Penrith Regional City Infrastructure Strategy

Penrith City Council December 2008



SGS Economics & Planning

SGS Economics & Planning

This Report has been prepared for:

PENRITH CITY COUNCIL
Serving Our Community

This report has been prepared by:

SGS Economics and Planning Pty. Ltd.
ACN 007 437 729
Suite 12/50 Reservoir St
Surry Hills NSW 2010
phone: 61 2 83070121
fax: 61 2 83070126
email: sgsnsw@sgsep.com.au
web: www.sgsep.com.au

In collaboration with:

MAUNSELL

Maunsell Australia Pty Ltd
Level 11, 44 Market Street,
Sydney, NSW 2000
phone: 61 2 8295 4446
fax: 61 2 9262 5060
email: Sydney@maunsell.com
web: www.maunsell.com

Figures

Tables

Executive Summary

Penrith has been designated in Metropolitan Strategy as a Regional city. It is therefore expected to become the principal centre providing services for one of the most rapidly growing regions in Australia. By 2031 the equivalent of 'two Canberra's will be added to the Greater Western Region.

The City of Penrith is expected to accommodate 25,000 new dwellings by 2031 and around 40,000 new jobs requiring commercial and industrial facilities. This growth will occur in both infill and Greenfield situations and will generate significant infrastructure needs.

The purpose of this Infrastructure Strategy is to identify the critical infrastructure that will be required to support this unprecedented level of growth and to explore the means by which its rollout may be funded and managed. The emphasis of the Strategy is on 'higher order' publicly funded infrastructure which necessitates dealing with the responsibilities of all levels of government.

Infrastructure planning must ensure that any future development is sustainable and balances social, economic and environmental needs. Infrastructure planning plays a pivotal role in creating liveable communities, vibrant economies, sustainable places, diverse cultural expression and social cohesion.

Western Sydney and Penrith have fallen behind in educational attainment and income compared to the Inner Sydney region. The provision of a well planned and designed infrastructure will help to overcome this gap.

Due to short-term financial planning horizons, land that is required for infrastructure in the long run is often not set aside. Therefore, opportunities to provide the infrastructure in the future are lost or are severely compromised.

If for example, Penrith's road network is not upgraded and extended during the urban expansion phase, the City will face major congestion problems in 20 years time which will harm its economy and community. This will negatively affect the City's competitiveness.

In order to address the funding challenge, principles have been explored from the literature. Based on this analysis a distinction is made between 'social public infrastructure' which includes cultural recreational, social support and environmental facilities, and 'physical public infrastructure' which includes roads, pipes and cables.

A general principle is that social public infrastructure should be funded from taxation rather than user charges. The basis for this is the redistribution outcomes that are desired to be achieved. In contrast, a general principle applied to funding physical public infrastructure is that user charges, including development contributions, should be applied. In both instances borrowing funds to spread the cost over the period in which the infrastructure delivers benefits is economically efficient.

These principles are applied in this Strategy to infrastructure at the regional, district and local levels. The City of Penrith applies development contributions to all greenfields and infill development for what might be termed 'estate items' and 'City-wide items'. The rates vary widely -

up to $48,000 per lot. When combined with State Infrastructure Contributions, which can be around $33,000 per lot, there is a significant upfront cost imposed on home purchasers.

The City of Penrith in common with all Councils in NSW, has been subjected to rate pegging for two decades hence rates on a per-capita basis lag behind the national average by 15%. Arguably they should be higher than the national average due to the strength of the taxation base and the high level of need for urban infrastructure.

As a consequence, the City has only minimal funds available for capital works and in fact relies on 'special rate increases' to renew current assets. A number of authoritative reports (including IPART) have highlighted the unsustainability of this situation.

A review of 'good practice' in Australia points to the approach in South East Queensland where long-term budgets are in place to fund planned infrastructure. The Growth Centres in Sydney are another example of long-term infrastructure planning. In contrast, there is no long-term planning for regional infrastructure items in Western Sydney.

Deficiencies in current practice are:

1. Lack of commitment by the State Government agencies to their proportion of planned infrastructure at the regional level.
2. Lack of planning for regional infrastructure outside the Growth Centres.
3. Some shortfalls in-long term planning for district infrastructure, e.g. in aquatic centres.
4. Over-emphasis on development contributions for local and regional public infrastructure.

If these deficiencies are not addressed, Western Sydney will face a situation where the objectives of liveability, economic viability and environmental sustainability will be compromised.

In preparing this Strategy an extensive review of existing and required urban infrastructure was undertaken. The review focused on 'high order' items and took a conservative approach in that only those items that are considered to be essential for basic health, safety and amenity were included. All items were included in a model to facilitate analysis and to estimate future costs.

The analysis of future requirements identifies a number of backlogs in infrastructure provision plus the following future requirements:

Category	Council	State	Developer Contr.	Total
Social Services	$8,250,000	$7,500,000	$20,471,750	*$36,221,750*
Health Services	$0	$0	$0	*$0*
Cultural Services	$0	$0	$0	*$0*
Emergency Services	$0	$10,505,000	$0	*$10,505,000*
Education Services	$0	$310,488,730	$0	*$310,488,730*
Recreation Services	$1,837,700	$9,782,000	$69,958,977	*$81,578,677*
Environmental Management	$0	$0	$0	*$0*
Utility Services	$0	$0	$20,657,139	*$20,657,139*
Civil Infrastructure	$0	$2,204,312,000	$363,824,835	*$2,568,136,835*
Total	*$10,087,700*	*$2,542,587,730*	*$474,912,701*	***$3,027,588,131***

In addition, there is a requirement to connect roads outside the City of Penrith into the regional network. It is estimated that new rail links and upgrades will cost in the order of $4 billion. Bus services will require major expansion.

While these estimates are necessarily broad they do indicate the order of magnitude of the infrastructure task ahead. The implications of not meeting these needs in a reasonable timeframe will be profound for the region. There will be major social and economic costs, not to mention safety issues on an under-developed road network. It is essential that planning for the identified future infrastructure needs commence forthwith.

The City faces a number of challenges in tackling the future infrastructure funding task. While constraints on revenue curtail any capital works program, beyond that funded by development contributions, there will be a significant future funding obligation arising from the development process. New infrastructure items provided directly by developers or through development contributions will come to the City for care and maintenance in perpetuity.

The City is already in a compromised position with regard to maintaining its assets. There is a $100m capital renewal backlog and funding for maintenance is $2.8m pa short of requirements. There is a potential, if current constraints remain, for the annual deficit to blow out to $21m pa and for the capital renewal backlog to blow out to $316m by 2031.

At this critical point it is very timely for the City to develop its Infrastructure Strategy. The strategy is framed around objectives in the areas of:

- supporting communities;
- protecting the environment;
- maximising liveability; and
- promoting economic development.

Funding and Financing

Rate pegging is severely constraining the Council's ability to carry out its infrastructure obligations (amongst other things) under the Metropolitan Strategy. When combined with responsibility and cost shifting from the State Government this threatens the financial viability of the Council. At the very least it is building up a huge unfunded liability for future generations.

It is recommended that under a rate pegging regime Council advocate to the State Government that a special rate variations policy for funding infrastructure be adopted to apply to the Local Government sector as a whole.

Partnerships

The lack of a formal platform for cooperation between Local and State Government in NSW is a major issue.

It is recommended that Council advocate to the State Government that a formal mechanism be put in place to foster partnerships between the Commonwealth, State and Local levels of government.

Regional Response

The issues affecting Penrith are equally applicable to the wider region and many are directly relevant to Local Government generally. Hence, a regional response is necessary.

The basis of the above advocacy initiatives should be 'information'. The key document will be a Western Sydney Comprehensive Structure Plan which gives effect to Metropolitan Strategy and which demonstrably accords with 'best practice'. The plan should be prepared collaboratively with the community and it should support the key stakeholders.

If the structure plan is based on best practice and it demonstrates how the region can develop in a sustainable way (complementary to the Metro and North West and South West Subregional Strategies) it will be difficult for State agencies to argue for a low expenditure scenario which constitutes worst practice and is seen to be creating unsafe and unliveable environments.

It is recommended that the Growth Alliance Councils join together to prosecute the Western Sydney Comprehensive Structure Plan and to forge the necessary partnerships to carry this through. Assistance will be sought from industry groups such as the UDIA, PCA and HIA. WSROC will be a key player and local groups should be included – including the relevant Chambers of Commerce, City Centre Association and community groups.

An early initiative in the advocacy strategy is development of a communications plan which will be expanded over time.

Other key initiatives to be pursued are a review of the Local Government Act special rate provisions and the potential for a separately funded metropolitan parks authority to replace the current system of ad hoc trusts.

Implementation, Monitoring and Review

The task of carrying forward the foregoing recommendations will require a co-ordinated and concerted effort on behalf of the Councils involved.

It is recommended that Council advocate to the State Government for establishment of a dedicated project management team to pursue the recommended actions in this Strategy.

1 Introduction

1.1 A Context of Growth

Australian capital cities are experiencing a sustained period of rapid urban growth which is predicted to remain strong for the next 25 years or more. The cost of building vibrant, economically viable and sustainable communities is high.

Western Sydney is home to 1 in 11 Australians and is Australia's third largest regional economy. Yet the region is suffering from increasing growth pressures as its population and economic activity increase.

Strong focus has been drawn to these issues recently by the National Growth Area Alliance (NGAA) representing 30 growth Councils around Australia, including Penrith City Council. The NGAA accommodates 22.6% of the nation's population and over the five years to 2006, 54.7% of Australia's population growth has occurred in NGAA Councils. This trend will continue with an expected 1.4 million people moving into growth areas in the next 15 years.

The NSW Government's State Plan articulates a range of key initiatives for Government action including growing prosperity, establishing jobs closer to home and improving housing affordability. These directives command continued emphasis in stimulating Western Sydney's economy to grow business and job delivery, increasing the number of people who live within 30 minutes of a city or major centre, and ensuring a supply of land and a mix of new housing that meets demand.

The NSW Government's Metropolitan Strategy identifies specific subregions where this growth and investment will be targeted. As a nominated Regional City, Penrith will gain importance as the principal centre servicing the North West Sydney Subregion.

Penrith City has experienced strong population growth over the last ten years and this trend is expected to continue. It is forecast that the population will grow by over 33,000 residents by 2021 and around 50,000 residents by 2031. Employment is projected to increase by approximately 40,000 jobs over the next 25 years.[1]

Thirteen major urban release areas will cater for the majority of the residential and employment growth in the City, but infill developments and an increase in jobs in the City Centre will also contribute towards growth.

Penrith City having been identified as a Regional City in the Department of Planning's (DoP) Metropolitan Strategy (2005) and Draft North West Subregional Strategy (2007) will be expected to strengthen its role in providing services for the Greater Western Region. Penrith is therefore experiencing increased pressure from both existing and incoming populations to provide the necessary infrastructure to support this growth.

[1] Penrith City Council Forecasts 2007

1.2 Overview of the Study

SGS Economics and Planning and Maunsell Australia were commissioned by Penrith City Council to undertake a 'Penrith Regional City Infrastructure Strategy'.

The three key objectives of the Infrastructure Strategy are:

- *Identify critical infrastructure required to underpin the City's growth, together with a sustainable funding strategy for its ongoing roll-out;*
- *Develop a delivery strategy for that infrastructure which identifies the most appropriate means of lobbying Government and other infrastructure providers and identifies innovative approaches to securing necessary infrastructure in partnership with a range of Government and non-government organisations and the private sector; and*
- *Provide a flexible mechanism for monitoring and updating the Strategy, so that it will remain current and in context in the years ahead.*

The strategy concentrates on the provision of 'higher order' infrastructure, e.g. schools and main roads, and does not consider infrastructure elements down to the neighbourhood level such as street furniture. It examines the 'baseline' infrastructure which is necessary to sustain the planned development of Penrith as a Regional City.

The strategy investigates the current provision of higher order infrastructure items, identifies existing backlogs as well as future requirements and develops funding and financing options and advocacy strategies.

An infrastructure inventory software has been developed that includes all higher order infrastructure items linked to a cash-flow and a financing model. The inventory will provide a flexible mechanism for monitoring and updating the Infrastructure Strategy.

1.3 Penrith Now

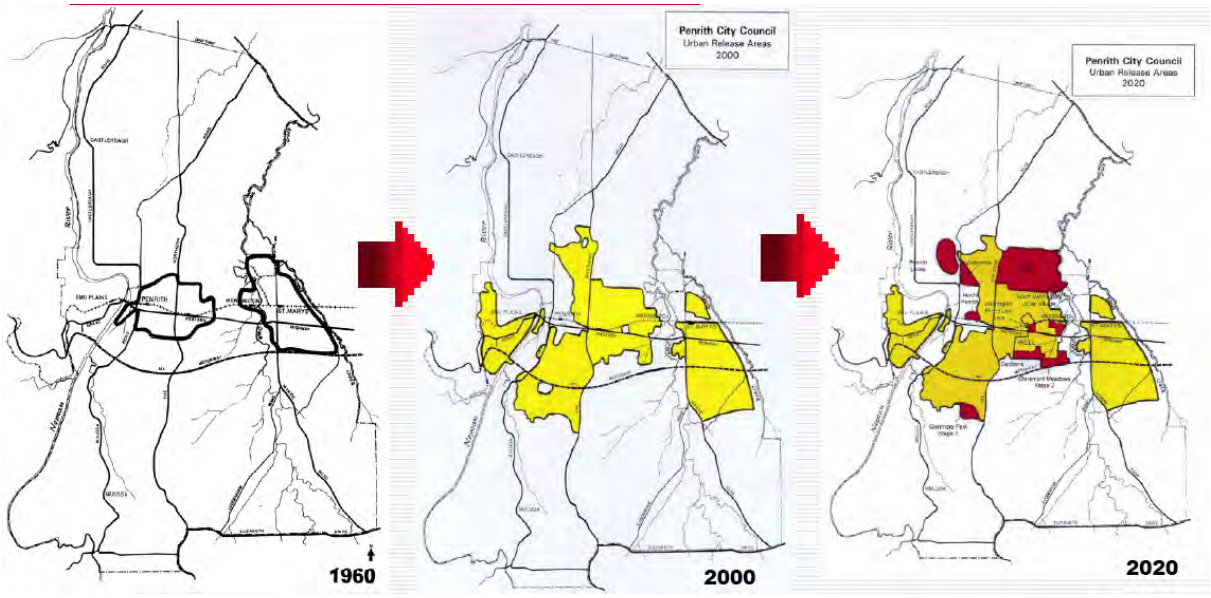
Urban Growth in Penrith

Penrith has experienced strong growth since the 1960's due to the continued release of land for urban development. Originally, the main residential areas were concentrated in Penrith City and St. Marys as illustrated in Figure 1. New residential areas have developed around the railway line as well as the Greater Western Highway and the M4.

Penrith's population has grown continuously from a very small population base of 31,969 residents in 1961 to 60,316 in 1971, 108,720 residents in 1981 and 176,661 residents in 2007.[2] Penrith's growth is continuing into the first half of the 21st century and the City is preparing for another surge in residential and employment development and growth as illustrated overleaf.

[2] Penrith City Council. Penrith City e-history, 2008.

Figure 1. Penrith City, Historical Growth



Source: Penrith City Council 2008

A snapshot of Penrith

A snapshot of the City in 2007 shows the following recent developments:

Demographic and Socio-Economic Profile

- **Penrith City has experienced significant population growth in the last ten years.** The most recent ABS Estimated Resident Population (ERP) data indicates that there were 176,661 people living in Penrith City in 2007. Over the last ten years, the City has experienced a higher annual growth rate (2.6%) than Outer Western Sydney (1.0%) and the Sydney metro area (0.7%).

- **The City has a high proportion of residents of working age as well as young children.** Penrith's residents are predominantly adults aged 25-49 years (36.8%). Children aged 12 and under make up 18.2% of the population and the proportion of people aged 60 years and over is 11.9%. Penrith's overall age structure diverges from the metropolitan average and to a lesser extent from Western Sydney insofar as there is a higher proportion of younger people and fewer older people.

- **Penrith City is home to residents with a medium to high weekly household income.** The percentage of families with a gross household income of $1,000 – $2,499 (43.2%) is significantly higher than in Sydney SD (35.6%) and the Western Sydney Regional Organisation of Councils (WSROC) Region (37.8%). The household income structure in Penrith LGA has changed only slightly in the last ten years. Families with children that have a medium to high household income are the dominant resident group in Penrith.

The Western Sydney Regional Organisation of Councils (WSROC) was formed in 1973 by Western Sydney councils as a regional advocacy, research and resource sharing organisation. WSROC is undertaking an important role in advocating for infrastructure investment. WSROC has authored several key reports outlining the need for higher infrastructure expenditure and structure planning in Western Sydney.

***WSROC** region is made up of eleven local government areas:*

- *Auburn*
- *Bankstown*
- *Baulkham Hills*
- *Blacktown*
- *Blue Mountains*
- *Fairfield*
- *Hawkesbury*
- *Holroyd*
- *Liverpool*
- *Parramatta*
- *Penrith*

In total the WSROC region covers an area of approximately 5,800 sqkm, with a diverse range of land uses. The LGAs differ enormously in character, with Blacktown being the most populous of the LGAs, while Hawkesbury has the smallest population but covers the largest land area. In 2006, the population of the WSROC region (ABS data) was approximately 1.6 million.

The eleven LGAs cover three subregions: the whole of the North West and West Central subregions, and part of the South West subregion. The WSROC is characterised by a large proportion land designated as National Park, with a mixture of residential, industrial/commercial and rural land.

Housing

- **Housing stock is dominated by detached dwellings.** According to the 2006 census, there were a total of 62,160 dwellings in Penrith LGA, an increase of 2,212 from 2001. Penrith LGA has 3.8% of the total dwellings in Sydney. In 2006, the proportion of separate houses to total dwellings in Penrith was 80.3%, compared with 72.1% for WSROC Region and 57.1% for the wider Sydney region.

- **The majority of dwellings in the City are being purchased.** Home ownership is still high, but most homes are being purchased. In 2006, 26.5% of all dwellings were fully owned and 41.8% were being purchased. This compares to 28.8% fully owned in the WSROC region and 30.1% in Sydney SD and 35.6% being purchased in the WSROC Region and 31.1% in Sydney SD.

Labour Force and Business Mix

- **Penrith City has a relatively high labour force participation rate**. In 2006, Penrith had 87,653 residents participating in the labour force; this translates into a participation rate of 66.4%. The unemployment rate in Penrith has continually decreased over the last ten years from 7.4% in 1996 to 5.3% in 2006.

- **A high proportion of Penrith City's workers are 'Intermediate, Clerical and Sales and Service Workers'.** In 2006, the 'Intermediate, Clerical and Sales and Service Workers' represented 20.5% of the labour force. The proportion of the labour force classified as 'Knowledge Workers' (Managers, Administrators, Professionals and Associated Professionals) in Penrith was 29.5% and thus lower than in the WSROC region (34.4%) and Sydney SD (43.7%).

- **Residents of Penrith City were most frequently employed in manufacturing, retail trade and construction**. In 2006, 13.2% of all residents worked in manufacturing, 12.2% in retail trade, 9.4% in construction.

- **The majority of jobs in Penrith are in retail trade, health and community services as well as manufacturing**. In 2006, there were approximately 52,300 jobs in Penrith. Of the total jobs, more than 10,086 jobs (19.3%) were in retail trade, compared to 8,226 in 1996; this represents a growth of 22%. Health care and community services (Nepean Hospital and others) had 6,973 jobs (13.3%) which is an increase of 45.8% over the last ten years. Manufacturing was the third biggest industry with 6,973 (12.3%) jobs, but experienced a 7.1% decline over the last ten years. Education (TAFE, UWS and others) experienced strong growth over the last ten years and had 5,468 jobs (10.4%) in 2006.[3]

- The majority of jobs in the City are held by Penrith residents, nevertheless **most residents travel outside of Penrith for work**. Of all Penrith jobs, 59% were held by local residents and 28% were held by people living in the North West Subregion. Yet, self-containment in Penrith is very low, only 37% of all resident workers (30,760 out of 83,028) are actually working in Penrith. More than 63% of the resident workers are travelling outside the City to work.

1.4 Penrith Future

Penrith's Role in the North West Subregion

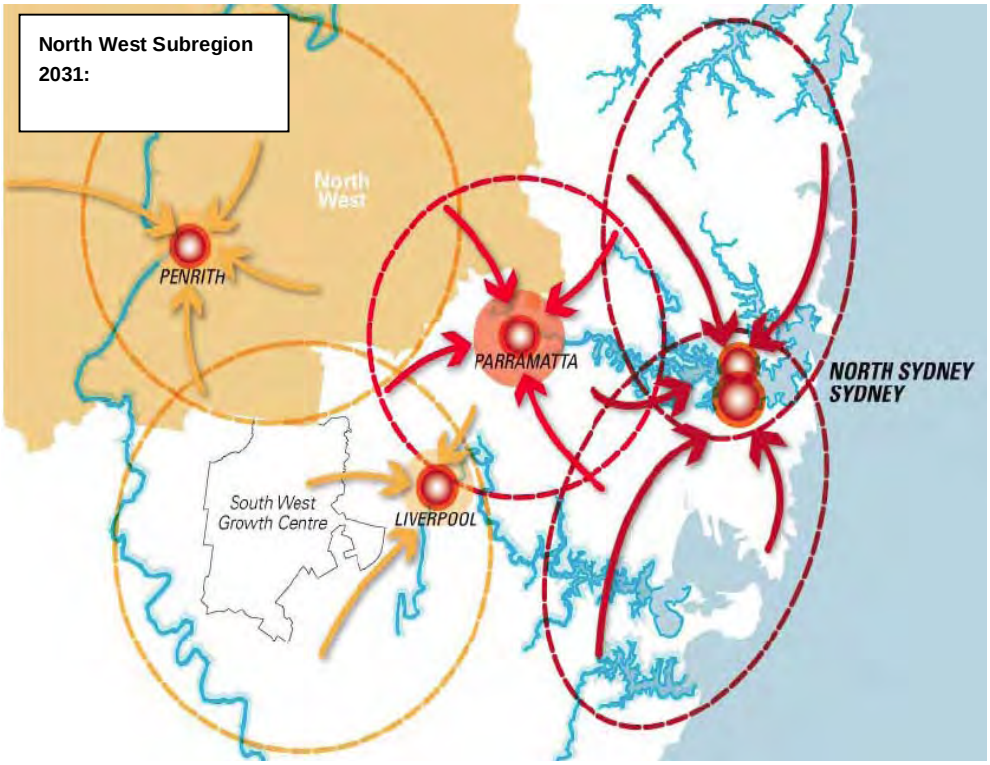
Penrith was nominated in the NSW Government's Metropolitan Strategy as a Regional City for the North West Subregion which includes Baulkham Hills, Blacktown, Blue Mountains, and Hawkesbury.

[3] In 2006, the ABS devised new ANZSIC industry classifications that are not directly comparable to the 1993 classification used in the 2001 and 1996 censuses. The currently published employment data from the 2006 census is classified according to the new 2006 ANZSIC categories. However, in order to interpret the industry distribution of employment in a historical context (to calculate industry-based growth rates etc.), SGS purchased the 2006 data at 1993 ANZSIC classifications which is detailed above.

As a Regional City, Penrith is expected to be a focal point for regional transport and employment with a full range of business, government, retail, cultural entertainment and regional activities for a catchment that currently exceeds 500,000 people.

Over the next 25 years, Penrith is expected to grow by around 50,000 people and 25,000 dwellings. Further, the North West Subregion, and thus the catchment for Penrith City, is anticipated to grow by more than 350,000 residents. This will create infrastructure needs within the City of Penrith in addition to those generated by internal population growth.

Figure 2. Penrith as Regional City



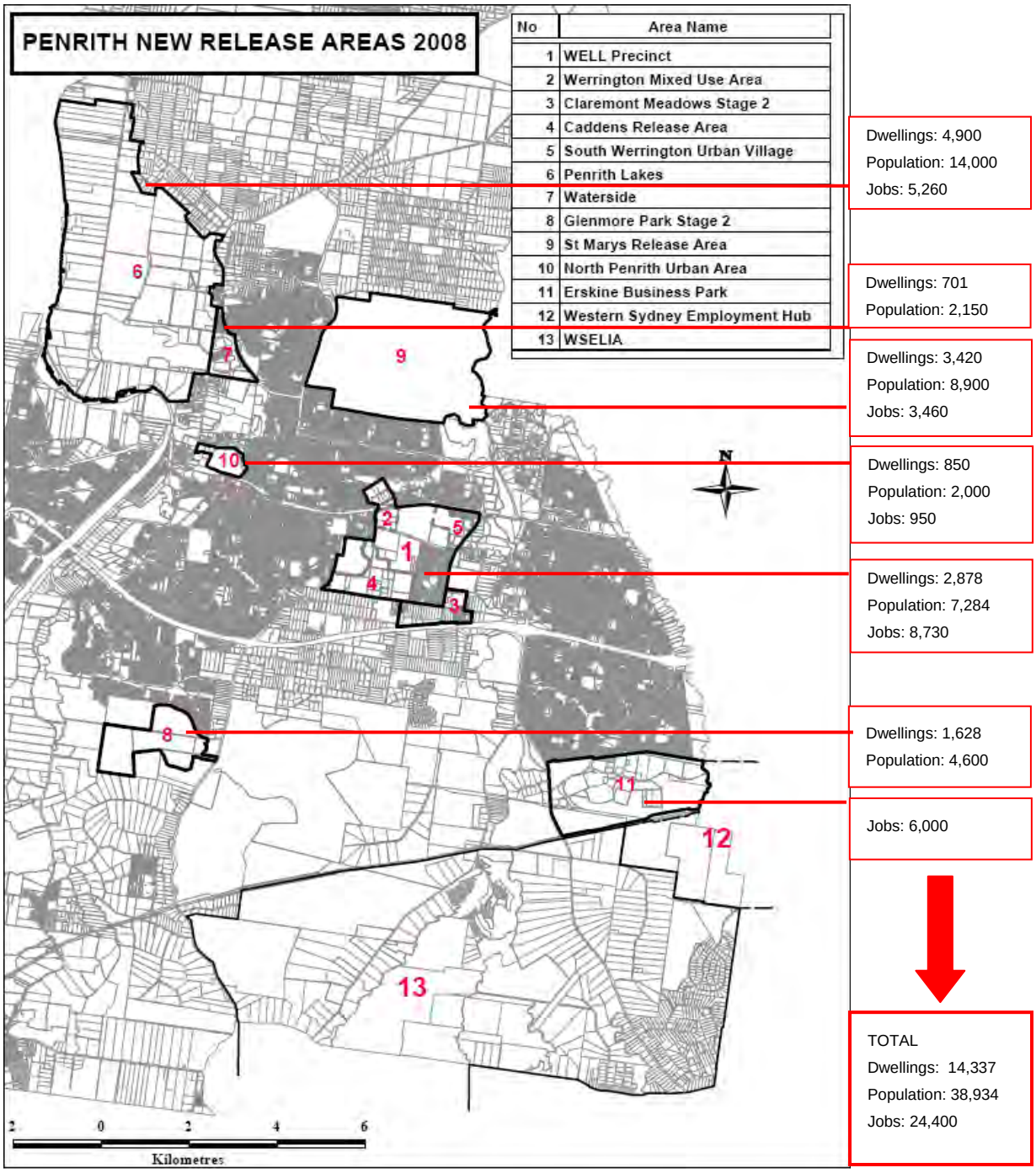
Source: Draft North West Subregional Strategy, p.18

Areas for Future Growth

Penrith City Council has identified **13 major release** areas; in addition, development of existing urban areas will be intensified. **Penrith City Centre** and **St. Marys Town Centre** will both experience significant intensification with infill development. This urban growth will require considerable infrastructure expenditure to support its delivery.

Figure 3 illustrates the location and projections for each of the urban release areas and Penrith City Centre. As shown, most of the urban release areas are located on the urban fringe. Due to their location, residents will be somewhat remote from services and infrastructure in the established areas, and will necessarily rely on the provision of adequate infrastructure in their respective new areas. There is also a need for adequate road and public transport infrastructure to connect the new areas with the town centres where most of the regional amenities such as train stations and regional cultural centres, are located.

