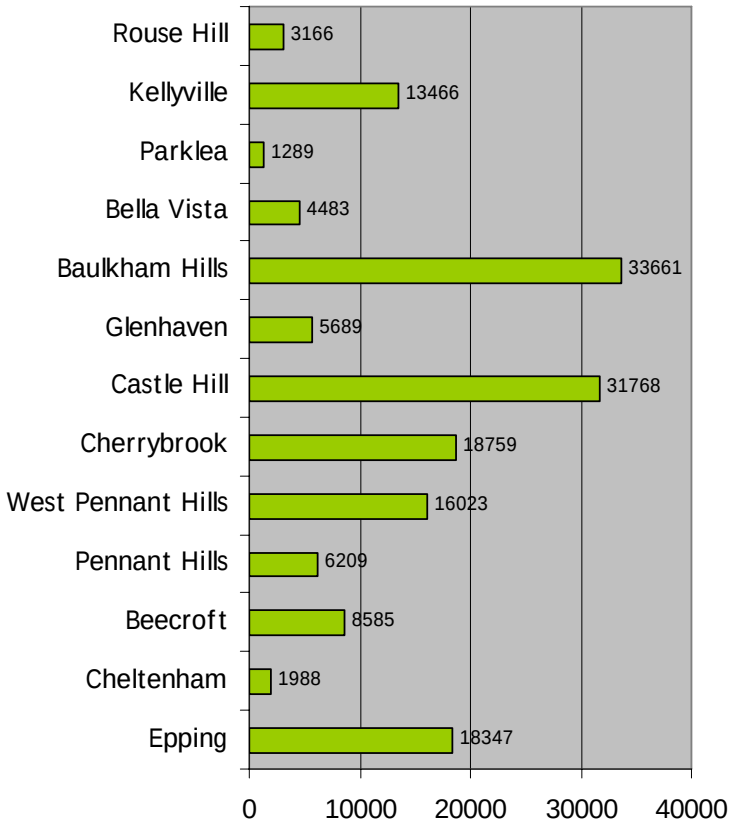

Figure 14: 2001 Population

4.2 Age

The total population 15 years and over (everyone 15 years and over) within these suburbs totalled 127,864. The total population 65 years over within these suburbs totalled 16,221. These figures have been recorded from the 2001 Census. Figure 16 reveals the 2001 age structure across affected suburbs, for both 15+ and 65+ age groups.

As a percentage of the total population within the area in question, persons 'Aged 15 years and over' totalled 78.2% and those 'Aged 65 years and over' comprised 9.9%. The percentage of persons within the 'Aged 15 years and over' bracket was less than the Sydney average of 79.9%, and the percentage of persons 'Aged 65 years and over' was also lower than the Sydney average of 11.8%.

Baulkham Hills and Castle Hill recorded the highest population of the 'Aged 15 years and over' bracket, 26,936 (16.5% of total 'area' population) and 25,111 (15.4% of total 'area' population) respectively. As well as this, Baulkham Hills and Castle Hill also recorded the highest population of the 'Aged 65 years and over' bracket, 3,096 (1.9% of total 'area' population) and 3,884 (2.4% of total 'area' population) respectively.

Parklea and Cheltenham recorded the lowest population of the 'Aged 15 years and over' bracket, 1,054 (0.6% of total 'area' population) and 1,576 (1% of total 'area' population) respectively. As well as this, Parklea and Cheltenham also recorded the lowest population of the 'Aged 65 years and over' bracket, 42 (0.03% of total 'area' population) and 242 (0.1% of total 'area' population) respectively.

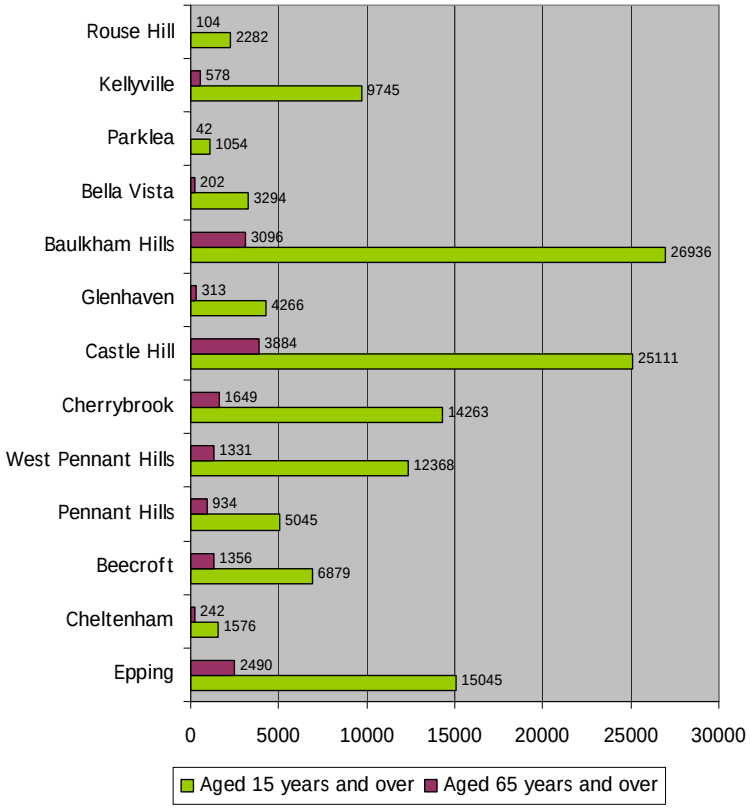

Figure 15: Age Structure

4.3 Labour Force

Total labour force

The total labour force within the subject suburbs totals 86,704, which comprises 53.1% of the subject areas population. This percentage is greater than the 48.4% which is recorded as the Sydney average.

Figure 17 reveals the 2001 total labour force across affected suburbs. As a percentage of total suburb population, Rouse Hill (57.3%), Baulkham Hills (56.5%) and Glenhaven (56%) experienced the highest proportion of the population in the labour force. At the opposite end of the scale, Parklea (24%) experienced the lowest proportion of the population in the labour force.

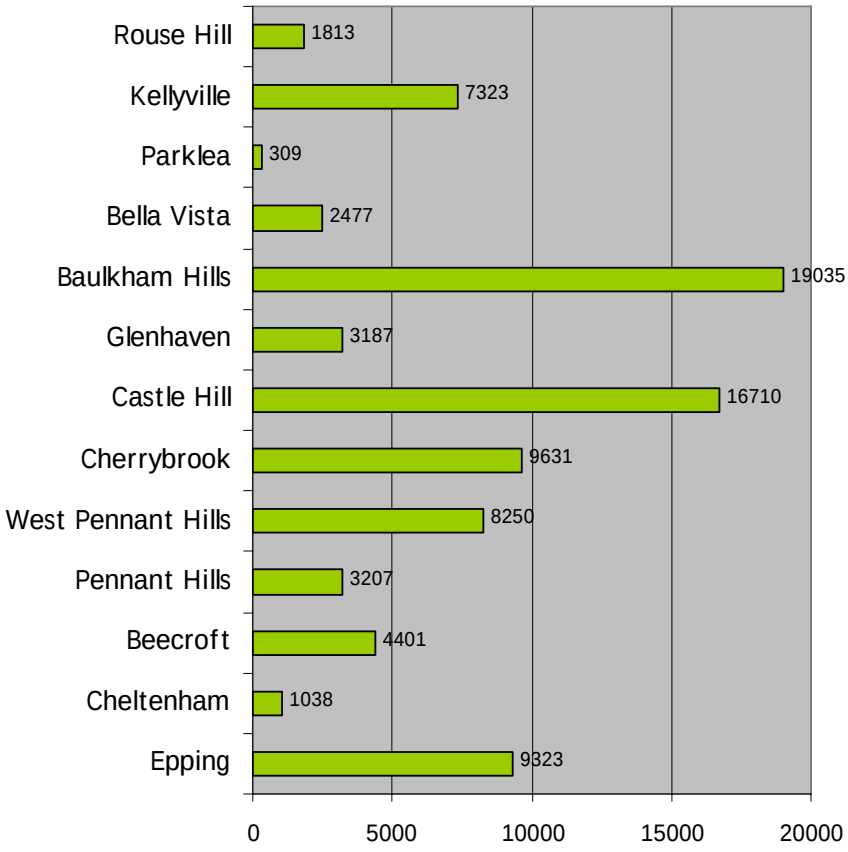

Figure 16: Total Labour Force

Employment level

The employment level within the subject suburbs totals 78,663, which comprises 48.1% of the subject areas population. This percentage is greater than the 45.4% which is recorded as the Sydney average. This indicates that residents are reliant upon local employment.

Figure 18 reveals the 2001 employment levels across affected suburbs. The suburbs with the highest employment level (as a number count) were Baulkham Hills and Castle Hill, at 18,400 and 11,148 respectively.

The suburbs with the lowest employment level (as a number count) were Parklea and Cheltenham, at 236 and 1,004 respectively.

As a percentage of the total labour force for each suburb, Rouse Hill (98.2%) and Glenhaven (97.6%) experienced the highest proportion of those employed in the labour force. At the opposite end of the scale, Parklea (76.4%) and Castle Hill (66.7%) experienced the lowest proportion of those employed in the labour force.

As a percentage of total suburb population, Rouse Hill (56.2%), Baulkham Hills (54.7%) and Glenhaven (54.6%) experienced the highest proportion of those employed in the labour force. At the opposite end of the scale, Parklea (18.3%) experienced the lowest proportion of those employed in the labour force, followed by Castle Hill (35.1%).

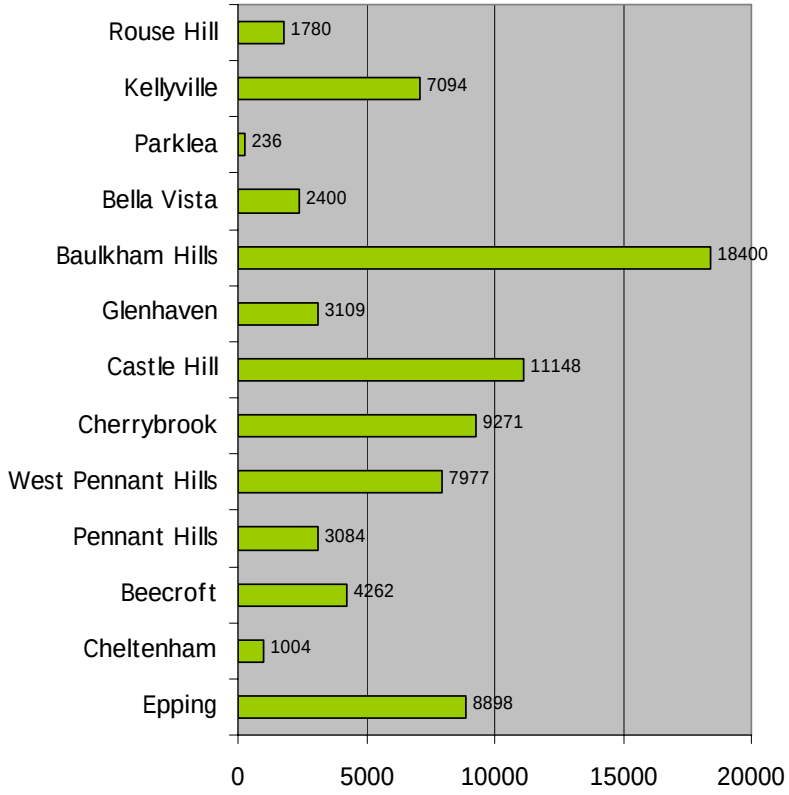

Figure 17: Employment level

Unemployment level

The total labour force within the subject suburbs totals 8,041, which comprises 4.9% of the subject areas population. This percentage is greater than the 3% which is recorded as the Sydney average.

Figure 19 reveals the 2001 unemployment level across affected suburbs. The suburbs with the highest unemployment level (as a number count) were Baulkham Hills and Epping, at 635 and 425 respectively. The suburbs with the lowest unemployment (as a number count) were Rouse Hill and Cheltenham, at 33 and 34 respectively.

As a percentage of total suburb population, Parklea (5.7%) and Epping (2.3%) experienced the highest proportion of unemployment in the labour force. At the opposite end of the scale, Rouse Hill (1%) experienced the lowest proportion of unemployed in the labour force.

The average unemployment rate across the subject suburbs comprised of 4.8%. This percentage is less than the 6.1% which is recorded as the Sydney average.

The highest unemployment rates were experienced in Parklea (23.6%) and Epping (4.6%). The lowest unemployment rates were experienced in Rouse Hill (1.8%) and Glenhaven (2.4%) (see figure 20).

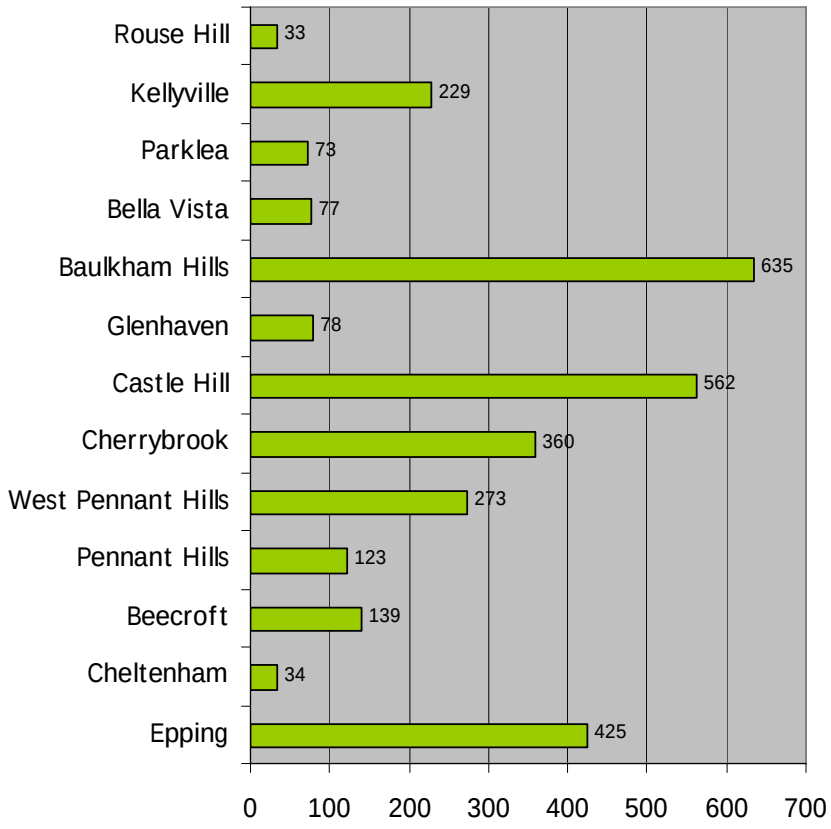

Figure 18: Unemployment level

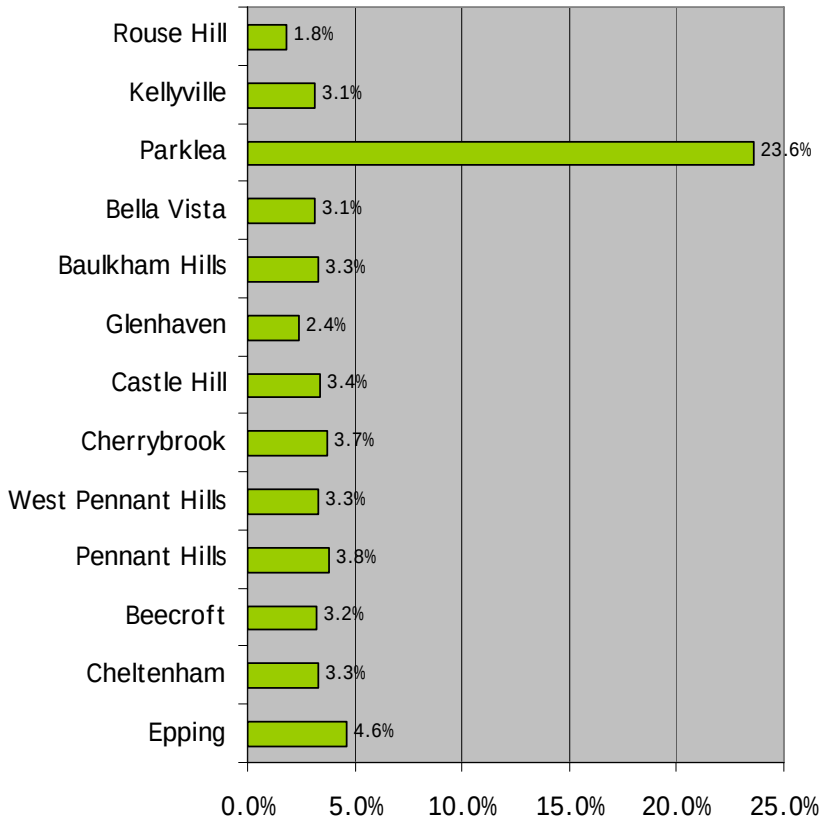

Figure 19: Unemployment Rate

4.4 Income

Median weekly individual income

Every suburb experienced a median weekly individual income of between $500-$599 except for Cheltenham ($600-$699), Rouse Hill ($600-$699) and Parklea ($400-$499). Every suburb's median weekly individual income was higher than the Sydney average of $400-$499, (apart from Parklea which was equal).

Median weekly family income

Every suburb experienced a median weekly family income of between $1500-$1999 except for Epping ($1200-$1499) and Parklea ($500-$599). Every suburb's median weekly family income was higher than the Sydney average of $1000-$1199, apart from Parklea where the median weekly family income was half that of the Sydney average.

Median weekly household income

Every suburb experienced a median weekly household income of between $1500-$1999 except for Baulkham Hills ($1200-$1499), Epping ($1000-$1199) and Parklea ($500-$599), Pennant Hills ($1200-$1499). Every suburb's median weekly household income was higher than the Sydney average of $800-$999, apart from Parklea where the median weekly family income was less than the Sydney average.

4.5 Relative socio-economic advantage/disadvantage

The relative socio-economic advantage/disadvantage information was gathered from the ABS's Socio-Economic Indexes For Areas (SEIFA). It should be noted that there were no values available for Parklea from the SEIFA database.

Socio-Economic Advantage/ Disadvantage

All suburbs within the subject area are classed as "advantaged" as their index values are over 1,000. Socio-Economic Advantage/Disadvantage can be explained as follows:

> *A higher score on the Index of Relative Socio-Economic Advantage/Disadvantage indicates that an area has attributes such as relatively high proportion of people with high incomes or a skilled workforce. It also means an area has a low proportion of people with low incomes and relatively few unskilled people in the workforce. Conversely, a low score on the index indicates that an area has a higher proportion of individuals with low incomes, more employees in unskilled occupations.*[48]

Figure 21 reveals the 2001 advantage-disadvantage index across affected suburbs. Cheltenham has the highest index of 1218.02 and Baulkham Hills has the lowest index of 1127.44. All suburbs have also recorded a value higher than the Sydney average of 1015.31.

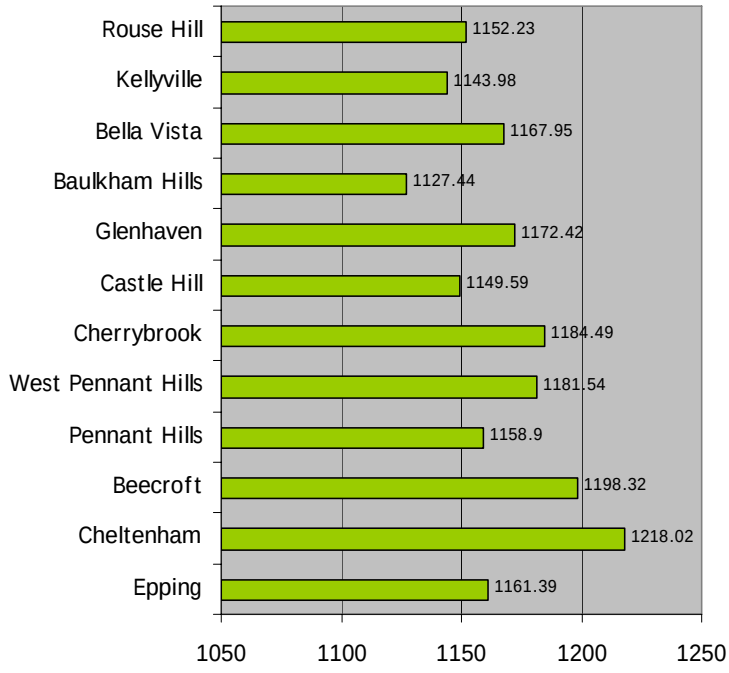

Figure 20: Advantage - Disadvantage

48 Australian Bureau of Statistics (2001) Census Of Population And Housing – Socio-Economic Indexes For Areas, Australia. p3-4.

Education - Occupation

All suburbs within the subject area are classed as "advantaged" as their index values are over 1,000. Education - Occupation can be explained as follows:

> *The Index of Education and Occupation is designed to reflect the educational and occupational structure of communities. The education variables in this index show either the level of qualification achieved or whether further education is being undertaken. The occupation variables classify the workforce into the major groups of the Australian Standard Classification of Occupations (ASCO) and the unemployed. This index does not include any income variables.*[49]

Figure 22 reveals the 2001 education – occupation index across affected suburbs. Cheltenham has the highest index of 1207.71 and Rouse Hill has the lowest index of 1077.36. All suburbs have also recorded a value higher than the Sydney average of 1038.53.

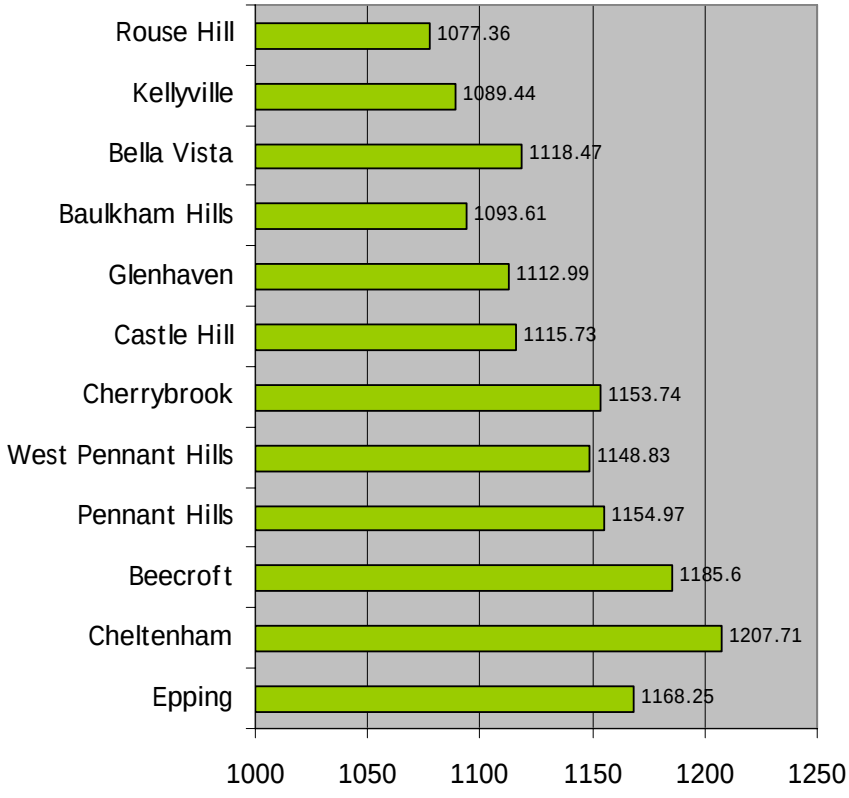

Figure 21: Education – Occupation

49 Australian Bureau of Statistics (2001) Census Of Population And Housing – Socio-Economic Indexes For Areas, Australia. p3-4.

4.6 Journey to work/school

Car Dependency - Broad Metropolitan Trends

A key text in documenting the broad metropolitan trends of car dependency is *TransFigures: Car Travel in Sydney: Changes in the Last Decade* (March 2006). This outlines that:

> *In Sydney as in other major cities of the world, travel by private vehicle is larger than all other modes combined. In 1991, 70% of all trips were made in a private vehicle. This majority share was sustained a decade later in 2001 as car usage continued to grow. The prevalence of the car can be evidenced from all indicators of car travel which increased at a faster pace in comparison to population. Between 1991 and 2001, the number of car driver and passenger trips made on an average weekday grew annually by 1.8% from about 9 million to about 11 million trips. The total number of household vehicles rose from 1.7 to 2.1 million by a faster rate of 2.2%. The number of licence holders increased by 2.1%. Vehicle kilometres travelled (VKT) also grew from 64 to 80 million kilometres, up by an average of 2.3% every year. These growth rates outpaced the annual growth in population of 1.3%.*[50]

Public Transport Reliance – Suburb analysis

The total journey to work public transport reliance (bus or train) within the subject suburbs totals 6,164, of this 3,889 (63.1%) train and 2275 (36.9%) bus. As a total of one method only trips within the selected suburbs, bus and train comprised 9.6% of total journeys. This is lower than Sydney's average of 16.3%.

Figure 23 reveals the 2001 public transport reliance across affected suburbs. The suburbs with the highest public transport reliance (as a number count) were Baulkham Hills and Epping, at 1,115 and 1,672 respectively. The suburbs with the lowest public transport reliance (as a number count) were Rouse Hill and Parklea, at 63 and 10 respectively.

The suburbs with the highest train reliance (as a number count) were Pennant Hills and Epping, at 506 and 1,421 respectively. The suburbs with the lowest train reliance (as a number count) were Glenhaven and Parklea, at 26 and 6 respectively.

The suburbs with the highest bus reliance (as a number count) were Baulkham Hills and Castle Hill, at 885 and 600 respectively. The suburbs with the lowest bus reliance (as a number count) were Cheltenham and Parklea, at 3 and 4 respectively.

However as a percentage of the total public transport (bus or train) one method only trips within the selected suburbs, Epping (24.3%) and

50 NSW Government Department of Planning – Transport and Population Centre. March 2006. - TransFigures: Car Travel in Sydney: Changes in the Last Decade. P 1.

Pennant Hills (22%) experienced the highest proportion of public transport use. At the opposite end of the scale, Kellyville (3.8%) and Glenhaven (2.7%) experienced the lowest proportion of public transport use.

As a percentage of the one method only trips within the selected suburbs, Epping (20.7%) and Pennant Hills (21.2%) experienced the highest proportion of train use. At the opposite end of the scale, Kellyville (1.3%), Castle Hill (1.3%) and Glenhaven (1.1%) experienced the lowest proportion of train use.

As a percentage of the one method only trips within the selected suburbs, Castle Hill (4.7%) and Baulkham Hills (6.1%) experienced the highest proportion of bus use. At the opposite end of the scale, Cheltenham (0.4%), Pennant Hills (0.8%) and Beecroft (0.7%) experienced the lowest proportion of bus use.

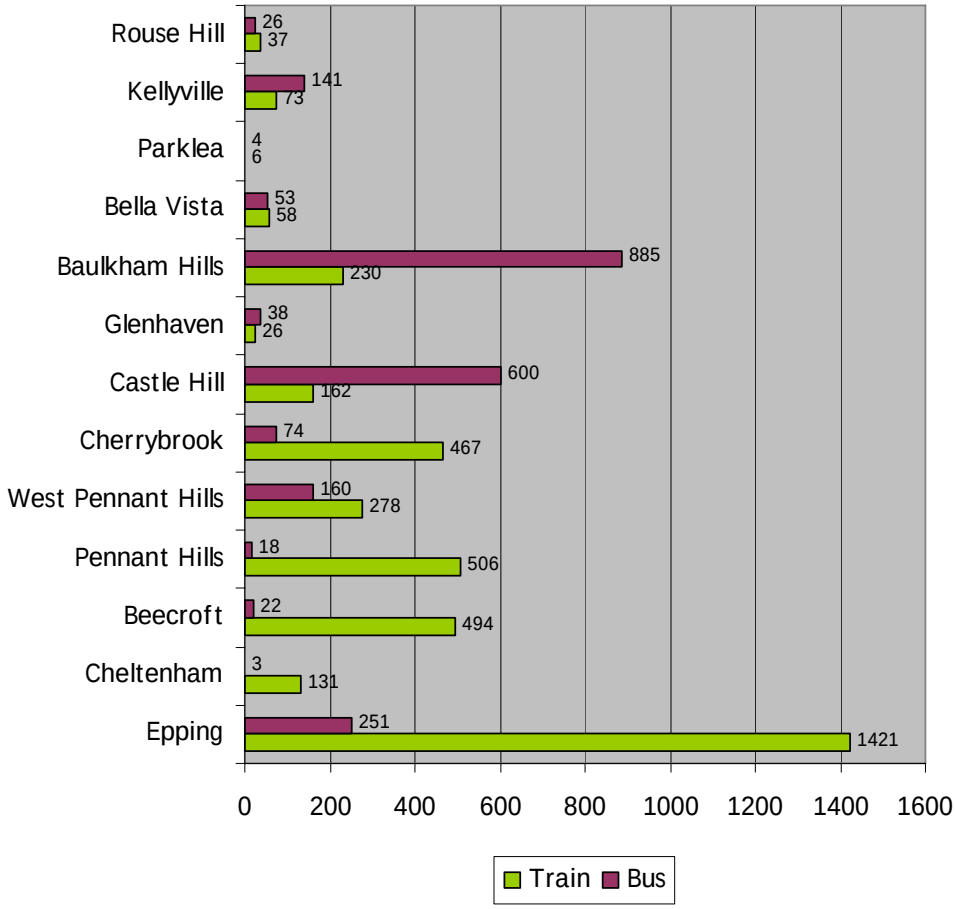

Figure 22: Public Transport Reliance (One method only)

Car Reliance – Suburb analysis

The total car reliance within the subject suburbs totals 55,273, of this 51124 (92.5%) are drivers and 4,149 (7.5%) are passengers. As a total of one method only trips within the selected suburbs, car reliance comprised 86%. This is higher than Sydney's average of 74.2%.

Figure 24 reveals the 2001 car reliance across affected suburbs. The suburbs with the highest car reliance (as a number count) were Baulkham Hills and Castle Hill, at 14,434 and 12,633 respectively. The suburbs with the lowest passenger car reliance (as a number count) were Cheltenham and Parklea, at 737 and 197 respectively.

The suburbs with the highest driver car reliance (as a number count) were Baulkham Hills and Castle Hill, at 11,674 and 10,471 respectively. The suburbs with the lowest driver car reliance (as a number count) were Cheltenham and Parklea, at 528 and 128 respectively.

The suburbs with the highest passenger car reliance (as a number count) were Baulkham Hills and Castle Hill, at 994 and 827 respectively. The suburbs with the lowest passenger car reliance (as a number count) were Cheltenham and Parklea, at 41 and 43 respectively.

However as a percentage of the total car reliance one method only trips within the selected suburbs, Glenhaven (94.1%) and Kellyville (92.3%) experienced the highest proportion of car reliance (driver and passenger combined). At the opposite end of the scale, Epping (72%) and Pennant Hills (70.9%) experienced the lowest proportion of car reliance.

As a percentage of the one method only trips within the selected suburbs, Glenhaven (89.6%) and Kellyville (85.7%) experienced the highest proportion of driver car reliance. At the opposite end of the scale, Epping (64.4%) and Pennant Hills (64.8%) experienced the lowest proportion of driver car reliance.

As a percentage of the one method only trips within the selected suburbs, Parklea (21.8%) and Epping (7.6%) experienced the highest proportion of passenger car reliance. At the opposite end of the scale, Cheltenham (5.6%), Glenhaven (4.5%) and Bella Vista (5.6%) experienced the lowest proportion of passenger car reliance.

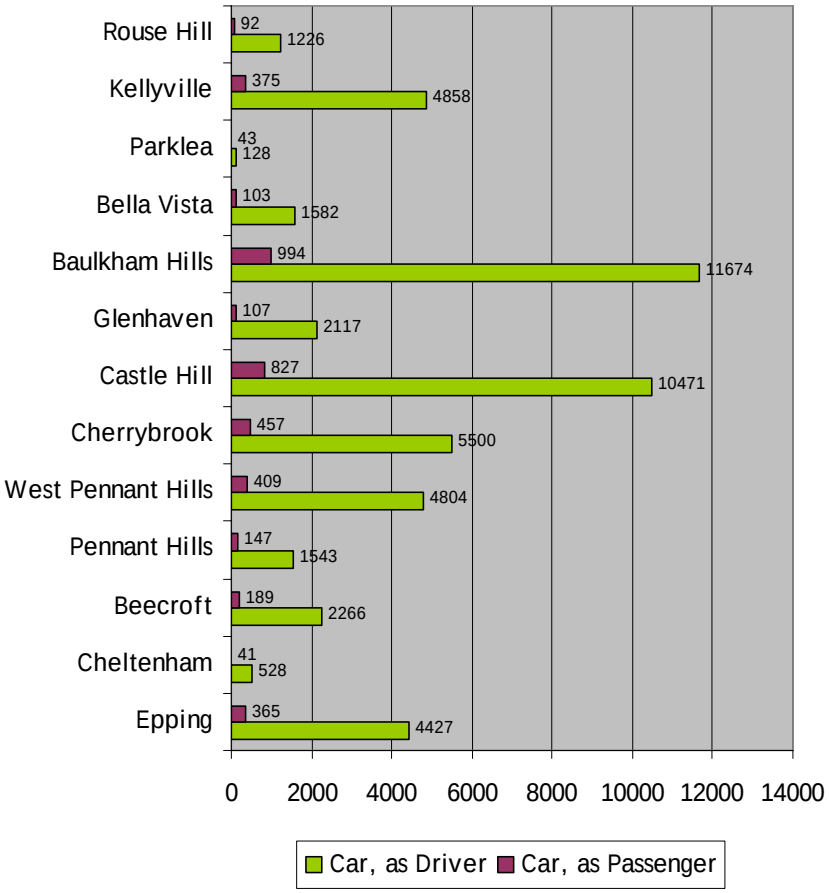

Figure 23: Car Reliance (One method only)

4.7 Total Dwellings

The total number of dwellings within the selected suburbs totals 54,873. This figure has been recorded from the 2001 Census and comprises 3.5% of Sydney's total dwelling number.

Figure 25 reveals the 2001 total dwelling number across affected suburbs. Baulkham Hills and Castle Hill recorded the highest population of the directly affected areas, 11,723 (21.4%) and 10,585 (19.3%) respectively. Parklea and Cheltenham recorded the lowest population of the directly affected areas, 318 (0.6%) and 697 (1.3%) respectively.

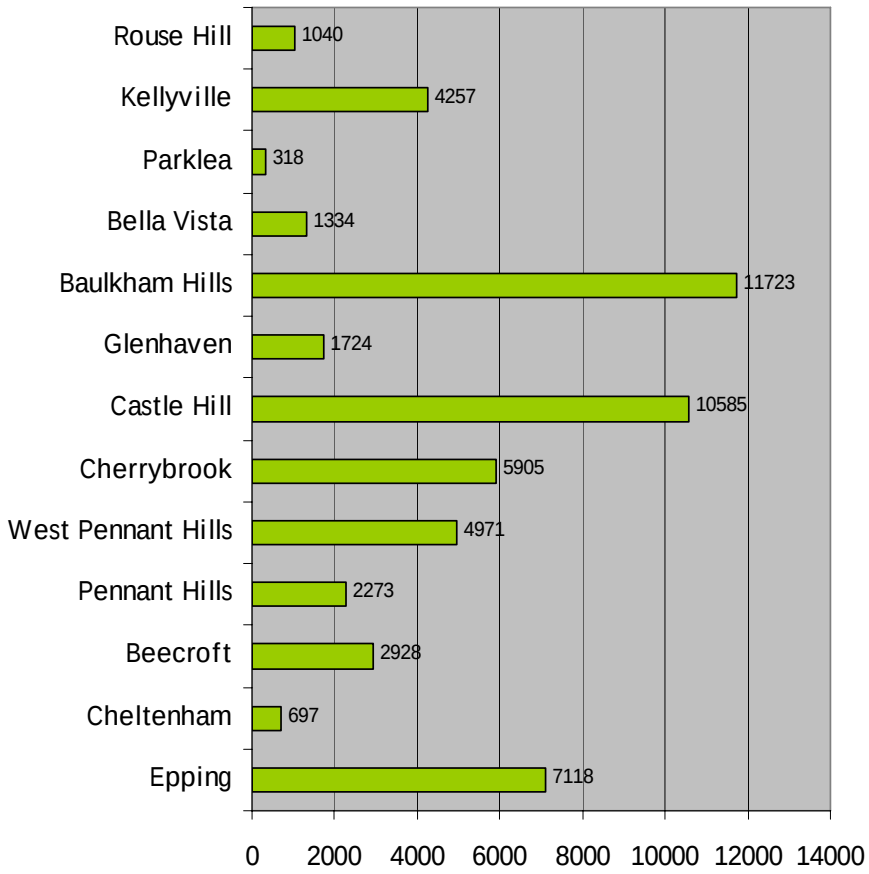

Figure 24: Total Dwellings

4.8 Tenure

46.6% of dwellings in the project area are fully owned, which is greater than the Sydney average of 39%. The total of privately rented dwellings is 7,023 (13.3% of total tenure in subject suburbs), which is less than the Sydney average of 23.6%. The total of public housing dwellings is 249 (0.5% of total tenure in subject suburbs) which is substantially less than the Sydney average of 5.1%.

Figure 26 reveals the 2001 type of tenure across the affected suburbs. The suburbs with the highest fully owned dwellings (as a number count) were Baulkham Hills and Castle Hill, at 5,517 and 4,629 respectively. The suburbs with the lowest tenure as fully owned (as a number count) were Rouse Hill and Parklea, at 177 and 5 respectively.

The suburbs with the highest tenure as privately rented (as a number count) were Baulkham Hills and Epping, at 1,411 and 1,626 respectively. The suburbs with the lowest tenure as privately rented (as a number count) were Cheltenham and Glenhaven, at 49 and 98 respectively.

The suburbs with the highest tenure as public housing (as a number count) were Baulkham Hills and Castle Hill, at 62 and 56 respectively.

Five suburbs recorded no public housing: Cheltenham, Beecroft, Glenhaven, Bella Vista and Kellyville. The suburbs with the lowest tenure other than zero as public housing (as a number count) were Cherrybrook and Rouse Hill, at 7 and 3 respectively.

However, as a percentage of the total tenure within the selected suburbs, Cheltenham (60.7%) and Beecroft (59%) experienced the highest proportion of fully owned dwellings. At the opposite end of the scale, Bella Vista (38.2%) and Parklea (1.5%) experienced the lowest proportion of fully owned dwellings.

As a percentage of the total tenure within the selected suburbs, Epping (24.3%) and Parklea (74.8%) experienced the highest proportion of privately rented dwellings. At the opposite end of the scale, Cheltenham (7.6%) and Glenhaven (5.9%) experienced the lowest proportion of privately rented dwellings.

As a percentage of the total tenure within the selected suburbs, Pennant Hills (2.1%) and Parklea (0.9%) experienced the highest proportion of public housing dwellings. At the opposite end of the scale, Cherrybrook (0.1%) and Rouse Hill (0.3%) experienced the lowest proportion of public housing dwellings (other than those at zero). Five suburbs recorded no public housing: Cheltenham, Beecroft, Glenhaven, Bella Vista and Kellyville, and therefore had a percentage of zero.

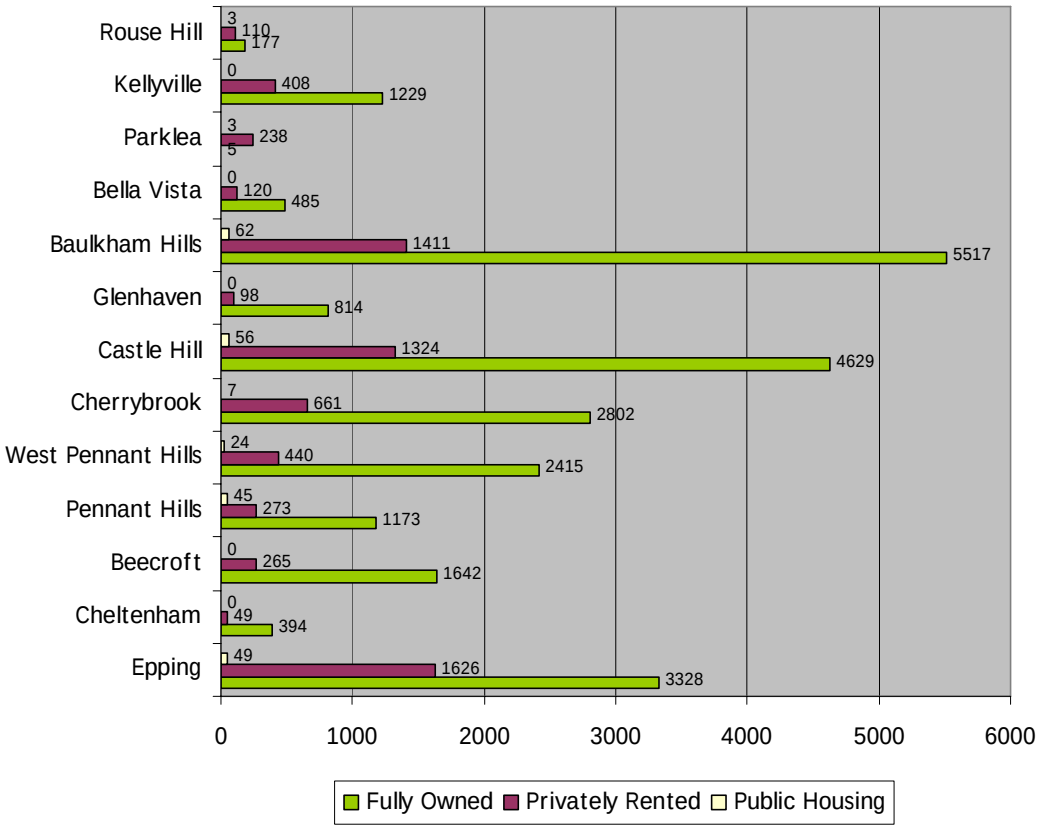

Figure 25: Tenure by suburb

4.9 Household types

The total of household types (only detached, flats and attached) within the subject suburbs is 51,439. The total of detached dwellings is 43,473 (79.2% of total household types in subject suburbs), which is greater than the Sydney average of 58.7%. The total of flat dwellings is 3,357 (6.1% of total household types in subject suburbs), which is less than the Sydney average of 10.5%. Lastly, the total of attached dwellings is 4,609 (8.4% of total household types in subject suburbs) which is less than the Sydney average of 22.2%.

Figure 27 reveals the 2001 household types across the affected suburbs.

The suburbs with the highest detached household type (as a number count) were Baulkham Hills and Castle Hill, at 9,716 and 8,299 respectively. The suburbs with the lowest detached household type (as a number count) were Cheltenham and Parklea, at 629 and 318 respectively.

The suburbs with the highest flat household type (as a number count) were Castle Hill and Epping, at 498 and 1,866 respectively. The suburbs with the lowest flat household type (as a number count) were Cheltenham and Parklea, at 3 and 0 respectively.

The suburbs with the highest attached household type (as a number count) were Baulkham Hills and Castle Hill, at 1,092 and 1,132 respectively. The suburbs with the lowest attached household type (as a number count) were Parklea and Cheltenham, at 0 and 12 respectively.

However, as a percentage of the total household types within the selected suburbs, Parklea (100%), Cheltenham (90.2%) and Kellyville (90.2%) experienced the highest proportion of detached dwellings. At the opposite end of the scale, Epping (60.4%) and Glenhaven (67.2%) experienced the lowest proportion of detached dwellings.