Figure 3. Penrith New Release Areas

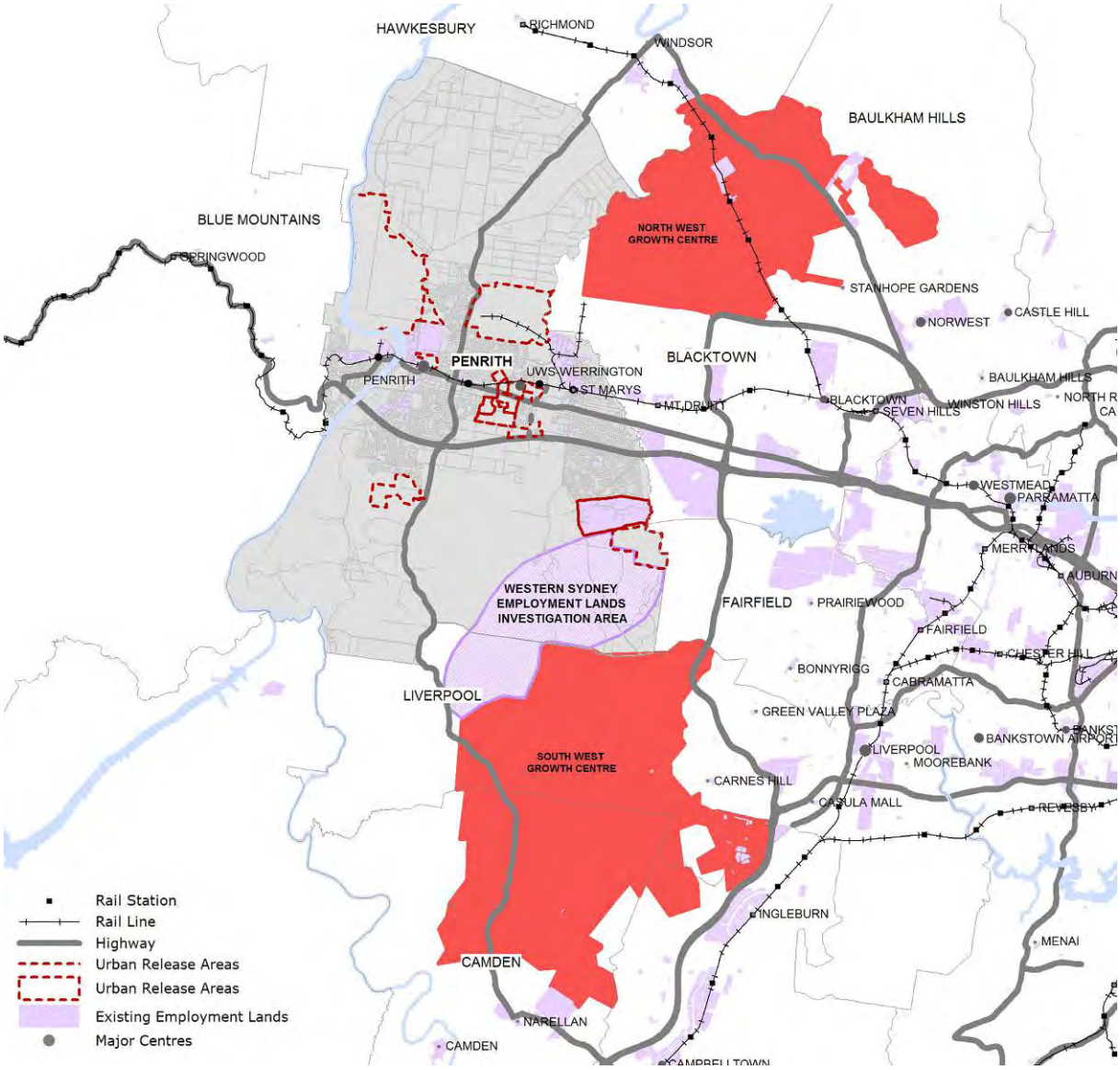


Source: Penrith City Council 2008

Major future employment areas are located to the south of Penrith and include: Erskine Business Park, the Western Sydney Employment Hub and the Western Sydney Employment Land Investigation Area (WSELIA). The latter consists of approximately 7,335ha of net potential employment land and could provide several thousand jobs.

Penrith City is also bordering the two biggest urban release areas in the Sydney Metropolitan Region: the North West and South West Growth Centres. The Growth Centres are forecast to accommodate 30% to 40% of Sydney's long term housing growth and will eventually accommodate 181,000 new homes, serviced by $7.5 billion of infrastructure. As a dedicated regional city for the North West Region, Penrith will serve the population of the North West Growth Centre.

Figure 4. Growth Centres



Source: SGS 2008

1.5 The Infrastructure Challenge

Planning for sustainability, liveability and long term needs

Infrastructure planning in the 21st century has to ensure that any future development is sustainable and balances social, economic and environmental needs. Infrastructure planning plays a pivotal role in creating liveable communities, vibrant economies, sustainable places, diverse cultural expression and social cohesion.

Infrastructure planning is an integrated part of structure planning for liveable future residential and employment areas. Long term needs have to be assessed and catered for. The provision of social and physical infrastructure is crucial to ensure that the highest level of social cohesion and thus the development of social capital in all suburbs across the City.

Western Sydney and Penrith are already falling behind in educational attainment and income compared to the Inner Sydney region. The provision of a well planned and designed infrastructure will help to overcome this gap.

The funding dilemma

Due to short-term financial planning horizons, land that is required for infrastructure in the long run is often not set aside. Therefore, opportunities to provide the infrastructure in the future are lost or are severely compromised.

If for example, Penrith's road network is not upgraded and extended during the urban expansion phase, the city will face major congestion problems in 20 years time which will harm its economy and community.[4] This will negatively affect the City's competitiveness.

[4] The Bureau of Infrastructure, Transport, and Regional Economics estimated in 2005 the cost of congestion for Sydney at $3.5 billion (BTRE, Estimating urban traffic and congestion cost trends for Australian cities, Working Paper 71, 2007).

2 Policy and Planning Context

2.1 State Government Policies and Plans

State Government policy affecting infrastructure provision, planning and financing is contained within several key State policy documents. It is important to note that these policies have evolved over time and thus do contain some inconsistencies.

The **NSW State Plan** was released in 2006 and sets out a range of key initiatives for Government action including the establishment of jobs closer to home, increasing public transport access, improving the efficiency of the road network, and increasing the use of open space and recreation facilities. In achieving its targets, the State Plan mostly relies on Government actions that are already implemented and underway. The State Plan stresses the importance of close collaboration between all three levels of government in relation to public transport, economic development and employment strategies, but does not identify the means of collaboration. The State Plan allocates the responsibility for planning for housing and employment growth to the *Metropolitan Strategy* and the *Draft North West Subregional Strategy*.

The **Metropolitan Strategy** (2005) is the key planning document for Sydney's growth over the next 25 years. The Strategy identifies subregions and regional cities and allocates specific employment and housing targets for each of the subregions. Penrith is part of the North West Subregion[5] and was identified as a Regional City in servicing this region. As a Regional City, Penrith is expected to be the focal point for transport and employment that also has a full range of business, government, retail, cultural, entertainment and recreational activities for a catchment of over 500,000 people. The Strategy is intended to be implemented through subregional plans and a partnership approach for the development of these plans is emphasised. A CEO group has been recommended to undertake five yearly reviews of these strategies.

The **Draft North West Subregional Strategy (2007)** [6] translates the Metropolitan Strategy's overall planning targets into a detailed planning framework for the North West Subregion. The Draft Strategy sets the target of an additional 130,000 jobs and 140,000 dwellings for the North West Subregion. For ***Penrith City***, the *growth* target is ***28,000 additional jobs*** and ***25,000 additional dwellings*** by 2031, with 10,000 of these jobs and residents to be accommodated in Penrith City centre alone. The Strategy envisages that the next step for Councils will be to prepare new LEPs in conformity with the Strategy.

[5] The North West Subregion includes Penrith City, Baulkham Hills, Blacktown, Blue Mountains, and Hawkesbury.

[6] The Draft Strategy was on exhibition until end of March 2008 and targets and policies contained in the Draft Strategy are still subject to change until the Final Strategy will be released.

As a key initiative of the Metropolitan Strategy, the NSW Government announced major land releases in Western Sydney: the **North West and South West Growth Centres**. The Growth Centres are located to the north and south of Penrith and are forecast to accommodate 30% - 40% of Sydney's long term housing growth (181,000 dwellings). The Department of Planning (DoP) has released a Sydney Growth Centres SEPP and established a Growth Centres Commission to manage the detailed precinct planning. Structure plans, development codes and infrastructure plans have been issued for both centres. Infrastructure costs are covered by a Special Infrastructure Contribution (Developer Contribution) which originally was set at 75% of the estimated attributable cost of infrastructure and has been reduced to approximately 50%. The structure planning only deals with the precinct development and no provision has been made to provide regional linkages to Penrith and other centres such as Liverpool.

The **Employment Lands for Sydney Action Plan (2007)** was released as part of the Metropolitan Planning process, and outlines important current and future employment land in the Greater Metropolitan Region. The plan identifies an area between the Western Sydney Employment Hub and the reserved site for Badgerys Creek Airport as the Western Sydney Employment Lands Investigation Area (WSELIA). After the decision to rule out Badgerys Creek as a second airport, WSELIA comprises now an area of approximately **10,700ha** and spans land in Penrith, Liverpool, Fairfield and Blacktown LGA. WSELIA - if considered for future employment – will have a major impact on Penrith.[7] There will be a need to upgrade existing infrastructure such as arterial roads, and also establish new infrastructure to ensure that WSELIA is provided with the necessary linkages to the wider subregion.

The **NSW State Infrastructure Plan** (2008/09 - 2017/18) is the guiding document for NSW's infrastructure investments over the next 10 years. The Plan intends to link the Sydney Metropolitan Strategy as well as the Subregional Plans to State Budget planning and outlines a $140 billion investment program for the next ten years. For Penrith City, the plan includes the duplication of the Mamre Road Overpass, the Nepean Hospital redevelopment, upgrade of Penrith High School, access improvements to Emu Plains station, upgrade of Caddens electricity distribution substation and general upgrades to water catchments. Most projects address backlogs and there is a lack of commitment to provide necessary infrastructure for the future growth.

In summary, the analysis of the different State Policy documents paints the following picture:

- The North West Region has been declared as a major growth region, accommodating more than 130,000 jobs and 140,000 dwellings by 2031.
- Penrith City, as a dedicated Regional City, is expected to be the main service centre for the North West Region catering for high order regional needs (education, health care, retail, entertainment etc), and being the focal point for regional transport and jobs.
- Penrith City will experience significant internal growth and will also need to service the North West Growth Centre and the South West Growth Centre.

[7] If a relatively modest hypothetical employment target of 20 jobs/hectare would be achieved, WSELIA could cater for 200,000 jobs in the future.

- The Metropolitan Strategy and the Draft North West Subregional Strategy both focus on employment and housing targets with little consideration given to necessary infrastructure and investments for sustainable growth.
- The NSW Infrastructure Plan addresses backlogs and does not take the scope of planned growth in Sydney into consideration. Further, the initiative for infrastructure planning lies with the individual agency and no overall 'big picture' infrastructure planning is undertaken.
- The State Government is currently reviewing possible future employment lands in and south of Penrith City. If these proceed, they will significantly increase the pressure on Penrith City's infrastructure.
- Structure planning has been undertaken in the Growth Centres, but it has been undertaken in isolation. There are no linkages between the Growth Centres and Penrith City. A regional structure planning approach needs to be implemented to identify the required infrastructure that is needed to enable sustainable growth.

2.2 WSROC Regional Planning

In its **Future West (2005)** Study, WSROC establishes a Sydney Regional Planning & Management Framework for Greater Western Sydney. With regards to infrastructure and structure planning the study outlines the following:

- Necessity for a mechanism to link regional and metropolitan plans to regional infrastructure provision
- Importance of infrastructure in underpinning economic performance, building social capital and making communities liveable and sustainable
- Need for a Regional Infrastructure Plan, developed in collaboration with the State Government
- Investigation of new funding and financing options, for example the development of a Government guaranteed regional infrastructure investment package to attract private investment to projects.

2.3 City of Penrith Policies and Plans

Penrith City Council has undertaken detailed planning studies in recent years informing current and future infrastructure needs. The following studies have been analysed as part of this study:

- Penrith City Centre Plan (including Vision, LEP, DCP, and Civic Improvement Plan);
- Penrith Employment Planning Discussion Paper and Strategy
- Penrith City Council, Job Challenge 2031;
- Annual Report 2006-2007
- Penrith City Strategic Plan 2005-2009
- Penrith City Management Plan 2007-2008
- Sustainability Blueprint for urban release areas, 2005
- St Marys Town Centre Strategy
- City Wide Local Plan
- Social Planning Framework 2006
- People's Lifestyle Aspirations and Needs Study (PLANS Study)
- Open Space Action Plan
- Plans for urban release areas and their associated Section 94 plans.

The studies highlighted the following:

- Penrith City recognises its role as a Regional City servicing the North West Region
- Penrith has identified the potential for up to 40,000 additional jobs by 2031 (Job Challenge 2031 paper), which is well above the Strategy's target of 28,000 jobs by 2031. The target is based on an increase of the employment self containment rate. It is expected that more than 45% of the total jobs will be located in the new release areas, thus highlighting the need for adequate infrastructure
- Penrith City Council is aware of the need for appropriate infrastructure to underpin the anticipated growth
- Penrith City has undertaken extensive analysis of its cultural and recreational facilities (PLANS Study, Open Space Strategy). The studies have specified future and current infrastructure needs. Future capital works will be funded through Developer Contributions and thus different Section 94 contribution plans such as the Open District Contribution Plan have been released
- A major redevelopment of Penrith City Centre will occur over the next decades. The Penrith City Plan is a detailed structure plan for the city centre that will enable the city to accommodate 10,000 new jobs and 10,000 new residents by 2031. The Plan addresses the

need to revitalise the city centre through improved design and open space, an increase in residential and commercial floor space, and the establishment of community hubs with community facilities. Most of the $74.5 million infrastructure measures will be funded through Section 94 Developer Contributions ($57.5 million).

2.4 Current Infrastructure Funding Practices

Under the NSW Local Government Act 1993, Chapter 15, Local Government in NSW is able to raise revenue through rates, grants, user fees and charges, interest and other sources. Local Government finances are under increasing stress and their capacity to deliver services and to develop and maintain infrastructure are being challenged as a result of restricted revenue raising capacity.[8] The major sources for infrastructure funding for local governments are rates, section 94 contributions and grants. The State Government draws upon state infrastructure contributions and acquisition of land to finance and enable infrastructure.

Rates

Rates are an 'ad valorem' tax linked to land value that applies to all properties in the council area. Rates are the only taxation measure available to local government. Generally, local governments differentiate rates levied according to the nature (farmland, residential, mining, business) and use of the property. Rates depend on the value of the property and can be based on a minimum amount or on the land value or on a combination of the land value of the property and a fixed amount. Land values are determined by the Land and Property Information Division of the NSW Department of Lands.

Council can apply ordinary rates or special rates. Ordinary rates in NSW are capped which means that the State Government sets a limit on the total amount of income that a council can raise from rates (rate pegging). NSW is the only State that applies rate pegging and as a result has the lowest rates per person in Australia[9].

Councils can apply to the Minister for Local Government to increase their general income by more than the rate-peg limit. This is called a *special variation application*. Council can further apply *special rates* under Section 495 of the Local Government Act 1993 at their own discretion. Special rates can be applied "towards meeting the cost of any works, services, facilities or activities provided or undertaken, or proposed to be provided or undertaken, by the Council within the whole or any part of the Council's area, other than domestic waste management services"[10].

Charges

The Local Government Act 1993 enables Councils to levy usage charges. A charge may be made in relation to specified services provided by Council (e.g. provision of water, sewerage or drainage services or the collection of garbage). A charge may be set at a level that enables part or full cost recovery.

[8] Local Government and Shires Associations of NSW, Local Government Finances.

[9] Australian Government Productivity Commission, Assessing Local Government Revenue Raising Capacity, April 2007, p. 30.

[10] Local Government Act 1993, Section 495.

Developer Contribution and Charges- Section 94 Contributions

Under Section 94 of the NSW *Environmental Planning and Assessment Act 1979,* Councils can grant consent for developments conditional upon a developer contributing land free of cost, making a monetary contribution, or both. Developer contributions may be levied for both social infrastructure and physical infrastructure and are imposed in accordance with a Development Contribution Plan. The latter are generally referred to as "Section 94 Plans".

On 3 April 2006, the NSW Government released two draft exposure bills that encompass wide-ranging changes to the State's planning system. According to the Environmental Planning and Assessment Amendment Bill 2008, the application of Section 94 will be limited to 'key community infrastructure' including local roads, bus infrastructure, parks, sport, recreation, cultural, civic, and social facilities, drainage and stormwater management works, and land for community infrastructure. District facilities are only allowed to be financed through contributions if "there is a direct connection with the development to which a contribution relates"[11]. The latter provision will be a challenge for local councils. Penrith has several district contribution plans, such as the District Open Space Facilities Contribution Plan, in place. It will be necessary for Council to successfully argue the link between the district facilities and the developments, or the District Contribution Plans will be repealed on 30 June 2009.

Grants

Grants are the third major source of revenue for Local Government in 2003. Council's receive Commonwealth Grants (Commonwealth Financial Assistance Grants)[12] as well as other grants and subsidies (including Specific Purpose Payments) from the Commonwealth and NSW State Government[13]. The Commonwealth's Financial Assistance Grants are general purpose grants that are paid to local councils through the NSW Local Government Grants commission which determines the allocation of the grants across NSW's LGAs. The Commonwealth also makes specific purpose payments direct to local governments to fund local roads and infrastructure (for example, Roads to Recovery program), child care programs, and disability and other services administered by local governments.

State Infrastructure Contributions

In 2006, the State Government introduced the Environmental Planning and Assessment Amendment Act 2006 which enables State Government to levy State Infrastructure Contributions (SIC). SIC's are held in a Special Contributions Areas Infrastructure Fund[14] and pay other State departments and agencies who provide the infrastructure. Currently, the State is adopting a 75/25 rule where 75% of the cost for regional infrastructure has to be funded by the developer and 25% by the State. Regional infrastructure includes regional roads, public transport (rail and bus), health and education facilities, regional open space and emergency and justice facilities. The Growth Centres were the first release areas where the 75/25 rule was adopted. The magnitude of the levy, approximately $33,000 per lot, led to reconsideration by the State Government and the

[11] Clause 31A (1) (g), Environmental Planning and Assessment Amendment Bill 2008.

[12] The grants are currently provided under the Local Government (Financial Assistance) Act 1995.

[13] Local Government and Shires Associations, Submission to the NSW State Government, 2006/2007 NSW Budget, p. 8.

[14] Under the Environmental Planning and Assessment Amendment Bill 2008, the fund will be called State Infrastructure Fund.

contribution was reduced to $23,000 in late 2007 (which is equivalent to a 50/50 split)[15]. Yet, recent developments such as Glenmore Park Stage 2 are still subject to the 75/25 rule.[16] Councils also levy contributions for local infrastructure, thus the total infrastructure bill for developers can increase to a significant amount.

Corporation Sole

An important aspect of infrastructure funding is the funding of land acquisition. Under Section 9 of the Environmental Planning and Assessment Act 1979 (EP&A Act 1979), the Minister as 'Administrator of the Act' is also a 'corporation sole'. A corporation sole is essentially a corporation that consists solely of a nominated office holder. In the Department of Planning's (DoP) case, the Minister for Planning is that nominated office holder. The Corporation's main activities are to acquire land, control and manage its vested lands and dispose of surplus land. The Land Management Branch of the Department of Planning administers the functions of the Corporation. For the purpose of infrastructure planning, the Corporation Sole has the power to purchase land which includes the right to compulsory acquisitions under the Land Acquisition (Just Terms Compensation) Act 1991.

[15] Department of Planning, Planning Circular PS 07-018, 6 November 2007.

[16] DoP Letter to Mr Bob Hayward, APP Corporation Pty Limited, 12 December 2007.

3 Funding and Financing Future Infrastructure Requirements

3.1 Principles of Funding and Financing Public Infrastructure

Urban Infrastructure at the local level has been privately provided to various degrees in the post-war era. Local streets and utilities are a case in point. In recent times, community facilities have been provided in developments where the 'market value' of doing so is recognised.

Private businesses have moved into providing services such as childcare[17]. However, there remains a wide range of facilities and services that the private sector does not provide without compulsion on the basis that it is unprofitable to do so. This creates a need for what might be considered as 'public infrastructure' – the principle focus of this strategy.

With regard to public infrastructure, there is a useful distinction to be made between what may be termed social and physical public infrastructure.

It should be noted that the emphasis in this Strategy is not just on public infrastructure for greenfields developments. A substantial proportion of future growth is earmarked as 'infill' - hence infrastructure requirements in existing urban areas are equally important.

Social Public Infrastructure

Social public infrastructure includes those facilities and services which the market will not provide (or fully provide) but the government sees merit in them being provided. Cultural, recreational, social support and environmental protection facilities are often included in this category.

Successive Australian governments have adhered to the notion of 'adequate opportunity'. This differs from 'equal opportunity' in that the latter is considered to be unattainable. Adequate opportunity means that everyone has a reasonable chance to prosper and develop within society.

The specific means by which adequate opportunity is promoted is through the progressive taxation system (taxation according to the ability to pay) and provision of the welfare 'safety net'. Various subsidies are delivered to the needy through social and economic development programs.

In the urban context adequate opportunity is achieved by providing access to social public infrastructure regardless of ability to pay. Hence access is provided to facilities such as libraries, recreation facilities, open space and social support at modest (sub-commercial) rates.

[17] It is noted that this industry has become problematic and the mix of public and private childcare is an unresolved issues.

The trend towards funding social public infrastructure via developer contributions is that people pay the same regardless of their ability to pay. A household who can afford only an entry level house pays the same as households who can afford a very expensive house.

The alternative of funding such infrastructure from borrowings and servicing the debt from rates removes the up-front impost and there is an element of 'progressiveness' in that rates bear some relationship to the relative wealth of households.

Developer contributions also raise the threshold for entry to the housing market which impacts on lower income households.

While social public infrastructure has a physical dimension its primary purpose is to provide services to **people**.

The general principle is that social public infrastructure should be funded from taxation as opposed to user charges.

Physical Public Infrastructure

Physical public infrastructure includes those facilities and services that the market will provide. Notwithstanding the government has a role in planning and constructing many such facilities where land owners are unable to act in their collective interest and in the wider community interest. The government also has a role in regulating the standard of facilities to meet consumer expectations of health safety and amenity. Roads, pipes and cables generally fit within this category.

Physical public infrastructure is distinct from social infrastructure in that it provides services to **property**.

The general principle is that physical public infrastructure should be funded from user charges (including development contributions).

Efficient Pricing

The Productivity Commission[18] has promoted the principle that the preferred method of charging for infrastructure is via user charges over time (e.g. tolls, metered usage, special charges on land, etc.). However, according to the Commission there is a role for up-front charges (e.g. development contributions) in situations where the cost of providing infrastructure varies between locations. By charging the location specific marginal cost this steers development to the most cost-effective areas which results in community benefits via efficient deployment of resources.

The general principle is that user charges should be the preferred method of funding public infrastructure with up-front charges restricted to instances where price signals are necessary to bring about efficient deployment of resources.

[18] Productivity Commission, First Home Ownership Report, June 2004. p. 155- 177.

Infrastructure is generally long-lived, often up to 40 or 50 years. It therefore delivers benefits over an extended period and it makes sense to spread the cost over this period. Of course spreading the cost requires borrowing and this comes at a cost. But so does using capital up-front. By deploying scarce capital there is an opportunity cost in that other necessary expenditure (for example, on asset renewal) can be displaced.

The community expects to spread its major capital expenditures on housing over the life of the assets via borrowing. Borrowing the majority of the funds for house purchase is quite the norm and it is arguable that this approach should be extended to the full suite of urban infrastructure that makes up the house/land package.

The general principle is that borrowing should play a major role in spreading the cost of public infrastructure over the period in which it delivers benefits.

3.2 Public Infrastructure Planning Hierarchy

It is useful to discuss the planning of both physical and social infrastructure in terms of the following levels in a hierarchy:

1. **Regional Public Infrastructure** – Serves broad areas and is commonly used by the community at large. Generally serves multiple LGA's. (Funding is normally the responsibility of the State Government and developers.). Examples:
    a. Social
        i. Health
        ii. Education
        iii. Regional open space
        iv. Regional cultural, recreation and leisure facilities
        v. Regional environmental conservation
        vi. Emergency services
    b. Physical
        i. Regional roads
        ii. Regional cycleways
        iii. Public transport
        iv. Traffic management
        v. Regional landscape/roadscape
        vi. Regional water management
        vii. Regional utilities (headworks)

2. **District Public Infrastructure** – Serves aggregations of neighbourhoods. Generally aligns with an LGA. (Funding is normally the responsibility of Local Government and developers.). Examples:
    a. Social
        i. District open space*

ii. District cultural, recreation and leisure facilities
iii. District environmental conservation
iv. Community hubs
v. Economic development

*Note: Many open space plans and documents refer to 'district' open space which is actually classified as 'local' under the definitions adopted here.

b. Physical
i. District roads
ii. District cycleways
iii. Traffic management
iv. District landscape/roadscape
v. Townscape (City Centres)
vi. District water management
vii. District utilities (trunk)

3. **Local Public Infrastructure** – Serves neighbourhoods. Generally aligns with areas defined by the arterial road grid. (Funding is normally the responsibility of the Local Government and developers.). Examples:
a. Social
i. Local open space improvements (excluding land – see below)
ii. Local cultural, recreation and leisure facilities (excluding land – see below)
iii. Local environmental conservation
iv. Local community hubs

b. Physical
i. Local streets
ii. Sites for local open space*
iii. Sites for local community facilities*
iv. Local cycleways
v. Local traffic management
vi. Local landscape/roadscape
vii. Local water management
viii. Local utilities (reticulation)

Note* Sites for local open space and for community facilities are classified as physical infrastructure on the basis that they are functionally required at the point of land subdivision. They are expected by the Community as being a basic requirement in a residential area.

3.3 Application of the Principles at the Local Level

Section 94 Contributions

In New South Wales Section 94 contributions have evolved in such a way that many items that might be viewed as social infrastructure become the subject of S94 contributions. The following list contains items from City of Penrith Section 94 plans, with those items in contention highlighted.

- Local roads and streets
- Local open space
- Local community facilities *(nominally social infrastructure)*
- Trunk drainage
- Biodiversity corridors *(nominally social infrastructure)*
- Traffic management
- Land acquisition for roads
- Tree planting
- Cultural facilities *(nominally social infrastructure)*
- Conservation land *(nominally social infrastructure)*
- Water cycle management

The City of Penrith's policy on urban infrastructure for new urban development is that within estates and City Centres (and for infill residential development) developers provide all infrastructure directly or via S94 contributions. Moreover, the policy applies to off-site 'connecting' infrastructure.

This is common practice across Local Government and has been so for over two decades.

In addition, the City imposes S94 contributions for 'district' infrastructure (covering City-wide or part City-wide areas) as follows:

- Upgrades to district open space
- Upgrades to local open space
- Debt service on the Dame Joan Sutherland Performing Arts Centre
- St Marys Community Arts Precinct
- Expansion of library facilities
- Community facilities
- Footpaths in established areas.

Examples of S94 contributions are shown in the table below.

Table 1. Section 94 Contributions as at 1/7/2008

Estate	S94 Estate Items	S94 City Wide Items	Employment Delivery Contribution	Total per Lot
Claremont Meadows (Eastern Precinct)	$18,037	$5,373		**$23,410**
Glenmore Park Stage 2 SC	$30,279	$5,220	$1,038	**$36,537**
Glenmore Park Stage 2 WP	$35,276	$6,275	$1,038	**$42,589**
Waterside	$8,061	$5,619		**$13,680**
Well Precinct (Caddens)	$43,274	$5,181		**$48,455**
Well Precinct (Precint Centre)	$21,816	$5,181		**$26,997**

Source: Penrith City Council 2008

Moreover, there are contributions relating to existing areas. For example there are schemes for:

- Penrith Town Centre – Parking, traffic management, trunk drainage and community facilities
- St Marys Town Centre – Parking
- Kingswood Neighbourhood Centre.