As a percentage of the total tenure within the selected suburbs, Epping (26.2%) and Pennant Hills (8.5%) experienced the highest proportion of flat dwellings. At the opposite end of the scale, Rouse Hill (0.3%) and Cherrybrook (0.1%) experienced the lowest proportion of flat dwellings.

As a percentage of the total tenure within the selected suburbs, Cherrybrook (13.2%) and Bella Vista (17.5%) experienced the highest proportion of attached dwellings. At the opposite end of the scale, Cheltenham (1.7%) and Rouse Hill (2.1%) experienced the lowest proportion of attached dwellings.

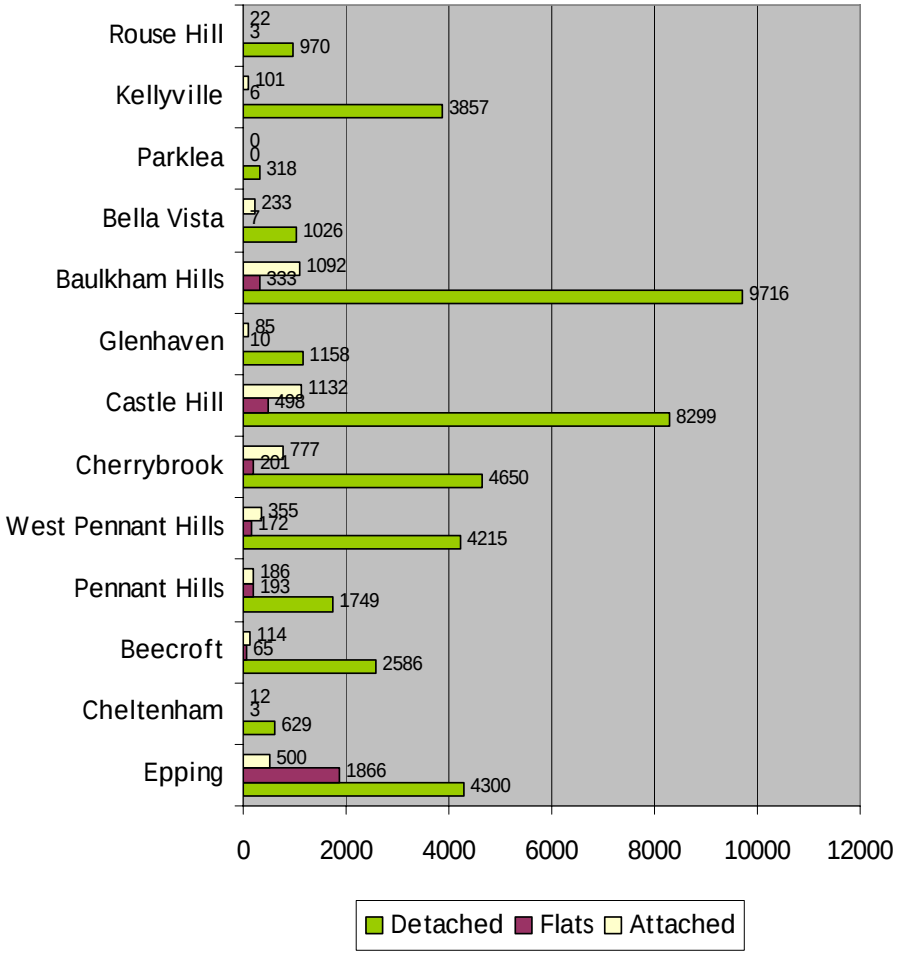

Figure 26: Household types by suburb

4.10 Occupancy rates

The average occupancy rate across the subject suburbs comprised of 2.9. This percentage is greater than the 2.5 which is recorded as the Sydney average.

Figure 28 reveals the 2001 occupancy rates across affected suburbs. The highest occupancy rates were experiences in Glenhaven (3.3) and Bella Vista (3.3). The lowest occupancy rates were experienced in Pennant Hills (2.6) and Epping (2.5). All occupancy rates by suburb are higher or equal to the above mentioned Sydney average of 2.5.

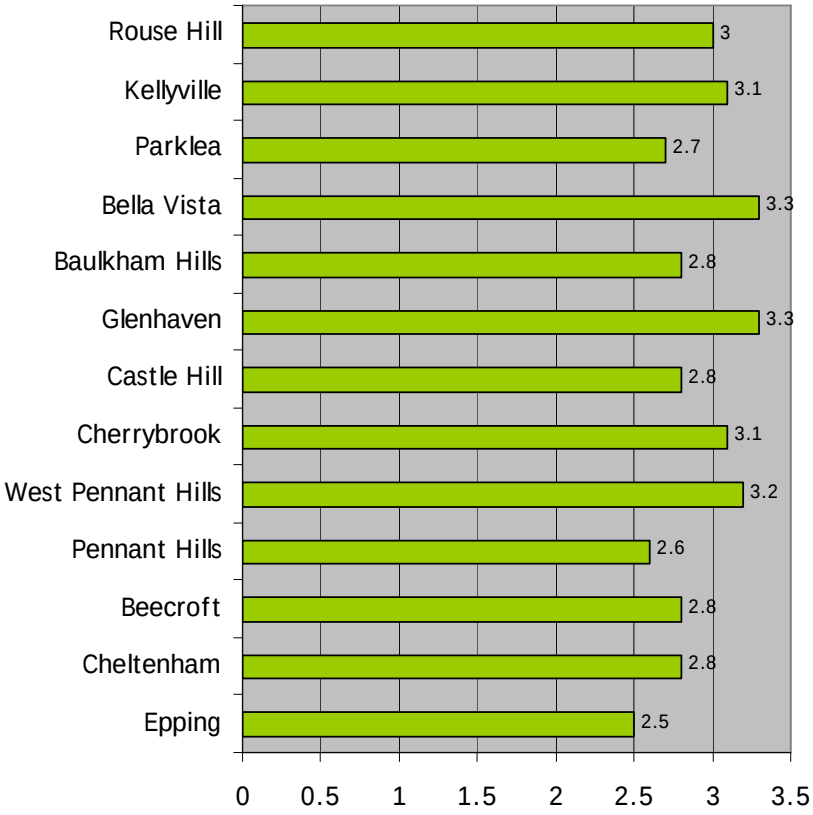

Figure 27: Occupancy rates by suburb

5 SOCIAL IMPACTS-OVERALL PROJECT

Construction of any major piece of public infrastructure has the potential to have a wide range of both positive and negative social impacts. This section analyses the social impacts at a metropolitan level which could potentially occur as a result of the proposal. The potential social impacts of particular interest are:

- Reduced car dependency;
- Reduced public transport journey times;
- Air quality benefits;
- Economic Impacts; and
- Metropolitan Strategy Implementation.

5.1 Reduced journey times and car dependency

The land area of the North (4.5%) and North West (43%) sectors combined are almost half the area of Sydney. Average trip distances per person for the North (37.7 km) and North West (43.8 km) sectors were higher than Sydney (35.6 km).

It has been identified that car travel times from the North West area will increase beyond current levels as demand growth exceeds capacity growth, if the NWRL is not implemented[51]. The NWRL would decrease time taken for patrons to access the rail network by up to 30 minutes and the average access distance to a rail station would decrease by about 50% across the study area, from 12km to 6km[52]. The rail link will also provide rail network congestion relief in the morning peak with transfer of up to 3000 passengers from the Richmond Line and up to 8000 passengers transferring from the Main West Lines.

It is expected that the implementation of the NWRL will also reduce the levels of traffic congestion experienced on roads in the North and North West of Sydney. A reduction in travel times will enhance the quality of life for those traveling to and from this region.

The level of trips undertaken by car was higher in the North (73.5%) and North West (79%) sectors compared to Sydney (69.5%). Those in the North and North West sectors are highly dependant on their cars, with the average commuting trips for the North (17.2 km) and North West (20.7 km) sectors higher than Sydney (15.5 km). The extent of car dependency within the North West is greater than 75%.

51 SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment. P4.

52 Ibid.

Trips undertaken by public transport (bus or train) in the North were equal to Sydney at 10.4%, where the North West experienced a lower result at 7.2%.

In the absence of continued improvements to the public transport system, it can be expected that as new land is released and the population increases, further reliance on cars can be expected, increasing congestion and emissions. As a result of the provision of a direct transport link to and from North West Sydney and the global economic corridor (ie. Macquarie-Lower North Shore-CBD-Airport), a reduction in car dependency is likely.

The NWRL should reduce dependency on cars, and for those that still need to drive (eg to get to a train station) they should in theory not need to drive as far. The patronage study undertaken by Parsons Brinkerhoff, 2005 concluded that with the proposal, the average distances to a rail station in North West Sydney would decrease by approximately 50%, from an average of 12 kilometres to an average of 6 kilometres.

5.2 Public Health

Current strong car dependency within the North and North West sub regions has a significant impact on air quality and, as a result, public health.

The NSW Government's '*Action for Air*', air quality management plan, identified improved public transport and reduced car reliance as being key means to contributing to improved air quality in the Sydney basin. Air quality benefits will arise from the provision of an alternate to private vehicles and consequential reduction in vehicle emissions.

The NWRL will reduce adverse impacts on local and regional air quality, further reducing the health implications of air pollution.

5.3 Economic

NWRL would represent a very significant investment in the NSW and Sydney economies. At the metropolitan level, the construction of the project would have a significant positive impact through the injection of capital investment, creation of direct jobs in the construction and related industries and retention of critical skills in the broader economy. A wide range of economic opportunities will also be created in the local economies along the route which are outlined in the following section.

5.4 Metropolitan Strategy Implementation

In December 2005, the NSW Government released the Metropolitan Strategy *City of Cities – A Plan for Sydney's Future*. The Strategy forecasts that by 2013, there will be approximately 15,000 new dwellings in existing areas in Sydney's north west and by 2031, another

55,000 dwellings in existing areas (that is a total of 70,000 dwellings). This highlights the forecast growth in established urban areas and the need to provide reliable public transport in these areas.

As part of the Strategy, the Government plans to direct new greenfield development to nominated growth centres in north west and south west Sydney. A key requirement for these new greenfield areas would be to provision of access to local jobs, safe and reliable public transport, schools, shops and parks. The North West Growth Centre, located at the northern extent of the proposal will accommodate a further 60,000 new dwellings and over 300 hectares of land for business/employment uses, and a further 250 hectares for industrial uses. This is in addition to development that will occur elsewhere in North West Sydney, such as at Rouse Hill and in the Balmoral Road Release Area.

The Government's intention to implement the proposal is documented in the Strategy.

Relevant actions include:

Centres and corridors strategy

- B4.2 (support centres with transport infrastructure and services) and B4.2.1 (carry out transport planning and align investment in rail and bus corridors to support the concentration of employment in centres):
    - The Strategy notes 'The recent announcement regarding the new rail lines connecting the North West and South West, and across the harbour through the global economic corridor, are all about strengthening the role of centres as locations for economic activity and connecting the labour force with jobs. Workers are more likely to use public transport if their home or job is located with easy reach of public transport.'
- B5 (protect and strengthen the primary role of economic corridors):
    - The Strategy notes: 'In this context the public transport and motorway connections for metropolitan wide travel are fundamental and the Government has three significant projects planned or underway to enhance these:
    - NW-CBD-SW Rail Corridor;
    - Rail Clearways; and
    - Lane Cove Tunnel.'

Transport strategy

- Action D1.1 (extend the rail and bus networks to connect centres) and Action D1.1.1 (plan and, as appropriate, construct the North West-CBD-South West Rail Link):
    - The Strategy notes: 'The new North West-CBD-South West Rail Link, an $8 billion rail extension announced in June

2005, would combine the largest public transport infrastructure projects ever seen in Australia to provide a continuous rail link between Rouse Hill and Castle Hill in the North West, the global economic corridor centre from Macquarie and Chatswood to North Sydney and the Sydney CBD, and Leppington and Campbelltown/Macarthur in the South West'.

Residential and commercial development in North West Sydney will lead to significant increases in population and employment, with associated increases in travel demand. Development in new release areas will dominate growth in this area. It will be accompanied by in-fill development and, particularly in areas of high land values, redevelopment of land to new more intensive uses. Whilst the proposal is mainly required to service established urban areas in North West Sydney, it would also service the transport needs of the future growth areas.

The aims of Metropolitan Strategy forecasts that:

- By 2031, the population of Sydney's North West will be 475,000, three times the 1981 population of 150,000;
- By the same time, Sydney's population will reach 5.35 million;
- 18% of Sydney's anticipated residential growth is expected to occur in the North West;
- From 1981 to 2031, employment is expected to have increased by nearly 200% from approximately 120,000 to 345,000, with substantial growth in centres including Castle Hill and Norwest Business Park.

The proposal also supports other elements of the Strategy by:

- Providing effective public transport to existing development areas in North West Sydney;
- Providing a major public transport link to two regional centres (Rouse Hill and Castle Hill) and a specialised centre at Norwest Business Park;
- Linking North West Sydney to major centres of employment within the 'Global arc' (the area of economic development from Macquarie Park to Botany Bay which contains nearly a quarter of all of Sydney's jobs and half of the region's professional jobs);
- Supporting land releases;
- Providing a link to services (such as health and education); and
- Reducing car dependency and lowering vehicle kilometres travelled.

One of the key potential impacts is expected to be the role the project would play in the implementation of the *Metropolitan Strategy* and the range of positive social development impacts which will stem from the functional future development of the city.

6 POTENTIAL SOCIAL IMPACTS- LOCAL

The potential positive social impacts associated with the project at a metropolitan level are far-reaching. Indeed, at a metropolitan level very few (if any) negative impacts could be identified as being directly attributable to the project.

At a local level however, while positive impacts will be experienced, there is also a potential for the project to create negative social impacts. Given the conceptual nature of the proposal at this stage, the purpose of this SIA is to identify the main potential social impacts. This will allow these to be adequately addressed during the ongoing/future design processes. Accordingly, this methodology has sought to understand those risks which are potentially the most significant to the communities along the route.

As a result of any development, impacts, either positive or negative are created. At a local level, the possible impacts associated with the construction and operation of the proposal is numerous. To allow a better understanding of each of the potential impacts, we have developed five categories as follows:

- Community Identity and Interaction
- Amenity impacts
- Crime and Safety
- Economic
- Impacts of Acquisition
- Community & special social group needs

A description of types of relevant impact, and the impacts found within can be seen below.

6.1 Community Identity and Interaction

At a local level, this group of potential impacts is one of the most critical in understanding how the proposal could change the structure of the community and the manner in which it may respond to the proposal.

- *Social Cohesion.* Social cohesion has a number of definitions, but the over-arching definition is that it is "All that which brings people together"[53]. It is also seen as being the ongoing process of developing a community of shared values, shared challenges and equal opportunities based on a sense of trust, hope and reciprocity.

53 European New Towns Platform (http://www.newtowns.net/newtowns/themesmap/socialcohesian)

- *Severance.* Severance refers to the extent to which the proposal or related activities (during construction or operation) has the potential to physically divide a community. That is, this impact focuses on identifying those project elements which could reduce the level of integration within a community based largely on the physical nature of the infrastructure.
- *Community Identity.* Community identity refers to a condition where the community has a distinctive identity. This identity is often developed as a result of evolution based on those characteristics of the community which contribute to its distinctiveness from other communities. Major infrastructure (such as a railway station) can promote community identity as it can be a meeting place and a focal point for activity. Similarly however, it can have negative impacts on identity as the character of the place changes due to differences in community structures and behaviours.
- *Social Interaction*. Social interaction refers generally to the extent to which individual or group actions promote a high level of interaction. Social interactions associated with a project of this nature are likely to fall into the following types:
    - *Deliberate*: This may take the form of opposition to, or support for, the project or certain project elements. Deliberate interaction is most likely to occur in the lead up to the project and during project construction phase. For example, resident action groups or certain stakeholders in the community who hold a certain view are likely to interact with each other (both positively and negatively) in response to the proposal.
    - *Accidental:* Accidental social interaction is likely to be generated and promoted – especially during the operation phase of the project – and includes the interaction experienced by "bumping into" people, be it neighbour, colleague or friend.
    - *Common*: This is the interaction which we experience simply living in a community and refers to the relationships which develop between individuals within the community who, for whatever reason, commonly see and interact with each other. Examples include a shop-keeper or other person who spends significant time in a community.
- *Community Assets.* Related to the above elements is the role of community assets in promoting cohesion and interaction among community members. Community assets such as public buildings, sport facilities and open space areas will be affected by the proposal. Some of the key community assets along the route which could be affected include:
    - Cheltenham railway station and carpark;
    - Beecroft Scout hall, tennis courts and Village Green;

- Beecroft Primary School;
- Castle Hill Showground, the Hills Centre and Baulkham Hills Shire Council administration centre;
- Open space and trunk drainage areas;
- Proposed facilities at the Rouse Hill regional centre.

The extent to which these assets are detrimentally affected by the project (either directly or indirectly) will determine the likely social impacts caused. Similarly, the impact recommended mitigation measures adopted to manage the impacts will also be important considerations, including the potential for new open space and improved connectivity.

- *Uncertainty*. The feeling of uncertainty is well known. In short it is the feeling of doubt or insecurity driven by not knowing what the result of an action may be. In relation to the project, the concept of uncertainty will be common, and in particular during this conceptual phase where a number of variables exist. For example, at present, some developers in the locality around the station are uncertain as to whether to develop now or later, families are uncertain as to extent of impacts, businesses are uncertain about future markets and access arrangements etc.

6.2 Amenity impacts

Amenity impacts will be created both during construction and operational project phases. For the purposes of this SIA, the following *contributory elements* have been identified as being those which are most likely to create impacts on the existing levels of amenity in the localities along the proposed route.

- *Loss of Flora and Fauna*: Along the proposed project corridor, the role of vegetation and animal habitat contributes significantly to the level of residential amenity. In addition to visual impacts, from a social perspective, flora and fauna also plays an important role in providing a respite from the urban form. Therefore, loss of vegetation as a result of the project may contribute to a reduction in this amenity. Although most of the project is in a tunnel, vegetation will be lost between Epping and Beecroft, at some of the stations (eg. Franklin Road and Burns Road), and along the viaduct between Burns Road and Rouse Hill.
- *Noise and Vibration:* Noise and vibration created during both the construction and operational phases may create impacts on residential amenity unless appropriate design and mitigation measures are adopted. Key elements likely to be associated with this project include:
  - Construction noise (machinery, excavation, tunnelling etc)
  - Operational noise
  - Ground borne noise

- Operational vibration

- *Operational Traffic, Parking, and "rat-running".* This is likely to be a major contributor to both negative and positive impacts on the amenity along the project corridor. The variables are numerous in terms of how this element will affect different parts of the corridor in different ways. Some of the key examples will include:
  - Overall reduction in vehicular traffic along the corridor, especially during the peak periods;
  - Reductions in "rat-running" through neighbourhood streets in some areas and increases in other areas;
  - Some increased congestion of local roads around new stations with Park & Ride facilities;
  - Reduced parking around existing railway stations along the Northern Line and balanced elsewhere by probable increased parking impacts around new stations
- *Construction Traffic and Spoil Management.* Spoil is a critical element of any major tunnelling project. Most spoil would be generated by the tunnel boring machines making the main tunnels and the associated station boxes. This spoil would be removed from the main work site at Balmoral Road. The remainder of the spoil would be associated with site preparation activities, excavation of access shafts, dive structures, cut and cover tunnels and would be removed by truck directly from the respective work sites[54]
- *Visual Impacts.* Visual impacts can have very significant impacts upon the amenity of an area as a result of a changed landscape and introduced structures associated with the project. The main areas potentially affected by visual impacts are:
  - the surface sections of the project from Epping to Beecroft (including a new bridge over the M2 Motorway);
  - the interface area at Beecroft;
  - the main construction site at Balmoral Road;
  - the cut and cover section of tunnel; and
  - the viaduct section of the railway line to Rouse Hill.

6.3 Crime and Safety

Wherever urban form changes occur, potential exists for the crime and safety environment of the locality to be altered in some way. It is not considered that the introduction of the NWRL would, in itself, have the potential to create crime and safety impacts. Notwithstanding this, it is likely that it will lead to changes in the urban form around the new

54 GHD. August 2006. North West Rail Link Environmental Assessment (Spoil Management report) P.6

railway stations. Some of the relevant considerations are outlined here to provide some guidance to the detailed design stages of the project.

Crime Prevention Through Urban Design (CEPTED) includes a set of principles used by proponents and approval agencies to assist in guiding changes to urban form. The generic issues which can relate to any setting in an urban design context include[55]:

- Lighting;
- Natural surveillance and sightlines;
- Signage;
- Building design;
- Land use mix;
- Landscaping;
- Spaces safe from entrapment; and
- Management and maintenance.

Most of these issues would apply to urban design considerations during the detailed design stages of the project.

6.4 Economic

Any major project of this nature has the potential to have significant local economic impacts. Some of the main economic impacts which can be expected to be associated with the project include:

- *Employment*: Employment would be generated during the construction phase of the project. Such employment is likely to draw people from around the Sydney metropolitan area and range from highly skilled to unskilled. In addition to the construction phase, the project – in association with development around the stations and a general increase in local economic activity – would also lead to long-term local employment opportunities in either new or existing retail, industrial and commercial areas.
- *Local Business impacts*: The project would have the potential to create both positive and negative impacts on local businesses including:
    - Potential short term negative impacts due to construction impacts and potential long-term impacts if the project resulted in changes to travel arrangement and urban form;
    - Potential benefits from increased activity around station precincts both during construction and operation;

[55] Crime Prevention and Urban Design Resource Manual, ACT Government. P11

- Improved ability to obtain and retain a workforce with the appropriate skills (which may not be available in the local community) as a result of improved inter-connectivity with the metropolitan labour market

- *Household Finances*: Household finances could be affected by the project in a number of ways including:
  - Reduced travel costs; and
  - Changes due to employment opportunity improvements, both locally and regionally.