The City of Penrith's Finances

The City of Penrith has made little provision for capital expenditure on new urban infrastructure – consistent with its policy that such items must be provided via S94 contributions. However, the City has been pro-active in asset renewal, and has adopted a number of special rate increases which enable the City to raise revenue over and above the State imposed rate cap:

- Asset Renewal and Established Areas Strategy:
  - 5.2% special rate increase for 10 years
  - Applied to road asset and buildings renewal plus established areas revitalisation
  - Enables expenditure in the order of $4.5 million pa for three years[19].
- Enhanced environmental program:
  - 4.8% special rate increase for 10 years
  - Applied to environmental improvements, community safety and economic development.

The City has also embarked on a borrowing program:

  - Annual loans program of $3.2 million in 2007-2008 and 2008-2009
  - Additional $3.0 million in 2007-2008 and 2008-2009 to accelerate the footpath paving program
  - $290,000 in 2007-2008 and $0.9 million per annum to 2015-2016 for the asset renewal program.

Borrowings are allocated exclusively to asset renewal and 'backlog' infrastructure. There is little allocation to new capital items.

Rate Pegging

The anticipated revenue from rates in the 2007-2008 Management Plan is $64 million ($361 per person) with $49 million of this ($277 per person) coming from residential properties. Rates account for 39% of all revenue.

Under Section 506 of the Local Government Act 1993 the NSW Government sets a limit on the percentage of total general income that councils can raise from particular rates and charges. This is called the rate-peg percentage and it is specified by the Minister for Local Government each year.

[19] Note that the special rate extends over 10 years to service the relevant debt.

Councils may apply for special variations and over the past seven years 82% of such applications have been approved.

Rates per person in NSW have traditionally lagged behind the national average (6% in 2002-2003 and 15% in 2005-2006)[20] due in the most part to rate pegging by the State Government. While rate increases for the past 30 years or so have generally exceeded CPI the additional income has been absorbed by new costs being imposed on Local Government.

In NSW the rates per person have not increased in real terms from 1999 to 2006. Over the same time Victoria's have increased by 37.6%[21]. The Productivity Commission has found that "*Rate pegging has dampened the revenue raised from rates in New South Wales relative to other States and there seems to have been little offset from non rates revenue sources*".

The most recently announced rate increase allowance is 3.2% which is below CPI and well below wage cost inflation, which is the largest cost centre in Local Government. NSW is the only State in Australia that imposes rate caps.

IPART Review

IPART[22] 'Issues Paper' dealing with Local Government revenues in NSW examines indicators which suggest that NSW Councils at an aggregate level have strong balance sheets with low (perhaps 'too low') debt levels. However, asset renewal expenditure is lagging behind depreciation to a significant degree. A range of cost pressures are identified including responsibility shifting imposed by higher levels of Government, cost rises over inflation and artificial constraints on revenue raising (rate pegging). Special rate variations are observed to be problematic from a time period point of view.

On the question of rate pegging IPART acknowledge the reasons for this (financial discipline) but also point out some draw backs:

- Limits Council's ability to provide services
- Prevents infrastructure backlogs from being addressed
- Encourages excessive user charges
- Runs counter to the principle of democracy and accountability in Local Government.

3.4 Application of the Principles at the State Level

The State Government's policy on infrastructure provision for residential developments appears to be (based on Glenmore Park Stage 2) that developers will contribute to 75% of the cost of 'regional' infrastructure and the State 25%. Requirements are included as 'State Infrastructure

[20] Local Government and Shires Association (May 2006) Independent Enquiry into the Financial Sustainability of NSW Local Government and Productivity Commission (2007) Assessing Local Government Revenue Raising Capacity – Draft.

[21] Productivity Commission (Figure 6.3 page 105)

[22] Independent Pricing and Regulatory Tribunal (July 2008) Other Industries – Issues Paper.

Contributions' under the EP&A Act 1979 co-ordinated by the Department of Planning. Regional infrastructure is assessed on the merits of the case and may include:

- Widening arterial roads
- Traffic signals and roundabouts
- Bus priority measures
- Other road works
- Bus route subsidies
- Land for schools
- Land for environmental outcomes
- Planning administration.

In the case of Glenmore Park Stage 2 the State charges are in the order of $28 million representing around $17,000 per lot for 1,620 lots compared to the Council S94 contributions of $53 million representing around $33,000 per lot.

It is noted that the State Government has negotiated the transfer of a significant parcel of land in addition to the above contribution for an undisclosed fee. It is also noted that there is no documented commitment of State agencies to funding their allotted portion of the cost of the infrastructure in question.

3.5 The Role of 'Plans'

The key planning document for the area (reviewed in detail above) is the North West Draft Subregional Strategy. This foreshadows that by 2031 the additional number of dwellings provided will be:

Penrith	25,000
Other Councils	55,000
North West Growth Centre	60,000
Total	**140,000**

This is equivalent to adding a city the size of Canberra (132,000 dwellings) to the area.

In addition, it is proposed to add 130,000 jobs to the North West Region. Penrith Town Centre is identified as a Regional City which is to provide higher level services for the region. While there is a plan which is presented as a 'structure plan' this is a very general document and key features of such a plan are missing. Major shortfalls in the planning include:

- An arterial road network of sufficient capacity to handle the level of growth anticipated.
- An absence of proposals to deal with the travel barriers created by the M4 and the rail line.
- A lack of road links from the Growth Centres to the Penrith Regional City.
- A lack of public transport from the Growth Centres to the Penrith Regional City.

A key document referred to in the Draft North West Subregional Strategy is the State Infrastructure Strategy. This sets out State infrastructure commitments for the next ten years. However an inspection of the proposed projects reveals few if any that are forward looking. Most if not all of the projects are dealing with existing problems and backlogs.

3.6 Examples of 'Good Practice'

3.6.1 South East Queensland

South East Queensland (SEQ) is experiencing the fastest growth rate of any urban region in Australia. By 2026, the population is expected to reach around 3.7 million people – an increase of more than one million people.

To put this in context 1,000,000 people equates to around 350,000 dwellings which is only 2.5 times the growth intended for the North West Subregion.

The Queensland Government is actively managing the region's future growth and has adopted a regional plan as well as South East Queensland Infrastructure Plan and Program 2008-2026 which outlines the government's infrastructure priorities.

The South East Queensland Infrastructure Plan[23] is intended to deliver:

- modern, integrated, efficient, fast, frequent and reliable public transport
- dedicated freight routes servicing an expanding economic base created by identifying and preserving new routes and corridors early
- a safe road network providing for inter-regional, intra-regional and local trips, complementing the region's public transport system
- reliable water and energy supplies, increasingly based on recycled and renewable sources and supported by demand management and consumer behaviour changes
- community infrastructure and services that are carefully planned and which support strong and sustainable communities
- a high-quality natural environment, including protected natural areas, waterways and beaches
- environmental infrastructure including public open space, national, state and regional parks and opportunities for nature-based recreation.

The Plan seeks to provide certainty on infrastructure development for the whole community. It will enable forward planning, capacity building and innovation in project delivery. It is based on the principle that strategically focused infrastructure investment will help to lead and support the preferred pattern of development and achieve key policy outcomes. In some instances, this means implementation ahead of existing need.

This Infrastructure Plan commits the Queensland Government to a series of major projects over the next 10 years, with further projects identified to 2026. Overall, these projects amount to an estimated $25.7 billion additional state investment in SEQ over the next 20 years.

The projects include:

- Transport $24.5 billion.
- Water $861 million
- Energy $3.4 billion

[23] Queensland Government, 2005, South East Queensland Infrastructure Plan and Program.

- Social and Community Infrastructure $3.5 billion

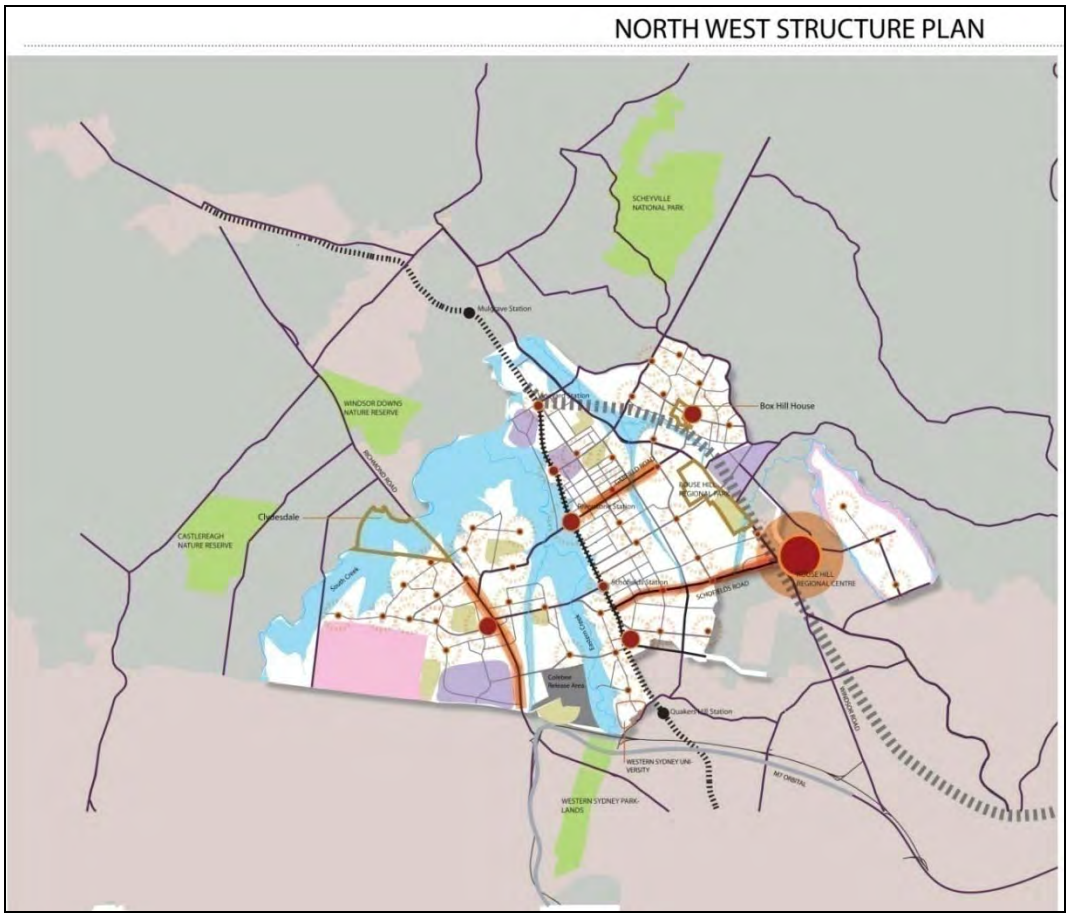
This level of forward commitment and investment in infrastructure that is designed to determine urban development outcomes is unprecedented in Australia.

3.6.2 Growth Centres

The State Environmental Planning Policy[24] (Sydney Region Growth Centres) 2006 (SEPP) and the EP&A Amendment Regulation 2006 provide the statutory planning framework for the Growth Centres. The SEPP for the Growth Centres is the key plan in the Government's Metropolitan Strategy. These instruments outline the statutory role of Structure Plans, the Infrastructure Plan and the Development Code.

Management of the precinct planning process will be undertaken by the Growth Centres Commission (GCC). A key role of the GCC is to establish the development parameters for each precinct and encourage and coordinate stakeholders' involvement, in particular Councils, relevant agencies, industry and community.

Figure 5. North West Growth Centre Structure Plan



Source: Growth Centres Commission 2008

[24] Text drawn from GCC Development Code p 1.3

The Structure Plans define a series of self-contained towns that should offer people a better quality of life through local jobs, a mix of housing types, pedestrian-friendly neighbourhoods, car and bus based transport with links to rail lines and amenities and services such a parks, libraries, shops, schools and health and medical facilities. Careful attention to integrated land use and transportation planning, in particular density - including its distribution and the achievement of the overall number and mix of dwelling units - is of primary importance to successful planning in the Growth Centres.

The Growth Centres Infrastructure Plan addresses both physical infrastructure and human services infrastructure for the precincts, including the location and extent of transportation network upgrades. The timing of infrastructure delivery will be based on the principle of it being provided at the right time to service new residents and businesses.

The GCC has published a practice note[25] which maps out the rate of 'Special Infrastructure Contributions' for the following items:

- New and upgraded regional roads
- New and upgraded heavy rail
- Bus services
- Educational services
- Health services
- Emergency services
- Attorney General's services
- Provision of conservation lands
- Precinct planning and delivery.

The Minister for Planning has determined that a Special Infrastructure Contribution will be applicable to development within the North West and South West Growth Centres. Under the Minister's determination the following Special Infrastructure Contribution will apply to:

- Precincts scheduled by the GCC where Special Infrastructure Contributions meet 75% of the estimated attributable cost of infrastructure.
    - Residential land $485,000 per hectare of Net Developable Area (approx. $33,000 per lot).
    - Industrial land $150,000 per hectare of Net Developable Area.
- Precincts scheduled under the terms of the Precinct Acceleration Protocol where Special Infrastructure Contributions meet 100% of the estimated attributable cost of infrastructure.
    - Residential land $647,000 per hectare of Net Developable Area.
    - Industrial land $200,000 per hectare of Net Developable Area.

These contributions may be amended in accordance with any determinations made by the Minister under Section 94EE(1) of the Environmental Planning and Assessment Act, 1979.

[25] Growth Centres Commission, Dec 2006, Special Infrastructure Contribution Practice Note (Under Review).

GCC officers advise that the social infrastructure items (hospitals, schools, etc.) have been deleted (sites still included) with the effect that the cost of $33,000 per lot is reduced to around $23,000 per lot. This effectively reduces the development contribution rate to just over 50% of cost.

In addition to contributions to state infrastructure, there are Council S94 contributions. These are potentially in the order of $47,000 per lot[26].

The Growth Centres model is nominated as an example of good practice because it is an example of comprehensive long-term planning, including infrastructure planning. The presumption of State infrastructure being largely funded by development contributions (notwithstanding that this has been eroded) appears to have enabled agencies to 'declare their hand' on future infrastructure requirements.

3.7 Development Contributions and Housing Affordability

There has been a considerable amount written and discussed on the question of housing affordability in recent times. Various studies[27] have documented:

- Growth in real prices relative to incomes
- Lower levels of home ownership
- Renter stress
- Widening deposit gaps.

However, higher incomes combined with lower interest rates have meant that average incomes after repayments have actually risen since 1993.

The debate on affordability tends to focus on dwelling prices without reference to the nature of the product being purchased. In reality, dwellings being purchased ten years ago are very different to those being purchased today. For example the average floor area of new dwellings being constructed in NSW is now 274.6 sqm, an increase of 10% since 2000. The national average is 239.2 sqm, an increase of 5.1% over the same period. Even older houses are a different product with a much higher proportion being fully renovated.

The standard of dwellings on the market has lifted across the board representing the capital invested in them. This has implications for lower income households if there is no diversity in housing product. The bottom end of the market is under-supplied.

The housing market has become 'overheated' due to strong demand coupled with low interest rates and questionable lending practices by financial institutions. This has artificially boosted demand and bid prices up above sustainable levels. A 'correction' is currently occurring.

[26] NSW Urban Taskforce September 2007, What Infrastructure?

[27] For example see Richards, A (2008), Some Observations on the Cost of housing in Australia, Reserve Bank of Australia.

Of critical importance to this study is the price of new urban lots at the fringe. In theory these should reflect:

- The value of the raw land plus development costs
- The value of access to the social and physical infrastructure that is provided (or promised)
- The time expended in development approvals (in holding costs)
- A profit margin for developers.

The Reserve Bank found that 400sqm entry level lots in late 2007 varied from around $100,000 in Melbourne and Adelaide to around $200,000 in Sydney and Perth.

This difference in lot prices is explicable in large part by differences in development contribution regimes. In Victoria, for example, Councils charge between $5,000 and $10,000 per lot for local distributor roads, arterial enhancements and sites for local community facilities. Community facilities in theory may be charged for but there is a cap of $900. These payments can only be extracted at the building permit stage which creates collection difficulties. Hence community facilities often are not included. Local open space is exacted as a percentage of land being subdivided (or cash-in-lieu).

There are no State level contributions in Victoria. In essence therefore the difference in charges is from $5,000 to $10,000 per lot in Victoria to up to $70,000 per lot in NSW. On the evidence of lot price differentials this difference is passed onto consumers.

3.8 Development Contributions and Equity

It has been argued that there exists an inequity between infill development and greenfields development on the basis that the former benefits from existing infrastructure which has been paid for by existing residents and the latter must cover all its infrastructure costs.

This is the case only if Local Government infrastructure is considered. However, if all public funding is taken into account it can be argued that greenfields development receives a greater level of subsidy than infill development. Every dwelling not built in an existing area must be built in a greenfields location. When this occurs, Local Government policy is to recover all infrastructure capital costs but at the State level there is less than full cost recovery. Explicit policy is to recover 75% only of costs through State Infrastructure Contributions, although this has been reduced to 50% in the Growth Centres.

Even at the Local Government level it is arguable that there are some capital costs that are not captured by S94 contributions (e.g. riparian corridor improvements). Further subsidy is delivered to greenfields development by virtue of the fact that Local Government takes on the care and maintenance of infrastructure in perpetuity. The additional recurrent costs associated with infill development by comparison are quite minimal.

It is ironic that infill development is accused of being more highly subsidised than greenfields development when quite clearly the opposite is the case. Moreover, the savings that infill development delivers are a fundamental underpinning of Metropolitan urban consolidation policy.

Another aspect of equity relates to moving away from funding infrastructure from general revenue to development contributions. Previous to the introduction of developer contributions, social and some physical infrastructure was funded from the rate base. Residents in established areas supported incoming residents by paying rates for needed infrastructure. This intergenerational contract seems to have ceased with the introduction of developer contributions. Generations who have benefitted from subsidies are no longer called upon to look after the new generations who must cover their own costs and suffer the consequences of reduced housing affordability.

3.9 Assessment of Current Practice

The examples of good practice cited above emphasise the importance of long-term structure planning coupled with infrastructure planning and funding strategies. The SEQ example shows that State Governments can make long-term commitments to infrastructure funding and the GCC example shows that such comprehensive planning can be done in NSW. The major difference in NSW is the lack of any long-term commitment to funding regional infrastructure.

Deficiencies in current practice are:

5. Lack of commitment by the State Government agencies to their proportion of planned infrastructure at the regional level.
6. Lack of planning for regional infrastructure outside the Growth Centres.
7. Some shortfalls in long term planning for district infrastructure, e.g. in aquatic centres.
8. Over-emphasis on development contributions for local and regional public infrastructure.

If these deficiencies are not addressed, Western Sydney will face a situation where the objectives of liveability, economic viability and environmental sustainability will be compromised.

3.10 The Way Forward on Funding and Financing Public Infrastructure

To reiterate, the principles developed above are:

- *Social public infrastructure should be funded from taxation (e.g. State Government revenues and Council rates) as opposed to user charges.*
- *Physical public infrastructure should be funded from user charges (including but not exclusively development contributions).*
- *User charges should be the preferred method of funding public physical infrastructure with up-front charges restricted to instances where price signals are necessary to bring about efficient deployment of resources.*
- *Borrowing should play a major role in spreading the cost of public infrastructure over the period in which it delivers benefits.*

These should be adopted as the guiding principles for infrastructure funding and financing in the future.

On Housing Affordability

It is often argued that reducing the cost of developing land by reducing development contributions will simply bloat development profits and house/land prices (said to be set by the 'market') will stay the same. However, on the evidence of price differentials between Victoria and NSW this would appear to not be the case. Moreover, the profit bloating thesis defies conventional economic theory.

Economic theory suggests that in a competitive environment when costs are reduced the scope for profits is enhanced but this will attract additional producers into the market. Competition will result in lower prices as profit margins equilibrate to the market norm. Land development is in fact a competitive industry therefore this outcome can be expected in the long-run.

Economic theory also suggests that increasing costs past a point where producers can exact a reasonable return will result in a contraction of supply as consumers are constrained to absorb price increases. This outcome is observed in Sydney.

Application of Principles

Public policy on infrastructure pricing should be driven by application of sound principles, not exogenous factors such as rate pegging or ill-informed views on developer profits.
If the forgoing principles were adopted by the State Government and applied in NSW:

1. All future S94 plans would not include social infrastructure. Such items to be planned on a City-wide basis and funded from borrowings with debt serviced from special rate variations.
2. All future S94 plans would include local physical infrastructure and exclude district physical infrastructure with the latter to be funded from borrowings with debt serviced from special rate variations.
3. Council may formulate additional special rate variations to ensure that sufficient funds are available to operate and maintain its current and future infrastructure assets.
4. Council may formulate special rate variations to service debt required to provide backlog infrastructure.

Application of these principles will require State Government support. However, the State Government has indicated it is open to reasonable arguments with regard to special rate variations. It is noted too that the State Government has put rate pegging on the agenda.[28] Hence, it is opportune for Local Government to be advocating appropriate funding principles.

[28] It is important to note the Premier's statement:" sometimes, in order to get better results, we need to spend a little bit more, and that might mean (…) adjustment to the rate pegging" as cited in SMH 26th October 2008 ' Council rates too low: Rees', p. 6.

Impact on Ratepayers

Given the extent to which Council rates in NSW lag behind the national average (15%) there is significant scope for rate increases. It is noted that achieving parity with the national average would raise an additional $11.3 million per annum as shown in this table.

07-08 Forecast Rate Revenue[29]	$64,000,000	85%
Increase to National Average	$75,294,118	100%
Increment	$11,294,118	15%

This would represent an average rate rise per dwelling of $145 per annum.

Proportion of Residential Rate	$9,292,729	77.4%
Dwellings	64,000	
Increment per Dwelling	$145	

There is an argument for going further with this on the basis that rates have been artificially and inappropriately pegged for so long. The current generation of ratepayers should not see higher rates as a net cost but rather as an investment in needed infrastructure that will make the City a better place to live for both present and future generations. At a base level it can be argued that such investment is essential to underpin future property values.

On 'Financial Discipline'

Rate pegging has been shown to be a very blunt tool to achieve financial discipline in Local Government and indeed is counter-productive in many ways. There are more effective ways to achieve greater efficiency, transparency and accountability such as improved financial reporting, common reporting frameworks to enable effective benchmarking and improved information management systems – particularly for asset management.

Specific Purpose Agencies

Application of the recommended funding principles is often best carried out by specific purpose agencies. A case in point is metropolitan parks which are a very important element of the City's infrastructure. Currently, these are administered via a raft of ad hoc arrangements.

In Melbourne, Parks Victoria manages the City's metropolitan parks with funding provided from a property levy collected by local Councils on its behalf. This provides a direct connection between funding and outcomes and it allows resource allocation decisions to be made on a comprehensive basis.

[29] Forecast rate revenue from Penrith Council Management Plan.

4 Infrastructure Appraisal

Penrith City has a wide range of public social and physical infrastructure. Table 2 provides an overview of the public 'high order' infrastructure that has been assessed for this study.

Table 2. High Order Social Public Infrastructure

High Order Category	Subcategory 1	Subcategory 2	Funding Responsibility	Planning Hierarchy
Health Services	Hospital		State	Regional
	Community Health Centre		State	Regional
Education Services	University		State	Regional
	TAFE		State	Regional
	Primary School		State	Regional
	High School		State	Regional
Social Services	Childcare Centre		Council/Private	Local
	Youth Centre		Council	District
	Senior Citizen Centre		Council	District
	Civic Centre		Council	District
	Multipurpose Centre		Council	District
	Community and Neighbourhood Centres		Council	Local
Cultural Services	Performing Arts Centre		Council/State/Federal	Regional
	Library	Regional	Council	District
	Library	Branch Library	Council	Local
Recreation Services	Sporting Facilities	Sporting Ground	Council	District
	Sporting Facilities	Aquatic Centres	Council	District
	Sporting Facilities	Recreation/Leisure Centres	Council/State/Federal	Regional
	Parks	District Park	Council	District
Environmental Management	Stormwater		Council	District
	Waste Management	Recycling	State	District
	Waste Management	Landfill	State	District
Utility Services	Sewerage		State	District
	Electricity		State	Regional
	Gas		Private	Regional
	Drainage		Council	District
	Water		State	Regional
Civil Infrastructure	Roads	Motorways	Federal/State	Regional
	Roads	Main Roads	State	Regional
	Roads	Secondary Roads	State/Council	District
	Roads	Local Roads	Council	District
	Roads	Bridges	State	District
	Roads	Junctions	State/Council	District
	Public Transport	Bus Services	State	Regional
	Public Transport	Train Services	State	Regional
	Path/Cycleways		Council	District
	Townscape Works		Council	Local
	Public Car Parking		Council	District
	Commuter Car Parking		State	Regional
Emergency Services	State Emergency Services		State/Council	Regional
	Police		State	Regional
	Fire & Rescue		State/Council	Regional
	Ambulance		State	Regional

Source: SGS 2008

4.1 Social Public Infrastructure

SGS undertook consultation with State Government representatives to assess the adequacy of the current regional public infrastructure provision. District and local public infrastructure was assessed on the grounds of previous studies undertaken by Penrith City Council, most importantly the PLANS study[30].

4.1.1 Current Situation

Regional Public Infrastructure

Generally, Penrith City is well provided with range of regional social public infrastructure. The City is home to major regional and state funded facilities such as the Penrith Performing Arts Centre, the Q Theatre, the Nepean Hospital, the University of Western Sydney, TAFE, Whitewater Centre, and Sydney International Regatta Centre. With regards to Emergency Services such as Ambulance services, Fire and Rescue Services as well as Police, the City is well served. However, Penrith Police Station is of an inadequate standard for the Police's current operations and new premises will be required. 0 gives an overview of the regional public infrastructure assessment. It should also be noted that the Nepean Hospital has been granted an $80 million extension program. Though this will improve the hospital's operations, the grant falls short of the initial $320 million funding requirement that was put forward to NSW Treasury.

District Public Infrastructure

District facilities serve the entire local government area. Penrith City experiences as shortage of district facilities in several infrastructure categories. There is an acute need for youth services as well as senior citizen services as previously identified in the PLANS study. This shortage has been recognised by Penrith City Council, for example, the Penrith City Improvement Plan includes two major multipurpose facilities that will cater for these needs. Further, Penrith City has a need for an additional aquatic centre and Penrith Council has already made provisions for major upgrades to both existing aquatic centres which are funded by the Section 94 District Open Space Facilities Development Contribution Plan.

[30] People's Lifestyle Aspirations and Needs Study (PLANS Study)

Table 3. Regional Public Infrastructure Situation

REGIONAL			
High Order Category	**Subcategory 1**	**Subcategory 2**	**Adequate Current Provision**
Health Services	Hospital (Public)		✓
	Community Health Centre		✓
Education Services	University		✓
	TAFE		✓
	Primary School		✓
	High School		✓
Cultural Services	Performing Arts Centre		✓
	Art Galleries		✓
Recreation Services	Sporting Facilities	Recreation/Leisure Centres	✗
Emergency Services	State Emergency Services		✓
	Police		✗
	Fire & Rescue		✓
	Ambulance		✓

Source: SGS 2008

Table 4. District Public Infrastructure Situation

DISTRICT			
High Order Category	**Subcategory 1**	**Subcategory 2**	**Adequate Current Provision**
Social Services	Youth Centre		✗
	Senior Citizen Centre		✗
	Civic Centre		✓
	Multipurpose Centre		✗
Cultural Services	Library	Main Library	✓
Recreation Services	Sporting Facilities	Sporting Ground	✓
	Sporting Facilities	Aquatic Centres	✗
	Parks	District Park	✓

Source: SGS 2008

Local Public Infrastructure

With regard to local public infrastructure, Penrith City operates several childcare centres, as well as three branch libraries and a multitude of community and neighbourhood centres. The current provision has been assessed as sufficient; however there is a heavy reliance on private providers in the area of childcare.

Table 5. Local Public Infrastructure Situation

LOCAL			
High Order Category	**Subcategory 1**	**Subcategory 2**	**Adequate Current Provision**
Cultural Services	Library	Branch Library	✓
Social Services	Childcare Centre		✓
	Community and Neighbourhood Centres		✓

Source: SGS 2008

4.1.2 Future Requirements

Recognised standard rates of provision (benchmarks) have been applied to assess the City's future need for social public infrastructure. This approach outlines the general scope of infrastructure needed given the expansion of Penrith's population and its dedication as a Regional City. Benchmarks are only a guideline for a 'base case' provision level.