6.5 Community & Special Social Group needs

Services and facilities for special social groups may be impacted by the project. The social groups include:

- Disabled
- People from a non-English speaking background (NESB)
- Children and young people
- Indigenous peoples
- The aged.

Examples of how these groups can be impacted includes

- *Access and Mobility*: special social groups in the community often have particular needs in relation to access, vehicle use and public transport use. These needs are generally addressed by contemporary building standards embraced in the Building Code of Australia, Australian Standards and Development Control Plans.
- *Health:* Community health, including for special groups has the potential to be impacted by a project of this scale. At a broad level, reduced air pollution and increased road safety as a result of reduced car reliance, augmented by an improvement in access to high level medical facilities elsewhere in the metropolitan area has the potential to increase health levels.
- *Other community services:* Other community services include:
  - Child Care
  - Services such as meals on wheels
  - Aged care
  - Libraries
  - Schools

6.6 Impacts of Acquisition

The construction of the North West Rail Link requires the acquisition of land along the route.

The land would be acquired under the terms of the *Land Acquisition (Just Terms Compensation) Act 1991*. Section 55 of the act allows for the following matters to be considered in determining the amount of compensation to which a person in entitled:

(a) "the market value of the land on the date of its acquisition,

(b) any special value of the land to the person on the date of its acquisition,

(c) any loss attributable to severance,

(d) any loss attributable to disturbance,

(e) solatium"

Despite the above mitigative measures, compulsory acquisition of property can potentially create the following social impacts:

Table 5: Social Impact associated with acquisition

Residential	Commercial/ Employment	Rural	Industrial
• Anxiety • Amenity • Financial Distress • Isolation • Severance from community	• Financial concerns • Relocation costs • Locating suitable alternative accommodation • Staff anxiety • Operational difficulties • Market impacts	• Loss of agricultural land and production • Relocation costs • Locating suitable alternative accommodation	• Financial concerns • Relocation costs • Locating suitable alternative accommodation • Staff anxiety • Operational difficulties • Market impacts

7 IMPACT ASSESSMENT

The following assessment has been framed around categorising each key impact into positive, negative and neutral impacts. Where a site is found to potentially have a negative or positive impact, these impacts are discussed in more detail. Where neutral/nil impacts have been identified, no additional assessment has been undertaken.

7.1 Epping – Beecroft

7.1.1 Construction

A summary of potential impacts generated from construction in the Epping - Beecroft area are included in the below table.

Table 6: Summary of potential impacts

Negative	Neutral/Nil	Positive
Community Identity & Interaction	Community & special group needs	Community Identity & Interaction
Amenity Impacts	Acquisition impacts	Economic
Economic		

Community Identity and Interaction

Construction activities associated with the quadruplication of the Northern Line from Epping to Beecroft has the potential to have both *positive* and *negative* impacts on the local identity and level of social interaction.

The potential *negative* impacts include:

- The community developed around the Northern Line corridor during last century. Notwithstanding this, the level of physical *severance* has the potential to increase in this locality due to the access restrictions across the corridor associated with the Cheltenham Road bridge works;
- *Uncertainty* amongst the community has the potential to lead to anxiety and concern about project details, design and construction if this information is not adequately communicated;
- *Social interaction* has the potential to be reduced during the construction phase as a result of the scale of works and site disturbances etc including the reconstruction of the Cheltenham Road bridge etc;
- *Community Assets* have the potential to be compromised as a result of the construction program. The notable element here is the commuter car park at Cheltenham railway station which would be directly affected as part of the project. In addition to this direct impact, some elements of use at the Cheltenham Bowling

and Recreation Club and Cheltenham Girls High School can also be expected to be indirectly affected as a result of construction activities.

The potential *positive* impacts include:

- *Social interaction* and *social cohesion* has the potential to be promoted through activities associated with the project. This community was particularly vocal in the lead up to the construction of the M2 Motorway and it is likely that community interest in elements of the proposed project may also lead to community activities and interaction either in support or against the proposal.

Amenity Impacts

Amenity along the surface route of the quadruplification has the potential to be only negatively affected during the construction phase. The potential negative impacts on amenity along the route include:

- *Flora and fauna:* The surface works in this locality has the potential to result in the loss of vegetation. This area has varied vegetation including a high proportion of invasion by exotic species as well as some areas of remnant native communities with intact native understorey[56]. Although this loss has the potential to be restricted to within the rail corridor, this vegetation does contribute to the amenity of the localities along the route by adding to the natural character and by providing visual screening of the rail corridor and services.
- *Noise and Vibration:* Construction works in this part of the route has the potential to include vegetation removal, bulk excavation, construction of retaining wall, bridge construction (over the M2) and management of the existing Northern Line traffic. Noise and vibration mitigation measures are further described in a Noise and Vibration Technical Report.
- *Traffic and Parking:* Traffic and parking impacts during the construction phase has the potential to have negative impacts on the amenity of the locality. The primary impacts to be managed are expected to include:
    - *Construction Traffic*: Based on the worst case, the heavy vehicle traffic generation during the weekday periods is in the order of 74 vehicle trips per day[57]
    - *Parking*: Parking arrangements at Cheltenham Station has the potential to be affected during the construction phase. The existing commuter car park would be physically affected by the proposal and would not be available for

56 GHD. August 2006. North West Rail Link Environmental Assessment (Ecological Assessment) P.12

57 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking & Access) P.46

use. The result is that some increases in street parking by commuters may occur. Up to 50 vehicles associated with construction workers are likely to park on The Crescent between Beecroft Road and Cheltenham Road for the duration of works due to lack of space on-site and the availability of street parking.[58]

Notwithstanding this, should the project proceed, it would be necessary to implement a range of measures (especially traffic management measures) to ensure that a neutral/nil impact is achieved. An example of such measures includes the upgrading of the intersection of Beecroft Road and The Crescent to signals (recommended by The Traffic, Transport, Parking & Access prepared as part of this Environmental Assessment) as this would divert construction traffic away from the residential area and Cheltenham Girls High School with associated amenity and safety benefits.

- *Visual Impacts*: Construction related visual impacts has the potential to include c*onstruction area impacts* including the impacts of machinery, temporary stockpiles and work area facilities etc. Importantly, the construction phase of the project would also see the introduction of permanent changes to the area within the rail corridor. These permanent changes are addressed in *Operational Impacts* in the following section.

Economic

While the construction phase would have a positive impact on employment opportunities, it is not considered that this would have a significant direct impact on the immediate locality and that these benefits are most likely to accrue at a metropolitan level.

Potential exists for *positive* local business impacts as a result of increased demand for the daily needs of the construction workforce including food and services etc.

Acquisition Impacts

It is understood that the proposal does not involve any acquisition of private land holdings in this location.

Community & special group needs

The construction phase would need to be managed to ensure that the needs of community and special groups would not be affected.

58 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking & Access) P.47

7.1.2 Operation

The section of the project from Epping to Beecroft has the potential to experience some significant construction related impacts. Although a number of positive benefits have the potential to accrue during operation, this area would not benefit as directly as areas further to the North West because it is already located on the Northern Line. Accordingly, while this section has the potential to experience operational benefits, these benefits are likely to be more modest than those experienced elsewhere along the corridor. Notwithstanding this however, the project involves an upgrading of Cheltenham Station which would provide benefits to rail users.

A summary of potential impacts generated from operation in the Epping - Beecroft area are included in the below table.

Table 7: Summary of potential impacts

Negative	Neutral	Positive
Amenity Impacts	Acquisition impacts	Community Identity & Interaction
Economic		Amenity Impacts
		Community & special group needs

Community Identity and Interaction

While some negative impacts during the construction phase can be expected, community identity and interaction would experience mainly *positive* impacts once construction is complete and the amplified rail corridor becomes operational. These impacts can be summarised as follows:

- Improvements to Cheltenham Railway Station. The station has the potential to become an "easy-access" station which would comply with Australian Standards for access. This would allow improved access for the aged and those who have a physical disability.
- Removal of uncertainty. Until the proposal is completed, there would be a degree of uncertainty as to how the work may affect the amenity and character of the area, potentially leading to a level of concern and perhaps anxiety. This uncertainty would be removed once the project is complete and operating.

Amenity Impacts

Amenity impacts during the operational phase have the potential to be both positive and negative.

The potential *positive* impacts include:

- *Noise and Vibration:* the Northern Line, as the main railway out of Sydney to the north is used heavily by both electric passenger trains and diesel freight and passenger services. Noise mitigation measures along this section of the railway have the potential to substantially reduce noise levels.
- *Traffic and parking:* Cheltenham Station, as well as other stations along the Northern Line is currently used by people who live in the North West to access the city. As a result, the local streets around the station experience high levels of parking during the week. Although the existing commuter car park is to be removed, once the new railway line is operational, potential exists for the level of parking in the local streets to reduce as people would no longer need to drive to Cheltenham (and other stations). Apart from local benefits, this has the potential to provide direct benefits to communities located along the rail corridor due to reduced peak hour traffic flows in these areas.

The potential *negative* impacts include:

- *Noise and Vibration*: The operating rail line, including the movement of freight, has the potential to result in substantial noise impacts.
- *Visual impacts*: The project would result in significant changes to the locality and would have the potential to create visual impacts as a result of the structures including:
    - A redeveloped Cheltenham Station;
    - Retaining walls;
    - Noise walls;
    - Overhead cabling and staunchions;
    - The rail bridge over the M2; and
    - Changes to the bridge over the Northern Line at Cheltenham Road.

Economic

Overall economic impacts during the operational phase have the potential to be neutral or negative.

It is unlikely that the project, once operational, would accrue significant economic benefits to the local community in this section of the project. Because the community is already located close to the Northern Line and the NWRL would not stop at Cheltenham, the benefits which normally occur as a result of increased public transport services would not be realised.

Acquisition Impacts

It is understood that the proposal does not involve any acquisition of private land holdings in this location.

Community & special group needs

Once constructed and operational, the access to the railway station has the potential to be significantly improved. As a result, the aged and persons with a disability has the potential to more easily gain access to trains.

In addition to improved access to the rail service, this section of the project corridor has the potential to share the benefits of reduced pollution stemming from reduced vehicle reliance which the project aims to achieve.

7.2 Beecroft Interface

The "interface" between the Northern Line and the NWRL is proposed to occur on the northern side of The Crescent close to the existing Scout/Guides hall and lawn tennis courts.

The NWRL Consultation Report (March-June 2002) identified potential impacts relevant to Beecroft including:

- There was a general view expressed that while Beecroft would be impacted by the NWRL, local residents would not benefit directly from it and would if anything be adversely affected.[59]
- Tunnel entry – lack of detail made it difficult to precisely locate the tunnel entrance and there was concern that it would impact adversely on the *Beecroft Village Green* and be located beneath *Beecroft primary school* – this was considered to be unacceptable[60]
- Fear that local shopping precincts in and around Beecroft would be adversely impacted because of the need to introduce new and restrictive parking provisions should the rail link proceed. Streets near stations would suffer due to commuters parking in them – this is a reality with the M2 Expressway[61]
- Beecroft would no longer have a 'village feel' and noise and vibration may affect nearby residents.

7.2.1 Construction

A summary of potential impacts generated from construction in the Beecroft Interface area are shown in the below table.

Table 8: Summary of potential impacts

Negative	Neutral	Positive
Community Identity & Interaction (community assets, uncertainty)	Community & specia social group needs	Community Identity & Interaction (cohesion)

59 Quay Connection. March-June 2002. NWRL Consultation Report. P7.

60 Ibid.

61 Quay Connection. March-June 2002. NWRL Consultation Report. P7.

Negative	Neutral	Positive
Amenity Impacts (Flora & Fauna, Noise & Vibration, Traffic & Parking, visual impacts)	Impacts of acquisition	Economic (Local Business impacts)

Community Identity and Interaction

Construction activities associated with the interface works between the NWRL and the Northern Line at Beecroft have the potential to have both *positive* and *negative* impacts on the local identity and level of social interaction.

The potential *negative* impacts include:

- *Community Assets* have the potential to be compromised as a result of the construction program. The three notable elements here are:
    - The *Scout and Guides Hall* located between The Crescent and the rail corridor is proposed to be demolished. The Scout Hall is an important community asset which is used by Scouts and Guides. The Beecroft Scouts have close connections with the Rotary Club and the two organisations work closely together on community projects;
    - The lawn tennis courts. Although the proposal does not impact directly on the tennis courts, some impacts during the construction phase of the project can be expected. These are likely to be related to *amenity* impacts (discussed below);
    - The *Village Green*. The *Village Green* may be used as a temporary construction site. The extent of this requirement will be subject to further detailed design.
    - *Beecroft Primary School*. The proposed tunnel would run beneath Beecroft Primary School located on the corner of Beecroft Road and Copeland Road.
- *Uncertainty* amongst the community has the potential to lead to anxiety and concern about project details, design and construction, particularly in relation to the way the proposal may impact on day to day lives, the character of the area and valued community assets.

The potential *positive* impacts have the potential to be restricted to *Social interaction* and *social cohesion* promoted through activities associated with the project. It is likely that interest in proposal may also lead to community activities either in support or against the proposal.

Amenity Impacts

- *Flora and fauna:* The works in this locality has the potential to result in the loss of vegetation, however this loss is expected to be restricted to within the rail corridor and around the Scout hall. The vegetation in this part of the corridor was found to be in a disturbed area with access paths and a small amount of weed invasion by species such as Lantana (Lantana camara), Common Olive and Asparagus sp. Despite this, the vegetation does contribute to the amenity of the localities along the route by adding to the natural character and by providing visual screening of the rail corridor and services.
- *Noise and Vibration:* Construction works around the Beecroft interface would include vegetation removal, bulk excavation, construction of the tunnel portal (within the rail corridor), and construction of retaining walls and management of the existing Northern Line traffic. Noise and vibration mitigation measures are further described in a Noise and Vibration Technical Report.
- *Traffic and Parking:* Traffic and parking impacts during the construction phase has the potential to have negative impacts on the amenity of the locality. The primary impacts to be managed are expected include:
    - *Construction Traffic*: Based on the worst case, the heavy vehicle traffic generation during the weekday periods is in the order of 74 vehicle trips per day[62]. Potentially the upgrading of the Beecroft Road/The Crescent intersection to signals (or other traffic control measures) would allow these heavy vehicles to access Beecroft Road in a way which would reduce the need to drive through residential areas.
    - *Parking*: Up to 50 vehicles associated with construction workers has the potential to park on The Crescent between Beecroft Road and Cheltenham Road for the duration of works due to lack of space on-site and the availability of street parking.[63]
- *Visual Impacts*: Construction related visual impacts has the potential to include *construction area impacts* including the impacts of machinery, temporary stockpiles and work area facilities etc. Importantly, the construction phase of the project would also see the introduction of permanent changes to the area within the rail corridor. Detailed design of the interface and the way in which it minimizes impacts on the key views and vistas would be a key element of the future design process.

62 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking & Access) P.46

63 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking & Access) P.47

Economic

Potential exists for *positive* local business impacts as a result of increased demand for the daily needs of the construction workforce including food and services etc in the Beecroft Village.

Impacts of Acquisition

No private property would be acquired in this locality as a result of the project.

Community & Special Social Group needs

The construction phase would need to be managed to ensure that the needs of community and special groups would not be affected. Central here would be the relocation of the Scout hall.

7.2.2 Operation

A summary of potential impacts generated from operation in the Beecroft Interface area are included in the below table.

Table 9: Summary of potential impacts

Negative	Neutral	Positive
Community Identity & Interaction (Community Assets)	Economic	Amenity (Traffic & Parking)
Amenity (Noise & vibration, visual)	Impacts of Acquisition	Community & Special Social Group needs
Economic		

Community Identity and Interaction

The only potential *Community Identity & Interaction* impact during the operational phase has the potential to relate to the need to relocate the Scout Hall.

Amenity Impacts

Amenity impacts during the operational phase in the vicinity of the Beecroft interface have the potential to be both positive and negative.

The key potential *positive* impact has the potential to relate to *traffic and parking.* Beecroft and Cheltenham Stations, as well as other stations along the Northern Line are currently used by people who live in the North West to access the city. As a result, the local streets around the station experience high levels of parking during the week. Although the existing commuter car park at Cheltenham is to be removed, once the new railway line is operational, potential exists for the level of parking in the local streets to reduce as people would no

longer need to drive to Cheltenham, Beecroft and other stations. Apart from local benefits, this would also provide direct benefits to communities located along the rail corridor due to reduced peak hour traffic flows in these areas.

The potential *negative* amenity impacts include:

- *Noise and Vibration*: The operating rail line has the potential to create noise and vibration impacts in the locality in the absence of suitable mitigation measures.
- *Visual impacts*: The project has the potential to result in significant changes to the locality and would have the potential to create visual impacts as a result of the structures including:
    - Wider rail corridor – closer to key view points including the Village Green, The Crescent and Beecroft Road;
    - Interface works including the tunnel portal;
    - Retaining walls;
    - Noise walls; and
    - Overhead cabling and stanchions.

Economic

Economic impacts during the operational phase are expected to be neutral.

Because the community is already located close to the Northern Line and the NWRL would provide no additional rail services, the benefits which normally occur as a result of increased public transport services would not be realised.

Acquisition Impacts

It is understood that the proposal does not involve any acquisition of private land holdings in this locality.

Community & Special Social Group needs

Beecroft Station is not an "easy access" station and therefore does not meet Australian Standards for access by persons with a disability and the aged. Because Cheltenham Station would become an "easy-access" station (and is also a short distance from the "interface" area), residents with special access requirements who live in the locality would be able to access rail services along the Northern Line.

7.3 Franklin Road Station

Franklin Road station would be the first new station on the NWRL. The introduction of a new railway station into a community has the potential to have significant impacts on the community identity and dynamic. Most of these impacts however would be experienced during the operational phase of the project.

The new railway station has the potential to form the catalyst for a new urban form in the immediate vicinity which in turn has the potential to make significant changes to social interaction and the provision of goods and services in the locality. Although Hornsby Council[64] would prefer that the associated development be of the scale of a "Neighbourhood Centre" as identified in the Metropolitan Strategy which would comprise only 2-5 shops for day to day needs of the local community, it is possible that the development around the station would be larger than this. This would depend on the zoning of the land and future changes to planning controls.

The NWRL Consultation Report (March-June 2002) prepared by Quay Connection, identifies raised issues in focus-groups and workshops. Identified impacts relevant to Franklin Road Station include:

- Franklin Road Station was considered to be an unsuitable location due to traffic congestion, its location on a blind corner of Castle Hill Road, lack of safety for pedestrians, likely to offer poor parking provisions for rail users[65].
- Franklin Road Station was cited as requiring particular attention given that most people using the station would drive or use public transport to access to it. In this respect, planning for this station was seen to require careful consideration of parking facilities and suitable provision made for "kiss and ride" facilities.
- There was also general concern that the station would result in increased traffic volumes in and around the area and that appropriate measures needed to be put into place to mitigate against such impacts. There were also concerns about pedestrian safety given the proximity of the station to a number of local schools.[66]

It is considered that the most significant changes would be attributable to changes in the built and social form in and around the Franklin Road area, rather than the station itself. This assessment focuses on the station impacts as the current concept proposal does not account for future urban development changes.

7.3.1 Construction

Franklin Road station has the potential to be a substantial structure located under-ground with associated access and car parking. The construction technique for the NWRL however means that the station would be "mined" (with road-headers) from the tunnel rather than from the surface. That is, once the tunnel boring machine (TBM) has made the main tunnel, other machinery can then make the "station box" completely underground, without the need to have substantial

64 Meeting BCS & Hornsby Council 21st July 2006

65 Quay Connection. March-June 2002. NWRL Consultation Report. P7.

66 Ibid. P19.

impacts on the surface. Clearly however, there is the potential for surface impacts which would need to be managed.

This section seeks to identify the key issues to be managed.

A summary of potential impacts generated from construction in the Franklin Road Station area are included in the below table.

Table 10: Summary of potential impacts

Negative	Neutral	Positive
Community Identity & Interaction (uncertainty)	Community & Special Social Group needs	Community Identity and Interaction (Interaction & Cohesion)
Amenity (Flora & fauna, noise & vibration, traffic/parking, visual impacts)	Impacts of Acquisition	
Economic		

Community Identity and Interaction

While the operational changes have the potential to be marked (as a result of changes to the community dynamic in the locality and potential for future built form changes), the actual construction works associated with the Franklin Road Station are likely to have only limited impacts in terms of community identity and interaction.

As with other areas along the proposed corridor, the potential *positive* impacts are likely to be restricted to s*ocial interaction* and *social cohesion* promoted through activities associated with the project. It is likely that interest in the proposal may also lead to community activities either in support or against the proposal.

Uncertainty amongst the community has the potential to be the key *negative* impact. This, in turn, has the potential to lead to community and individual anxiety and concern about project details, design and construction, particularly in relation to the way the proposal may impact on day to day lives, the character of the area and valued community assets, if the information is not adequately communicated.

Amenity Impacts

It is unlikely that any *positive* amenity benefits would be created during the construction phase of the project. Notwithstanding this, the impacts which are likely to be created would not need to extend beyond the construction time-frame and during the operational phase would be replaced by a wide range of positive impacts.

The key impacts that have the potential to be experienced are flora and fauna, noise and vibration, traffic/parking, visual impacts).

- *Flora and fauna:* The works in this locality have the potential to result in the loss of vegetation to allow the construction of the railway station. A stand of Blue Gum High Forest is located in the vicinity of the proposed station. Although this station would be an underground station, the construction zone and access area would occur within a remnant stand of this community. The Ecological Assessment completed as part of this Environmental Assessment[67] found that this stand was considered to be highly degraded with very little understorey or groundcover remaining, a high level of weed invasion and the dominant canopy trees were not those characteristic of this community. The Ecological Assessment also found that the extent of the footprint of this construction zone has not been finalised and therefore the direct impact on this community cannot be determined.
- *Noise and Vibration:* Construction works would be largely underground. The tunnel is expected to be approximately 30 metres deep in this locality.
- *Traffic and Parking:* Traffic and parking impacts during the construction phase has the potential to have negative impacts on the amenity of the locality. The primary impacts to be managed are expected include:
    - *Construction Traffic*: The site is located on Castle Hill Road and has the potential to be the major route for construction traffic. The heavy vehicle generation of the site is expected to be in the order of 43 heavy vehicles per day resulting in a worst case of 86 heavy vehicle movements[68].

      Further investigation is required to resolve site access arrangements for the construction period. The two options identified include:

        1. Access to the site from west side of Franklin Road. This route would have the potential to impact on the existing residential area and also on the Tangara and Inala schools; or
        2. Provide direct signalised access from Castle Hill Road into the site, potentially at the intersection with Glenhope Road. This option would also have the potential to create construction traffic impacts.

    - *Parking*: Parking arrangements have the potential to be affected during the construction phase. Up to 50 cars associated with construction workers are expected to arrive and depart the site each day. The Traffic, Transport, Parking and Access report[69]expects that construction

67 GHD. August 2006. North West Rail Link Environmental Assessment (Ecological Assessment) PP.44-5

68 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P.51

69 Ibid. P.52

workers would park on surrounding local streets for the duration of the works due to a lack of space on-site and availability of street parking in the vicinity.

- *Visual Impacts*: Construction related visual impacts has the potential to include c*onstruction area impacts* including the impacts of machinery, temporary stockpiles and work area facilities etc.

Economic

Potential economic impacts are mixed. While employment opportunities have the potential to accrue to the local population, overall economic benefits has the potential to be limited during the construction phase to positive business impacts as a result of increased demand for the daily needs of the construction workforce including food and services etc in the Cherrybrook neighbourhood shopping centre.

Impacts of Acquisition

It is understood that the Crown presently owns sufficient land in the locality to accommodate the railway station itself. It is also understood that some additional acquisitions are proposed. Any acquisitions would be completed in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991.*

7.3.2 Operation

A summary of potential impacts generated from operation in the Franklin Road Station area are included in the below table.

Table 11: Summary of potential impacts

Negative	Neutral	Positive
Amenity (Flora & fauna, traffic/parking, visual impacts)	Impacts of Acquisition	Community Identity and Interaction (Social Interaction & Cohesion, community identity)
		Community & Special Social Group needs
		Economic

Community Identity and Interaction

These impacts has the potential to be both *positive* and *negative*. The *positive* impacts are likely to include:

- *Social Interaction and Cohesion*: The new railway station has the potential to form the catalyst for a new built form. Both the station and this new built form have the potential to impact on the level and type of interaction within the community. The

presence of a railway station and associated transport infrastructure has the potential to result in the area developing into a dynamic place where people interact. Over time, this has the potential to generate increased social capital in the area as people interact with other community members on a regular basis.

- *Community Identity*: Franklin Road would develop its own strong community identity and sense of place with the introduction of the railway station. People within the community would view this differently with some seeing it as a negative impact and others viewing it as a positive impact.

Amenity Impacts

The potential amenity impacts during the construction phase include:

- *Traffic and parking.* At present, a large proportion of people who live in the North West access the city by driving to Pennant Hills, Thornleigh or Beecroft stations on the Northern Line. Once the NWRL is operational, it is anticipated that much of the train patronage would comprise people living in the Cherrybrook, Dural and Glenorie areas and that these people would use the Franklin Road station as a "park & ride" facility.

  The Traffic, Transport, Parking and Access report[70] found that the park and ride facility has the potential to cause congestion on local roads during peak periods. It is recommended that access to the facility be obtained via Castle Hill Road or collector roads directly accessible from Castle Hill Road to avoid this congestion.

- *Noise and Vibration*: There is the potential that rail related noise and vibration would be negligible in the Franklin Road area as the tunnel in this locality is deep. Noise and vibration mitigation measures are further described in a Noise and Vibration Technical Report.

- *Visual impacts*: The project has the potential to result in significant changes to the locality and would have the potential to create visual impacts as a result of the structures including:
  - Revised road patterns and layouts;
  - The station surface elements such as access ways, parking and other considerations; and
  - Future urban development in the vicinity of the station

Economic

Primarily *positive* economic impacts have the potential to be experienced as a result of the project. These would include:

70 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P.21

- Improved transport choice would allow the full community to benefit from access to work, educational, health and recreational opportunities;
- Increased social economic equity would be created as those community members unable to afford a car would have substantially improved transport options;
- Reduced travel costs for people who work in the "Global Arc" who would now be able to access work via public transport. These benefits would also be experienced for other users including students, the aged and elderly who have travel concessions on public transport but who, at present, have poor access to quality transport;

Community & Special Social Group needs

The needs of *special social groups* have the potential to be improved measurably as a result of the station. The facility has the potential to comply with access requirements for people with physical disabilities and would also provide improved access for people with special needs to specialist facilities located within the "Global Arc".

Positive *health* impacts have the potential to be generated from the proposal. The Traffic, Transport, Parking and Access study[71] found that daily demand for rail passengers is expected to be in the order of 18,000 people by 2021. The cumulative impacts of car reliance and its impacts on physical and mental health is becoming increasingly well understood. One consistent element of rectifying the reliance on cars is the provision of quality public transport services.

7.4 Castle Hill Station

Castle Hill is identified as being a "Major Centre" by the Metropolitan Strategy. Accordingly, it is expected to be a key employment, commercial, retail and services centre in north western Sydney. Heavy reliance on car use underpins the current transport arrangements in Castle Hill with only limited public transport solutions (bus) being available for those who cannot afford, or are otherwise unable to use a car.

Introduction of the station at Castle Hill has the potential to accrue a wide range of benefits to the centre itself as well as the suburbs around the centre.

71 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P.19

7.4.1 Construction

A summary of potential impacts generated from construction in the Castle Hill Station area are included in the below table.

Table 12: Summary of potential impacts

Negative	Neutral	Positive
Amenity impacts	Community Identity & interaction	Economic
Community & Special Social group needs	Acquisition impacts	
	Community & Special Social group needs	

Amenity Impacts

Amenity impacts associated with the construction phase of Castle Hill railway station would be largely restricted to;

- Noise and Vibration impacts;
- Traffic management; and
- Visual impacts

Noise and Vibration: The construction area is located well away from residential properties and the station is located underground. Due to the proposed construction method (mining the station box from the bored tunnel), it is anticipated that potential impacts would be minimal.

Traffic & Parking: Heavy vehicle generation has the potential to be in the order of 80 movements per day for heavy vehicles and 100 vehicles per day for light vehicles (construction workers).

Some negative impacts on traffic and parking arrangements within the centre can be anticipated during the construction phase including haulage down Old Northern and Showground Roads. It is also proposed that the Eastern Ring Road would provide a bypass for through traffic and that it would become a classified road under the control of the RTA[72].

Economic

Both *positive* and *negative* economic impacts have the potential to accrue to the local businesses during the construction period.

Positive impacts have the potential to be a result of increased demand for the daily needs of the construction workforce including food and services. *Negative* impacts have the potential to be associated with

72 Parsons Brinkerhoff. 2005. NWRL Patronage Studies.

the business disturbance during the construction phase, such as changes to pedestrian and vehicular access arrangements.

Community & Special Social group needs

The requirement of special social groups has the potential to be met during the construction phase to ensure access arrangements are retained. The key *negative* impact has the potential to be the potential impacts on Arthur Whiting Park, under which the station is proposed to be located. It is anticipated that these impacts (partial park closure etc) would be temporary with the park being largely reinstated upon completion of the project.

7.4.2 Operation

A summary of potential impacts generated from operation in the Castle Hill Station area are included in the below table.

Table 13: Summary of potential impacts

Negative	Neutral	Positive
Community & Special Social group needs	Acquisition impacts	Community Identity & interaction
		Amenity impacts
		Economic
		Community & Special Social group needs

Community Identity and Interaction

The following elements has the potential to be *positively* impacted as a result of the proposed railway station at Castle Hill:

- Improved *community identity* as the station has the potential to form a focal point and meeting place for the community;
- Improved *social interaction* as a result of increased activity around the centre; and
- A new *community asset* in the form of a new railway station and associated facilities.

Amenity Impacts

Most of the potential amenity impacts (flora & fauna, noise & vibration, spoil management and visual impacts) are considered to be neutral. The main *positive* impact on the amenity of the area has the potential to relate to traffic and parking. As a result of the substantially improved public transport access which would be possible as a result of the NWRL, the level of traffic to and through the Castle Hill centre has the potential to reduce. This positive impact would apply to both the

town centre area as well as the suburban areas in the immediate locality.

Economic

Primarily *positive* impacts would be experienced as a result of the project. These would include:

- Improved transport choice would allow the community to benefit from access to work, educational, health and recreational opportunities;
- Increased social economic equity would be created as those community members unable to afford a car would have substantially improved transport options;
- Reduced travel costs for people who work in the "Global Arc" who would now be able to access work via public transport. These benefits would also be experienced for other users including students, the aged and elderly who have travel concessions on public transport but who, at present, have poor access to quality transport;
- The large number of employers in the Castle Hill centre may find it easier to attract and to retain quality employees as a result of improved access to the Metropolitan rail network;
- The station would support the growth of Castle Hill as a Major Centre. The growth in the size of the centre and the larger role it would play in the metropolitan area would result in positive economic conditions for local businesses and the community.

Community & Special Social Group needs

The needs of special social groups would be improved measurably as a result of the station. The facility has the potential to comply with access requirements for people with physical disabilities and also has the potential to provide improved access for people with special needs to specialist facilities located within the "Global Arc".

Positive *health* impacts have the potential to be generated from the proposal. The cumulative impacts of car reliance and its impacts on physical and mental health is becoming increasingly well understood. One consistent element of rectifying the reliance on cars is the provision of quality public transport services.

The key *negative* impact during the operation of the railway has the potential to include a section of Arthur Whiting Park for permanent works at the station including entrance, egress, service shafts and ventilation buildings.

7.5 Hills Centre Station

The Hills Centre Station would be an underground station, located between the Hills Centre and the Castle Hill Showground.

7.5.1 Construction

A summary of potential impacts generated from construction in the Hills Centre Station area are included in the below table.

Table 14: Summary of potential impacts

Negative	Neutral	Positive
Community identity & interaction (community assets)	Amenity (visual)	Community identity & interaction (social cohesion)
Amenity (noise & vibration, traffic and parkingl)	Community & Special Social Group needs	Economic

Community Identity and Interaction

The proposal has the potential to create both *positive* and *negative* impacts on the immediate locality.

The potential *positive* impact relates to:

- *Social interaction* and *social cohesion* has the potential to be promoted through activities associated with the project. The Castle Hill Showground is a very important community asset and the people who use it in its various ways are likely to express significant interest in the proposal for a new railway station.

The potential *negative* impact relates to:

- *Community asset impacts*. Because the Castle Hill Showground has played an important role in the level of social capital in the community over an extended period of time and is still used regularly for equestrian and other shows, community markets, the circus and other events, any impact on the showground would have the potential to create negative social impacts.

  The reference design (both the station itself and the rail corridor would be located underground) does not propose any direct physical impact on the showground itself, however it would affect some of the buildings in the south western part of the ground.

  The other community asset which could potentially be affected during the construction period is the Hills Centre and Council's administration building.

Amenity Impacts

Amenity impacts during the construction period have the potential to generally to be negative. These impacts would include noise & vibration, traffic and parking, visual impacts.

- *Noise and Vibration*: Noise and vibration associated with the underground works has the potential to impact upon both the Hills Centre and the Council administration building. Heggies Australia[73] have identified that noise from in-tunnel construction works may exceed the design objectives however that exceedances could be minimised through the appropriate planning and construction and by avoiding coincidence with critically sensitive events held at the centre.
- *Traffic and Parking:* Heavy vehicle traffic generation has the potential to be approximately 82 heavy vehicle movements per day[74]. It is estimated that 100 light vehicle movements would be created as a result of construction workers driving to and from the site. If parking is located within the Council depot, impacts associated with the cars driven by workers has the potential to be minimal.

  Impacts are likely along Carrington Road to the west of Doran Drive as heavy vehicles enter and depart the site.
- *Visual impacts*: Impacts have the potential to be created by the new station and revised vehicular and pedestrian access arrangements, all of which would need to be constructed. Because the scale of surface development is relatively minor, and it is located immediately adjacent to the Hills Centre which is very large building that dominates the landscape, visual impacts of the construction phase have the potential to be moderate and manageable.

Economic

Over the longer term, economic impacts have the potential to be primarily positive for both the residential and industrial land uses in the locality. During the construction period however, the impacts created by traffic/parking and noise/vibration need to be managed to ensure no detrimental impacts are experienced by households or businesses in the locality.

Impacts of Acquisition

It is understood that some surface acquisition would be required in the south western corner of the showground land for the station entrance and access ways. No private dwellings would be acquired.

73 Heggies Australia (2006). North West Rail Link Environmental Assessment Noise and Vibration. P. 59

74 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P.59

7.5.2 Operation

A summary of potential impacts generated from operation in the Hills Centre Station area are included in the below table.

Table 15: Summary of potential impacts

Negative	Neutral	Positive
Amenity (Flora & fauna, visual impacts)	Impacts of Acquisition	Community Identity and Interaction (Social Interaction & Cohesion, community identity)
Community Identity and Interaction (Social Interaction & Cohesion, community identity)		Amenity (Traffic& parking)
		Community & Special Social Group needs

Community Identity and Interaction

These impacts are likely to be both *positive* and *negative*. The *positive* impacts are likely to include:

- *Social Interaction and Cohesion*: The station has the potential to have impacts on the level and type of interaction within the community, especially given the nature of the surrounding lands which are heavily community and employment focused.
- *Community Identity*: This locality already has its own strong community identity and sense of place. This however, has the potential to be increased by the introduction of the railway station. People within the community would view this differently with some seeing as a negative impact and others viewing it as a positive impact

Amenity Impacts

Amenity impacts during the operational phase in the vicinity of the Hills Centre Station are expected be both *positive* and *negative*.

The potential amenity impacts include:

- *Traffic and parking.* Because people working in the Castle Hill (Victoria Avenue) industrial area may have a viable alternative to driving to work, traffic along Carrington Road would possibly reduce. Similarly, people who would otherwise need to drive along the general route of the corridor would be able to use the train, thereby further reducing traffic impacts in the locality.

  The Hills Centre Station would be a "park and ride" station so it has the potential to result in some increases in traffic in the area may result due to people using the station for this purpose.

It is expected that the demand for park and ride spaces could be up to 1,400 spaces, however a lower target is likely to be set.

- *Noise and Vibration*: The Noise and Vibration assessment has found that feasible noise and vibration mitigation options are available for slab track to mitigate any potential exceedances of the design goals.

  Accordingly, there is the potential that rail related noise and vibration would be negligible during the operational phase of the project.

- *Visual impacts*: The project has the potential to result in significant changes to the locality and would have the potential to create visual impacts as a result of the structures including the station surface elements such as access ways and parking.

Economic

Primarily *positive* impacts have the potential to be experienced as a result of the project. These would include:

- Improved transport choice has the potential to allow the full community to benefit from access to work, educational, health and recreational opportunities;
- Employers in the industrial area may find it easier to employ and retain their workforce;
- Increased social economic equity has the potential to be created as those community members unable to afford a car would have substantially improved transport options;
- Reduced travel costs for people who work in the "Global Arc" who would now be able to access work via public transport. These benefits have the potential to also be experienced for other users including students, the aged and elderly who have travel concessions on public transport but who, at present, have poor access to quality transport; and

Community & Special Social Group needs

The needs of *special social groups* have the potential to be improved measurably as a result of the station. The facility has the potential to comply with access requirements for people with physical disabilities and would also provide improved access for people with special needs to specialist facilities located within the "Global Arc".

The proposal has the potential to greatly improve access to key community facilities such as the Showground, Council's admin building and the Hills Centre.

The cumulative impacts of car reliance and its impacts on physical and mental health is becoming increasingly well understood. Positive *Health* impacts can be expected to be generated from the proposal as 7,000 people per day are expected to use the station. One consistent element of rectifying the reliance on cars is the provision of quality public transport services.

7.6 Norwest Station

Norwest Station would be located underground within the Norwest Business Park, in the vicinity of the existing Hillsong Church complex and retail shopping centre.

7.6.1 Construction

A summary of potential impacts generated from construction in the Norwest Station area are included in the below table.

Table 16: Summary of potential impacts

Negative	Neutral	Positive
Amenity	Impacts of acquisition	Community Identity & interaction
	Community & Special Social Group needs	Economic

Community Identity and Interaction

The construction phase of the project has the potential to promote increased *social cohesion* and *interaction.* This is particularly the case in this location as the station is located adjacent to (or very close to) very major stakeholders including the owners of the shopping centre, Hillsong, Norwest Business Park, Woolworths and ResMed. As a result, the local community as well as these major land owners have the potential to be very involved in the lead up to the construction phase.

Amenity Impacts

Amenity impacts which could potentially apply to the construction phase here may include noise/vibration and traffic and parking.

- *Noise and vibration* could potentially impact the activities at Hillsong which is a large church and conference centre. It is also understood that Hillsong proposes to start a TV and radio station. The project Noise and Vibration report[75] found that noise level criterion for a Church would not be exceeded. However it also indicated that the very low criteria that are appropriate for a *TV, film or drama studio* may be marginally exceeded.

75 Heggies Australia (2006). North West Rail Link Environmental Assessment. P. 60

Management of noise and vibration during the construction phase would be required so that any impacts on uses at Hillsong are minimised.

- *Traffic and parking impacts*. The construction phase of the project has the potential to create impacts in the locality. These could include:
    - Impacts on Hillsong and shopping centre parking;
    - Traffic and access arrangements to Hillsong and the shopping centre; and
    - The use of Northwest Boulevard as a haulage route.

Economic

Potential exists for *positive* local business impacts as a result of increased demand for the daily needs of the construction workforce including food and services in the adjacent shopping centre.

7.6.2 Operation

A summary of potential impacts generated from operation in the Norwest Station area are included in the below table.

Table 17: Summary of potential impacts

Negative	Neutral	Positive
Amenity (visual impacts)	Impacts of Acquisition	Community Identity and Interaction (Social Interaction & Cohesion, community identity)
		Amenity (Traffic& parking)

Community Identity and Interaction

These impacts are likely to be both *positive* and *negative*. The *positive* impacts are likely to include:

- *Social Interaction and Cohesion*: The station has the potential to have impacts on the level and type of interaction within the community, especially given the nature of the surrounding lands which includes Hillsong as well as the headquarters of one of Australia's largest companies (Woolworths).
- *Community Identity*: This locality already has its own strong community identity and sense of place as a result of proactive planning and the well known landowners in the locality. This however, has the potential to be increased by the introduction of the railway station.

Amenity Impacts

Amenity impacts during the operational phase in the vicinity of the Norwest Station are expected be both *positive* and *negative*.

The potential amenity impacts include:

- *Traffic and parking.* A park and ride facility is proposed for Norwest Station and a target of 500 spaces has been set for this purpose. The project Traffic, Transport, Parking and Access study[76] found that this facility has the potential to cause congestion on local roads during peak periods.

- *Noise and Vibration*: There is the potential that ground borne noise and vibration would comply with the appropriate criteria.

- *Visual impacts*: The project has the potential to result in some changes to the locality and would have the potential to create visual impacts as a result of the structures including the station surface elements such as accessways, parking and other considerations. Given the scale of the surrounding developments however, it is considered that any impact would be negligible and consistent with the scale of the existing built form.

Economic

Primarily *positive* impacts has the potential to be experienced as a result of the project. These would include:

- Improved transport choice has the potential to allow the full community to benefit from access to work, educational, health and recreational opportunities;
- Employers in Norwest Business Park may find it easier to employ and retain their workforce;
- Increased social and economic equity has the potential to be created as those community members unable to afford a car would have substantially improved transport options;
- Reduced travel costs for people who work in the "Global Arc" who would now potentially be able to access work via public transport. These benefits would also be experienced for other users including students, the aged and elderly who have travel concessions on public transport but who, at present, have poor access to quality transport;

Community & Special Social Group needs

The needs of *special social groups* have the potential to be improved measurably as a result of the station. The facility has the potential to

76 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P. 32

comply with access requirements for people with physical disabilities and would also provide improved access for people with special needs to specialist facilities located within the "Global Arc".

The proposal has the potential to greatly improve access to key community facilities such as the Hillsong Church.

Positive *health* impacts can potentially be expected to be generated from the proposal. The cumulative impacts of car reliance and its impacts on physical and mental health is becoming increasingly well understood. One consistent element of rectifying the reliance on cars is the provision of quality public transport services.

7.7 Balmoral Road Construction site

The Local Environmental Plan for the Balmoral Road Release Area has been gazetted and includes land zoned for the main construction site. This area is located near the western portal and has good access to arterial roads.

The Balmoral Road construction site would be the primary construction site associated with the project. The following activities are expected to occur at this construction site:

- Spoil management;
- Concrete batching;
- Regular heavy vehicle movements;
- Construction of Tunnel Boring Machines;
- Construction/delivery of rail infrastructure; and
- Administration and site management.

The social impacts associated with the construction site would, by their nature, only occur during the construction phase of the project. The impacts associated with this site, however, have the potential to be significant in the absence of appropriate management regimes.

The impacts would include:

- Noise & Vibration;
- Traffic/parking; and
- Economic.

Noise and Vibration

Construction noise impacts have been assessed by in the Noise and Vibration report which, found that[77]:

77 Heggies Australia (2006). North West Rail Link Environmental Assessment. P. 58

Residential receiver locations potentially impacted by construction works include the residential areas on the western side of Old Windsor Road, located approximately 100 m from the worksite boundary and 300 m from the proposed tunnel portals. Residential receiver locations in Brighton Drive and Craigend Place would also be potentially impacted by construction works, being located approximately 100 m to 150 m from the tunnel portals.

Accordingly, impact mitigation measures have been identified to address these construction related impacts.