The following assessment has taken into account all planned future capital projects included in S94 Contribution Plans and the Draft Management Plan 2008-2009. 0 identifies the additional need beyond the City's currently planned infrastructure. Appendix 1 outlines the detailed benchmark assessment. These are based on published Growth Centre planning standards.

Regional City Infrastructure

Considering regional infrastructure, the highest demand will be for education facilities. If the Growth Centres Commissions' benchmark of 1 primary school for every 1,500 dwellings is applied, then the City needs an additional 17 primary schools. Further, 6 high schools, 2 community centres and one ambulance station would be needed to sustain the growth.

Table 6. Future Regional Public Infrastructure Situation

REGIONAL			
High Order Category	**Subcategory 1**	**Planned Facilities**	**Additional Need**
Health Services	Hospital (Public)	**-**	**Significant Expansion**
	Community Health Centre	**-**	**2**
Education Services	University	**-**	**-**
	TAFE	**-**	**-**
	Primary School	**-**	**17**
	High School	**-**	**6**
Cultural Services	Performing Arts Centre	-	**-**
	Art Galleries	-	**-**
Recreation Services	Sporting Facilities	Penrith Sports and Entertainment centre	**-**
Emergency Services	State Emergency Services	-	**-**
	Police		**1**
	Fire & Rescue	-	**-**
	Ambulance	-	**1**

Source: SGS 2008

District Public Infrastructure

The City will need additional multipurpose facilities that can co-locate a variety of services. Further, youth services will be needed, especially in areas where a high population of families with children are expected (e.g. Glenmore Park 2). By 2031, the City will also be short of one aquatic centre. However, Penrith City adopted an Open District Facilities Contribution Plan in 2007 that includes capital works for major sport facilities and district parks.

Table 7. Future District Public Infrastructure Situation

DISTRICT			
High Order Category	**Subcategory 1**	**Planned Facilities**	**Additional Need**
Social Services	Youth Centre	1 centre will be included in Multipurpose Centre	2
	Multipurpose Centres incl. Senior Citizen Centre	2 Multipurpose	2
	Civic Centre	Expansion	-
Cultural Services	Library	--	-
			-
Recreation Services			
	Sporting Facilities	1 Aquatic Centre	1 Aquatic Centre
	Parks & Sporting Facilities	District Open Space Development Contribution Plan	-

Source: SGS 2008

Local Public Infrastructure

Penrith City is already very well serviced with some local public infrastructure, such as community and neighbourhood centres. The City has already adopted Contribution Plans for some of the urban release areas which include provisions for additional community centres. Therefore, based on a population benchmark of 1:6,000 people, Penrith will be only short of one community centre by 2031. The greatest need will be in childcare centres, in both long day care as well as after school care. However, Penrith City Council does not intend to provide further childcare centres and it is assumed that the demand is met by the private sector. Further, Penrith will also need an additional 70ha of local active open space.

Table 8. Future Local Public Infrastructure Situation

LOCAL			
High Order Category	**Subcategory 1**	**Planned Infrastructure**	**Additional Need**
Cultural Services	Library	will be included in future Multipurpose Centres	**2**
Social Services	Childcare Centre		**14**
	Community and Neighbourhood Centres	Waterside Green, Expansion Blue Hills, Penrith Lakes, Well Precinct	**1**
Recreation Services	Sporting Facilities	Local Opens Space Development Contribution Plan	**70ha**

Source: SGS 2008

4.2 Physical Public Infrastructure

4.2.1 Current Situation

Regional Public Infrastructure

Regional Road Network

Vehicular movements through the Penrith area are primarily accommodated along two key arterial routes – the M4 Motorway and Great Western Highway. Mamre Road, Mulgoa Road and the Northern Road provides direct connection to M4 and they form the key north-south arterials between M4 and Great Western Highway. M4 ramps with Mamre Road, Mulgoa Road and the Northern Road are signal-controlled. The M4 Motorway connects with the Sydney Orbital Network including the M2, M5 and M7, which provides good accessibility to different parts of Sydney.

Vehicles currently experience significant delays in Mulgoa Road, westbound in High Street and westbound in the Great Western Highway approaching Parker Street during the afternoon peak. Traffic speeds within the City Centre are low, generally below 35km/h. The Penrith Arterial Roads Study identified deficiencies at many intersections within Penrith City. The list of current intersection deficiencies are summarised in Table 9.

Table 9. Highlighted Current Deficiencies at Intersections

Location	Recommended Treatment
1. Great Western Highway / Parker Street	Installation of dual right turn bays will increase the intersection capacity improve operation
2. Leonay Parade / M4 WB Off Ramp	Construction of traffic signals and the introduction of a dual right turn from the offload ramp, WB, at Leonay Parade, to reduce the incidence of right turn delays
3. Great Western Highway Bennett Road	Provision of a 60 m dual right turn bay is recommended (Blacktown LGA)
4. Mamre Road and M4 WB Offload Ramp	Provision of an exclusive left turn lane from the offload ramp onto Mamre Road
5. Mamre Road and Banks Avenue	Provision of a dual right turn from Banks Avenue
6. Great Western Highway and Old Bathurst Road	Provision of dual left turn lanes from Bathurst Street. Introduction of a dual 120 m long right turn bays from Great Western Highway, WB, into Old Bathurst Road
7. Mulgoa Road and M4 Offload Ramp	Construction of a left turn slip lane from M4 EB ramp onto Mulgoa Road , northbound to Wolseley Street
8. Mulgoa Road and Glenmore Parkway	Reconstruction of the existing roundabout to facilitate a northbound slip lane in Mulgoa Road

Source Penrith Arterial Road Study 2007

The Roads and Traffic Authority's (RTA) data on traffic flows on a number of key roads in Penrith over a nine year period are represented in Table 10 and Figure 6. The data shows increasing traffic levels on roads from 1996 – 1999 with a lower rate of growth occurring between 1999 - 2005[31]. Increases in traffic flows travelling in both directions over the nine year period were observed on Parker Street north of the Great Western Highway (17.0%), the M4 Motorway crossing the Nepean River (20.0%), and on Werrington Road north of the Great Western Highway (10.0%). Currently, the M4 carries a significant amount of east-west traffic and as a result Great Western Highway has

[31] It should be noted that the data surveyed was a combination of AADT permanent and short term count data.

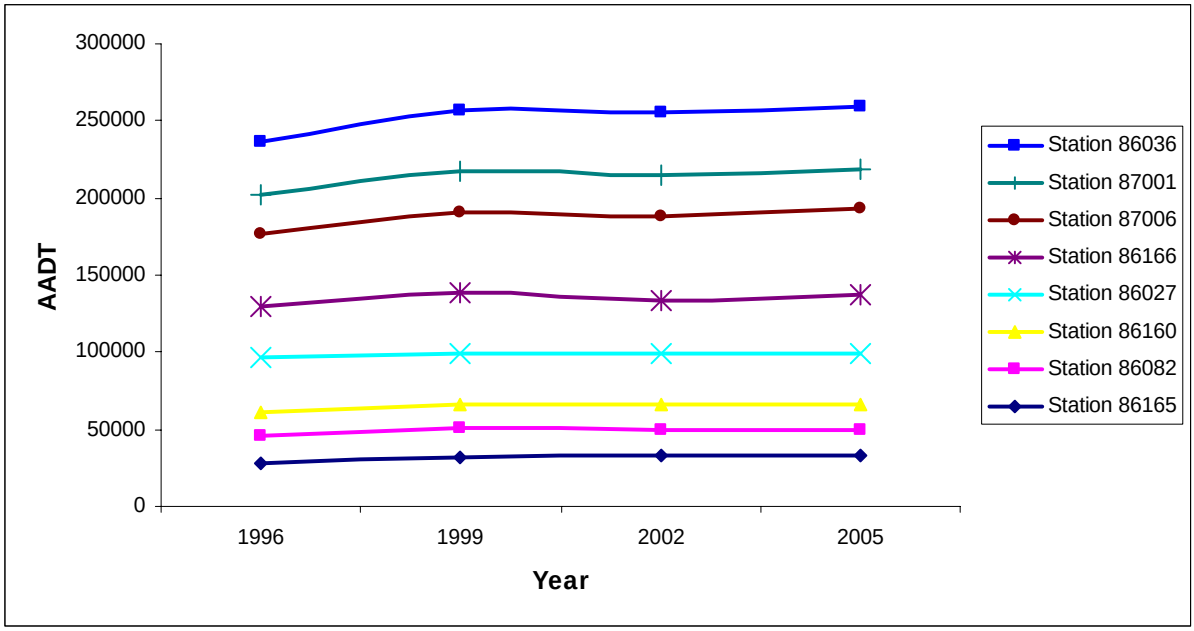
some spare capacity to accommodate additional traffic in the future. Increasing levels of road freight is adding to the high traffic volume.

Table 10. Table 1 Annual Average Daily Traffic in Penrith 1996 – 2005

Station number	Road	Location	1996	1999	2002	2005
86165	MAMRE RD,MR536	ST CLAIR-N OF RAMPS TO WESTERN FWY	28231	32143	32716	32534
86082	JAMISON RD,RR7290	PENRITH-W OF WOODRIFF ST	17280	18501	16636	16456
86160	WERRINGTON RD,RR7288-SL2	WERRINGTON-AT RAILWAY BRIDGE	15422	15042	17080	16991
86027	CASTLEREAGH RD,MR155-SL2	PENRITH-N OF SH5,GT WESTERN HWY	35819	34011	33081	33196
86166	MULGOA RD,MR155	JAMISONTOWN-S OF PRESTON ST	33243	38698	34015	38226
87006	WESTERN MWY,M4-SL3	JAMISONTOWN-W OF MULGOA RD	46770	52509	54853	56010
87001	GT WESTERN HWY,SH5-SL3	PENRITH-AT VICTORIA BR	24922	26577	26493	25162
86036	PARKER ST,MR154-SL2	PENRITH-N OF SH5,GREAT WESTERN HWY	35144	39396	40380	41144

Source: RTA AADT 2005

Figure 6. Figure 1 Traffic Flows in Penrith 1996 – 2005



Source: RTA AADT 2005

Regional Bus Services

Private bus operators under contract to the NSW Ministry of Transport (MoT) provide bus services to Penrith City. These contracts grant exclusive rights to operate bus services within a defined catchment area. Bus services within the area must meet minimum conditions in terms of service

frequency and coverage. Westbus and Pierce Omnibus (Mountainlink) are the private bus operators in Penrith and St Marys.

Currently there are 26 bus routes operating across the City. It is perceived that bus services in Penrith City are infrequent, with poor coverage outside the city centre, especially when compared to other areas in Sydney (see Table 11).

Table 11. Bus Service Frequency

Area	Frequency				
	Less than 15 mins	15-30mins	30 to 60 mins	Over 60 mins	No Service
Penrith LGA	4.5%	13.6%	10.7%	13.1%	58.2%
Narellan	0.0%	47.2%	0.0%	8.7%	44.1%
Parklea	9.6%	73.4%	0.8%	0.0%	16.3%

Source: PITLUS Study 2008

Approximately 18% of the City is served by buses with a frequency of 30 minutes or less, 11% have a 30-60min frequency and 58% of the LGA has no provision of bus services. In addition, little priority is reserved for buses on the traffic lanes.

Regional Rail Services

Penrith is served by the Main Western Line (City Rail) and the Blue Mountains (Inter-City) rail line operated by RailCorp. The train corridor travels east-west through the Penrith region with the western line linking Emu Plains to Sydney where it becomes the northern line extending to Berowra via North Sydney. This rail line also spurs north from Blacktown to Richmond. The Blue Mountains (Inter-City Link) rail line connects Emu Plains to the Blue Mountains and Central Western NSW. The Penrith LGA region is served by five railway stations at Emu Plains, Penrith, St Marys, Werrington and Kingswood. All stations offer a limited stop service via Parramatta to Central Station and North Sydney.

Train services at Penrith Station run at a 6 minute service frequency (at best) at peak periods during weekdays. Weekday frequency at other stations within Penrith LGA is approximately 15 minutes during peak and with 18 to 30 minute frequency at weekends. Trains from Penrith stopping at Kingswood and Werrington, invariably travel all stations to Parramatta, before making limited stops on its way to Central, Town Hall, Wynyard and North Sydney. From North Sydney and the City, trains run express to Parramatta, then all stations to either Penrith or Emu Plains, including Werrington and Kingswood. The details of service frequencies at Penrith Station are given in Table 12.

Table 12. Train Service Frequency

Penrith Station	Service Frequency
AM peak period (Emu Plains to North Sydney) average of 6 minute service frequency (based on number of services within a two hour peak period)	**6 minutes**
PM peak period (North Sydney to Emu Plains) average 6.5 minute service frequency based on number of services within a two hour peak period)	**6.5 minutes**
Weekends – generally 18 to 30 minutes between services travelling to Sydney City and travelling to Penrith.	**18 -30 minutes**

Source: CityRail Timetables, July 2008

The City Rail Compendium of Travel Statistics 2006 recorded passengers entering and exiting each station in 2005. The AM and PM peak hours and daily patronage of several stations along the Western Line during a typical weekday is highlighted in Table 13.

Table 13. Patronage of Major Stations on Western Line in 2005

Station	06:00-09:30		15:00-18:30		24 Hours	
	In	Out	In	Out	In	Out
St Marys	2,160	860	970	2,020	4,350	4,350
Werrington	710	80	130	610	1,110	1,110
Kingswood	1,420	760	940	1,350	3,800	3,800
Penrith	3,500	1,530	2,270	3,710	9,250	9,250
Emu Plains	1,090	200	250	930	6,480	6,480
Total	**8,880**	**3,430**	**4,560**	**8,620**	**24,990**	**24,990**

Source: Compendium of City Rail Travel Statistics, 2006

Rail services are well patronised by commuters as the above table indicates. A large proportion of commuters 'park and drive'. There are plans to further extend commuter car parking provision particularly to the north of Penrith Station to make rail commuting more attractive.

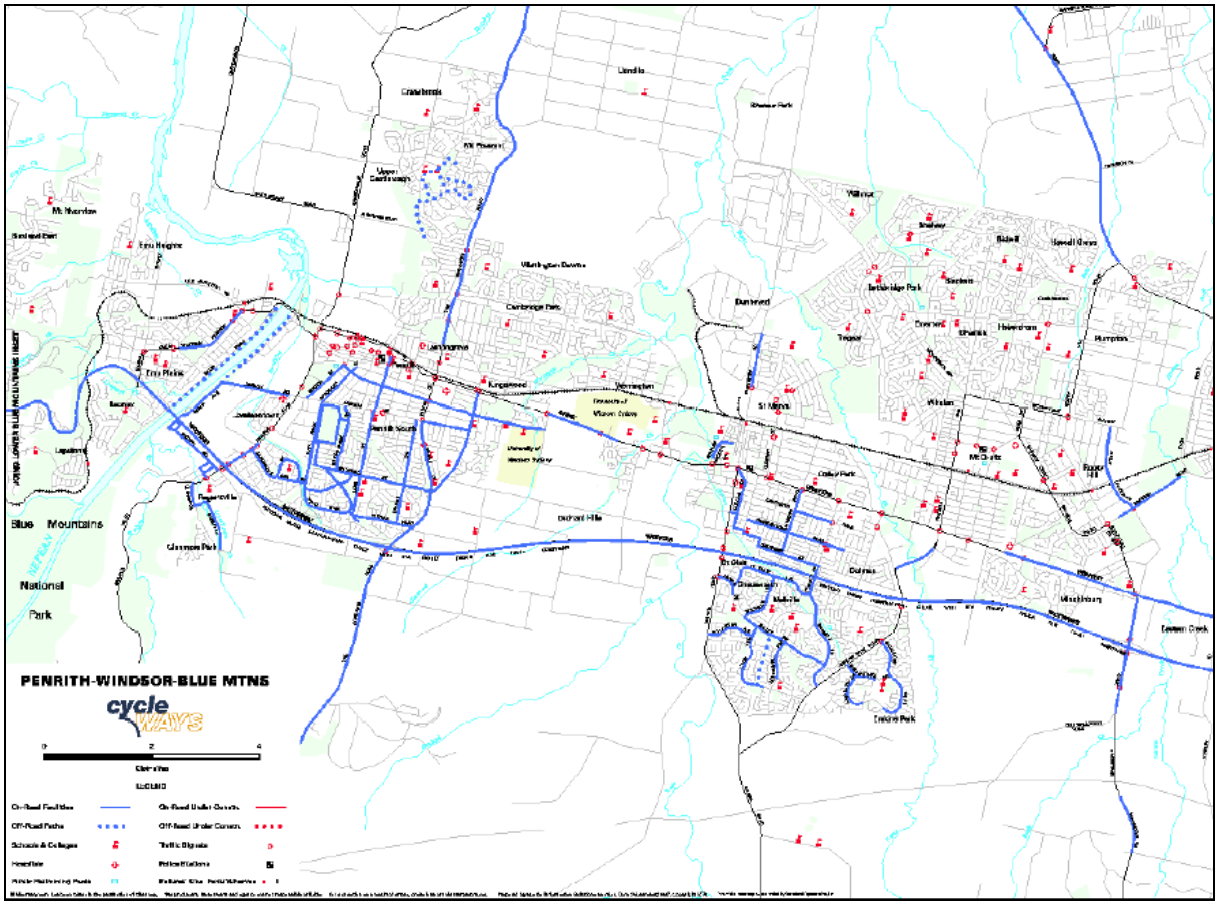
A total of 50,000 passengers in 2005 used the five rail stations within Penrith LGA in a day. Penrith Station had the highest number of passengers approximately 40% with a total of 18,500 passengers over a 24 hour period.

The existing arrangement of the public transport system is that long haul trips are serviced using the railway system with bus services for local trips and as feeder services for rail travel.

Regional Cycleways

The RTA Cycleways Plan of the Penrith – Windsor – Blue Mountains area is shown in Figure 7. It illustrates the on road and off road cycleway network following the M4 and the M7 and Great Western Highway that provides regional links and connects to the local cycle links in the Penrith urban areas.

Figure 7. RTA Cycleways Plan of the Penrith – Windsor – Blue Mountains area



Source: RTA Metropolitan Cycleway Networks

Regional landscape / roadscape

The regional landscape bordering the regional road network is of good quality with flat landscaping rising to views of the Blue Mountains in the west.

Regional water management

Sydney Water is currently undertaking detailed investigations to assess the capability of current systems to meet the demands of future development.

Regional electricity supply

Regional Electricity supply is through the Penrith Transmission Substation, located at Castlereagh Road, it has three 60MVA 132/33 kV Transformers with provision for a fourth.

A $36 million project to upgrade the existing substation is underway. This will double its capacity and will be funded by capital contribution and reviewed on a 5 year period by the regulator. The project has been designed so the new equipment can be installed on the existing site while the substation continues to operate as usual. The upgraded system involves replacing outdoor switchyards with indoor switchyards in a new building and installing new power transformers. It is due for completion by mid 2009 and will put in place the infrastructure needed to power future residential and commercial growth in Penrith.

District Public Infrastructure

District roads

The Penrith Arterial Roads Study identified deficiencies at many intersections within the City. The list of current intersection deficiencies are summarised in Table 9 **Error! Reference source not found.**. The main deficiencies highlighted in the table are the intersections of Mulgoa Road/ Great Western Highway and Jane Street / Castlereagh Street Road which operate at a poor level of service with vehicles and buses experiencing significant delays during the morning and evening peak. These intersections are currently being considered for upgrade.

Current Bus Services

Approximately 18% of the City is served by buses with a frequency of 30 minutes or less, 11% have a 30-60min frequency and 58% of the LGA has no provision of bus services. This current level of service coverage and service frequency is not attractive to potential customers and has led to a lack of patronage and reliance on private cars and taxis. Furthermore, in the City Centre there is little priority reserved for buses on the traffic lanes (no bus or transit lanes or bus priority signals in the streets within or at the periphery of the City Centre).

District landscape / roadscape

The amenity of the current District road networks combining trees and landscape planting is high.

Townscape (City Centre)

There are extensive plans and proposals in the Revitalising Penrith City Centre Plan and Vision Report 2006 that require implementation to upgrade the streetscape and overall urban design of the city centres in Penrith LGA.

District water management

Initial discussions with Sydney Water indicated there are known constraints on water and sewerage provision in the Penrith CBD redevelopment area.

Local Public Infrastructure

Local streets

There are high volumes of traffic on local roads with limited capacity which is exacerbated by poor connectivity to district and arterial roads at intersections that generates congestion. The Penrith Civic Improvement Plan proposes upgrades to Penrith High Street.

Local cycleways

There are limited local cycleways on the edge of the urban area these networks need to be extended to the City Centre and other key facilities.

During 2004/05 more than $5.3 million dollars was allocated by the RTA to '50/50 fund' local cycleway projects within 66 Council areas. Eighty-nine (89) local bike network projects are being funded at a combined cost of $10.8 million.

Local traffic management

Local traffic management schemes are required at busy intersections particularly adjacent to schools, hospitals, retail centres and commuter car parking areas to improve safety.

Local landscape / roadscape

Local streets would benefit from further landscaping and street furniture provision to improve the amenity and overall comfort of public transport users waiting for connecting services.

Local water management

Sydney Water is currently undertaking detailed investigations to assess the capability of current systems to meet the demands of future development.

4.2.2 Future Requirements

Regional Public Infrastructure

Investment in strategic regional transport links to Penrith LGA has not kept pace with population growth and urban expansion. Both the Metropolitan Strategy and the Draft North West Subregional Strategy highlight the need for further investment in the strategic transport network. In many cases these proposed strategic transport improvements do not have committed funding programmes for upgrading. Consequently strategic regional road links including the M4 and Greater Western Highway and the Western City Rail line networks are reaching capacity and are not keeping pace with the proposed future economic expansion and jobs growth in the area.

There are no significant regional road improvements to cater for the proposed growth as specified in the Metropolitan Strategy and the Draft North West Subregional Strategy.

Regional roads

The designation of Penrith as a Regional City in the Sydney Metropolitan Strategy coupled with the designation of two major residential growth zones of the North West and South West Growth Centres and the designation of the Western Sydney Employment Lands highlights the need for a more sustainable transport system to cope with future demands to 2031.

Regional road links and sub regional transport networks need to be re-structured in the Penrith region to meet forecast growth demand.

These proposed links will follow the existing road network wherever possible and involve:

- widening existing minor roads to provide key transport corridors to incorporate public transport provision
- widening existing major roads to provide key transport corridors to incorporate public transport provision
- developing a new grid road hierarchy of transport links to urban release areas and growth centres.

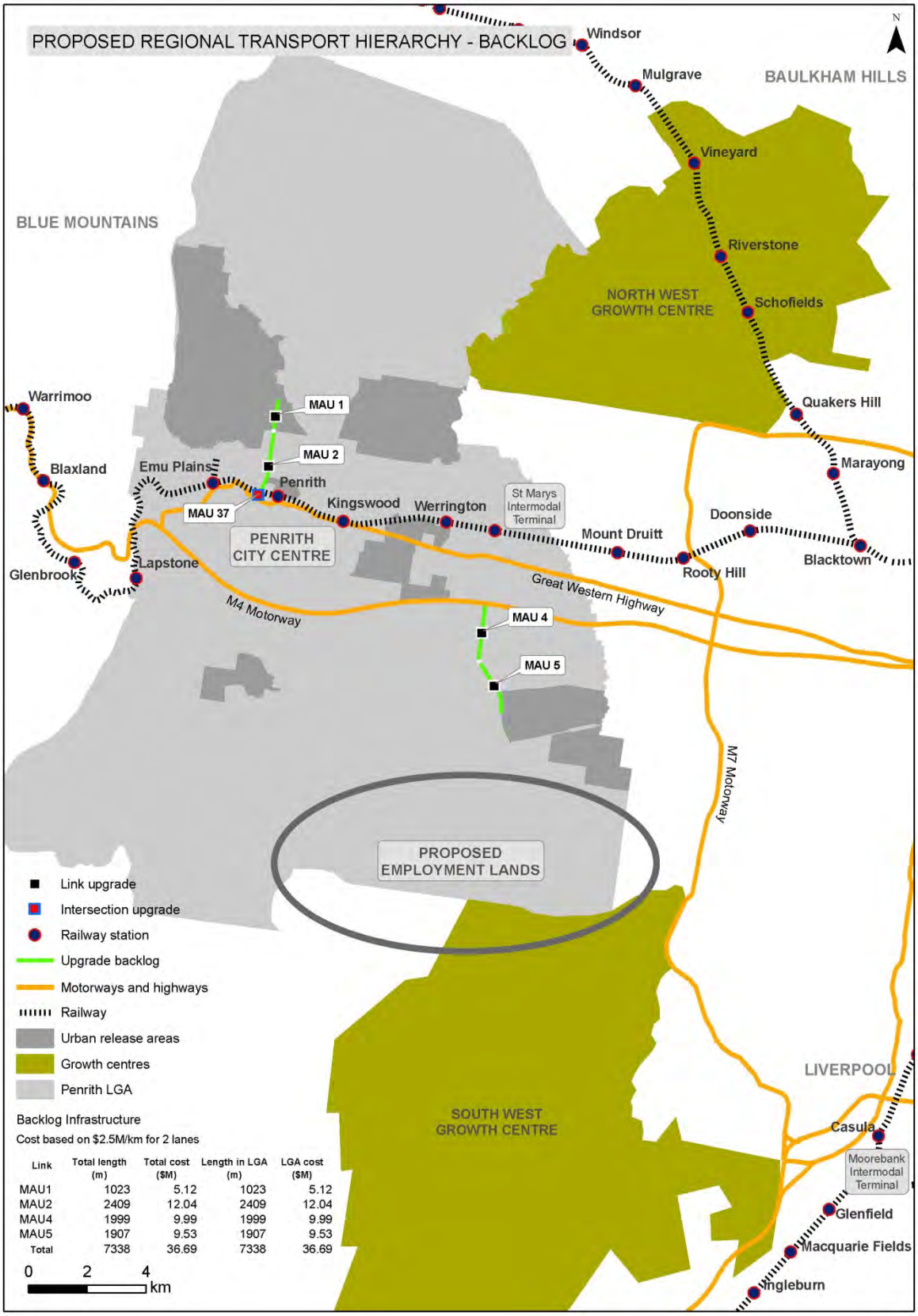
The future road network requirements have been assessed and summarised in Table 14 and Figure 8 to Figure 12.