Traffic and Parking

It is likely that the transportation of spoil away from the site, and delivery of construction materials etc to the site would represent the largest potential impact associated with the construction site. Based on the worst case, a total of 1,183 heavy vehicle movements would occur during the weekdays in addition to 200 light vehicle movements associated with construction workers[78].

Economic

Potential economic impacts associated with the Balmoral Road construction site relate to the *positive* impacts on local businesses as a result of the large number of construction workers and the potentially *negative* impacts on the *Homemakers Collection* centre on Celebration Drive as a result of construction related traffic.

7.8 Burns Road Station

Burns Road Station would be located immediately to the south of Burns Road within the Balmoral Road Release and would form a major transport interchange for the NWRL with the bus transitways connecting Blacktown to Castle Hill and Parramatta to Rouse Hill.

7.8.1 Construction

A summary of potential impacts generated from construction in the Burns Road Station area are included in the below table.

Table 18: Summary of potential impacts

Negative	Neutral	Positive
Amenity impacts	Acquisition impacts	Economic
	Community & special need groups	
	Community identity & Interaction	

78 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P. 67

This site is located in an area which is largely undeveloped and Baulkham Hills LEP for the area has zoned the land for railway purposes. As a result, it is expected that the urban form which develops in the area would do so having regard for the proposed railway station and for the purposes of this conceptual approval.

Despite this, some negative impacts on amenity and positive economic impacts may be created during the construction phase.

It is assessed that other potential impacts would be Neutral.

Amenity

The potential amenity impacts associated with the Burns Road station include:

- *Noise and Vibration:* Noise and vibration impacts, particularly as a result of construction noise (machinery, excavation, spoil movement and management etc) have the potential to be created for adjoining and nearby land uses.

Economic

- During the construction phase, benefits are likely to be created for local businesses as a result of increased demand for the daily needs of the construction workforce including food and services in the neighbouring areas.

7.8.2 Operation

A summary of potential impacts generated from operation in the Burns Road Station area are included in the below table.

Table 19: Summary of potential impacts

Negative	Neutral	Positive
Amenity (Noise/Vibration)	Community Identity & interaction	Amenity
	Impacts of acquisition	Economic
		Community & special group needs

The key negative impact in this locality would be the potential for noise and vibration associated with the rail services. Notwithstanding this however, the Noise and Vibration assessment completed for the Environmental Assessment found that:

> *South of Sunnyholt Road (just north of Burns Road Station), the proposed tracks would be located within a cut and cover tunnel*

and hence there would be no operational airborne noise impact as part of the proposal to the south of Sunnyholt Road[79].

Accordingly, the impacts would appear to minor to moderate in this area.

The remaining potential impacts are all considered to be either neutral or positive. The key reason for the low level of assessed impact in this locality is that the area is currently undeveloped and any future development would contemplate the existence of the rail corridor and station in this locality. The result is that key elements such as residential amenity, economic drivers and the needs of special social groups can be managed as the proposal is refined.

7.9 Viaduct Section between Balmoral Road and Rouse Hill

A Viaduct is a raised structure supporting two tracks in each direction.

The viaduct area has the potential to have significant impacts such as amenity (due to visual impacts) and community identity and interaction. These impacts would be experienced during both the construction and operational phase of the project.

7.9.1 Construction

A summary of potential impacts generated from construction in the viaduct area are included in the below table.

Table 20: Summary of potential impacts

Negative	Neutral	Positive
Community identity and Interaction	Impacts of acquisition	Economic
Amenity Impacts	Community & special social group needs	

Community Identity and Interaction

The construction works associated with the Viaduct Area has the potential to have potential negative impacts in terms of community identity and interaction.

Potentially the key impacts to be experienced are severance, social interaction and uncertainty.

- The level of physical *severance* has the potential to be increased in this locality as the linear nature of the construction works may create a barrier between those communities living on either side of the Viaduct; and

79 Heggies Australia (2006). North West Rail Link Environmental Assessment. P. 33

- *Social interaction* has the potential to be reduced during the construction phase as a result of the scale of works and site disturbances;
- *Uncertainty* amongst the community has the potential to be another impact. This, in turn, could lead to community and individual anxiety and concern about project details, design and construction, particularly in relation to the way the proposal may impact on day to day lives, the character of the area and valued community assets.

Amenity Impacts

It is unlikely that any *positive* amenity benefits would be created during the construction phase of the project. The impacts which are likely to be created would most probably extend beyond the construction time-frame and during the operational phase would remain potential negative impacts.

The potential key impacts to be experienced are flora and fauna, noise and vibration and visual impacts.

- *Flora and fauna:* The surface works in this locality has the potential to result in the loss of vegetation. Although this loss has the potential to be restricted to within the rail corridor, this vegetation does contribute to the amenity of the localities along the route by adding to the natural character and by providing visual screening of the rail corridor and services.
- *Noise and Vibration:* Construction works in this part of the route would include vegetation removal, piling, and management of the existing road traffic. The use of heavy equipment close to future residential areas has the potential to create some negative impacts.
- *Visual Impacts*: Construction related visual impacts has the potential to include the impacts of machinery, temporary stockpiles and work area facilities. Importantly, the construction phase of the project would also see the introduction of permanent changes to the area within the rail corridor. These permanent changes are addressed in *Operational Impacts* in the following section.

Economic

Potential economic impacts are mixed. While employment opportunities may accrue to the local population, overall economic benefits have the potential to be limited. However, during the construction phase, benefits are likely to be created for local businesses as a result of increased demand for the daily needs of the construction workforce including food and services in the neighbouring areas.

7.9.2 Operation

A summary of potential impacts generated from operation in the viaduct area are included in the below table.

Table 21: Summary of potential impacts

Negative	Neutral	Positive
Community identity and Interaction	Impacts of acquisition	
Amenity Impacts	Economic	
	Community & special social group needs	

Community Identity and Interaction

The operation works associated with the Viaduct Area have the potential to create potential negative impacts in terms of community identity and interaction.

The key impacts to be potentially experienced are severance and social interaction.

- The level of physical *severance* has the potential to be increased in this locality as the linear nature of the construction works may create a barrier between those communities living on either side of the Viaduct; and
- *Social interaction* has the potential to be reduced during the operation phase as a result of the scale of the structure;

Amenity Impacts

It is unlikely that any *positive* amenity benefits would be created during the operation phase of the project. Once the Viaduct area is established, the potential negative impacts are likely to remain.

The key impacts likely to be experienced are flora and fauna, noise and vibration and visual impacts.

- *Flora and Fauna:* When the surface works in this locality are concluded, the potential impacts from loss of vegetation may become more significant. Natural character would be diminished and natural visual screening of the rail corridor and services would be sparse in many location.
- *Noise and Vibration:* It is expected that rail related noise and vibration would be higher than other sections of the NWRL as the entire rail structure is exposed. The Noise and Vibration assessment completed as part of the Environmental Assessment found that:

  Adjacent to proposed surface track section between Balmoral Road and Rouse Hill, existing and proposed residential development are located on both sides of the

railway corridor. On the Down (western) side of the railway corridor, Windsor Road is located between the railway corridor and the nearest residential receiver locations. These locations are unlikely to be affected by railway vibration. On the Up (eastern) side of the railway corridor, a 40 m buffer zone is recommended adjacent to at-grade track in order to minimise vibration emissions upon future residential development[80].

- *Visual impacts*: The project would result in significant changes to the locality and would have the potential to create visual impacts as a result of the structures including:
    - Support columns;
    - Main rail bridge/viaduct;
    - Noise walls; and
    - Overhead cabling and stanchions.

  The visual impacts created are likely to exacerbate the extent of visual and physical severance between the communities on either side of Windsor Road.

7.10 Rouse Hill Station

The introduction of a new railway station into a community has the potential have significant impacts on the community identity and dynamic. Impacts would be experienced during both the construction and operational phase of the project.

The new railway station is to be a key part of the Rouse Hill Regional Centre, and has been planned for in the Rouse Hill Masterplan. The Rouse Hill Station, in conjunction with the Regional Centre, is likely to form the catalyst for a new urban form in the immediate vicinity which in turn has the potential to make significant changes to social interaction and the provision of goods and services in the locality.

7.10.1 Construction

Rouse Hill Station would be a substantial structure located under-ground. The construction technique for this section of the NWRL would be cut and cover. There would, however be some surface impacts which would need to be managed.

The Rouse Hill Town Centre would be completed and functioning for a number of years before any construction work would commence. Notwithstanding this however, the station is being planned into the centre and the impacts are largely predictable and can be allowed for in the future development of the centre.

80 Heggies Australia (2006). North West Rail Link Environmental Assessment. P. 58

This section seeks to identify the key issues *to be managed*.

A summary of potential impacts generated from construction in the Rouse Hill Station area are included in the below table.

Table 22: Summary of potential impacts

Negative	Neutral	Positive
Community Identity and interaction	Impacts of acquisition	Economic
Amenity	Community & special social group needs	Community Identify and interaction

Community Identity and Interaction

The actual construction works associated with the Rouse Hill Station have the potential to be only limited impacts in terms of community identity and interaction. The Major Centre currently Masterplanned for Rouse Hill, aims to create its own identity for the Rouse Hill area.

As with other areas along the proposed corridor, the potential *positive* impacts are likely to be restricted to *social interaction* and *social cohesion* promoted through activities associated with the project. Interest in the proposal may potentially lead to community activities either in support or against the proposal.

Uncertainty amongst the community has the potential to be the key *negative* impact. This, in turn, could lead to community and individual anxiety and concern about project details, design and construction, particularly in relation to the way the proposal may impact on day to day lives, the character of the area and valued community assets. These impacts may be somewhat reduced by the greenfield aspect of the planned Rouse Hill Centre.

Amenity Impacts

It is unlikely that any *positive* amenity benefits would be created during the construction phase of the project. Notwithstanding this, the impacts which has the potential to be created would not need to extend beyond the construction time-frame and during the operational phase would be replaced by a wide range of positive impacts.

The key potential impacts are flora & fauna, noise & vibration, traffic/parking, visual impacts).

- *Flora and Fauna:* Works currently undertaken to establish the Rouse Hill Centre have already resulted in significant loss of vegetation to the area. The cut and cover works has the potential to also impact on vegetation of the area. This said however, the further clearance required for the station box and access ways etc is not expected to be significant.

- *Noise and Vibration:* Construction works have the potential to include both the cutting and covering of the tunnel site, requiring works to be both on and under the surface.
- *Traffic and Parking:* Traffic and parking impacts during the construction phase has the potential to have negative impacts on the amenity of the locality.

  The primary impacts to be managed have the potential to include:

  - *Construction Traffic*: The site is located on Windsor Road has the potential to be the major route for construction traffic. During the construction phase, a total of 516 vehicle movements per day are expected.
  - *Parking*: Parking arrangements would need to be coordinated during the construction phase. Car parking associated with construction workers may be limited as the Town Centre would be complete by that time.
- *Visual Impacts*: Construction related visual impacts has the potential to include c*onstruction area impacts* including the impacts of machinery, temporary stockpiles and work area facilities.

Economic

Potential economic impacts are mixed. While employment opportunities may accrue to the local population, overall economic benefits are likely to be limited during the construction phase to *positive* business impacts as a result of increased demand for the daily needs of the construction workforce including food and services in the neighbouring areas.

7.10.2 Operation

A summary of potential impacts generated from operation in the Rouse Hill Station area are included in the below table.

Table 23: Summary of potential impacts

Negative	Neutral	Positive
Community Identity and Interaction	Impacts of acquisition	Community Identity and Interaction
Amenity	Community & special social group needs	Economic
		Community Services
		Amenity

Community Identity and Interaction

These impacts are likely to be both *positive* and *negative*. The *positive* impacts are likely to include:

- *Social Interaction and Cohesion*: The new railway station and Major Centre would form the catalyst for a new built form. Both the station and this new built form would have impacts on the level and type of interaction within the community. The presence of a railway station, Major Centre and associated transport infrastructure would result in the area developing into a dynamic place where people interact. Over time, this would generate increased social capital in the area as people interact with other community members on a regular basis
- *Community Identity*: Rouse Hill Station would develop its own strong community identity and sense of place with the introduction of the railway station. People within the community would view this differently with some seeing it as a negative impact and others viewing it as a positive impact.

Amenity Impacts

Amenity impacts during the operational phase in the vicinity of the Rouse Hill station have the potential to be generally both *positive* and *negative*.

The potential *negative* amenity impact is:

- *Noise and Vibration*: There is potential that rail related noise and vibration may have some impact at the Rouse Hill area. Notwithstanding this, given the ability of the Rouse Hill Town Centre to develop around the station and to ensure land use mixes and locations acknowledge the future existence of the station, impacts would be manageable.

Economic

Primarily potential *positive* impacts would be experienced as a result of the project. These would include:

- Improved transport choice would allow the full community to benefit from access to work, educational, health and recreational opportunities;
- Increased social economic equity would be created as those community members unable to afford a car would have substantially improved transport options;
- Reduced travel costs for people who work in the "Global Arc" who would now be able to access work via public transport. These benefits would also be experienced for other users including students, the aged and elderly who have travel concessions on public transport but who, at present, have poor access to quality transport;
- Development of a strong transit oriented development characteristic given that the centre is being designed to incorporate the station which will reinforce the function and attraction of this centre.

Community Services

The needs of *special social groups* would be improved measurably as a result of the station. The facility would provide improved access for people with special needs to specialist facilities located within the "Global Arc".

Positive *Health* impacts have the potential to be generated from the proposal. The cumulative impacts of car reliance and its impacts on physical and mental health are becoming increasingly well understood. One consistent element of rectifying the reliance on cars is the provision of quality public transport services.

7.11 Rouse Hill Stabling

After Rouse Hill Station, the alignment passes beneath the dual carriageway of Windsor Road in cut and cover tunnel, to a stabling facility located in a cutting west of, and roughly parallel to, Windsor Road.[81] A residential area of Rouse Hill and a commercial/retail area is located on the eastern side of Windsor Road. Although most of these residences are well separated from the proposed stabling yard, some impacts can be expected, particularly during the construction phase. Rouse Hill Regional Park is to the north of the proposed site.

The relationship between the stabling yard, the Rouse Hill Regional Park and the existing urban form is shown in Figure 26 below.

7.11.1 Construction

A summary of potential impacts generated from construction in the Rouse Hill Stabling Area is included in the below table.

Table 24: Summary of potential impacts

Negative	Neutral	Positive
Amenity Impacts	Impacts of acquisition	Economic
Community Identity and Interaction	Community & special social group needs	

Community Identity and Interaction

The construction works associated with the Stabling Area has the potential to have potential negative impacts in terms of community identity and interaction.

The key impacts likely to be experienced are social interaction and uncertainty.

81 SKM. April 2006. North West Rail Link Project Application and Preliminary Environmental Assessment. P30.

- *Social interaction* has the potential to be reduced during the construction phase as a result of the scale of works and site disturbances;
- *Uncertainty* amongst the community has the potential to be another potential impact. This, in turn, could lead to community and individual anxiety and concern about project details, design and construction, particularly in relation to the way the proposal may impact on day to day lives, the character of the area and valued community assets.

Amenity Impacts

It is unlikely that any *positive* amenity benefits would be created during the construction phase of the project. The impacts which are likely to be created would most probably extend beyond the construction time-frame and during the operational phase would remain potential negative impacts.

The key potential impacts are flora and fauna, traffic and parking, noise and vibration and visual impacts.

- *Flora and fauna:* The Ecological Assessment found that this work would *"…require further clearance, hereto of unspecified size, to accommodate the stabling facilities as well as additional supporting infrastructure."* There is potential that vegetation loss associated with the works would have an impact on the amenity and character of the locality.
- *Traffic and Parking:* The Traffic, Transport, Parking and Access report[82] predicted that 93 heavy vehicles in addition to 50 light vehicles would access the site per day during the construction phase. The report also recommended that further investigations be undertaken to assess potential impacts on local intersections.

  There is the potential for traffic lane closures on Windsor Road.

  Subject to adequate Site Management Planning, work sequencing and traffic management, traffic related impacts experienced would be manageable.
- *Noise and Vibration:* The stabling yards would be located approximately 80m from the existing residences along Windsor Road.

  The Noise and Vibration assessment[83] found that:

  > *Given the 'typical' construction plan for the site, it is anticipated that construction noise levels [would represent] a noticeable exceedance of the design goals and consideration of mitigation and management measures would need to be made as a Construction Plan is progressively refined.*

82 GHD. August 2006. North West Rail Link Environmental Assessment (Traffic, Transport, Parking and Access) P. 75

83 Heggies Australia (2006). North West Rail Link Environmental Assessment. P. 42

Based on the Construction Plan being refined such that design goals are satisfied, the noise impacts are not expected to have significant impacts upon nearby houses.

- *Visual Impacts*: Construction related visual impacts have the potential to include c*onstruction area impacts* including the impacts of machinery, temporary stockpiles and work area facilities etc. Importantly, the construction phase of the project would also see the introduction of permanent changes to the area within the rail corridor. These permanent changes are addressed in *Operational Impacts* in the following section.

Economic

Potential economic impacts are mixed. While employment opportunities may accrue to the local population, overall economic benefits are likely to be limited during the construction phase to *positive* business impacts as a result of increased demand for the daily needs of the construction workforce including food and services etc in the neighbouring areas.

7.11.2 Operation

A summary of potential impacts generated from operation in the Rouse Hill Stabling area are included in the below table.

Table 25: Summary of potential impacts

Negative	Neutral	Positive
Amenity Impacts	Economic	
	Community identity & interaction	
	Community & special needs groups	
	Impacts of acquisition	

Amenity Impacts

The key potential impacts are noise and vibration and visual impacts.

- *Noise and Vibration:* It is expected that rail related noise and vibration would be higher than other sections of the NWRL as the entire rail structure is above ground. Noise impacts are exacerbated by brake and horn testing which can increase noise emissions from the site significantly.

  Buffer distances of approximately 200m would be required. Reduced buffer distances could be achieved by the introduction of noise barriers.

Noise impacts on the residential area to the east of Windsor Road would exceed DEC criterion (without mitigation)[84]. The noise levels however have the potential to be only slightly higher than noise levels currently experienced by truck pass-bys on Windsor Road. A noise barrier would potentially reduce the impact of horn testing to approximately the same level as truck pass-bys.

Noise levels on the western side of the stabling facility as a result of horn testing have the potential to be more significant with a combination of a 200m buffer and 6m noise wall being required to comply with DEC requirements.

The expected noise impacts could have detrimental impacts on the user characteristics and experience of the Rouse Hill Regional Park which is a key recreational asset in north western Sydney.

- *Visual impacts*: The project would result in significant changes to the locality and would have the potential to create visual impacts as a result of the structures including:
    - Stabling structures and associated infrastructure; and
    - Overhead cabling and staunchions.

Economic

Potential economic impacts are likely to be positive. Employment opportunities may be available at the Stabling facility. Positive business impacts would continue to result through the demand for the daily needs of the operation workforce including food and services in the neighbouring areas.

84 Heggies Australia (2006). North West Rail Link Environmental Assessment. P. 8

8 RECOMMENDED MITIGATION MEASURES AND COMMITMENTS

The recommended mitigation measures and commitments required to address the key potential social impacts are outlined in the following table:

Table 26: Potential mitigation measures and commitments

Potential Social Impacts	Recommended Mitigation Measure/Commitments
Community Identity and Interaction	The design phase focus on project elements which aim to ensure the project promotes Community Cohesion and identity, promotes social interaction, protects community assets and minimises severance. This would include: • Completion of further social and demographic analysis once results of the 2006 ABS census have been released and project details have been refined; • Comprehensive community and stakeholder consultation be undertaken including all sectors of the community. This would be central to reducing uncertainty and anxiety about the project and its potential impacts; • Develop urban design solutions to the physical intervention of the infrastructure on established landscapes; • Design of railway stations and transport interchanges so that interaction is promoted through the introduction of vibrant land uses and active street frontages etc; • Protection of community assets by minimising direct impacts while maximising the benefits which can potentially accrue through improved access arrangement etc. Particular focus here would be on Cheltenham railway station and carpark, Beecroft Scout hall, tennis courts and Village Green, Beecroft Primary School, Castle Hill Showground, the Hills Centre and Hillsong.
Amenity impacts	• Working closely with Hornsby and Baulkham Hills Councils to develop urban planning solutions around the stations which meet the needs for the project and maximize potential project benefits; • Development of effective mitigation measures to mitigate potential amenity

Potential Social Impacts	Recommended Mitigation Measure/Commitments
	impacts created during construction, such as noise and vibration, traffic and parking; • Further detailed investigations relating to: o Traffic and parking (Traffic management planning, more detailed analysis) o Built form relationships o Visual impacts of mitigation measures (noise walls etc)
Crime and Safety	• Working with Council to develop clear planning and design solutions to potential negative impacts while maximising the potential benefits from the project; • Develop urban design solutions to the physical intervention of the infrastructure on established landscapes; • Adoption of the principles of *Crime Prevention Through Environmental Design;* • Design of railway stations and transport interchanges so that interaction is promoted through the introduction of vibrant land uses and active street frontages etc
Economic	• A full and detailed assessment would be required of potential local business impacts. This assessment would then be integrated into the detailed design phase to ensure negative impacts are minimised while potential benefits are maximised. The assessment would include consideration of: o Short term – construction related – impacts and how these can be managed o Long term benefits of increased activity around station precincts o Improved ability to obtain and retain a skilled workforce • Full assessment of potential *employment benefits* which potentially could be created by the project; • Full assessment of potential impacts on *household finances* including travel cost impacts
Community &special social group needs	• The detailed design process would need to address the needs of social groups such as: o Disabled

Potential Social Impacts	Recommended Mitigation Measure/Commitments
	o People from non-English speaking backgrounds (NESB) o Children and young people o Indigenous peoples o The aged • Identification of measures to protect and maximize project benefits on key community services including: o Child Care o Services such as meals on wheels o Aged care o Libraries o Schools
Impacts of Acquisition	• The detailed design would continue to consider ways of reducing – as far as practicable – the need to acquire properties • Any acquisitions would occur under the terms of the Land Acquisition (Just Terms Compensation) Act, 1991.