Table 14. Future Regional Public Infrastructure Situation

Widen Existing Major Roads by 2 lanes							
Cost per lane per kilometre $2.5million							
SERIES	**Link**	**Total length (m)**	**Total cost ($M)**	**Length in LGA (m)**	**LGA cost ($M)**	**Road name/s**	**Location**
1	MAU1	1023	5.12	1023	5.12	Cranebrook Rd	Nepean St - Andrews Rd
1	MAU2	2409	12.04	2409	12.04	Castlereagh Rd	Andrews Rd - Great Western Hwy
1	MAU4	1999	9.99	1999	9.99	Mamre Rd	M4 Mwy - Luddenham Rd
1	MAU5	1907	9.53	1907	9.53	Mamre Rd	Luddenham Rd - Erskine Park
	Total	7338	36.69	7338	36.69		
5	MAU37(Intersection)		24.00		24.00	Intersection Upgrade	Jane St and Castlereagh Rd
Widen Existing Minor Roads by 2 Lanes							
Cost per lane per Kilometres $1.5million							
	Link	**Total length (m)**	**Total cost ($M)**	**Length in LGA (m)**	**LGA cost ($M)**	**Road name/s**	**Location**
2	MAU6	12178	36.54	9081	27.24	Paget St, Londonderry Rd, The Northern Rd	March St - Seventh Ave
2	MAU7	17001	51.00	13322	39.97	George St, The Northern Rd, Cranebrook Rd, Mulgoa	Bell St - Nepean St
2	MAU8	2235	6.71	2235	6.71	Andrews Rd	Castlereagh Rd - The Northern Rd
2	MAU9	4144	12.43	4144	12.43	Dunheved Rd	Richmond Rd - Christie St
2	MAU10	1733	5.20	1733	5.20	Christie St	Forrester Rd - Werrington Rd
2	MAU11	2236	6.71	2236	6.71	Coreen Ave	Castlereagh Rd - Richmond Rd
2	MAU12	461	1.38	461	1.38	Jane St Extension	Jane St - Victoria Bridge
2	MAU13	9254	27.76	9254	27.76	Luddenham Rd	Mamre Rd - Elizabeth Dr
2	MAU14	4046	12.14	4046	12.14	Kerrs Rd, Mt Vernon Rd, Capitol Hill Dr	New Grid Road - Mamre Rd
	Total	53290	159.87	46514	139.54		
Widen Existing Major Roads by 2 lanes							
Cost per lane per kilometre $2.5million							
	Link	**Total length (m)**	**Total cost ($M)**	**Length in LGA (m)**	**LGA cost ($M)**		
3	MAU15	25866	129.33	18048	90.24	The Northern Rd	Seventh Ave - Bringelly Rd
3	MAU16	1505	7.53	1505	7.53	The Northern Rd	Borrowdale Way - Andrews Rd
3	MAU17	826	4.13	826	4.13	The Northern Rd	Andrews Rd - Dunheved Rd
3	MAU19	6811	34.06	427	2.14	Carlisle Ave	Luxford Rd - Roper Rd
3	MAU20	1703	8.51	1703	8.51	Hewitt St, Roper Rd	Great Western Hwy - M4 Mwy
3	MAU21	1329	6.65	1329	6.65	The Northern Rd	Glenmore Parkway - Bradley St
3	MAU22	12199	60.99	12199	60.99	Erskine Park Rd, Mamre Rd	M4 Mwy - Elizabeth Dr
3	MAU23	4714	23.57	2933	14.66	Lenore Lane	Erskine Park Rd - Old Walgrove Rd
3	MAU24	1759	8.79	0	0.00	Erskine Park Arterial	Lenore Lane Extension - M7 Mwy
3	MAU25	13864	69.32	11081	55.40	Elizabeth Dr	The Northern Rd - M7 Mwy
3	MAU26	6754	33.77	0	0.00	Badgerys Creek Rd	Elizabeth Dr - The Northern Rd
3	MAU27	7979	39.89	0	0.00	Devonshire Rd, King St	Elizabeth Dr - Bringelly Rd
3	MAU28	13732	68.66	0	0.00	Bringelly Rd, Camden Valley Way	The Northern Rd - M7 Mwy
3	MAU29	8909	44.55	0	0.00	The Northern Rd	Bringelly Rd - Cobbitty Rd
3	MAU41	3063	15.32	3063	15.32	Mulgoa Rd	
	Total	111015	555.08	53115	265.58		
5	MAU38 (intersection)		16.00		16.00	Intersection Upgrade	Parker St and Great Western Hwy
5	MAU39 (intersection)		24.00		24.00	Intersection Upgrade	Castlereagh Rd and Mulgoa Rd
Create New Grid Roads 4 lanes							
Costs per lane per kilometre $2million							
	Link	**Total length (m)**	**Total cost ($M)**	**Length in LGA (m)**	**LGA cost ($M)**		
1	MAU3	1777	14.22	1777	14.22	Werrington Arterial Stage 1	Great Western Hwy - M4 Mwy
3	MAU18	1650	13.20	1650	13.20	Werrington Rd	Parkes Ave - Great Western Hwy
4	MAU30	8706	69.65	7029	56.23	New Grid Road	Cranebrook Rd - Stony Creek Rd
4	MAU33	3307	26.46	0	0.00	New Grid Road	Forrester Rd - Carlisle Ave
4	MAU34	7564	60.51	7564	60.51	New Grid Road	The Northern Rd - Erskine Park Rd
4	MAU35	9946	79.57	9946	79.57	New Grid Road	M4 Mwy - Elizabeth Dr
4	MAU36	15638	125.10	12472	99.78	New Grid Road	The Northern Rd - M7 Mwy
4	MAU42	6888	55.10	6888	55.10		
	Total	55475	443.80	47326	378.60		
5	MAU40 (intersection)		N/A		N/A	Intersection Upgrade	M4 Mwy and Gipps St
Intersections - all have been incorporated.							
5	MAU37		24.00				
5	MAU38		24.00				
5	MAU39		16.00				
5	MAU40						

Source: Maunsell 2008

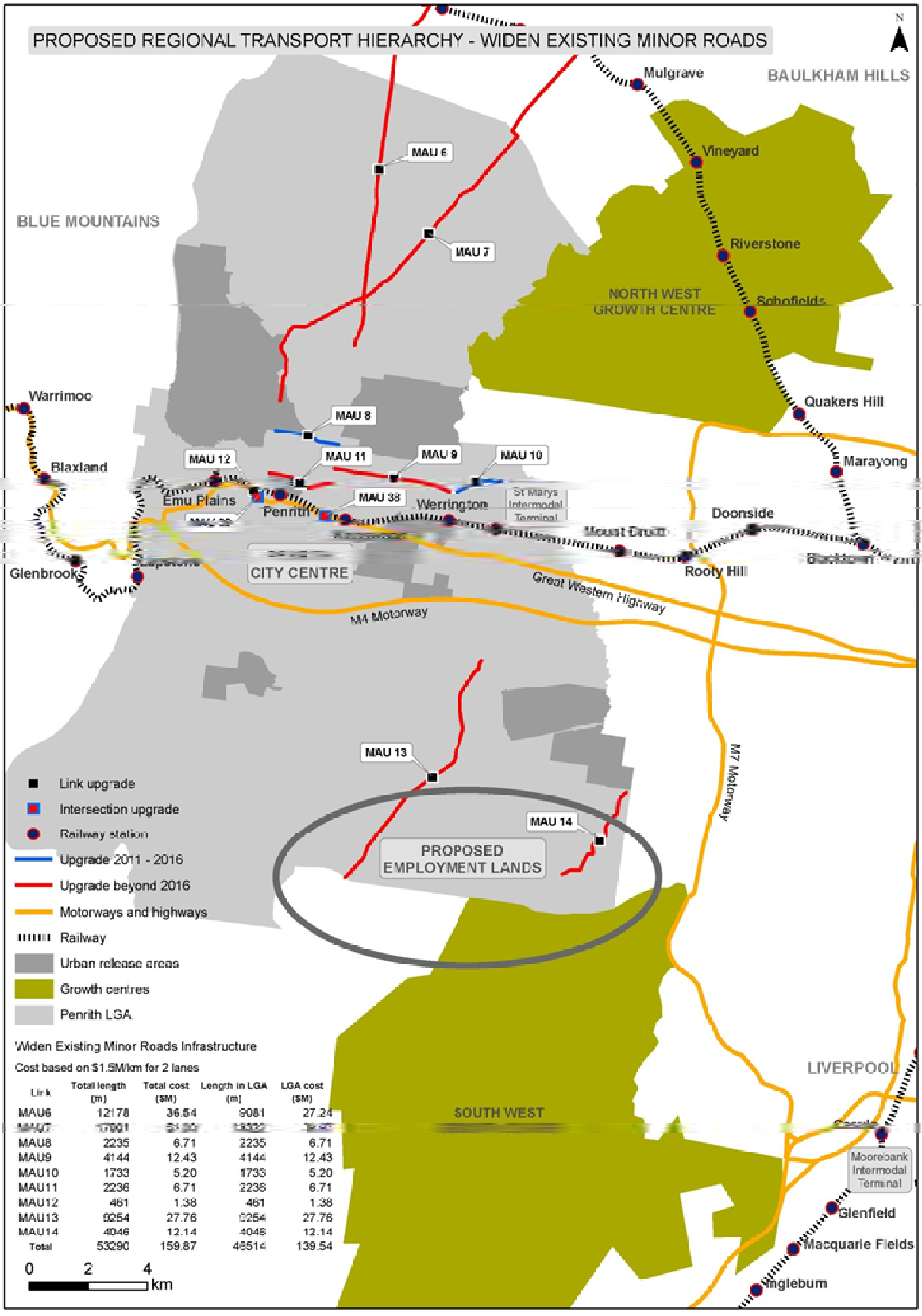
Figure 8. Proposed Regional Transport Diagram– Backlog of upgrading Road Works



Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU1	1023	5.12	1023	5.12
MAU2	2409	12.04	2409	12.04
MAU4	1999	9.99	1999	9.99
MAU5	1907	9.53	1907	9.53
Total	7338	36.69	7338	36.69

Source: Maunsell 2008

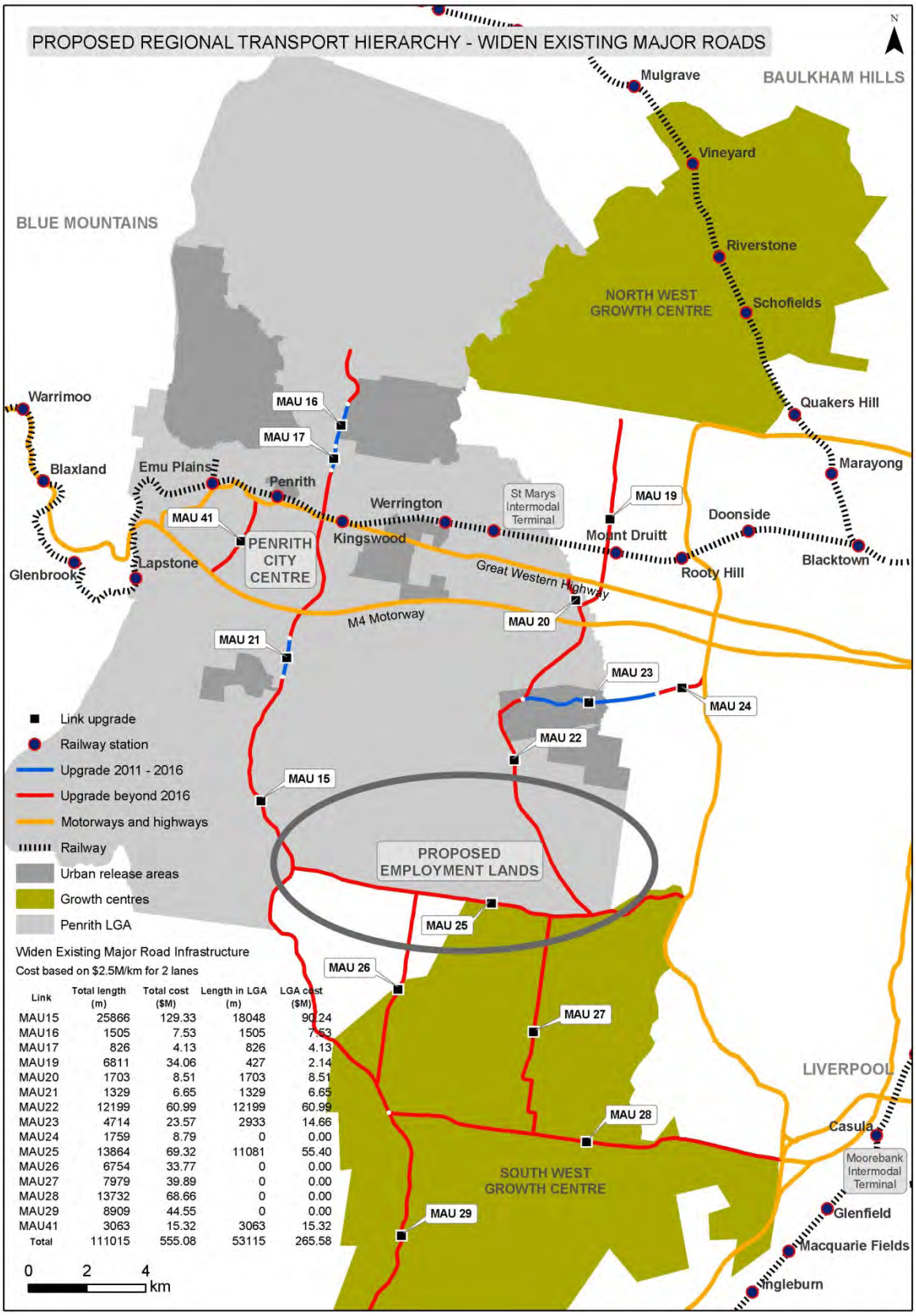
Figure 9. Proposed Transport Infrastructure – Widen Existing Minor Roads



Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU6	12178	36.54	9081	27.24
MAU7	17001	51.00	13323	39.97
MAU8	2235	6.71	2235	6.71
MAU9	4144	12.43	4144	12.43
MAU10	1733	5.20	1733	5.20
MAU11	2236	6.71	2236	6.71
MAU12	461	1.38	461	1.38
MAU13	9254	27.76	9254	27.76
MAU14	4046	12.14	4046	12.14
Total	53290	159.87	46514	139.54

Source: Maunsell 2008

Figure 10. Proposed Transport Infrastructure – Widen Existing Major Roads

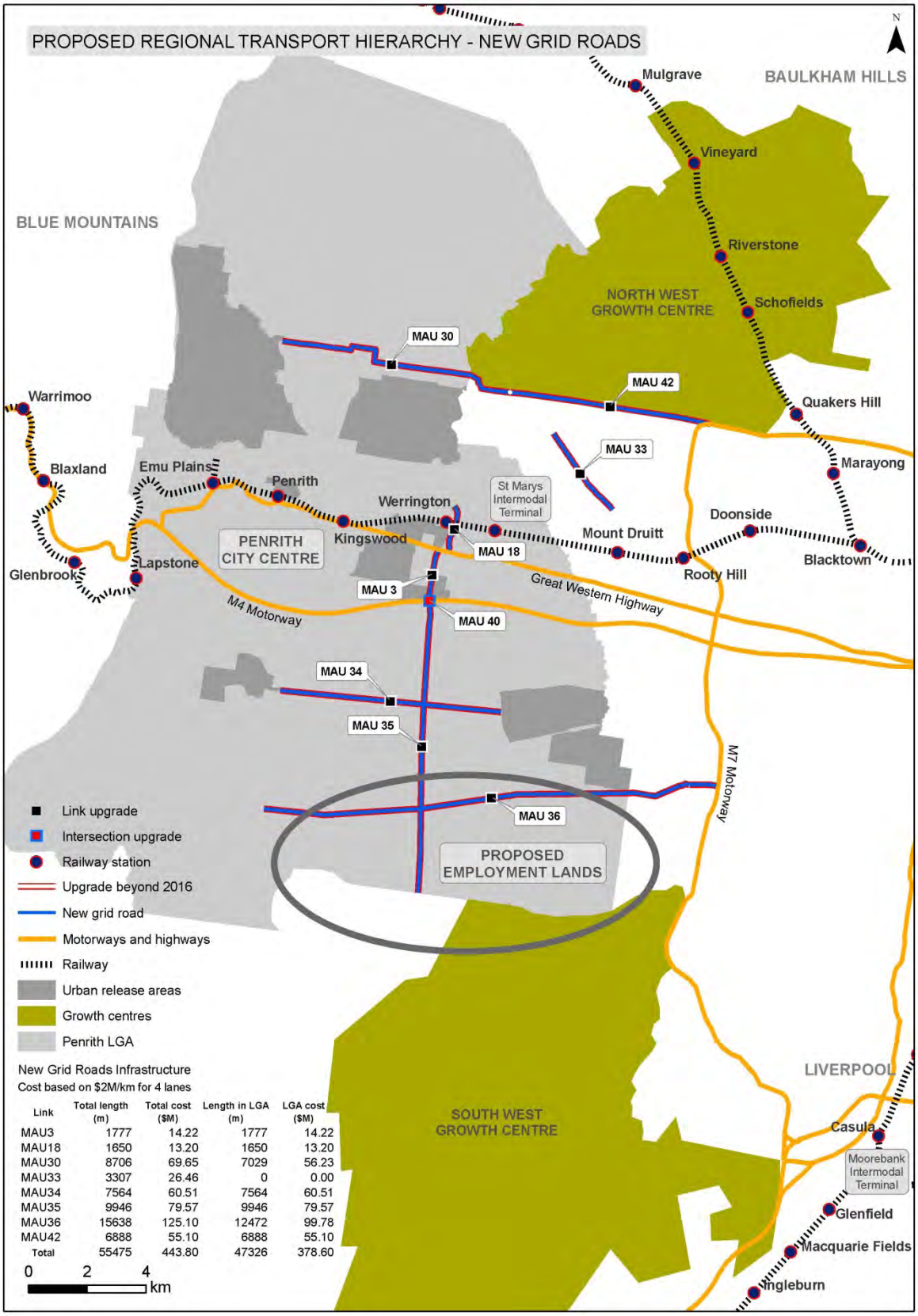


Widen Existing Major Road Infrastructure
Cost based on $2.5M/km for 2 lanes

Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU15	25866	129.33	18048	90.24
MAU16	1505	7.53	1505	7.53
MAU17	826	4.13	826	4.13
MAU19	6811	34.06	427	2.14
MAU20	1703	8.51	1703	8.51
MAU21	1329	6.65	1329	6.65
MAU22	12199	60.99	12199	60.99
MAU23	4714	23.57	2933	14.66
MAU24	1759	8.79	0	0.00
MAU25	13864	69.32	11081	55.40
MAU26	6754	33.77	0	0.00
MAU27	7979	39.89	0	0.00
MAU28	13732	68.66	0	0.00
MAU29	8909	44.55	0	0.00
MAU41	3063	15.32	3063	15.32
Total	111015	555.08	53115	265.58

Source: Maunsell 2008

Figure 11. Proposed Transport Infrastructure – New Grid Roads

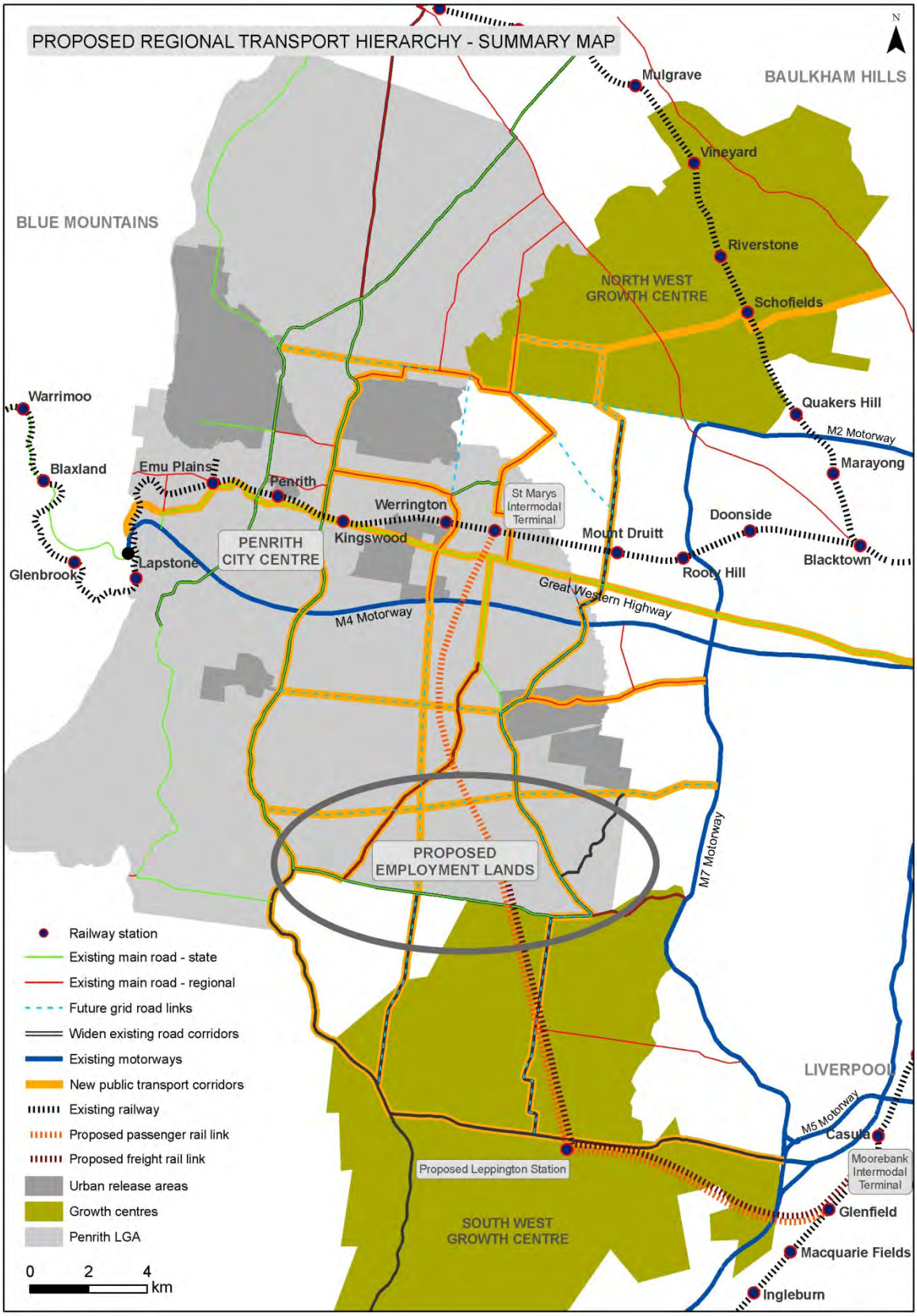


New Grid Roads Infrastructure
Cost based on $2M/km for 4 lanes

Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU3	1777	14.22	1777	14.22
MAU18	1650	13.20	1650	13.20
MAU30	8706	69.65	7029	56.23
MAU33	3307	26.46	0	0.00
MAU34	7564	60.51	7564	60.51
MAU35	9946	79.57	9946	79.57
MAU36	15638	125.10	12472	99.78
MAU42	6888	55.10	6888	55.10
Total	55475	443.80	47326	378.60

Source: Maunsell 2008

Figure 12. Proposed Transport Infrastructure – Summary Map



Source: Maunsell 2008

Public Transport

Public transport networks need to be improved in the City. Connections should be better integrated between existing and new areas and the quality of interchanges needs to be improved to contribute to the quality and character of the Penrith LGA. At a regional level the following improvements are required:

- Comprehensive public transport services along the M4/ Greater Western Road / Parramatta Road corridor
- Upgrading of rail / bus transport interchanges and improved commuter parking areas
- Secure integrated intra regional transport networks through establishment of core regional transit corridors and regional services that provide improved intra-regional access.

Bus Services

Current bus networks and services will need to be extended into the new urban release areas as there are many areas of Penrith City that are not currently connected to the local bus network. At the strategic level there needs to be full implementation of the State Government's strategic bus corridor and transitway program that will provide sub regional connections to surrounding areas. There are proposals for a shuttle bus to service the needs of the community within Penrith City Centre. There also needs to be improved integrated transport interchanges of bus stations with the railway stations in the area.

Future Rail Services

The current capacity of the Western Rail line services at peak periods is unsatisfactory and requires improvement. Future population and employment growth will generate additional demands which must be catered for. The proposed quadruplication of the line between St Marys and Penrith will add capacity. However, the main Western Rail line from Sydney CBD to the Blue Mountains is coming under increased pressure from expanding population and employment growth in the Western Sydney Growth Corridor. People's choice of travel mode will depend on what is provided, if the rail services continue to be overcrowded. Sustainable transport choices are possible but they will require support and funding from the state level or joint ventures with the private sector. The following is necessary:

- Development of a new train station, Werrington UWS railway station (to support the WELL precinct)
- Expansion of the rail network and ongoing capacity improvements to support access to the metropolitan labour market and facilitate efficient non-intrusive freight movement across the region to key economic infrastructure
- Fast and efficient rail links to Parramatta
- Upgrade of both the Penrith and St Marys station's rail / bus interchanges
- Double track from St Marys to Penrith by 2017
- Expansion of commuter parking areas at the main Railway Stations that were possible should be integrated with surrounding commercial centres.

District Public Infrastructure

Most travel is undertaken within the sub region at the district level where a network of transport links connects to the regional and local roads. Greater connectivity is required at this level between the city centres, employment and residential areas. Congestion costs of Penrith residents are rising on journey to work trips affecting the attractiveness of the area as a place to live and work. In order to improve future travel patterns public transport networks need to be improved through increased capacity on train and bus networks to provide fast, frequent and direct services connecting centres across the area. Investing in public transport travel will reduce costs for commuters and congestion on the roads.

District roads

The district road network that includes arterial and sub arterial roads requires upgrading to provide greater accessibility to future expansion areas. The Penrith City Strategy 2006 and the Access and Transport Analysis of Penrith City Centre & St Marys Town Centre as well as the Penrith Arterial Roads Study (Pitlus) highlighted intersections requiring upgrading. These intersections are operating at a poor level of service with vehicles and buses experiencing significant delays during the morning and evening peak. These intersections need to be considered for upgrading. Greater connectivity is required at the district level between the city centres, employment and residential areas. Congestion delays and costs are rising on the critical journey to work trips at peak periods between residences and employment areas.

Future recommended district road improvements to cater for local urban areas development are illustrated in Figure 8 to Figure 10.

District cycleways

Priority needs to be made for cyclists on district roads through provision of cycleways to the main centres in the area as well extending a network of cycleways throughout the area.

Traffic management

Traffic management measures identified in the Penrith Arterial Roads Study 2006 to address peak period congestion on the district road network need to be funded and implemented particularly through improvements to key intersections including roundabouts and signalised junctions leading into the main urban centre.

Townscape (City Centres)

Townscape works are highlighted in 2006 Penrith City Centre reports. These works would improve the overall quality of the public realm through reorganisation of public space, creation of new urban squares, street furniture and landscaping areas.

Local Public Infrastructure

Local transport networks and investment in public transport systems require urgent action. The provision of local precinct roads for new urban release areas is required. Local bus networks need to be expanded to link key centres and local facilities and further provision needs to be made to expand commuter parking provision at railway stations to encourage use of the rail system. There

is also a need to improve and extend the walking and cycling network to local schools, commercial and community centres and recreation areas.

Local streets

Local streets need improvement as there are high volumes of traffic with limited lane capacity which is exacerbated by poor connectivity to district and arterial roads at intersections generating significant congestion. Widening of key local streets and junctions will be required to overcome congestion problems. The Penrith Civic Improvement Plan proposes upgrades to Penrith High Street.

Local cycleways

Local cycleways routes need to be extended to the city centre and other key facilities such as schools and recreation areas.

Local traffic management

Local traffic management schemes are required at busy intersections particularly adjacent to schools, hospitals, retail centres and commuter car parking areas to improve safety.

Local landscape / roadscape

Local streets would be improved by further landscaping and street furniture provision to improve the amenity and overall comfort of public transport users waiting for connecting services.

4.3 Privately Provided Infrastructure

4.3.1 Current Situation

Social Infrastructure

Several non-government organisations (NGOs) as well as private 'not-for profit' organisations are providing services to Penrith City's residents. Services include youth facilities, such as the Penrith YMCA, St Marys RSL Youth Club and Community Club, health services such as the Nepean Private Hospital and the Penrith Youth Health Centre, but also many private sport clubs. There are also ten private primary schools, 7 private high schools and three comprehensive private schools in Penrith. More than half of all child care centres in the City are private.

Broadband

Broadband take-up across Australia has increased by 51 percent[32]. This is the result of the increased coverage of and access to a range of broadband services as outlined in Table 15.

[32] Percentage increase in broadband uptake from 30 September 2005 – 30 September 2006 (ACCC Snapshot of broadband deployment September 2006).

Table 15. Type of Broadband services

Type of broadband offering					
	Cable	**Satellite**	**ADSL**	**XDSL**	**Other**
Geographic Availability	Brisbane, Sydney, Melbourne, Canberra, Adelaide, Perth	Australia wide	- All state and territory CBDs - All state and territory metro areas - Majority of all state and territory regional centres	- All state and territory CBDs - All state and territory metro areas except: • South Australia • Tasmania • Northern Territory	Metro Areas in Adelaide Brisbane Canberra Melbourne Perth Sydney Some regional areas of Victoria

Source: ACCC, September 2006

Broadband in Penrith City

In Penrith City, internet and computer usage is reasonably widespread with 63% of households having an internet connection (Table 16). The majority of households (45%) have a broadband internet connection. Dial up and other types of internet connections represent 17% and 1% of total households respectively.

Table 16. Type of internet connection in Penrith City 2006

No Internet connection	Broadband	Dial Up	Other	Internet connection not stated	Total
19,044	25,838	9,946	341	1,762	56,931
33%	45%	17%	1%	3%	100%

Source: ABS, Census 2006

Gas

A 7.1km primary pipeline was constructed in 2003, from Eastern Creek to Penrith. It supplies high-pressure gas to the Penrith and Blue Mountains region. Its operating pressure is 3,500kPag, which is sufficient capacity to meet future demand.