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10 APPENDIX 1 – INDICATORS BY SUBREGIONS

Table 27: Summary of Indicators by Subregions 2004[85]

	Sydney	North	North West
Geography 2004			
Land Area (sq km)	12,143	548	5,252
Population 2004			
Population	4,169,000	261,000	749,000
Households 2004			
Households	1,538,000	89,000	249,000
Household size	2.71	2.92	3.01
Dwellings 2001			
Dwellings	1,547,000	88,000	246,000
Proportion of separate dwellings (%)	58.7	76.9	82.3
Proportion of attached dwellings (%)	10.5	4.9	6.9
Proportion of flats (%)	30.9	18.2	10.8
Employment 2001			
Number of Jobs	1,684,000	68,000	203,000
Total workforce	1,802,000	118,000	326,000
% of workforce that live and work within the subregion	90.3	32.2	48.8
Trips 2004			
Total trips	15,549,000	1,043,000	2,765,000
Trip mode distribution 2004			
% of Vehicle (Car)	69.5	73.5	79
% of Public Transport (Bus/Train)	10.4	10.4	7.2
Vehicles 2004			
Total Vehicles	2,251,000	154,000	441,000
Average number of vehicles per household	1.46	1.72	1.78
Average Trip Distances (km) 2004			
All trips	9.4	9.4	11.9
Commuting trips	15.5	17.2	20.7
Average distance per person per day	35.6	37.7	43.8
Average vehicle kilometres travelled per person per day	20.3	20.3	26.5
Targets for each subregion			
Housing	~	21,000	140,000
Employment	~	8,000	99,000

85 NSW Government Department of Planning – Transport and Population Centre. June 2006. TransFigures: Statistics for the Subregional Planning Process. P 7-8.

11 APPENDIX 2 - SUBURB OVERVIEW ANALYSIS AND PROFILE

This appendix provides a suburb by suburb social overview along the proposed NWRL route. This suburb analysis begins at Epping and continues along the rail route to Rouse Hill.

Six key themes have been examined in this section to assess the social and demographic profile of the study area. These are:

- Age structures and projections;
- Population numbers and projections;
- Index of relative socio-economic advantage/disadvantage;
- Reliance on welfare;
- Income; and
- Employment.

This information has been sourced primarily from the Australian Bureau of Statistics (ABS) Basic Community Profiles and SEIFA.

SEIFA provides an index figure for a number of key variables; socio-economic advantage/disadvantage, economic resources and education/occupation). A brief outline of these SEIFA socio-economic variables is provided below:

A higher score on the Index of **Relative Socio-Economic Advantage/Disadvantage** *indicates that an area has attributes such as relatively high proportion of people with high incomes or a skilled workforce. It also means an area has a low proportion of people with low incomes and relatively few unskilled people in the workforce. Conversely, a low score on the index indicates that an area has a higher proportion of individuals with low incomes, more employees in unskilled occupations.*

The index of **Economic Resources** *reflects the profile of the economic resources of families within the areas. The census variables which are summarised by this income reflect the income and expenditure of families, such as income and rent. Additionally, variables which reflect wealth, such as dwelling size, are also included. The income variables are specified by family structure, since this affects disposable income. A higher score on the Index of Economic Resources indicates that an area has a higher proportion of families on high income, a lower proportion of low income families, and more households living in large houses i.e. 4 or more bedrooms. A low score indicates the area has a relatively high proportion of households on low incomes and living in small dwellings.*

The Index of **Education and Occupation** *is designed to reflect the educational and occupational structure of communities. The education variables in this index show either the level of qualification achieved or whether further education is being undertaken. The occupation variables classify the workforce into the major groups of the Australian Standard Classification of Occupations (ASCO) and the unemployed. This index does not include any income variables.*[86]

All the indices have been constructed so that relatively "advantaged" areas have high index values (i.e. often over 1000). For the Index of Relative Socio-Economic Disadvantage this means that relatively "disadvantaged" areas have lower index numbers. The above indices examine a number of variables. Some of the key variables include:

- Income;
- Employment status;
- Educational attainment;
- Skill levels;
- Income and expenditure;
- Dwelling type and size; and
- Family structure.

11.1 Epping

As at 2001, Epping had a total population of 18,347 persons, of these 47.8% were male and 52.2% were female. The male population in Epping is slightly lower than the Sydney Statistical District, which was 49.2%. Epping covers an area of 6.8 square kilometres within the Hornsby LGA.

Of this total population, 82% are aged 15 and over with 13.6% aged 65 and over. The 15 and over age bracket is slightly higher than the Sydney Statistical District level of 79.9%, and persons aged over 65 were also higher than the 11.8% of the Sydney Statistical District. Epping displayed the fastest growing proportions of children, yet had fewer younger families compared to the Hornsby LGA. There were also fast growing proportions of people aged 75 or more.

The total Epping labour force in 2001 was 9,323, and of these 425 were unemployed. At that time, 50.8% of the Epping population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Epping's unemployment rate is 4.6%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%. Amongst all suburbs within the Hornsby LGA, Epping had one of the highest unemployment rates for men, at 4.3%.

86 Australian Bureau of Statistics (2001) Census Of Population And Housing – Socio-Economic Indexes For Areas, Australia. p3-4.

With 46% of people living as a married couple, Epping displayed one of the highest rates within Hornsby LGA.

There were 7,118 dwellings identified from the 2001 Census. 4,300 (60.4%) were detached, which is higher than the 58.7% displayed as the Sydney average. 1,866 (26.2%) were flats, which was again higher than the Sydney average of 22.2%. Lastly 500 (7%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 3,328 (46.8%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 1,626 (22.8%), which was lower than the Sydney average of 23.6%. Lastly the public housing total is 49 (0.7%), which is lower than the Sydney average of 5.1%. The occupancy rate is 2.5% which is equal to the Sydney average.

4,792 (53.9%) drove to work (one method only), which is less than the Sydney average of 57.7%. Of these 365 (4.1%) were passengers, which is lower than the Sydney average of 5.6%. 1672 (18.8%) were reliant on public transport (bus or train only), which is greater than the Sydney average of 12.7%. 1,421 (16%) used the train system only, which is double the Sydney average of 8%.

Within Epping, the median weekly individual income is between $500-599, with the median weekly family income between $1200-1499. These were higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Epping is between $1000-1199, which was higher than the Sydney average, which was $800-999. The average incomes for couples with children were one of the highest in the Hornsby LGA.

The Epping averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 28: Epping averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Epping	1106.59	1161.39	1153.57	1168.25
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Epping displays a higher level of advantage than the Sydney average. These results indicate that within Epping there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 29: Social and demographic profile of Epping

Social and demographic profile of Epping				
Age Structures	Ages 15 years and over	7,152 (Male)	7,893 (Female)	15,045 (Total)
	Aged 65 years and over	1,000 (Male)	1,490 (Female)	2,490 (Total)
Population numbers and projections	Males 2001	8,788		
	Females 2001	9,559		
	Total Persons 2001	18,347		
Employment	Total Labour Force	9,323		
	Total Unemployed	425		
	Unemployment Rate	4.6%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1200-1499		
	Median weekly household income	$1000-1199		
Journey to work/school	Car Reliance	4,792 (365 of these passengers)		
	Public Transport Reliance	1672 (1421 of these train)		
Tenure	Fully owned	3,328		
	Privately rented	1,626		
	Public housing	49		
Household types	Total Dwellings	7,118		
	Detached	4,300		
	Flats	1,866		
	Attached	500		
Occupancy rate	2.5%			

11.2 Cheltenham

As at 2001, Cheltenham had a total population of 1,988 persons, of these 47.4% were male and 52.6% were female. The male population in Cheltenham is slightly lower than the Sydney Statistical District, which was 49.2%. Cheltenham covers an area of 1.6 square kilometres of the Hornsby LGA.

Of this total population, 79.3% are 15 and over with 12.2% 65 and over. The 15 and over age bracket within Cheltenham is slightly lower than the Sydney average of 79.9%, and the total persons within Cheltenham over 65 was also lower than the 11.8% of the Sydney average.

The total Cheltenham labour force in 2001 was 1,038, and of these 34 were unemployed. At that time, 52.2% of the Cheltenham population aged 15 years or more were in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from the ABS indicate that Cheltenham's unemployment rate is 3.3%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 697 dwellings identified from the 2001 Census. 629 (90.2%) were detached, which is significantly higher than the 58.7% displayed as the Sydney average. 3 (0.4%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 12 (1.7%) were attached which was much less than the Sydney average of 10.5%. Of these dwellings, 394 (56.5%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 49 (7%), which was lower than the Sydney average of 23.6%. Lastly there was no public housing. The occupancy rate is 2.8% which is higher than the Sydney average of 2.5%.

569 (56.8%) drove to work (one method only), which is less than the Sydney average of 57.7%. Of these 41 (4.1%) were passengers, which is lower than the Sydney average of 5.6%. 13.4 (13.4%) were reliant on public transport (bus or train only), which is greater than the Sydney average of 12.7%. 131 (13.1%) used the train system only, which is greater than the Sydney average of 8%.

Within Cheltenham, the median weekly individual income is between $600-699, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Cheltenham is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Cheltenham averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 30: Cheltenham averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Cheltenham	1154.57	1218.02	1222.52	1207.71
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Cheltenham displays a higher level of advantage than the Sydney average. These results indicate that within Cheltenham there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 31: Social and demographic profile of Cheltenham

Social and demographic profile of Cheltenham				
Age Structures	Ages 15 years and over	767 (Male)	809 (Female)	1576 (Total)
	Aged 65 years and over	121 (Male)	121 (Female)	242 (Total)
Population numbers and projections	Males 2001	942		
	Females 2001	1,046		
	Total Persons 2001	1,988		
Employment	Total Labour Force	1,038		
	Total Unemployed	34		
	Unemployment Rate	3.3%		
Incomes	Median Weekly Individual income	$600-699		
	Median Family Income	$1500-1999		
	Median weekly household income	$1500-1999		
Journey to work/school	Car Reliance	569 (41 of these passengers)		
	Public Transport Reliance	134 (131 of these train)		
Tenure	Fully owned	394		
	Privately rented	49		
	Public housing	0		
Household types	Total Dwellings	697		
	Detached	629		
	Flats	3		
	Attached	12		
Occupancy rate	2.8%			

11.3 Beecroft

As at 2001, Beecroft had a total population of 8,585 persons, of these 47.2% were male and 52.8% were female. The male population in Beecroft is slightly lower than the Sydney Statistical District, which was 49.2%. Beecroft covers an area of 5.3 square kilometres of the Hornsby LGA.

Of this total population, 80.1% are aged 15 and over with aged 15.8% 65 and over. The 15 and over age bracket within Beecroft is slightly higher than the Sydney average of 79.9%, and persons within Beecroft over 65 were also higher than the 11.8% of the Sydney average.

The total Beecroft labour force in 2001 was 4,401, and of these 139 were unemployed. At that time, 51.3% of the Beecroft population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney average of population in the labour force (48.4%). Current statistics from the ABS indicate that Beecroft's unemployment rate is 3.2%. This is almost half the Sydney Statistical District's unemployment rate of 6.1%.

There were 2,928 dwellings identified from the 2001 Census. 2,586 (88.3%) were detached, which is higher than the 58.7% displayed as the Sydney average. 65 (2.2%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 114 (3.9%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 1,642 (56.1%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 265 (9.1%), less than the Sydney average of 23.6%. Lastly there was no public housing recorded in Beecroft. The occupancy rate is 2.8% which is higher than the Sydney average of 2.5%.

2,455 (57.6%) drove to work (one method only), which is minutely less than the Sydney average of 57.7%. Of these 189 (4.4%) were passengers, which is lower than the Sydney average of 5.6%. 516 (12.1%) were reliant on public transport (bus or train only), which is just less than the Sydney average of 12.7%. 494 (11.6%) used the train system only, which is greater than the Sydney average of 8%.

Within Beecroft, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Beecroft is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Beecroft averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 32: Beecroft averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Beecroft	1150.25	1198.32	1207.37	1185.6
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Beecroft displays a higher level of advantage than does the Sydney average. These results indicate that within Beecroft there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 33: Social and demographic profile for Beecroft

Social and demographic profile of Beecroft				
Age Structures	Ages 15 years and over	3,191 (Male)	3,688 (Female)	6,879 (Total)
	Aged 65 years and over	573 (Male)	783 (Female)	1,356 (Total)
Population numbers and projections	Males 2001	4,048		
	Females 2001	4,537		
	Total Persons 2001	8,585		
Employment	Total Labour Force	4,401		
	Total Unemployed	139		
	Unemployment Rate	3.2%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1500-1999		
	Median weekly household income	$1500-1999		
Journey to work/school	Car Reliance	2,455 (189 of these passengers)		
	Public Transport Reliance	516 (494 of these train)		
Tenure	Fully owned	1,642		
	Privately rented	265		
	Public housing	0		
Household types	Total Dwellings	2,928		
	Detached	2,586		
	Flats	65		
	Attached	114		
Occupancy rate	2.8%			

11.4 Pennant Hills

As at 2001, Pennant Hills had a total population of 6,209 persons, of these 49% were male and 51% were female. The male population in Pennant Hills is higher than the Sydney average, which was 49.2%. Pennant Hills covers an area of 5.9 square kilometres of the Hornsby LGA.

Of this total population, 81.3% are aged 15 and over with 15% aged 65 and over. The 15 and over age bracket within Pennant Hills is slightly higher than the Sydney average of 79.9%, and persons within Pennant Hills over 65 were also higher than the Sydney average (11.8%).

The total Pennant Hills labour force in 2001 was 3,207, and of these 123 were unemployed. At that time, 52% of the Pennant Hills population aged 15 years

or more was in the labour force, which was higher than the proportion of the average Sydney population in the labour force (48.4%). Current statistics from ABS indicate that Pennant Hills's unemployment rate is 3.8%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 2,273 dwellings identified from the 2001 Census. 1,749 (76.9%) were detached, which is higher than the 58.7% displayed as the Sydney average. 193 (8.5%) were flats, which was lower than the Sydney average of 22.2%. Lastly 186 (8.2%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 1,173 (51.6%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 273 (12%), lower than the Sydney average of 23.6%. Lastly the public housing total is 45 (2%), which is less than half the Sydney average of 5.1%. The occupancy rate is 2.6% which is higher than the Sydney average of 2.5%.

1,690 (54.8%) drove to work (one method only), which is less than the Sydney average of 57.7%. Of these 147 (4.8%) were passengers, which is lower than the Sydney average of 5.6%. 524 (17%) were reliant on public transport (bus or train only), which is greater than the Sydney average of 12.7%. 506 (16.4%) used the train system only, which is double the Sydney average of 8%.

With 45% of people living as a married couple, Pennant Hills displayed one of the highest rates within Hornsby LGA.

Within Pennant Hills, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Pennant Hills is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Pennant Hills averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 34: Pennant Hills averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Pennant Hills	1114.33	1158.9	1156.25	1152.97
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Pennant Hills displays a higher level of advantage than does the Sydney average. These results indicate that within Pennant Hills there are a higher proportion

of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 35: Social and demographic profile of Pennant Hills

Social and demographic profile of Pennant Hills				
Age Structures	Ages 15 years and over	2,435 (Male)	2,610 (Female)	5,045 (Total)
	Aged 65 years and over	393 (Male)	541 (Female)	934 (Total)
Population numbers and projections	Males 2001	3044		
	Females 2001	3,165		
	Total Persons 2001	6,209		
Employment	Total Labour Force	3,207		
	Total Unemployed	123		
	Unemployment Rate	3.8%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1500-1999		
	Median weekly household income	$1200-1499		
Journey to work/school	Car Reliance	1,690 (147 of these passengers)		
	Public Transport Reliance	524 (506 of these train)		
Tenure	Fully owned	1,173		
	Privately rented	273		
	Public housing	45		
Household types	Total Dwellings	2,273		
	Detached	1,749		
	Flats	193		
	Attached	186		
Occupancy rate	2.6%			

11.5 West Pennant Hills

As at 2001, West Pennant Hills had a total population of 16,023 persons, of these 48.4% were male and 51.6% were female. The male population in West Pennant Hills is slightly lower than the Sydney Statistical District, which was 49.2%. By 2024 this population is projected to grow by 1,960 (medium series)[87]. West Pennant Hills covers an area of 9 square kilometres of the Hornsby and Baulkham Hills LGAs.

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Of this total population, 77.2% are 15 and over with 8.3% 65 and over. The 15 and over age bracket within West Pennant Hills is slightly lower than the Sydney Statistical District level of 79.9%, and persons within West Pennant Hills over 65 were also lower than the 11.8% of the Sydney Statistical District.

The total West Pennant Hills labour force in 2001 was 8,250, and of these 273 were unemployed. At that time, 51.4% of the West Pennant Hills population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that West Pennant Hills's unemployment rate is 3.3%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 4,971 dwellings identified from the 2001 Census. 4,215 (84.8%) were detached, which is higher than the 58.7% displayed as the Sydney average. 172 (3.5%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 355 (7.1%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 2,415 (48.6%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 440 (8.9%), again lower than the Sydney average of 23.6%. Lastly the public housing total is 24 (0.5%), which is lower than the Sydney average of 5.1%. The occupancy rate is 3.2% which is higher than the Sydney average of 2.5%.

5,213 (65.4%) drove to work (one method only), which is higher than the Sydney average of 57.7%. Of these 409 (5.1%) were passengers, which is lower than the Sydney average of 5.6%. 438 (5.5%) were reliant on public transport (bus or train only), which is less than the Sydney average of 12.7%. 278 (3.5%) used the train system only, which is almost double the Sydney average of 8%.

Within West Pennant Hills, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within West Pennant Hills is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The West Pennant Hills averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 36: West Pennant Hills averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
West Pennant Hills	1131.67	1181.54	1212.23	1148.83

Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, West Pennant Hills displays a higher level of advantage than does the Sydney average. These results indicate that within West Pennant Hills there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 37: Social and demographic profile of West Pennant Hills

Social and demographic profile of West Pennant Hills				
Age Structures	Ages 15 years and over	5,913 (Male)	6,455 (Female)	12,368 (Total)
	Aged 65 years and over	550 (Male)	781 (Female)	1,331 (Total)
Population numbers and projections	Males 2001	7,749		
	Females 2001	8,274		
	Total Persons 2001	16,023		
	Population Projections (2024)	Additional 1,960		
Employment	Total Labour Force	8,250		
	Total Unemployed	273		
	Unemployment Rate	3.3%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1500-1999		
	Median weekly household income	$1500-1999		
Journey to work/school	Car Reliance	5213 (409 of these passengers)		
	Public Transport Reliance	438 (278 of these train)		
Tenure	Fully owned	2,415		
	Privately rented	440		
	Public housing	24		
Household types	Total Dwellings	4,971		
	Detached	4,215		
	Flats	172		
	Attached	355		
Occupancy rate	3.2%			

11.6 Cherrybrook

As at 2001, Cherrybrook had a total population of 18,759 persons, of these 48.1% were male and 51.9% were female. The male population in Cherrybrook is slightly lower than the Sydney Statistical District, which was 49.2%. Cherrybrook covers an area of 8.4 square kilometres of the Hornsby LGA.

Of this total population, 76% are 15 and over with 8.8% 65 and over. The 15 and over age bracket within Cherrybrook is slightly lower than the Sydney Statistical District level of 79.9%, and persons within Cherrybrook over 65 were also lower than the 11.8% of the Sydney Statistical District.

The total Cherrybrook labour force in 2001 was 9,631, and of these 360 were unemployed. At that time, 51.3% of the Cherrybrook population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Cherrybrook's unemployment rate is 3.7%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 5,905 dwellings identified from the 2001 Census. 4,650 (78.7%) were detached, which is higher than the 58.7% displayed as the Sydney average. 201 (3.4%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 777 (13.2%) were attached which was higher than the Sydney average of 10.5%. Of these dwellings, 2,802 (47.5%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 661 (11.2%), which was lower than the Sydney average of 23.6%. Lastly the public housing total is 7 (0.1%), which is significantly lower than the Sydney average of 5.1%. The occupancy rate is 3.1% which is higher than the Sydney average of 2.5%.

5,957 (64.3%) drove to work (one method only), which is higher than the Sydney average of 57.7%. Of these 457 (4.9%) were passengers, which is lower than the Sydney average of 5.6%. 541 (5.8%) were reliant on public transport (bus or train only), which is less than half the Sydney average of 12.7%. 467 (5%) used the train system only, which is less the Sydney average of 8%.

Within Cherrybrook, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Cherrybrook is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Cherrybrook averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 38: Cherrybrook averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Cherrybrook	1128.9	1184.49	1215.12	1153.74
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Cherrybrook displays a higher level of advantage than does the Sydney average. These results indicate that within Cherrybrook there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 39: Social and demographic profile of Cherrybrook

Social and demographic profile of Cherrybrook				
Age Structures	Ages 15 years and over	6,757 (Male)	7,506 (Female)	14,263 (Total)
	Aged 65 years and over	681 (Male)	968 (Female)	1,649 (Total)
Population numbers and projections	Males 2001	9,030		
	Females 2001	9,729		
	Total Persons 2001	18,759		
Employment	Total Labour Force	9,631		
	Total Unemployed	360		
	Unemployment Rate	3.7%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1500-1999		
	Median weekly household income	$1500-1999		
Journey to work/school	Car Reliance	5,957 (457 of these passengers)		
	Public Transport Reliance	541 (467 of these train)		
Tenure	Fully owned	2,802		
	Privately rented	661		
	Public housing	7		
Household types	Total Dwellings	5,905		
	Detached	4,650		
	Flats	201		
	Attached	777		

Social and demographic profile of Cherrybrook	
Occupancy rate	3.1%

11.7 Castle Hill

As at 2001, Castle Hill had a total population of 31,786 persons, of these 47.9% were male and 52.2% were female. The male population in Castle Hill is slightly lower than the Sydney Statistical District, which was 49.2%. By 2024 this population is projected grow by 7,230 (medium series)[88]. Castle Hill covers an area of 19 square kilometres of the Hornsby LGA. This population density is the second highest within Baulkham Hills LGA.