4.3.2 Future Requirements

Social Infrastructure

Future growth is likely to lead to an expansion of private service providers as well as NGO activities in the City. The influx of families with children in the new urban release areas will create a high demand for children and youth services and it is most likely that private providers will cater partly for this demand.

Broadband

In the rapidly changing telecommunications / broadband business current trends indicate continuing growth in e-commerce. Telecommunications infrastructure is available throughout the majority of Penrith City region. Telecommunications is unlikely to be tied continuously to a particular form of infrastructure. For example, broadband is largely provided through copper cable,

however fibre optic is offering quantum leaps in capacity and wireless technology is emerging rapidly.

The best way to support future broadband provision is to continue to support telecommunications networks in the area that are flexible and proactive with new developments in broadband technology. Broadband providers are continuing to compete vigorously for business expansion to supply services to the area on a profitable return basis.

Gas

Alinta proposes any future developments on a 5 year investigation program that is funded by Capital Contribution with a return on assets. Developments are only completed where there is profitable return to shareholders.

5 Infrastructure Funding Requirements

5.1 Financial Modelling

In order to forecast future funding requirements, a model (see Appendix 2) has been developed as follows:

- All existing 'high order' infrastructure items have been identified and appraised in terms of
  - Replacement costs
  - Ongoing costs (operation and maintenance)
  - Depreciation
- 'Low order' infrastructure items have been included using aggregate figures from the Council's data bases.

This enables future funding liabilities associated with the existing asset base to be anticipated.

In addition, required infrastructure items are included in the model. These are classified as either 'backlog' items or 'future' items; and cost estimates are made. This enables future capital and recurrent costs associated with these assets to be anticipated.

The model can produce cash flow reports with graphs in a number of formats, for example:

- By funding responsibility (e.g. Council, State Government, Commonwealth Government or development contributions);
- By assets type (e.g. roads or childcare centres); or
- By existing, backlog, or future classification.

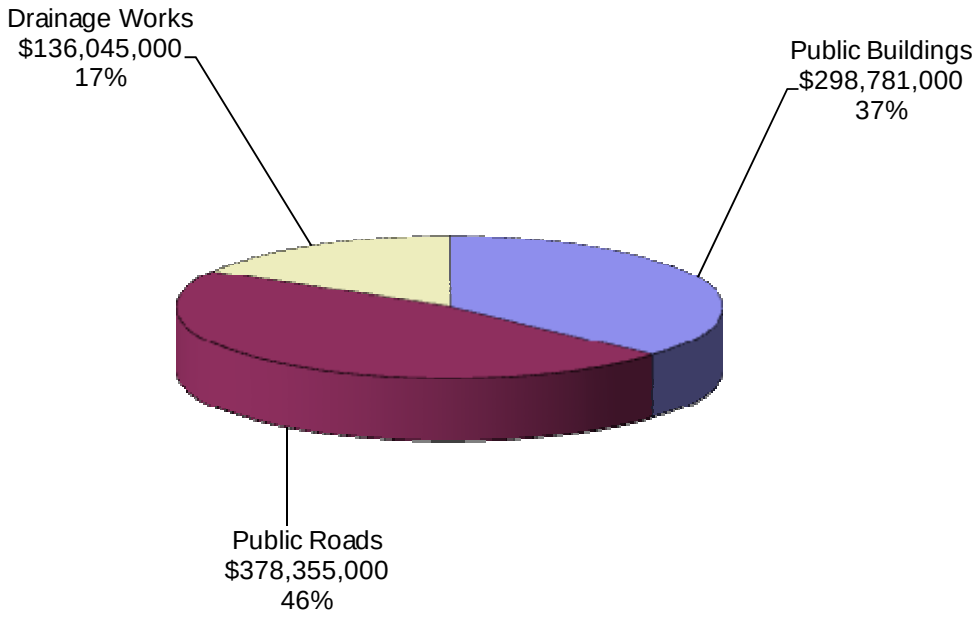
The model is linked to a mapping system and is fully interactive. An explanation of the method applied to integrating the Council's databases is included in Appendix 2.

5.2 Current Urban Infrastructure Assets

Council Urban Infrastructure Assets

Council is the custodian on behalf of the community of a highly significant asset base. According to the Council's Annual Report (Special Schedule No. 7) the value of all assets (excluding open space) in 2008 was $813 million made up of the figures shown below. By far the most important assets are the roads and their associated drainage works.

Figure 13. Value of Council Assets 2008

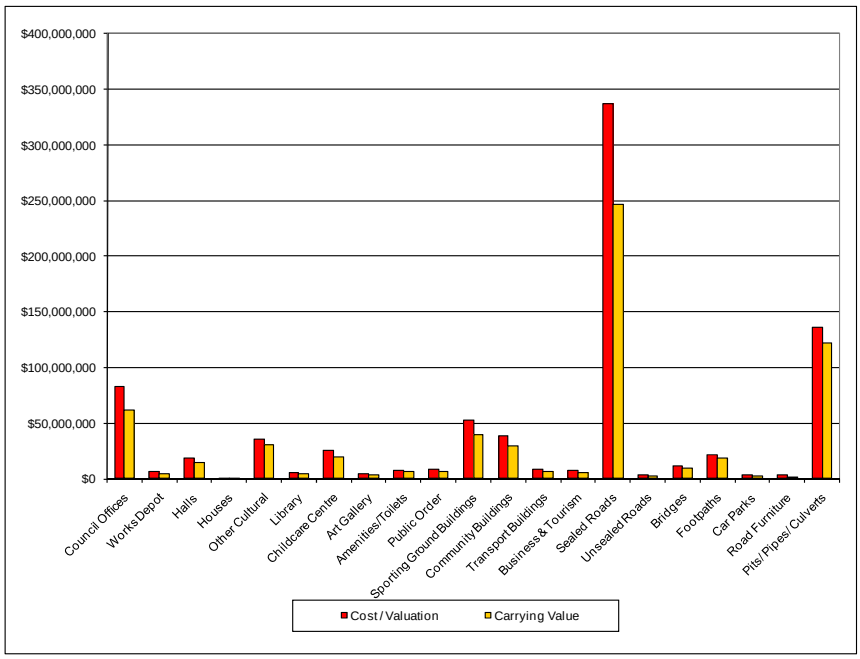


Source: Penrith City Council, Annual Report 2007-2008

The relative values of individual asset categories along with the extent to which each category is depreciated is shown in 0 overleaf.

Overall, the assets are 23% depreciated with the standouts being unsealed sealed roads at 44% and sealed roads at 27%. A number of building categories are similarly depreciated.

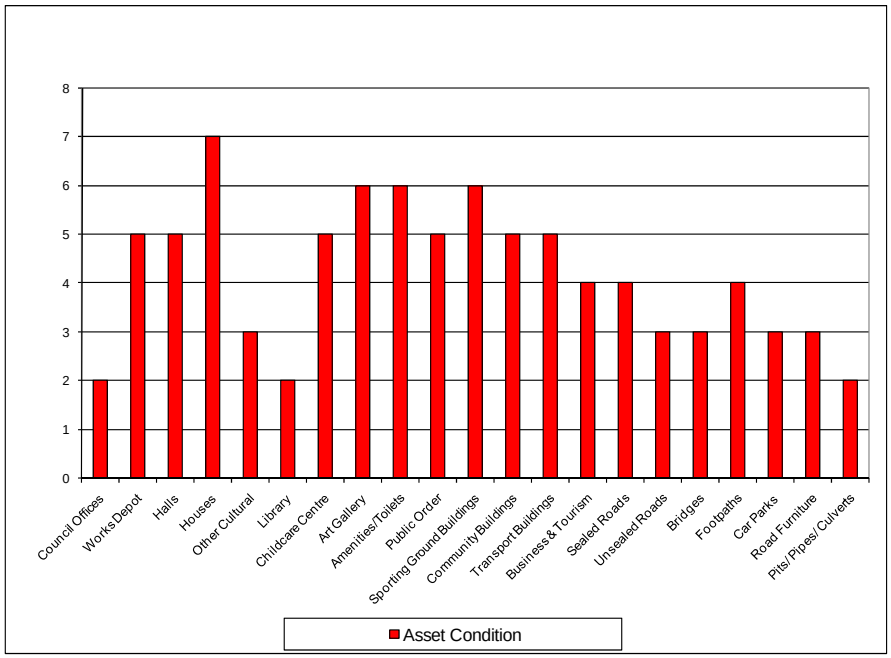
Figure 14. Values of Individual Asset Categories



Source: Penrith City Council, Annual Report 2007-2008

The condition of the asset base is assessed as per Figure 15 . A rating of 1 is 'excellent' and higher ratings represent deterioration of the assets. For roads a rating of 2 is 'satisfactory'. Roads on average rate 4, therefore they are less than satisfactory on this scale. However, the Council has elected to adopt a basic 'safe and serviceable' criterion reflecting funding constraints. For buildings, a rating of 6 is 'satisfactory'. It can be seen that most buildings fall within this threshold, although many are approaching a rating of 5.

Figure 15. Asset Condition

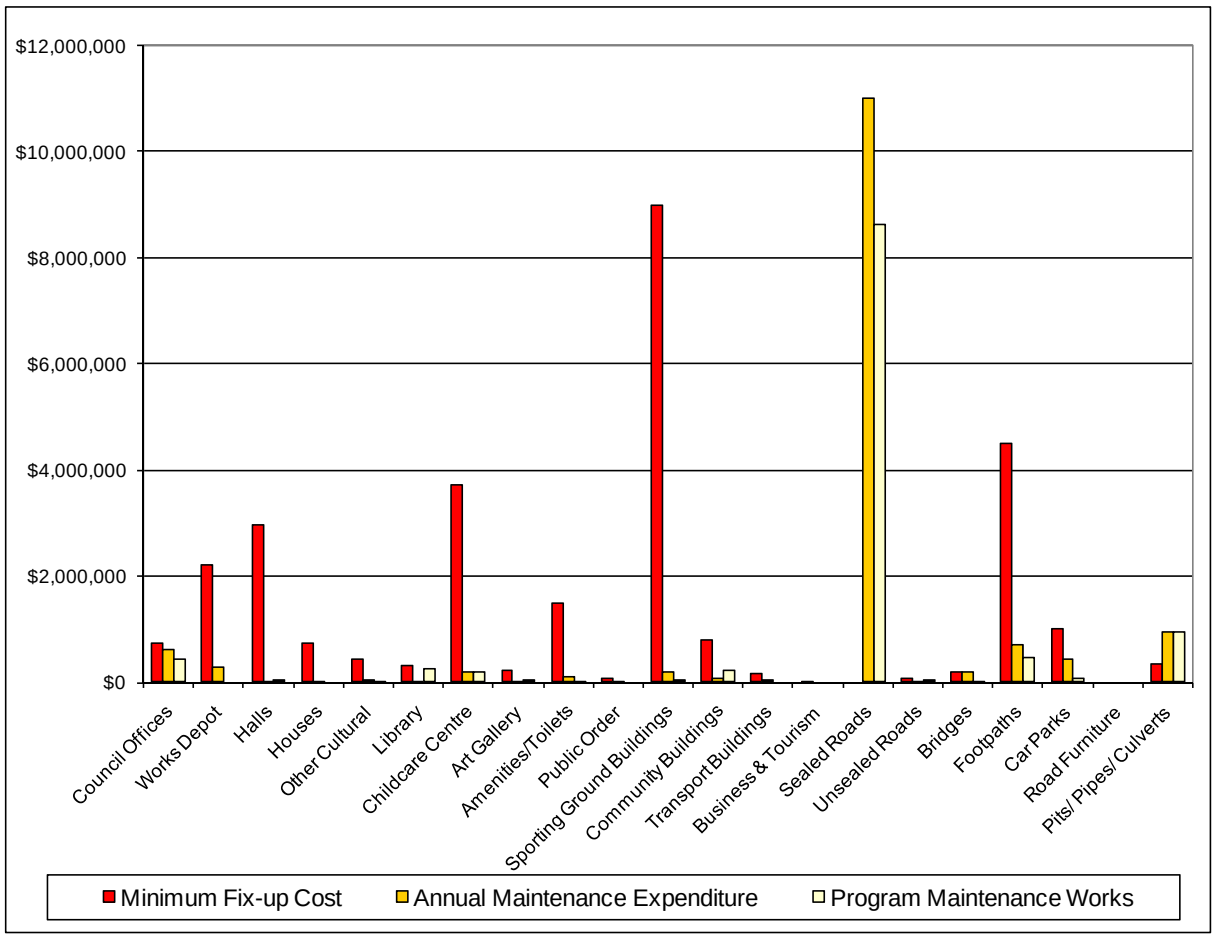


Source: Penrith City Council, Annual Report 2006-2007

All assets have been assessed by the Council in terms of the minimum expenditure that is required to bring them to a satisfactory level. In the figure below this 'minimum fix-up cost' is shown along with current annual maintenance expenditure and programmed maintenance works. The total estimated cost to bring them to a satisfactory standard is just under $1 billion. The fix-up cost for sealed roads is $78.9 million which dwarfs the other costs. It has been omitted from the graph to enable the details of the smaller items to be displayed.

Annual maintenance expenditure totals $12.1 million which is $2.8 million short of what is estimated by the Council to be required. The amount being spent on buildings is 0.54% of their value per annum which is a bare minimum. The amount being spent on roads is 3.26% of their value per annum which reasonably aligns with appropriate benchmarks. However, the valuation of roads is at historic cost not replacement cost. Therefore, it is likely that Council is underspending on road maintenance.

Figure 16. Minimum Fix-up Costs, Maintenance Expenditure and Actual Program 2007-2008



Source: Penrith City Council, Special Schedule No 7, 2007-2008

5.3 Backlogs in Council Urban Infrastructure

While there are certainly backlogs in terms of deferred maintenance as discussed above ($1.0 billion), the actual quantity of infrastructure is reasonably aligned with community needs. The City is currently undertaking a footpath program that will retro-fit footpaths across the city, Construction of high and medium order footpaths will be completed in the 2008/2009 financial year.

There are some projects that could be brought on stream now but the extent to which they constitute 'backlogs' is arguable. Examples are roadscape and landscape projects, bicycle paths and improvements to waterways. It has been decided to classify these projects as 'future projects'.

5.4 Future Requirements for Council infrastructure

5.4.1 Developer Funded Items

Developers provide urban infrastructure via direct provision (e.g. local streets, footpaths and drains) and through developer contributions (S94 and planning agreements). This infrastructure comes to the custodianship of the Council for operation and maintenance in perpetuity. The total value of these items to 2031 is summarised below.

Table 17. Developer Contributions

Direct Provision	$289,750,610	61%
S94 Plans (excl. land acquisition)	$ 185,162, 091	39%
Total	**$474,912,701**[33]	**100.0%**

Source: Penrith City Council, SGS Modelling 2008

The direct provision amount equates to around $22,000 per future residential lot. This includes a 10% loading for non residential developments. This is the estimated cost to a developer for local subdivision streets and utilities. The Section 94 Plan amount equates to around $13,300 per future residential lot. This also includes a loading for non residential developments and it excludes land acquisition costs which make up around 50% of the development contributions in some cases.

The financial modelling provides an estimate of what the future recurrent funding requirement for maintenance will be. The annual and periodic maintenance cost for the developer funded items only will ramp up from approximately $160,000 in 2009 to $17.6 in 2031.

These assets will also accumulate depreciation which will create an unfunded liability to replace them at some point in the future.

[33] The following section 94 plans have been considered: Claremont Meadows Development Contribution Plan 2004, Erskine Business Park Dev Contribution Plan, Glenmore Park Stage 2 Dev. Contribution Plan 2007, Lakes Environs Contribution Plan 2005, District Open Space Dev Contribution Plan, Well Precinct Contribution Plan 2008. Also included in this list is: Waterside Green Community Centre, one additional Community Centre, 3 Multipurpose Centres (partly financed through Developer Contributions)

5.4.2 Council Funded Items

The financial model estimates the future known capital funding requirements for the Council to the year 2031. The outputs are summarised in the table below and include: Upgrade of Londonderry NHC, upgrade of St Marys Memorial Hall, Civic Centre extension, and Ripples Leisure Centre extension.

Table 18. Council Funded Infrastructure[34]

Infrastructure	Capital Requirements
Civic	$2,950,000 (2008)
Community	$5,300,00
Recreation	$1,837,700
Total	**$10,087,700**
Average Yearly Capital requirement	**$483,595**

Source: SGS 2008

If the Council is to provide this infrastructure the total capital cost to 2031 it will be in the order of $10 million. This represents an average spend of $480,000 per annum. This is well below past trends, most likely reflecting the current fiscal situation. In the future it is hoped that public domain expenditure will not be so constrained.

The financial modelling also provides an estimate of what the future recurrent funding requirement will be. To the year 2031 the annual cost will ramp up to be an additional $195,000 per annum.

5.5 Projected Council Funding Sources

Council's current Management Plan (2008-2009) sets out the City's budget and revenue policy. The budget for 2008-2009 in summary is:

Table 19. Expenditure, Income and Net Position

Expenditure	
Capital Works	$51.3m
Other Funded Expenses	$134.9m
Total	**$186.2m**
Income	
Rates	$66.6m
Fees and Charges	$48.7m
Grants and Contributions	$32.9m
Other Income/Reserves	$38.1m
Total	**$186.3m**
Net Position	**$0.1m**

Source: Penrith City Council 2008

[34] It has to be noted that Penrith Council will not provide additional childcare centres and that it is assumed that the private sector will cater for the need of additional 14 childcare centres between 2008-2031.

Council has commenced a 10 year asset renewal program for parks and public toilets. A major consideration is the cost of maintaining Council's asset base.

Salaries and wages are the largest cost item at $65.9m net of capitalised costs.

The Management Plan documents the historic decline in road asset condition from 1998-1999. This was reversed in 2005-2006 following an increase in expenditure levels in 2000-2001. In 2008-2009 an additional $523,000 has been allocated taking total expenditure on roads to $10.7m (including kerb, gutter and road widening programs).

The ten year plan identifies a need for $1.5m per annum to be expended on buildings requiring an additional $200,000 in 2008-2009.

The Council maintains a total of 1,254 ha of open space, a 25% increase since 1998. Funding of $250,000 per annum has been allocated in 2008-2009 for asset renewal in parks.

The Management Plan is based on a financial model to 2017-2018. The model includes income from the 'Area Renewal and Established Areas Strategy (AREAs)' which is a special rate variation of 5.2% approved by the State Government in 2006 (plus a variation from 2002-2003). The variation will require further approval to extend beyond 2015.

Key factors in the modelling include:

- Employee costs, escalating 4.95% per annum
- Expenditure items escalating by CPI (3.5%)
- Increased expenditure on asset renewal
- Property development projects included
- 'Ministerial' rates rises to 3.5%
- Continuation of two special rates
- Rate income growth of $400,000 per annum from development
- Financial Assistance Grants (Commonwealth – FAGS escalate at 3% per annum. Other grant levels are maintained
- Infrastructure loan borrowing program $3.2m per annum
- Asset Renewal Program borrowing of $913,000 per annum.

Capital expenditure will be subject to funds availability. The majority of projects have associated funding such as S94 contributions, reserve transfers and special purpose grants. The main impact these capital projects will have is their ongoing operational costs (operating, recurrent maintenance and periodic maintenance).

5.5.1 Grants

In the past eight years the Council has received over $29 million in grants averaging around $3.6 million per annum (see table below). In this time the largest individual grants have been received from the Commonwealth Government for the Roads to Recovery Program and NSW Arts for the Joan Sutherland Performing Arts Centre. The most significant grantor is the RTA with over $8.4 million in grants during the period.

Table 20 shows that grants vary wildly from year to year depending on projects and availability. This uncertainty is a major issue in financial planning for Local Government.

Table 20. Grants

Year	Grants Received
07-08	$1,657,138
06-07	$2,716,743
05-06	$5,170,300
04-05	$3,988,024
03-04	$2,282,405
02-03	$3,180,892
01-02	$9,657,261
00-01	$660,567
Total	**$29,313,329**
Average	**$3,664,166**

Source: Penrith City Council 2008

Forecasting future grants is clearly fraught, ideally grants will trend upwards as the City grows and needs become more pressing. The North West Subregional Strategy anticipates an additional 25,000 dwellings by 2031, an increase of around 40% over the current 62,000. Moreover, there is a potential for between 28,000 and 40,000 new jobs, in addition to the current 102,000 (28% to 40% increase). On this basis the flow of grants should increase in the order of 40%. This equates to around $5.2m per annum in 2031.

5.5.2 Rates

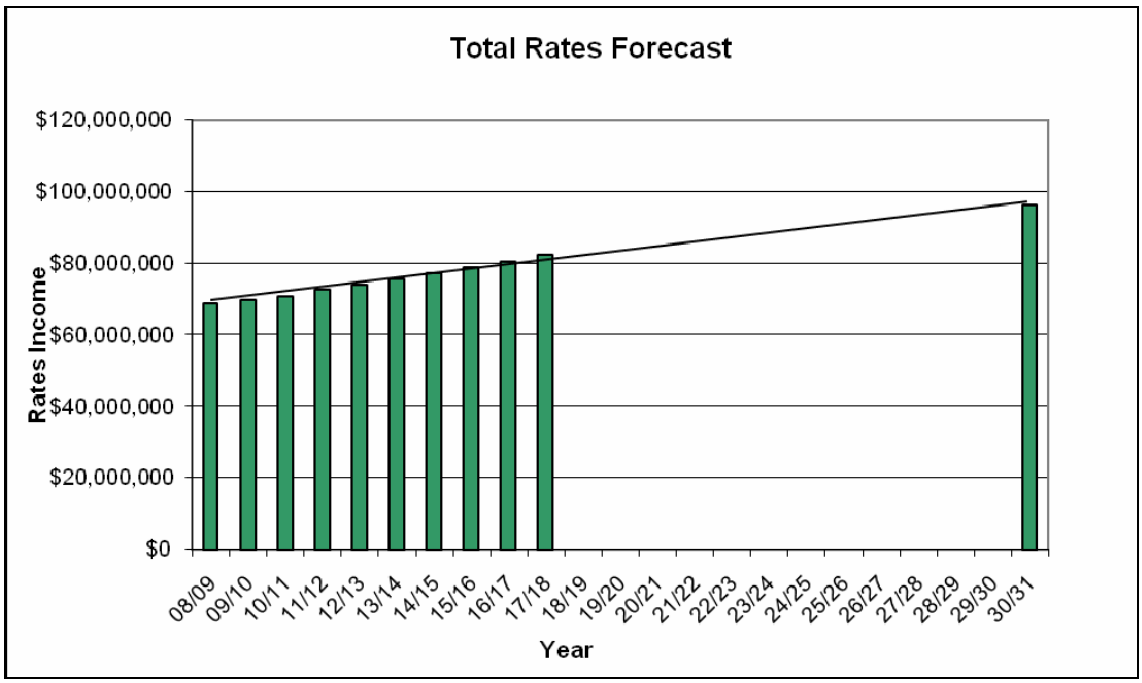
The Council has forecast a real increase in rate revenue of 19.51% over the next ten years. If this is extrapolated to 2031 this would represent an increase in the order of 40% which is consistent with the forecasts for dwellings and jobs growth discussed above.

Table 21. Total Rates Forecast

Timeframe	**2008 Dollars**	%
Rates 2008-2009	$68,973,922	
Council forecast 2017-2018	$82,428,886	19.51%
Extrapolate to 2030-2031	$96,409,361	39.78%

Source: Penrith City Council, SGS 2008

Figure 17. Total Rates Forecast



Source: Penrith City Council, SGS 2008

On this basis it is reasonable to expect an increase in rates revenue of 40% real for modelling purposes. If this is the case the amount potentially available for maintaining infrastructure may be estimated. At present, Council expends an amount equivalent to 16.4% of the total rates take on maintenance. If this were to be perpetuated there would be in the order of $4.5m per annum available in 2031 (16.4% of $27.4m).

5.5.3 Own Source Revenue

The Council's ten year management plan contains forecast revenues to 2017-2018 (see table below). Total operating revenue is forecast to lag behind inflation (3.1% per annum vs. 3.5% per annum). Rates are expected to grow faster than inflation due to new subdivisions coming on-stream.

It is not therefore expected that there will be any real growth in own source revenues.

Table 22. Revenues 2007/2008-2017/2018

	Year 07-08	Year 17-18	Nominal Increase	Compound Rate
Annual charges	$10.4 m	$12.8 m	22.52%	2.05%
Rates[35]	$69.0 m	$108.4 m	57.20%	4.63%
User charges and fees	$4.2 m	$6.7 m	59.52%	4.78%
Fees for commercially available services	$25.4 m	$25.4 m	0.00%	0.00%
Interest Income	$3.0 m	$3.6 m	20.00%	1.84%
Other operating revenue[36]	$1.6 m	$1.4 m	-12.50%	-1.33%
Operating grants	$18.4 m	$21.4 m	16.30%	1.52%
Operating contributions	$2.0 m	$2.0 m	0.00%	0.00%
Profit on sale of assets	-$0.4 m	-$0.4 m	0.00%	0.00%
Total operating revenue	**$133.6 m**	**$181.3 m**	**35.70%**	**3.10%**

Source: Penrith City Council, Draft 2008-2009 Management Plan 2008-2009, p. 144

5.5.4 Funding Gaps

Recurrent Funding

Taking the foregoing estimates into account the picture that emerges is summarised in Table 23.

[35] Ministerial Rise 3.5% plus subdivisions.

[36] Penrith City Council advised that 'other operating revenue' will be maintained at 2007-2008 level ($1.6m); the nominal increase would then be 0.00%, and the compound rate 0.00%.

Table 23. Recurrent Funding

Recurrent and Periodic Maintence Costs			
Costs	**2008**	**2031**	**Notes**
Current Assets	$14.90 m	$14.90 m	From Schedule 7 Annual Report
Current Open Space	$6.75 m	$6.75 m	
Estate Infrastructure Handed Over		$11.60 m	Local streets and drains, etc. handed over for care and maintencne.
Infrastructure Funded by Development Contributions		$6.00 m	As per development contribution plans
Open Space Funded by Development Contributions		$0.22 m	As per development contribution plans
New Council		$0.30 m	Council capital works program
Totals	**$21.65 m**	**$39.77 m**	
Funding	**2008**	**2011**	
Current Schedule 7 Items	$12.10 m	$12.10 m	From Schedule 7 Annual Report
Open Space Maintence Budget	$6.75 m	$6.75 m	CoP Advice
Rates Increment Proportion	$0.00 m	$2.90 m	Estmate 40% increase in rates revenue and 16.4% available for maintenance
Own Source Revenue Proportion	$0.00 m	$0.00 m	CoP Management Plan
Totals	**$18.85 m**	**$21.75 m**	
Surplus/Deficit	**-$2.80 m**	**-$18.02 m**	
Book Depreciation	$184.40 m	$584.68 m	2008 from Sch 7, 2031 based on 2% pa on Cumulative Capital Base
Make Good Cost	$99.80 m	$316.44 m	2008 from Sch 7, 2031 based on same proportion of book depreciation

Source: Penrith City Council, SGS 2008

In the above table the estimated 'required' maintenance costs for current assets are shown as continuing to 2031. This is all of the roads and buildings that council maintains. The annual cost is $14.9 million. Also shown is the annual cost of maintaining existing open space at $6.75 million.

In 2031 the Council will have custodianship of a large amount of new infrastructure in new estates and through its capital works program. Taken together the maintenance costs will be approximately $11.6m pa.

On the revenue side, as documented in the Annual report, there is already underspending on current assets in the order of $2.8 million per annum. There will be only modest growth in funds available from rates – an additional $2.9 million.

Hence the current deficit of $2.8million per annum is expected to blow out to $20.8 million per annum without a major change in funding strategies and capacities.

The Council's estimate of book depreciation (an indication of an accumulated liability to renew capital) is $184 million. Against this is the Council's estimate of the 'make good cost' – the real cost of returning infrastructure to a reasonable service level, as opposed to 'brand new' is $99m. It

is estimated that, without any investment in capital renewal, book depreciation will blow out to $584m million in 2031 and the make good cost will be in the order of $316 million.

In the past the Council has undertaken capital renewal when a critical situation arises through special rate variations. This practice will be necessary in the future.

There will also be operational costs (in addition to maintenance costs) coming on stream with new infrastructure and these will need to be funded. These costs have not been examined in any detail due to data unavailability, but an assumption has been made that the bulk of rate growth, fees and charges will cover these costs.

Capital Funding

The assessment of future Council capital items to 2031 is conservative insofar as there are many projects that could be pursued. However, many of these have not been investigated in any detail therefore they cannot have costs attributed to them. Hence, the figure of $10 million is on the low side.

Expenditure of $10 million to 2031 represents an average of $0.48 million per annum which is well within the average for grants over the past eight years. It will therefore be assumed that future Council capital requirements will be met.

5.6 Required State Capital Expenditure

5.6.1 Backlogs

The main infrastructure backlogs coming under the responsibility of the State Government are roads. These have been assessed to be $200 million in 2008. Other backlogs that have been identified include:

- New Penrith police station $10.5 million
- Expanded capacity at the Nepean Hospital $240 million
- Rail system capacity deficiencies
- Bus service capacity deficiencies

It has been assumed that most social infrastructure (e.g. schools) is reasonably in alignment with needs.

5.6.2 Future Requirements

The analysis of future requirements for items funded by the State Government identifies the following:

Table 24. State Government Capital Funding Requirements

Infrastructure	Capital Funding Requirements
Primary and Secondary Schools	$310,488,730
Roads	$604,312,000
Ambulance	$10,505,000
Social Services	$7,500,000
Recreational Services	$9,782,000
Total	**$2,542,587,730**

Source: SGS 2008

In addition, there is a requirement to connect roads outside the City of Penrith into the regional network. Maunsell has estimated that new rail links and upgrades will cost in the order of $4 billion. Bus services will require major expansion.

While these estimates are necessarily broad they do indicate the order of magnitude of the infrastructure task ahead. The implications of not meeting these needs in a reasonable timeframe will be profound for the region. There will be major social and economic costs, not to mention safety issues on an under-developed road network. It is essential that planning for the identified future infrastructure needs commence forthwith.

5.7 Summary Future Expenditure

Table 25 illustrates that the total capital expenditure needed to deliver the baseline infrastructure for the future growth of Penrith Regional City is $3 billion. Improvements to the road infrastructure account for the largest share with $2.5 billion. Table 25 also shows that a high share of the costs is funded by developer contributions. It can be assumed that those costs will be carried over to the end user – the house buyer – and that this will negatively affect housing affordability.

Table 25. State Government Funding Requirements

Category	Council	State	Developer Contr.	Total
Social Services	$8,250,000	$7,500,000	$20,471,750	*$36,221,750*
Health Services	$0	$0	$0	*$0*
Cultural Services	$0	$0	$0	*$0*
Emergency Services	$0	$10,505,000	$0	*$10,505,000*
Education Services	$0	$310,488,730	$0	*$310,488,730*
Recreation Services	$1,837,700	$9,782,000	$69,958,977	*$81,578,677*
Environmental Management	$0	$0	$0	*$0*
Utility Services	$0	$0	$20,657,139	*$20,657,139*
Civil Infrastructure	$0	$2,204,312,000	$363,824,835	*$2,568,136,835*
Total	*$10,087,700*	*$2,542,587,730*	*$474,912,701*	***$3,027,588,131***

Source: SGS 2008

6 The Penrith Regional City Infrastructure Strategy

6.1 Strategic Objectives

This infrastructure strategy is being prepared in a context of fiscal restraint. Rate capping and the uncertainty of future grants plus constraints on other council revenues require the Council to plan only for 'baseline' infrastructure. This is to say that only items that are essential for basic health, safety and amenity are being planned for.

This is an unfortunate set of circumstances in which to be planning for the Penrith Regional City. It is hoped that circumstances will change in the future to enable future generations to attain the level of quality in their urban environment that they deserve.

Against this backdrop the objectives of the Penrith Regional Infrastructure Strategy are:

6.1.1 Supporting Communities

Communities will be supported by provision of a full suite of social and physical infrastructure at the local, district and regional levels. Infrastructure will be planned, designed and operated in collaboration with communities and will be provided in a timely fashion to a high level of quality in terms of service, amenity and safety.

6.1.2 Protecting the Environment

Infrastructure will be planned and designed incorporating best practice in environmental sustainability including with regard to resources consumed and discharges to land, air and water. Comprehensive open space networks will protect areas of biodiversity and will be integrated with water management initiatives. Cultural Heritage assets will be conserved.

Transport networks will cater for the efficient movement of vehicles and freight and will maximise opportunities for public transport use and non-motorised travel.

6.1.3 Maximising Liveability

Landscape design and urban design will be of the highest quality in the public domain including open spaces, road spaces and urban spaces. Open spaces will provide for a full range of recreation, cultural and leisure activities and will promote a healthy lifestyle.

6.1.4 Promoting Economic Development

A full range of utility, communication and transport infrastructure will be provided to promote business investment and to facilitate the efficient operation of business enterprises. The efficient movement of people and goods within the region will be facilitated in a safe environment utilising various modes of transport.

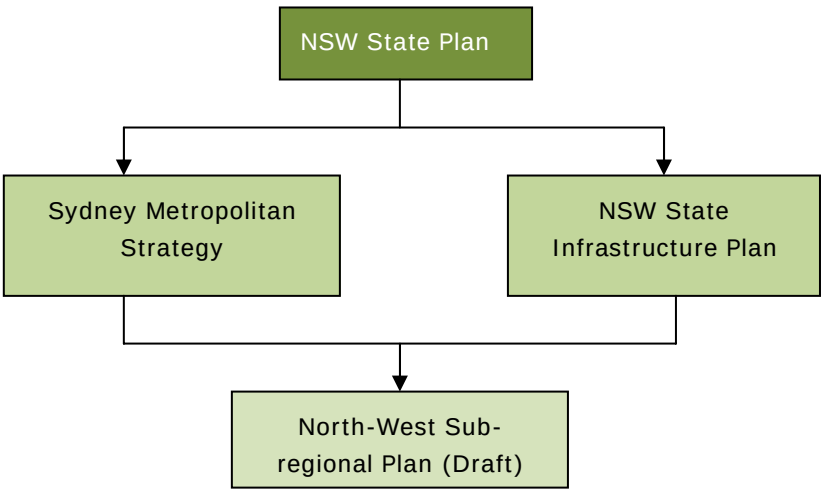
In pursuit of these objectives, strategies have been developed in the following areas:

1. **Planning** – What can be done to improve the long-term planning for future growth, including infrastructure requirements?
2. **Funding and Financing** – How can infrastructure be efficiently and equitably funded?
3. **Partnerships** – Who are the key stakeholders and how can they be brought together to adopt a common purpose.
4. **Advocacy** – How can the City effectively include key stakeholders in productive partnerships?
5. **Monitoring and Review** – What systems are required for effective situation monitoring and review to ensure that the strategy continues to be developed and implemented?

These components are now detailed in turn.

6.2 Planning Context

There is a comprehensive strategic planning framework in place for metropolitan Sydney and hence for Western Sydney where the City of Penrith is a key stakeholder. The principal documents are:



There are many supporting documents (e.g. the State Transport Plan) and plans at the regional sub-regional and local levels (see Section 2.1 in this report).

Within this framework the North-west and South-west Growth Centres have been the subject of comprehensive structure planning including long-term infrastructure planning and funding strategies.

The planned growth in Western Sydney is comparable to adding two cities of the size of Canberra to the region. The Metropolitan Strategy plans for an additional 140,000 dwellings in the North West Subregion and an additional 155,000 dwellings in the South West Subregion. Almost half of the growth is earmarked for the North West and South West Growth Centres which both about the City of Penrith (see Table 26)

There is also significant growth planned for the West Central Subregion (95,500 dwellings and 61,000 jobs) which will have implications for infrastructure planning in the outer-west.

Table 26. Growth Targets – Comparison

	Dwellings	Jobs
North West Subregion (dwelling growth by 2031)	***140,000***	***130,000***
North West Growth Centre (dwelling growth by 2031)	60,000	
South West Subregion (dwelling growth by 2031)	***155,000***	***89,000***
SW Growth Centre (dwelling growth by 2031)	100,000	
Western Region Combined (dwelling growth by 2031)	**295,000**	219,000
Canberra (existing dwellings)	**133,000**	178,000
South East Queensland (dwelling growth underpinned by $25.7 billion State funding committed over 10 years)	**350,000**	

Source: DoP, ABS 2006

The analysis has shown that there is a lack of funding commitment and structure planning of the type undertaken for the Growth Centres for 'regional infrastructure'. This deals with:

- Social
  - Public transport
  - Health
  - Education
  - Regional open space
  - Regional cultural, recreation and leisure facilities
  - Regional environmental Conservation
  - Emergency services
- Physical
  - Regional roads
  - Regional cycleways
  - Traffic management
  - Regional landscape/roadscape
  - Regional water management

While there has been a significant amount of planning by the Council for 'district infrastructure' there is a lack of funding commitment for infrastructure items in this category include:

- Social
  - District open space

        - District cultural, recreation and leisure facilities
        - District environmental conservation
        - Community hubs
        - Economic development
    - Physical
        - District roads
        - District cycleways
        - Traffic management
        - District landscape/roadscape
        - Townscape (city centres)
        - District water management

Logically, the next level of planning to support the subregional plans should be a comprehensive structure plan to deal with:

- Urban design, landscape, townscape, roadscape
- Land use structure
- The natural environment - bio-diversity, ecology and water
- Access and circulation – walkways, cycleways, public transport networks and traffic /freight movement
- Conservation of cultural heritage – natural, European and Indigenous
- Open space networks and recreation and leisure facilities
- Social and cultural facilities.

The structure plan will define the nature of the place that must be created to meet the objectives of this Strategy.

The need for such a structure plan is confirmed by the State Government's submission to Infrastructure Australia (June 2008, p22) where it is stated:

> *"Over the next 25 years, the boundary of the Greater Sydney Region will expand to accommodate an additional 1.1 million people in Sydney. When considering long-term transport infrastructure, it would be prudent to fund the purchase and reservation of lands for an outer western Sydney Orbital route (Outer Sydney Motorway) to accommodate this Growth".*

While it is remarkable that such a proposal is not mentioned in Metropolitan Strategy nor in the Subregional Strategies, at least this confirms some awareness of planning issues facing the western region.

The route for such a major road will require extensive integrated land-use and transport planning. There will be major implications for the route selected and for the feeder grid.

The Department of Planning is the proper body to auspice the required structure planning. However, the State Government must ensure that infrastructure agencies 'buy in' to the process. This may necessitate a legislative approach similar to that adopted for the Growth Centres. The Commonwealth Government would be an essential participant.

The 'first tier' or principal stakeholders will be the key State agencies plus the five growth area Councils:

- Penrith
- Blacktown
- Baulkham Hills
- Camden
- Campbelltown

The second tier stakeholders will include:

- The balance of North West, South West, and West Central Councils
- WSROC
- Industry groups
- Local interest groups including Chambers of Commerce and Community Groups
- The community at large.

Having said this, the structure plan should primarily be a rigorous technical exercise taking full advantage of the strategic planning frameworks and extensive consultation that has gone before.

The structure plan should identify and cost all regional and district infrastructure requirements and develop a program with costings.

It is noted that there exists a major resource in 'Future West' – a strategic planning document prepared for Western Sydney by WSROC. In this document it is stated:

Future West:

"*Well-maintained and modern infrastructure is critical to the effective functioning of the region. For a region which is experiencing high levels of growth and expansion, the need to invest in maintaining and improving capacity of existing infrastructure networks should be augmented by major capital expenditure in the expansion of these networks to both new and backlog areas.*

Infrastructure is linked with productivity, growth and economic prosperity. In addition to underpinning economic performance, public infrastructure is also important in social and environmental capital, helping to bind our communities and make them liveable. Failure to provide sufficient or appropriate infrastructure undermines the competitiveness of a place and its social and environmental sustainability. In this context, identifying a sustainable approach to the key issue of financing and funding the provision of urban infrastructure in the region is critical for the future success of Greater Western Sydney. […]

Traditionally infrastructure is defined as the facilities, services and equipment, including roads and schools, that a community needs to function properly. Urban infrastructure is the facilities and services that support the functioning of metropolitan communities. At a regional level, this infrastructure includes tertiary education, regional hospitals, regional transport and arterial roads, reticulated sewerage and energy, telecommunications and regional open space. […]

In this context, the provision of physical infrastructure such as transport and roads remain critical for a growing region, to improve access and efficient movement. […] While the Greater Western Sydney region is one of the most rapidly growing areas in the Sydney metropolitan area, it has not experienced the same growth in the level of transport infrastructure. As the region grows the spatial structure is also changing and this, coupled with the

greater importance of cross-regional trips, needs to be reflected in a retrofitting of a regional transportation network."[37]

An important aspect of planning is the information base upon which it proceeds. There is a need for a comprehensive database and regular updating. This is expanded upon in Section 6.6.

6.3 Funding and Financing

6.3.1 Issues

Funding and finance issues have been canvassed in section 3 of this paper. The issues are in summary:

- Short-term budget horizons
- Lack of commitment by State Government to funding their share (after the State Infrastructure Contribution) of regional infrastructure
- Inability of Councils to commit any future funds to district infrastructure due to constraints on Councils' ability to raise revenue and to borrow. This situation is exacerbated by the spasmodic nature of government grants
- Over-reliance on local developer contributions, State Infrastructure contributions and Planning Agreements which is having an adverse impact on housing affordability
- Lack of funds for land acquisition.

Rate pegging is severely constraining the Council's ability to carry out its infrastructure obligations (amongst other things) under the Metropolitan Strategy. When combined with responsibility and cost shifting from the State Government this threatens the financial viability of the Council. At the very least it is building up a huge unfunded liability for future generations.

6.3.2 Strategic Response

Council should seek special rate variations in order to bring the rate base to a sustainable level. Application of the principles developed in this paper points to the following strategy:

Council to formulate and advocate for a special rate variations for:

- All required social infrastructure and servicing debt for same
- All required District physical infrastructure and servicing debt for same
- Backlog physical and social infrastructure and servicing debt for same
- Operating and maintaining social and physical infrastructure assets.

Although these special rate variations are theoretically possible there are many barriers, particularly relating to timelines. It will not be possible for Penrith to act alone. It will be necessary for the State Government to amend the Local Government Act to remove these barriers. In

[37] WSOROC, Future West (2005) p.28, reference to the WSROC Infrastructure Strategy.

addition there is a need for guidelines to be prepared for the wider application and use of special rate variations.

In the event that rate pegging is abolished or relaxed there will still be a need to justify rate rises as if they were special rate variations.

There is also a need to investigate the establishment of a metropolitan parks authority which would take custodianship of all metropolitan parks. Such an authority would be funded by a metropolitan-wide levy collected by Local Government as a surcharge on rates. This is the model adopted in Melbourne with 'Parks Victoria'.

6.3.3 Actions

It is recommended that Council advocate to the State Government that a special rate variations policy for funding infrastructure be adopted to apply to the Local Government sector as a whole.

6.4 Partnerships

6.4.1 Issues

State Government plans have a strong emphasis on requiring Councils to pursue population and employment targets but little emphasis on infrastructure requirements. The Draft North West Subregional Strategy envisages that the next step will be for Councils to prepare LEPs in conformity with the Subregional Strategy. However, the planning is not sufficiently resolved at this stage to move to this step.

The Draft North West Subregional Strategy states that the State Government requires its agencies to reflect the priorities outlined in the **NSW State Plan**. However, the links between the Draft North West Subregional Strategy and the State Plan are unclear. Further the engagement of local government is barely considered in the State Plan. The plan does emphasise a co-ordinated approach between State Government and Local Government to the provision of facilities and services: "*Agencies will be particularly encouraged to come together with local government, business and non-government organisations to deliver and monitor locally tailored solutions*"[38]. However, there is no official mechanism for cooperation and coordination. The established Western Sydney Regional Coordination Management Group (WS-RCMG) is a forum for State agency regional managers only and not a platform for State – Local Government coordination. Also, Penrith Council has not been engaged by the WS-RCMG to date.

While the **Metropolitan Strategy** emphasises 'partnerships' in subregional planning[39], the Draft North West Subregional Strategy emphasises that while Councils have 'assisted', it is a NSW

[38] NSW State Plan, p.144: "Undertake subregional planning in partnership with local government and State agencies".

[39] Metropolitan Strategy, Supporting Information, p.255.

Government Strategy: "*while acknowledging the assistance provided by councils, it is important to note that this draft Subregional Strategy is a NSW strategy*"[40].

The **State Infrastructure Strategy (SIS)** is intended to be updated every 2 years and the first SIS revision was issued in June 2008. Its purpose is to ensure that Agency budgets align with the State Plan, the Metropolitan Strategy and the Subregional Plans. The deficiency in this is that initiation of projects appears to still rest with the agencies.

There appear to be no formal mechanisms to foster partnerships apart from involvement of the Metropolitan CEO's Group in 5 yearly reviews of the Metropolitan Strategy. This Group includes the different State Agencies' executives only.

The lack of a formal platform for cooperation between Local and State Government in NSW is a major issue. NSW is the only jurisdiction without a State and Local Government inter-governmental agreement. Victoria adopted such an agreement in May 2008. The agreement's objective is to improve communication and consultation between State and Local Government. The Victorian State–Local Government Group, comprising the Minister for Local Government, the President of the Municipal Association of Victoria and other parties was established as a mechanism through which State and Local government can together 'tackle some of the significant, complex and challenging issues' in Victoria.[41]

6.4.2 Strategic Response

A formal mechanism needs to be established to foster partnerships between State and Local Government. Collaborative planning is required to redress emerging social disadvantage in Western Sydney. Political endorsement of a structure plan for the North West subregion should be the first step in a State-Local Government partnership.

The Commonwealth Government is a potentially important partner. It is developing a number of relevant initiatives:

- The National Rail Strategy is being developed through COAG to tackle national network issues.
- Infrastructure Australia is conducting a national audit of infrastructure with a view to addressing shortfalls and bottlenecks.
- The Building Australia Fund has an initial allocation of $20 billion for critical investment in roads, rail, ports and broadband.
- A $1.6 billion commitment to rail projects and a strong emphasis on rail network development for both freight and passengers. The particular problems experienced in Sydney are recognised.

[40] North West Subregional Strategy, p. 148 and p.155.

[41] Victorian State-Local Government Agreement, May 2008.

The Western Sydney Comprehensive Structure Plan proposal recommended above provides the ideal vehicle for forging the necessary partnerships for infrastructure planning and provision in the future.

6.4.3 Actions

It is recommended that Council advocate to the State Government that a formal mechanism be put in place to foster partnerships between the Commonwealth, State and Local levels of government.

6.5 Regional Response

6.5.1 Issues

The issues affecting Penrith are equally applicable to the wider region and many are directly relevant to Local Government generally. Hence, a regional response is necessary.

6.5.2 Strategic Direction

The basis of the above advocacy initiatives should be 'information'. The key document will be a Western Sydney Comprehensive Structure Plan which gives effect to Metropolitan Strategy and which demonstrably accords with 'best practice'. The plan should be prepared collaboratively with the community to build expectations and support the key stakeholders.

If the structure plan is based on best practice and it demonstrates how the region can develop in a sustainable way (complementary to the Metro and North West and South West Subregional Strategies) it will be difficult for State agencies to argue for a low expenditure scenario which constitutes worst practice and is seen to be creating unsafe and unliveable environments.

The Western Growth Council's Strategic Alliance should lobby the following entities:

- Local Members of State and Commonwealth Parliament
- Department of Planning
- All important infrastructure providing State Government Agencies such as RTA, Ministry of Transport, Department of Education and Training, and especially their Western Sydney regional managers
- Department of Premier and Cabinet: Office of the Coordinator General in relation to public private partnership projects and private sector investments
- Department of Premier and Cabinet: Infrastructure Implementation Group
- Department of Premier and Cabinet: Western Sydney Regional Coordinator
- Western Sydney Regional Coordination Management Group
- Treasury: Office of Infrastructure Management.

6.5.3 Actions

It is recommended that the Growth Alliance Councils join together to prosecute the Western Sydney comprehensive Structure Plan and to forge the necessary partnerships to carry this through. Assistance will be sought from industry groups such as the UDIA, PCA and HIA. WSROC will be a key player and local groups should be included – including the relevant Chambers of Commerce, City Centre Association and community groups.

An early initiative in the advocacy strategy is development of a communications plan which will be expanded over time.

Other key initiatives to be pursued are a review of the Local Government Act special rate provisions and the potential for a separately funded metropolitan parks authority to replace the current system of ad hoc trusts.

6.6 Implementation, Monitoring and Review

6.6.1 Issues

Carrying forward the foregoing recommendations relating to funding and financing while at the same time facilitating a regional response will require a co-ordinated and concerted effort on behalf of the Councils involved.

6.6.2 Strategic Response

An essential step in implementing this strategy will be appointment of a dedicated project management team. The team will initiate the Western Sydney comprehensive Structure Plan as a flagship initiative. The team should have at a minimum:

- An experienced project manager
- A planner
- A communications officer
- Technical support
- Administration support.

The team will require funding and accommodation, the cost of which would ideally be borne by the Growth Alliance Councils, the State Government and potentially the Commonwealth Government. Its personnel may be drawn from any of these contributors, potentially with outside appointments.

An essential planning tool will be a comprehensive infrastructure database for the study area and a forecasting model of the type developed for Penrith in this study. This will require regular updating.

An option is to extend the Growth Centres model to cover the area. This would provide legislative backing and a firm framework for agency co-operation.

WSROC Council's have recently adopted a policy position addressing the State Government seeking[42]:

- Development of detailed infrastructure strategies
- Development of alternative approaches to funding of infrastructure
- Establishment of a Greater Western Regional Coordination Management Group that would involve the Minister for Western Sydney, the Mayors and Presidents of WSROC and MACROC
- Establishment of an officer-level working group to develop an implementation strategy.

6.6.3 Action

It is recommended that Council advocate to the State Government establishment of a dedicated project management team to pursue the recommended actions in this Strategy.

[42] WSROC, proposed regional response to the State Plan Update Meeting, Penrith City Council 30th June 2008.

Appendix 1: Social Infrastructure Benchmark

The concept of benchmarking has been used over many years to indicate a best practice standard, or target, for the provision of community facilities and services. Benchmarks are a powerful tool to enable forward planning, co-ordination and negotiation between respective community facilities providers. They also enable monitoring of the adequacy of infrastructure provision and its contribution to developing social capital.

The benchmarks used in this strategy are derived from different sources. Benchmarks from the Growth Centres Commission (GCC) have been applied for hospitals, community health centres, primary schools, high schools, tertiary education, childcare centres, youth centre, community centres, police station and ambulance. The GCC has derived their standards from NSW Departments responsible for those services, as well as best practise Councils. Penrith City Council (PCC) has established benchmarks for open space and recreation facilities which are outlined in different policy and planning instruments (Open Space Provisions, Contribution Plans, PLANS). For other social infrastructure, such as libraries and performing art centres, benchmarks have been taken from the Social Infrastructure Planning Guidelines for Queensland which has been developed by SGS Economics and Planning Pty Ltd, Andrea Young Planning Consultants, Elliott Whiteing Pty Ltd and Briggs and Mortar Pty Ltd, and peer reviewed by Phil Heywood, Associate Professor of Urban and Regional Planning, Queensland University of Technology. The benchmarks developed are considered the best and most recent guide to community infrastructure provision at the local, district and LGA wide (or wider) levels in Queensland. They are based on a series of investigations reviewing commonly used standards or benchmarks, demographic and housing formation trends and current models of community facility provision as applied in Queensland at the present time. They draw on a combination of research, consultation and practice undertaken by the authors in conducting social infrastructure planning in a diversity of local government areas, including Ipswich, Maroochy, Caloundra, Brisbane City and others. Although the underlying standards of services used in the gap analysis (benchmarks) have been derived from Queensland every effort has been made to utilise benchmarks that are relevant to the NSW and Penrith City context

It is recommended that new development, particularly in respect of any new suburbs provide high standards of community infrastructure. Table 27 outlines the recommended benchmarks for the provision of social infrastructure in the Penrith City at a local, district and regional level. Benchmarks are provided as a ratio of one community facility to ‘x’ thousand people, except where otherwise noted.

It is important to note that benchmarks are minimum best practice standards and more detailed structure or local area planning in respect of any suburb may require higher standards that are more suited to the specific circumstances of a particular locality.

Table 27. Social Infrastructure Benchmark and Analysis

Category	Social Infrastructure Subcategory	Benchmark for Provision	Funding Responsibility	Current Provision	Need 08-16	Need , cum. 08-21	Need, cum. 08-31	Planned Infra-structure	Projected Need by 2031 (excl. planned infrastructure)	Comment
Health	Hospital - Public	2 beds:1,000 **population** Source: GCC	State	420 (benchmark: 352 beds)	-	-	-	-	**-**	Expansion to Nepean Hospital planned, shortfall of $240 Million (initial funding $320M, $80M granted)
	Community Health Centre	1:20-30,000 **population** **Source: GCC**	State/Council/ NFP	9	-	1	2	-	**2**	2008: 4 Community Health Centres, 1 Women Centre, 2 Baby Health Centres, 2 Youth Health Centres
Education	University	1:150,000 **population** **Source: GCC**	C'wealth	1	-	-	-	-	-	Expansion planned (WELL Precinct)
	TAFE District Facility	1:150,000 **population** **Source:GCC**	State	1	-	-	-	-	-	Expansion planned (WELL Precinct)
	Public High School	1:4,500 **dwellings** **Source: GCC**	State	13	2	4	6	-	**6**	Assumes equilibrium in 2008 (10 high Schools, 3 Comprehensive Schools) and applies benchmark for additional dwellings only
	Public Primary School	1:1,500 **dwellings** **Source: GCC**	State	34	6	11	17	-	**17**	Assumes equilibrium in 2008 (31 Primary Schools, 3 Comprehensive Schools) and applies benchmark for additional dwellings only
Social Services	Childcare Centres	1 **place**: 5 Children 0-4 years Source : GCC	Council/Private	28 Council, 44 Private	3 Centres (111 Places)	9 centres (376 places	15 centres (596 places)		**14 centres (596 places)**	2008: 28 Council operated, 44 private childcare centres. Average of 40 childcare and 45 after school care places per centre applied. Equilibrium assumed for 2008. One childcare Centre planned for Blue Hills (Glenmore Park).