Of this total population, 79% are 15 and over with 12.2% 65 and over. The 15 and over age bracket within Castle Hill is lower than the Sydney Statistical District level of 79.9%, and persons within Castle Hill over 65 were slightly higher than the 11.8% of the Sydney Statistical District. Castle Hill displayed the fastest growing proportions of young people within the Hornsby LGA.

The total Castle Hill labour force in 2001 was 16,710, and of these 562 were unemployed. At that time, 52.6% of the Castle Hill population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Castle Hill's unemployment rate is 3.4%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

With 46% of people living as a married couple, Castle Hill displayed one of the highest rates within Hornsby LGA.

There were 10,585 dwellings identified from the 2001 Census. 8,299 (78.4%) were detached, which is higher than the 58.7% displayed as the Sydney average. 498 (4.7%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 1132 (10.7%) were attached which was higher than the Sydney average of 10.5%. Of these dwellings, 4,629 (43.7%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 1,324 (12.5%), which was lower than the Sydney average of 23.6%. Lastly the public housing total is 56 (0.5%), which is lower than the Sydney average of 5.1%. The occupancy rate was 2.8% which was higher than the Sydney average of 2.5%.

11298 (70%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 827 (5.1%) were passengers, which is lower than the Sydney average of 5.6%. 762 (4.7%) were reliant on public transport (bus or train only), which is less than the Sydney average of 12.7%. 162 (1%) used the train system only, which is eight times less than the Sydney average of 8%.

Within Castle Hill, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were

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significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Castle Hill is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999. The average incomes for couples with children were one of the highest in Castle Hill.

The Castle Hill averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 40: Castle Hill averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Castle Hill	1112.62	1149.59	1185.76	1115.73
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Castle Hill displays a higher level of advantage than does the Sydney average. These results indicate that within Castle Hill there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 41: Social and demographic profile of Castle Hill

Social and demographic profile of Castle Hill				
Age Structures	Ages 15 years and over	11,823 (Male)	13,288 (Female)	25,111 (Total)
	Aged 65 years and over	1,411 (Male)	2,473 (Female)	3,884 (Total)
Population numbers and projections	Males 2001	15,210		
	Females 2001	16,558		
	Total Persons 2001	31,768		
	Population Projections (2024)	Additional 7,230		
Employment	Total Labour Force	16,710		
	Total Unemployed	5,562		
	Unemployment Rate	3.4%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1500-1999		
	Median weekly household income	$1200-1499		
Journey to work/school	Car Reliance	11,298 (827 of these		

Social and demographic profile of Castle Hill		
		passengers)
	Public Transport Reliance	762 (162 of these train)
Tenure	Fully owned	4,629
	Privately rented	1,324
	Public housing	56
Household types	Total Dwellings	10,585
	Detached	8,299
	Flats	498
	Attached	1,132
Occupancy rate	2.8%	

11.8 Glenhaven

As at 2001, Glenhaven had a total population of 5,689 persons, of these 49% were male and 51% were female. The male population in Glenhaven is just lower than the Sydney Statistical District, which was 49.2%. By 2024 this population is projected to grow by 790 (medium series)[89]. Glenhaven covers an area of 6.5 square kilometres of the Baulkham Hills LGA.

Of this total population, 75% are 15 and over with 5.5% 65 and over. The 15 and over age bracket within Glenhaven is lower than the Sydney Statistical District level of 79.9%, and persons within Glenhaven over 65 were more than half the 11.8% of the Sydney Statistical District.

The total Glenhaven labour force in 2001 was 3,187, and of these 78 were unemployed. At that time, 56% of the Glenhaven population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from the ABS indicate that Glenhaven's unemployment rate is 2.4%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 1,724 dwellings identified from the 2001 Census. 1158 (67.2%) were detached, which is higher than the 58.7% displayed as the Sydney average. 10 (0.6%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 85 (4.9%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 814 (47.2%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 98 (5.7%), which was lower than the Sydney average of 23.6%. Lastly there was no public housing. The occupancy rate is 3.3 which was higher than the Sydney average of 2.5%.

2,224 (71.6%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 107 (3.4%) were passengers, which is

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lower than the Sydney average of 5.6%. 64 (2.1%) were reliant on public transport (bus or train only), which is lower than the Sydney average of 12.7%. 26 (0.8%) used the train system only, which is significantly lower than the Sydney average of 8%.

Within Glenhaven, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Glenhaven is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Glenhaven averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 42: Glenhaven averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Glenhaven	1132.93	1172.42	1227.47	1112.99
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Glenhaven displays a higher level of advantage than does the Sydney average. These results indicate that within Glenhaven there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 43: Social and demographic profile of Glenhaven

Social and demographic profile of Glenhaven				
Age Structures	Ages 15 years and over	2,077 (Male)	2,189 (Female)	4,266 (Total)
	Aged 65 years and over	148 (Male)	165 (Female)	313 (Total)
Population numbers and projections	Males 2001	2,787		
	Females 2001	2,902		
	Total Persons 2001	5,689		
	Population Projections (2024)	Additional 790		
Employment	Total Labour Force	3,187		
	Total Unemployed	78		
	Unemployment Rate	2.4%		
Incomes	Median Weekly Individual income	$500-599		

Social and demographic profile of Glenhaven		
	Median Family Income	$1500-1999
	Median weekly household income	$1500-1999
Journey to work/school	Car Reliance	2,224 (107 of these passengers)
	Public Transport Reliance	64 (26 of these train)
Tenure	Fully owned	814
	Privately rented	98
	Public housing	0
Household types	Total Dwellings	1,724
	Detached	1,158
	Flats	10
	Attached	85
Occupancy rate	3.3%	

11.9 Baulkham Hills

As at 2001, Baulkham Hills had a total population of 33,661 persons, of these 49.2% were male and 50.8% were female. The male population in Baulkham Hills is equal to the Sydney Statistical District, which was also at 49.2%. By 2024 this population is projected grow by 7,920 (medium series)[90]. Baulkham Hills covers an area of 20 square kilometres of the Baulkham Hills LGA.

Of this total population, 80% are 15 and over with 9.2% 65 and over. The 15 and over age bracket within Baulkham Hills is slightly higher than the Sydney Statistical District level of 79.9%, and persons within Baulkham Hills over 65 were lower than the 11.8% of the Sydney Statistical District.

The total Baulkham Hills labour force in 2001 was 19,035, and of these 635 were unemployed. At that time, 56.5% of the Baulkham Hills population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Baulkham Hills's unemployment rate is 3.3%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 11,723 dwellings identified from the 2001 Census. 9,716 (82.9%) were detached, which is higher than the 58.7% displayed as the Sydney average. 333 (2.8%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 1,092 (9.3%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 5517 (47.1%) dwellings were fully owned, which is higher than the Sydney average of 39%. The private rental total was 1,411 (12%), which was lower than the Sydney average of

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23.6%. Lastly the public housing total is 62 (0.5%), which is lower than the Sydney average of 5.1%. The occupancy rate is 2.8% which is higher than the Sydney average of 2.5%.

12,668 (68.9%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 994 (5.4%) were passengers, which is lower than the Sydney average of 5.6%. 1,115 (6.1%) were reliant on public transport (bus or train only), which is less than half the Sydney average of 12.7%. 230 (1.3%) used the train system only, which less than the Sydney average of 8%.

Within Baulkham Hills, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Baulkham Hills is between $1200-1499, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Baulkham Hills averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 44: Baulkham Hills averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Baulkham Hills	1102.88	1127.44	1168.54	1093.61
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Baulkham Hills displays a higher level of advantage than does the Sydney average. These results indicate that within Baulkham Hills there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 45: Social and demographic profile of Baulkham Hills

Social and demographic profile of Baulkham Hills				
Age Structures	Ages 15 years and over	13,087 (Male)	13,849 (Female)	26,936 (Total)
	Aged 65 years and over	1,324 (Male)	1,772 (Female)	3,096 (Total)
Population numbers and projections	Males 2001	16,557		
	Females 2001	17,104		
	Total Persons 2001	33,661		

Social and demographic profile of Baulkham Hills		
	Population Projections (2024)	Additional 7,920
Employment	Total Labour Force	19,035
	Total Unemployed	635
	Unemployment Rate	3.3%
Incomes	Median Weekly Individual income	$500-599
	Median Family Income	$1500-1999
	Median weekly household income	$1200-1499
Journey to work/school	Car Reliance	12,668 (994 of these passengers)
	Public Transport Reliance	1,115 (230 of these train)
Tenure	Fully owned	5,517
	Privately rented	1,411
	Public housing	62
Household types	Total Dwellings	11,723
	Detached	9,716
	Flats	333
	Attached	1,092
Occupancy rate	2.8%	

11.10 Bella Vista

As at 2001, Bella Vista had a total population of 4,483 persons, of these 48.5% were male and 51.5% were female. The male population in Bella Vista is slightly lower than the Sydney Statistical District, which was 49.2%. By 2024 this population is projected grow by 2,890 (medium series)[91]. Bella Vista covers an area of 2.5 square kilometres of the Baulkham Hills LGA.

Of this total population, 73.5% are 15 and over with 4.5% 65 and over. The 15 and over age bracket within Bella Vista is lower than the Sydney Statistical District level of 79.9%, and persons within Bella Vista over 65 were also lower than the 11.8% of the Sydney Statistical District.

The total Bella Vista labour force in 2001 was 2,477, and of these 77 were unemployed. At that time, 55.3% of the Bella Vista population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Bella Vista's unemployment rate is 3.1%.

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This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 1,334 dwellings identified from the 2001 Census. 1026 (76.9%) were detached, which is higher than the 58.7% displayed as the Sydney average. 7 (0.5%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 233 (17.5%) were attached which was higher than the Sydney average of 10.5%. Of these dwellings, 485 (36.4%) dwellings were fully owned, which is lower than the Sydney average of 39%. The private rental total was 120 (9%), which is lower than the Sydney average of 23.6%. Lastly there is no public housing. The occupancy rate is 3.3% which is higher than the Sydney average of 2.5%.

1685 (70.3%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 103 (4.3%) were passengers, which is lower than the Sydney average of 5.6%. 111 (4.6%) were reliant on public transport (bus or train only), which is less than the Sydney average of 12.7%. 58 (2.4%) used the train system only, which is less than the Sydney average of 8%.

Within Bella Vista, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Bella Vista is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Bella Vista averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 46: Bella Vista averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Bella Vista	1121.19	1167.95	1228.04	1118.47
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Bella Vista displays a higher level of advantage than does the Sydney average. These results indicate that within Bella Vista there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 47: Social and demographic profile of Bella Vista

Social and demographic profile of Bella Vista				
Age Structures	Ages 15 years and over	1,587 (Male)	1,707 (Female)	3,294 (Total)

Social and demographic profile of Bella Vista				
	Aged 65 years and over	92 (Male)	110 (Female)	202 (Total)
Population numbers and projections	Males 2001	2,175		
	Females 2001	2,308		
	Total Persons 2001	4,483		
	Population Projections (2024)	Additional 2,890		
Employment	Total Labour Force	2,477		
	Total Unemployed	77		
	Unemployment Rate	3.1%		
Incomes	Median Weekly Individual income	$500-599		
	Median Family Income	$1500-1999		
	Median weekly household income	$1500-1999		
Journey to work/school	Car Reliance	1,685 (103 of these passengers)		
	Public Transport Reliance	111 (58 of these train)		
Tenure	Fully owned	485		
	Privately rented	120		
	Public housing	0		
Household types	Total Dwellings	1,334		
	Detached	1,026		
	Flats	7		
	Attached	233		
Occupancy rate	3.3%			

11.11 Parklea

As at 2001, Parklea had a total population of 1,289 persons, of these 71.1% were male and 28.9% were female. The male population in Parklea is significantly higher than the Sydney Statistical District, which was 49.2%. Parklea covers an area of 1.2 square kilometres of the Baulkham Hills LGA.

Of this total population, 81.8% are 15 and over with 3.3% 65 and over. The 15 and over age bracket within Parklea is slightly higher than the Sydney Statistical District level of 79.9%, and persons within Parklea over 65 were significantly lower than the 11.8% of the Sydney Statistical District.

The total Parklea labour force in 2001 was 309, and of these 73 were unemployed. At that time, 24% of the Parklea population aged 15 years or more was in the labour force, which half proportion of the Sydney Statistical

District's population in the labour force (48.4%). Current statistics from ABS indicate that Parklea's unemployment rate is 23.6%. This is nearly four times higher than Sydney's average unemployment rate of 6.1%.

There were 318 dwellings identified from the 2001 Census. 318 (100%) were detached, which is higher than the 58.7% displayed as the Sydney average. There were no recorded flats or attached dwellings. Of these dwellings, 5 (1.5%) dwellings were fully owned, which is significantly lower than the Sydney average of 39%. The private rental total was 238 (74.8%), which is significantly greater than the Sydney average of 23.6%. Lastly the public housing total is 3 (0.9%), which is lower than the Sydney average of 5.1%. The occupancy rate is 2.8% which is higher than the Sydney average of 2.5%.

171 (72.8%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 43 (18.3%) were passengers, which is higher than the Sydney average of 5.6%. 10 (4.3%) were reliant on public transport (bus or train only), which is less than the Sydney average of 12.7%. 6 (2.6%) used the train system only, which is less the Sydney average of 8%.

Within Parklea, the median weekly individual income is between $400-499, which is identical to the Sydney Statistical District. The median weekly family income is between $500-599, which is significantly lower than the Sydney Statistical District, whose median weekly family income between $1000-1199. The median weekly household income within Parklea is between $500-599, which is again lower than the Sydney Statistical District, which was $800-999.

There were no Parklea averages for relative socio-economic advantage/disadvantage available from SEIFA.

Table 48: Social and demographic profile of Parklea

Social and demographic profile of Parklea				
Age Structures	Ages 15 years and over	782 (Male)	272 (Female)	1,054 (Total)
	Aged 65 years and over	30 (Male)	12 (Female)	42 (Total)
Population numbers and projections	Males 2001	917		
	Females 2001	372		
	Total Persons 2001	1,289		
Employment	Total Labour Force	309		
	Total Unemployed	73		
	Unemployment Rate	23.6%		
Incomes	Median Weekly Individual income	$400-499		
	Median Family Income	$500-599		
	Median weekly household	$500-599		

Social and demographic profile of Parklea		
	income	
Journey to work/school	Car Reliance	171 (43 of these passengers)
	Public Transport Reliance	10 (6 of these train)
Tenure	Fully owned	5
	Privately rented	238
	Public housing	3
Household types	Total Dwellings	318
	Detached	318
	Flats	0
	Attached	0
Occupancy rate	2.7%	

11.12 Kellyville

As at 2001, Kellyville had a total population of 13,466 persons, of these 49.7% were male and 50.3% were female. The male population in Kellyville is slightly higher than the Sydney Statistical District, which was 49.2%. By 2024 this population is projected grow by 13,060 (medium series)[92]. Kellyville covers an area of 16.4 square kilometres of the Baulkham Hills LGA.

Of this total population, 72.4% are 15 and over with 4.3% 65 and over. The 15 and over age bracket within Kellyville is lower than the Sydney Statistical District level of 79.9%, and persons within Kellyville over 65 were also lower than the 11.8% of the Sydney Statistical District.

The total Kellyville labour force in 2001 was 7,323, and of these 229 were unemployed. At that time, 54.4% of the Kellyville population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Kellyville's unemployment rate is 3.1%. This is considerably less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 4,257 dwellings identified from the 2001 Census. 3,857 (90.6%) were detached, which is significantly higher than the 58.7% displayed as the Sydney average. 6 (0.1%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 101 (2.4%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 1,229 (28.9%) dwellings were fully owned, which is lower than the Sydney average of 39%. The private rental total was 408 (9.6%), which was lower than the Sydney average of 23.6%. Lastly there were no public housing. The occupancy rate is 3.1% which is higher than the Sydney average of 2.5%.

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5,233 (73.8%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 375 (5.3%) were passengers, which is lower than the Sydney average of 5.6%. 214 (3%) were reliant on public transport (bus or train only), which is less than the Sydney average of 12.7%. 73 (1%) used the train system only, which is eight times less than the Sydney average of 8%.

Within Kellyville, the median weekly individual income is between $500-599, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Kellyville is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Kellyville averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 49: Kellyville averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Kellyville	1114.49	1143.98	1214.48	1089.44
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Kellyville displays a higher level of advantage than does the Sydney average. These results indicate that within Kellyville there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 50: Social and demographic profile of Kellyville

Social and demographic profile of Kellyville				
Age Structures	Ages 15 years and over	4,791 (Male)	4,954 (Female)	9,745 (Total)
	Aged 65 years and over	259 (Male)	319 (Female)	578 (Total)
Population numbers and projections	Males 2001	6,691		
	Females 2001	6,775		
	Total Persons 2001	13,466		
	Population Projections (2024)	Additional 13,060		
Employment	Total Labour Force	7,323		
	Total Unemployed	229		
	Unemployment Rate	3.1%		

Social and demographic profile of Kellyville		
Incomes	Median Weekly Individual income	$500-599
	Median Family Income	$1500-1999
	Median weekly household income	$1500-1999
Journey to work/school	Car Reliance	5,233 (375 of these passengers)
	Public Transport Reliance	214 (73 of these train)
Tenure	Fully owned	1,229
	Privately rented	408
	Public housing	0
Household types	Total Dwellings	4,257
	Detached	3,857
	Flats	6
	Attached	101
Occupancy rate	3.1%	

11.13 Rouse Hill

As at 2001, Rouse Hill had a total population of 3,166 persons, of these 50.8% were male and 49.2% were female. The male population in Rouse Hill is slightly higher than the Sydney Statistical District, which was 49.2%. By 2024 this population is projected grow by 4,270 (medium series)[93]. Rouse Hill covers an area of 4.2 square kilometres of the Baulkham Hills LGA.

Of this total population, 72.1% are 15 and over with 3.3% 65 and over. The 15 and over age bracket within Rouse Hill is lower than the Sydney Statistical District level of 79.9%, and persons within Rouse Hill over 65 were also lower than the 11.8% of the Sydney Statistical District.

The total Rouse Hill labour force in 2001 was 1,813, and of these 33 were unemployed. At that time, 57.3% of the Rouse Hill population aged 15 years or more was in the labour force, which was higher than the proportion of the Sydney Statistical District's population in the labour force (48.4%). Current statistics from ABS indicate that Rouse Hill's unemployment rate is 1.8%. This is at least three times less than the Sydney Statistical District's unemployment rate of 6.1%.

There were 1,040 dwellings identified from the 2001 Census. 970 (93.3%) were detached, which is significantly higher than the 58.7% displayed as the Sydney average. 3 (0.3%) were flats, which was significantly lower than the Sydney average of 22.2%. Lastly 22 (2.1%) were attached which was less than the Sydney average of 10.5%. Of these dwellings, 177 (17%) dwellings were

93 AECGroup. October 2004. Baulkham Hills Shire Population Projections- Rouse Hill. P4.

fully owned, which is lower than the Sydney average of 39%. The private rental total was 110 (10.6%), which was less than the Sydney average of 23.6%. Lastly the public housing total is 3 (0.3%), which is lower than the Sydney average of 5.1%. The occupancy rate is 3% which is higher than the Sydney average of 2.5%.

1,318 (74%) drove to work (one method only), which is greater than the Sydney average of 57.7%. Of these 92 (5.2%) were passengers, which is lower than the Sydney average of 5.6%. 63 (3.5%) were reliant on public transport (bus or train only), which is lower than the Sydney average of 12.7%. 37 (2%) used the train system only, which is four times less than the Sydney average of 8%.

Within Rouse Hill, the median weekly individual income is between $600-699, with the median weekly family income between $1500-1999. These were significantly higher than the Sydney Statistical District, whose median weekly individual income is between $400-499, with the median weekly family income between $1000-1199. The median weekly household income within Rouse Hill is between $1500-1999, which was significantly higher than the Sydney Statistical District, which was $800-999.

The Rouse Hill averages for relative socio-economic advantage/disadvantage are compared to those of Sydney in the table below.

Table 51: Rouse Hill averages for relative socio-economic advantage/disadvantage

SEIFA Index	Disadvantage	Socio-Economic Advantage/ Disadvantage	Economic Resources	Education and Occupation
Rouse Hill	1121.86	1152.23	1258.7	1077.36
Sydney Average	1016.84	1051.31	1078.08	1038.53

Across all relative socio-economic advantage/disadvantage indexes, Rouse Hill displays a higher level of advantage than does the Sydney average. These results indicate that within Rouse Hill there are a higher proportion of people with higher incomes, higher levels of employment, in a skilled workforce, and living in larger households.

Table 52: Social and demographic profile of Rouse Hill

Social and demographic profile of Rouse Hill				
Age Structures	Ages 15 years and over	1,158 (Male)	1,124 (Female)	2,282 (Total)
	Aged 65 years and over	46 (Male)	58 (Female)	104 (Total)
Population numbers and projections	Males 2001	1,609		
	Females 2001	1,557		
	Total Persons 2001	3,166		

Social and demographic profile of Rouse Hill		
	Population Projections (2024)	Additional 4,270
Employment	Total Labour Force	1,813
	Total Unemployed	33
	Unemployment Rate	1.8%
Incomes	Median Weekly Individual income	$600-699
	Median Family Income	$1500-1999
	Median weekly household income	$1500-1999
Journey to work/school	Car Reliance	1,318 (92 of these passengers)
	Public Transport Reliance	63 (37 of these train)
Tenure	Fully owned	177
	Privately rented	110
	Public housing	3
Household types	Total Dwellings	1,040
	Detached	970
	Flats	3
	Attached	22
Occupancy rate	3%	