Category	Social Infrastructure Subcategory	Benchmark for Provision	Funding Responsibility	Current Provision	Need 08-16	Need , cum. 08-21	Need, cum. 08-31	Planned Infra-structure	Projected Need by 2031 (excl. planned infrastructure)	Comment
		After School Care **1 place**: 25 Children 5-12 years Source: GCC	Council/Private		2 centres (54 places)	3 centres (126 places)	5 centres (196 places)		(5 centres with 196 places)	Multi-service operations assumed. **Total Need 14 Centres** Council does not intend to provide further childcare centres and it is assumed that the demand will be met by the private sector
	Youth Facility/Service	1:20,000 **population** Source: GCC	Council/State	4	1	2	3	1	**2**	2008: 4 Council operated Youth Centres, 7 privately managed centres. Backlog existing. 1 youth service planned to be integrated in City multipurpose centre.
	Community Service Centre (incl. Senior Citizens)	1:60,000 **population** **Source: GCC**	Council/Federal	-	3	4	4	2	**2**	2 new multipurpose centres planned for Penrith City Centre (will include services for Teenagers, Senior Citizens). Need for upgrade or new Senior Citizen Centre in St. Marys. Total need of 2 additional Multipurpose Centres (incl. Youth & Senior)
	Community Meeting Room/Multi-purpose hall	1:6,000 **population** **Source: GCC**	Council	31	-	4	7	6	**1**	Council operates 31 community halls. Planned expansion to Blue Hills Community Facility $ 1.3M (Provision for Glenmore Park Stage 2), 1 new facility at Waterside Green, 2 Multipurpose facilities planned, facility for Penrith Lakes, 1 facility for WELL Precinct.
Cultural	Performing Arts/Exhibition/Convention Centre	1:100-150,000 **population** Source: SGS	Council/State/Federal	1	-	-	-	-	**-**	

Category	Social Infrastructure Subcategory	Benchmark for Provision	Funding Responsibility	Current Provision	Need 08-16	Need , cum. 08-21	Need, cum. 08-31	Planned Infra-structure	Projected Need by 2031 (excl. planned infrastructure)	Comment
	Central Library	1:150,000 **population** Source: SGS	Council	1	-	-	-	-	-	2008: 1 Central Library in Civic Centre
	Branch Library	1:15-30,000 **population** Source: SGS	Council	4	-	1	2	-	**2**	2008: 4 Branch Libraries. Need for 2 additional branch libraries by 2031, Branch libraries will be co-located in new multipurpose facilities, thus no new buildings will be needed.
Recreation	Sporting Fields (Local Active Open Space)	1.4**ha**/1,000 Source: PCC	Council	248ha	-	-	70ha	-	**70ha**	Benchmark of 1.4 ha/1,000 population indicates a need for an additional 70ha of local active open space for the projected additional population. Additional local open space will be provided via S.94 Plans with each new release area & development within established areas.
	District Parks & Facilities	1.23**ha**/1,000 Source: PCC	Council	218ha	-	-	-	-	**-**	Planning underway to provide the necessary District Park Facilities (see Sect.94 Contribution Plan for District Open Space)
	Aquatic Centre	1:50,000 **population** Source: PCC	Council	2	1	2	2	1	**1**	Expansion to Penrith Swimming centre planned, additional need for 1 pool by 2031.
Community Safety	Police	4,000**sqm** per Station Source: GCC	State	2	-	-	-	-	**1**	Penrith and St. Marys Police Station (new). Penrith Police Station is inadequate and police needs new premises
	Fire & Rescue	1:15,000 **population** Source: SGS & Rural Fire Brigade	State/Council	15	-	-	-	-	-	Provision in 2008: 10 Rural Fire Brigades, 5 NSW Fire Brigade station (benchmark need: 12 stations)

Category	Social Infrastructure Subcategory	Benchmark for Provision	Funding Responsibility	Current Provision	Need 08-16	Need , cum. 08-21	Need, cum. 08-31	Planned Infra-structure	Projected Need by 2031 (excl. planned infrastructure)	Comment
	Ambulance	1:25,000 - 50,000 **population** Source: PCC	State	2	-	-	1	-	**1**	Dependent on response time within the area. Equilibrium assumed for 2008, benchmark applied for additional population
	State Emergency Service (SES)	1 SES Unit: Local Government Area Source: SES	Council/State	1	-	-	-	-	-	NSW State Emergency Service Benchmark: 1 SES unit per Council. 2nd SES Station planned in Penrith Lakes.

Appendix 2: The Infrastructure Model

SGS has developed a web-based infrastructure model that includes all infrastructure items linked to a cash flow model.

1. Assets Display

   Assets can be either displayed in an 'asset list' or an 'asset map'. The map is interactive and displays the location of the different assets.

2. Data Filtering

   Data can be filtered by:

   - Funding Source:
     - Commonwealth
     - State
     - Council
     - Development Contributions

   - Timeline
     - Backlog
     - Current
     - Future

   - Categories

Category	Sub Category	Sub-Sub Category
Social Services	Childcare Centre	
	Youth Centre	
	Senior Citizen Centre	
	Civic Centre	
	Multipurpose Centre, Community and Neighbourhood Centre	
Health Services	Hospital	
	Community Health Centre	
Cultural Services	Performing Arts Centre	
	Library	Main Library
		Branch Library
Emergency Services	State Emergency Services	
	Police	
	Fire & Rescue	
	Ambulance	
Education Services	Public Primary School	
	Public Secondary School	
	Public Comprehensive School	
	TAFE	
	University	
Recreation Services	Sporting Facilities	Aquatic Centre
		Sporting Ground
		Recreation /Leisure Centre
	Parks	District Park
		Regional Park
Environmental Management	Stormwater	
	Waste Management	Recycling
		Landfill
Utility Services	Sewerage	
	Electricity	
	Gas	
	Drainage	

Category	Sub Category	Sub-Sub Category
	Water	
Civil Infrastructure	Roads	Motorways
		Primary Arterials
		Secondary Arterials
		Distributor Roads
		Bridges
		Junctions
	Public Transport	Bus Services
		Train Services
	Path/Cycleway	
	Townscape Works	
	Public Car Parking	
Schedule 7 Items		

3. Editing, Adding and Deleting Assets

Assets can be edited, added and deleted in the 'asset list' tab. By clicking on the editing symbol (pen on paper) the editing tab will open, by clicking on 'new asset' tab on the bottom an asset can be added, by clicking on the stop sign symbol an asset will be deleted.

The edit field allows entering several asset attributes including the funding authority (funding percentage), capacity, construction cost, depreciation rate and written down value. Where fields are left blank, the model is using default variables.

4. Default Variables

Default Variables for straight line depreciation, maintenance costs (opex, recurrant, periodic) as well as the funding responsibility (Council, State Government, Commonwealth Government or development contributions) can be entered for each of the categories, subcategories and sub-subcategories.

5. Cash Flow

The model can produce cash flow reports with graphs in a number of formats, for example:

- By funding responsibility (e.g. Council, State Government, Commonwealth Government or development contributions)
- By assets type (e.g. roads or childcare centres),or
- By existing, backlog, or future classification.

Appendix 3: Compiling the City of Penrith Asset Database

The City of Penrith has extensive data on its assets albeit contained in a number of separate databases. It was necessary to manipulate these data to bring them onto a common footing. Given that the Infrastructure Strategy has a focus on 'high order' infrastructure these items were identified separately where possible. Lower order items were dealt with using aggregate data. To this end the following steps were taken:

Existing Infrastructure

The City of Penrith in its Annual Report publishes 'Schedule 7' which is a summary of its assets situation. This is a statutory requirement under the Local Government Act. Schedule 7 provides asset values and recurrent maintenance expenditure.

Where individual items had information from other sources these were netted out of the Schedule 7 aggregates. Schedule 7 does not provide estimates of operating costs or periodic maintenance therefore 'default values' were used in the model based on percentages of asset values.

Individual high order assets where information was provided were included in the model. Where data on costs was available, this was used. Alternatively, default values were applied.

Individual high order assets where information was not provided were included in the model for completeness but their financials are dealt with in the Schedule 7 aggregates.

Taken together, these steps provide a reasonable estimate of the ongoing financial burden associated with current fixed assets (urban infrastructure).

District parks have also been identified. These have data maintenance costs. Default values were used for operation and periodic maintenance costs. A database for all parks (including the District Parks above) was available. This was used with the District Parks netted out.

Future Infrastructure

As development proceeds in the City there will be a considerable amount of 'local' infrastructure handed over to the Council by land subdividers and developers. This includes local streets, drains, footpaths, street furniture and traffic management items. There is no database for these items therefore general estimates have been made on a 'per lot' basis. An allowance has been made for non-residential infrastructure. Estimates of operation and maintenance costs have been made based on current experience.

In addition to the local infrastructure there will be a range of infrastructure items provided via development contribution plans (Sec. 94). These are included in the model using data contained in the Sec. 94 Plans.

Over and above the local and Sec. 94 infrastructure there will be a range of higher-order 'District Infrastructure' items. The need for these has been assessed based on recognised planning standards.

Appendix 4: Penrith Regional City Transport Hierarchy Plan

MAUNSELL AECOM

Penrith Regional City Infrastructure Strategy
Penrith Regional City Transport Hierarchy

Penrith City Council

13 August 2008

Penrith Regional City Transport Hierarchy

Prepared for

Penrith City Council

Prepared by

Maunsell Australia Pty Ltd
Level 11, 44 Market Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8295 3600 F +61 2 9262 5060 www.maunsell.com
ABN 20 093 846 925

In association with

SGS Economics and Planning Pty Ltd

13 August 2008

60041063

MAUNSELL | AECOM

Quality Information

Document Penrith Regional City Transport Hierarchy

Ref 60041063

Date 13 August 2008

Prepared by David Wilson

Reviewed by Andy Yung

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	30/07/2008	Draft Final Report	Philip Davies Technical Director, Transport Planning & Advisory	Original signed
0	08/08/2008	Final Report	Philip Davies Technical Director, Transport Planning & Advisory	
1	13/08/2008	Final Report	Philip Davies Technical Director, Transport Planning & Advisory	

Table of Contents

Executive Summary

Maunsell has been engaged by Penrith City Council to provide the Penrith Regional City Transport Hierarchy Plan as part of the Penrith Regional City Infrastructure Strategy. This report provides a preliminary transport assessment of the development of Regional Transport Hierarchy for the Penrith Region including an assessment of existing conditions, future conditions, future transport demand and a recommended transport strategy for the region.

The main issues examined in this report include:

- Investigation of an inter-regional transport links;
- Identification of transport links to expansion areas;
- Identification of Strategic Road and Bus Corridors;
- Investigation of Passenger and Freight Rail Links;
- Benchmarking of best practice in regional transport planning;
- Preparation of a Transport Hierarchy Plan;

The key findings of this study are that existing planning of future transport networks in the western region are short-sighted and will not accommodate the transport demand that will be generated by the proposed development planned in the Metropolitan Strategy and the Sub-Regional Plans.

The preliminary analysis in this study has identified a need for long term investment in major transport infrastructure. There is a need to provide direct links between the Growth Centres, Urban Release Areas, Penrith Regional City and major employment areas. This will require expansion of the strategic regional road network and planning for a future grid of roads to provide inter-regional accessibility. Equally important will be the need for strategic public transport corridors including rail extensions.

To achieve this end the planning in the Sub-Regional plans must be taken to the next logical step which is an integrated land use and transport structure plan for the region. This must be a collaborative effort involving all stakeholders.

1.0 Introduction

SGS Economics and Planning and Maunsell have been engaged by Penrith City Council to prepare a Regional Transport Hierarchy Plan as part of the Penrith Regional City Infrastructure Strategy.

1.1 Objectives and Tasks

The key objectives of the plan are:

- Identify future Regional Transport linkages; and
- Provide a Transport Hierarchy Plan

The Regional Transport Hierarchy Plan includes the following tasks:

1) Investigation of an orbital link route between Penrith City and main expansion areas of the North West and South West Growth Centres;
2) Identification of links to the employment precincts particularly the Western Sydney Employment Hub (WESH) and the Western Sydney Employment Lands Investigation Area and to the wider region;
3) Identification of Strategic Road and Bus Corridors to the future urban release areas and wider sub region;
4) Investigation of upgrading of the capacity of the Western Sydney Rail link and extension of the rail link from Rouse Hill to the Richmond line;
5) Assess freight road and rail link upgrades and extensions to the Western Sydney Employment Hub (WSEH) and the Western Sydney Employment Lands Investigation Area;
6) Investigate improved transport infrastructure links between Penrith, Castle Hill, Windsor, Richmond, Leppington and Liverpool;
7) Investigate examples of the best practice in transport planning including Canberra and other new urban growth areas;
8) Prepare a Transport Hierarchy Plan outlining Penrith City Council's existing infrastructure provisions, gaps and future transport infrastructure requirements (city wide and region wide).

1.2 Report Framework

This report consolidates the information and data gathered while undertaking the above tasks including transport infrastructure assessment and gap analysis, providing an assessment of existing transport capacity and potential future transport requirements. The report has been structured to address the requirements of Council and the tasks outlined above:

- **Section 2** details the existing transport conditions and travel behaviour and various modes and capacity of travel including road, rail, bus and highlighting current opportunities and constraints
- **Section 3** summarises planned regional, sub regional and local expansion plans, proposed transport linkages and travel patterns and highlights future growth opportunities and constraints for road, rail, bus linkages, future capacity and gaps in transport connections and services.
- **Section 4** determines the transport demands including the trip generation rates associated with the future development areas, the target mode shifts as well as the trip distribution to future residential and employment development areas.
- **Section 5** summaries the Transport Hierarchy strategy identifying strategic road, rail and bus upgrades and transport links required, estimated costs, key conclusions and recommendations.

2.0 Existing Conditions

2.1 Introduction

Penrith has expanded its population since the 1960's due to the continued release of land for urban development. The latest population estimate by Penrith City Council is there are 177,000 residents. The main residential areas are concentrated in Penrith City and St. Marys. New residential areas have developed around the railway line as well as the Greater Western Highway and the M4. Thirteen major urban release areas have been designated to cater for the majority of the residential and employment growth in the City. Infill developments and an increase in jobs in the City Centre are contributing towards growth.

In addition, Penrith City has been identified as a Regional City in the Department of Planning's (DoP) Draft North West Subregional Strategy. Thus, the City will be expected to strengthen its role in providing services for the Greater Western Region. Penrith is therefore experiencing increased pressure from both existing and incoming populations to provide the necessary infrastructure to support this growth.

2.2 Transport Infrastructure

The key road network serving the Penrith area includes the east west M4 Motorway and Great Western Highway and the north south running Northern Road, Mulgoa Road, and Mamre Road. These links are relatively busy during peak periods, in particular the intersections between these links. North south road links passing over or under the M4 Motorway and Western Railway line suffer from peak period queuing due to lane narrowing and reduction in capacity.

Bus networks are limited and circuitous, especially during non-peak hours. The Western Rail Line provides regular services between Penrith and Parramatta, Central Sydney as well as the Blue Mountains. Pedestrian and cyclist accessibility in the area is limited and the area remains dominated by private cars.

Both the recently completed Penrith Arterial Road Study (PARS) 2007 and the Penrith Integrated Transport and Land Use Strategy (PITLUS) 2008 provide detailed information on transport provision in the Penrith region. This section provides a review of existing transport conditions and travel behaviour in the area. This provides a benchmark for the assessment of existing opportunities and constraints.

2.2.1 Existing Road Network

Vehicular movements through the Penrith area are primarily accommodated along two key arterial routes – the M4 Motorway and Great Western Highway. Mamre, Mulgoa and the Northern Road provides direct connection to M4 and they form the key north-south arterials between M4 and Great Western Highway. M4 ramps with Mamre, Mulgoa and the Northern Road are signal-controlled. The M4 Motorway connects with the Sydney Orbital Network including the M2, M5 and M7, which provides good accessibility to different parts of Sydney.

Vehicles currently experience significant delays in Mulgoa Road, westbound in High Street and westbound in the Great Western Highway approaching Parker Street during the afternoon peak. Traffic speeds within the City Centre are low, generally below 35km/h.

The Penrith Arterial Roads Study identified deficiencies at many intersections within Penrith LGA. The list of current intersection deficiencies are summarised in **Table 2.1**.

Table 2.1: highlighted Current Deficiencies at Intersections

Location	Recommended Treatment
1. Great Western Highway / Parker Street	Installation of dual right turn bays will increase the intersection capacity and improve operation
2. Leonay Parade / M4 WB Off Ramp	Construction of traffic signals and the introduction of a dual right turn from the M4 offload ramp, WB, at Leonay Parade, to reduce the incidence of right turn delays
3. Great Western Highway and Bennett Road	Provision of a 60 m dual right turn bay is recommended (Blacktown LGA)
4. Mamre Road and M4 WB Offload Ramp	Provision of an exclusive left turn lane from the offload ramp onto Mamre Road
5. Mamre Road and Banks Avenue	Provision of a dual right turn from Banks Avenue
6. Great Western Highway and Old Bathurst Road	Provision of dual left turn lanes from Bathurst Street. Introduction of a dual 120 metre long right turn bays from Great Western Highway, WB, into Old Bathurst Road
7. Mulgoa Road and M4 Offload Ramp	Construction of a left turn slip lane from M4 EB ramp onto Mulgoa Road , northbound to Wolseley Street
8. Mulgoa Road and Glenmore Parkway	Reconstruction of the existing roundabout to facilitate a northbound slip lane in Mulgoa

Source Penrith Arterial Road Study 2007

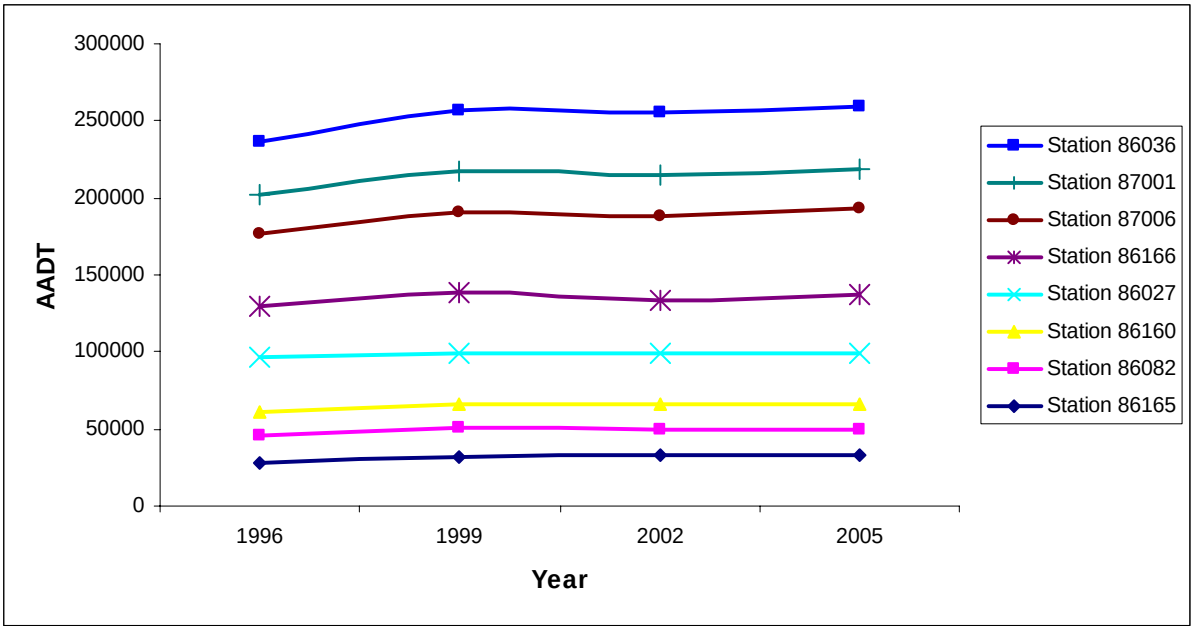
The Roads and Traffic Authority (RTA) publishes data on traffic volumes. RTA data of traffic flows on a number of key roads in Penrith over a nine year period are represented in **Table 2.2** and **Figure 2.1**. The data shows increasing traffic levels on roads from 1996 – 1999 with a lower rate of growth occurring between 1999 - 2005[1] Increases in traffic flows travelling in both directions over the nine year period were observed on Parker Street north of the Great Western Highway (17.0%), the M4 Motorway crossing the Nepean River (20.0%), and on Werrington Road north of the Great Western Highway (10.0%). Currently, the M4 carries a significant amount of east-west traffic and as a result Great Western Highway has some spare capacity to accommodate additional traffic in the future. The high volume of car use is being added to by increasing levels of road freight.

Table 2.2: AADT in Penrith 1996 – 2005

Station number	Road	Location	1996	1999	2002	2005
86165	MAMRE RD,MR536	ST CLAIR-N OF RAMPS TO WESTERN FWY	28231	32143	32716	32534
86082	JAMISON RD,RR7290	PENRITH-W OF WOODRIFF ST	17280	18501	16636	16456
86160	WERRINGTON RD,RR7288-SL2	WERRINGTON-AT RAILWAY BRIDGE	15422	15042	17080	16991
86027	CASTLEREAGH RD,MR155-SL2	PENRITH-N OF SH5,GT WESTERN HWY	35819	34011	33081	33196
86166	MULGOA RD,MR155	JAMISONTOWN-S OF PRESTON ST	33243	38698	34015	38226
87006	WESTERN MWY,M4-SL3	JAMISONTOWN-W OF MULGOA RD	46770	52509	54853	56010
87001	GT WESTERN HWY,SH5-SL3	PENRITH-AT VICTORIA BR	24922	26577	26493	25162
86036	PARKER ST,MR154-SL2	PENRITH-N OF SH5,GREAT WESTERN HWY	35144	39396	40380	41144

[1] It should be noted that the data surveyed was a combination of AADT permanent and short term count data.

Figure 2.1: Traffic flows in Penrith 1996 – 2005



Source: RTA AADT 2005

2.2.2 Rail Services

Penrith is served by the Main Western Line (City Rail) and the Blue Mountains (Inter-City) rail line operated by RailCorp. The train corridor travels east-west through the Penrith region with the western line linking Emu Plains to Sydney where it becomes the northern line extending to Berowra via North Sydney. This rail line also spurs north from Blacktown to Richmond. The Blue Mountains (Country Link) rail line connects Emu Plains to the Blue Mountains and Central Western NSW. The Penrith LGA region is served by five railway stations at Emu Plains, Penrith, St Marys, Werrington and Kingswood. All stations offer a limited stop service via Parramatta to Central Station and North Sydney.

Train services at Penrith Station run at a 6 minute service frequency (at best) at peak periods during weekdays. Weekday frequency at other stations within Penrith LGA is approximately 15 minutes during peak and with 18 to 30 minute frequency at weekends. Trains from Penrith stopping at Kingswood and Werrington, invariably travel all stations to Parramatta, before making limited stops on its way to Central, Town Hall, Wynyard and North Sydney. From North Sydney and the City, trains run express to Parramatta, then all stations to either Penrith or Emu Plains, including Werrington and Kingswood. The details of service frequencies at Penrith Station are given in **Table 2.3**.

Table 2.3: Train Service Frequency

Penrith Station	Service Frequency
AM peak period (Emu Plains to North Sydney) average of 6 minute service frequency (based on number of services within a two hour peak period)	**6 minutes**
PM peak period (North Sydney to Emu Plains) average 6.5 minute service frequency based on number of services within a two hour peak period)	**6.5 minutes**
Weekends – generally 18 to 30 minutes between services travelling to Sydney City and travelling to Penrith.	**18 -30 minutes**

Source: CityRail Timetables, July 2008

The City Rail Compendium of Travel Statistics 2006 recorded passengers entering and exiting each station in 2005 and the AM and PM peak hours and daily patronage of several stations along the Western Line during a typical weekday is highlighted in **Table 2.4**.

Table 2.4: Patronage of major station on Western Line in 2005

Station	06:00-09:30		15:00-18:30		24 Hours	
	In	Out	In	Out	In	Out
St Marys	2,160	860	970	2,020	4,350	4,350
Werrington	710	80	130	610	1,110	1,110
Kingswood	1,420	760	940	1,350	3,800	3,800
Penrith	3,500	1,530	2,270	3,710	9,250	9,250
Emu Plains	1,090	200	250	930	6,480	6,480
Total	**8,880**	**3,430**	**4,560**	**8,620**	**24,990**	**24,990**

Source: Compendium of City Rail Travel Statistics, 2006

Rail services are well patronised by commuters as the above table indicates, a large proportion of whom 'park and drive'. There are plans to further extend commuter car parking provision particularly to the north of Penrith Station to make rail commuting more attractive.

A total of 50,000 passengers in 2005 used the five rail stations within Penrith LGA in a day. Penrith Station had the highest number of passengers approximately 40% with a total of 18,500 passengers over a 24 hour period.

The existing arrangement of the public transport system is that long haul trips are serviced using the railway system with bus services for local trips and as feeder services for rail travel.

2.2.3 Bus Services

Private bus operators under contract to the NSW Ministry of Transport (MoT) provide bus services to Penrith LGA. These contracts grant exclusive rights to operate bus services within a defined catchment area. Bus services within the area must meet minimum conditions in terms of service frequency and coverage. Westbus and Pierce Omnibus (Mountainlink) are the private bus operators in Penrith and St Marys.

Currently there are 26 bus routes operating across the Penrith LGA. It is perceived that bus services in Penrith LGA are infrequent, with poor coverage outside the city centre, especially when compared to other areas in Sydney (see **Table 2.5**).

Table 2.5: Bus Service Frequency

Area	Frequency				
	Less than 15 minutes	15 to 30 minutes	30 to 60 minute	Over 60 minute	No Service
Penrith LGA	4.5%	13.6%	10.7%	13.1%	58.2%
Narellan	0.0%	47.2%	0.0%	8,7%	44.1%
Parklea	9.6%	73.4%	0.8%	0.0%	16.3%

Source PITLUS Study 2008

Approximately 18% of the LGA is served by buses with a frequency of 30 minutes or less, 11% have a 30-60min frequency and 58% of the LGA has no provision of bus services. In addition, little priority is reserved for buses on the traffic lanes.

2.2.4 Journey to Work Travel Pattern

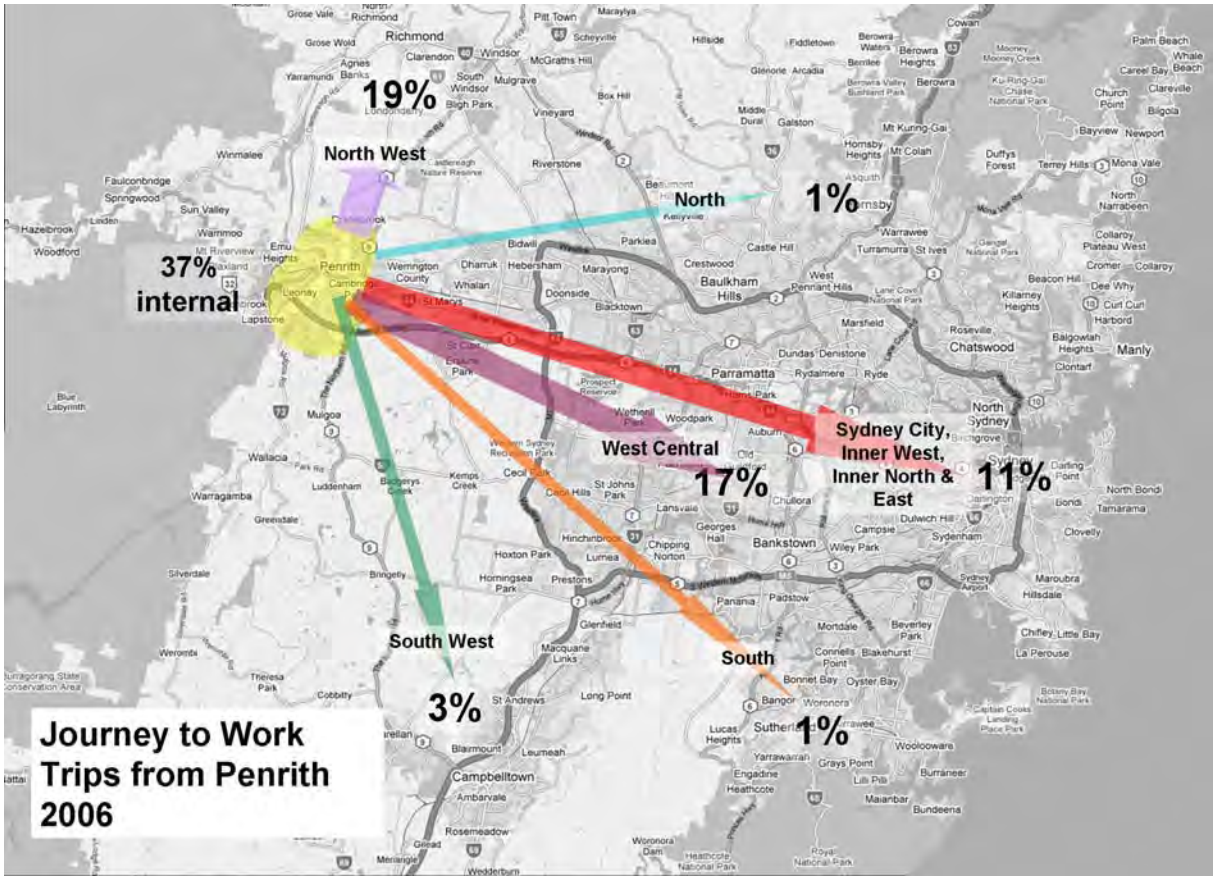
The most recent Journey to Work (JTW) data set available was obtained from the 2006 Census. The JTW data includes details of the origin zone and destination zone of trips, together with characteristics of the journey such as the mode of travel. This information is useful for forecasting the likely travel characteristics of journeys from new urban release areas and growth zones.

Key characteristics of the JTW data for Penrith and other western Sydney suburbs include a high proportion of self containment for employment trips within the suburb. This reflects the NSW Government objective of reducing vehicle kilometres travelled (VKT), and highlights the requirement for providing mixed used developments and employment opportunities in all areas. The JTW proportions for the Penrith LGA dispel the common belief that the majority of employment trips from the outer western suburbs are working in the Sydney CBD.

2.2.5 Trip Distribution

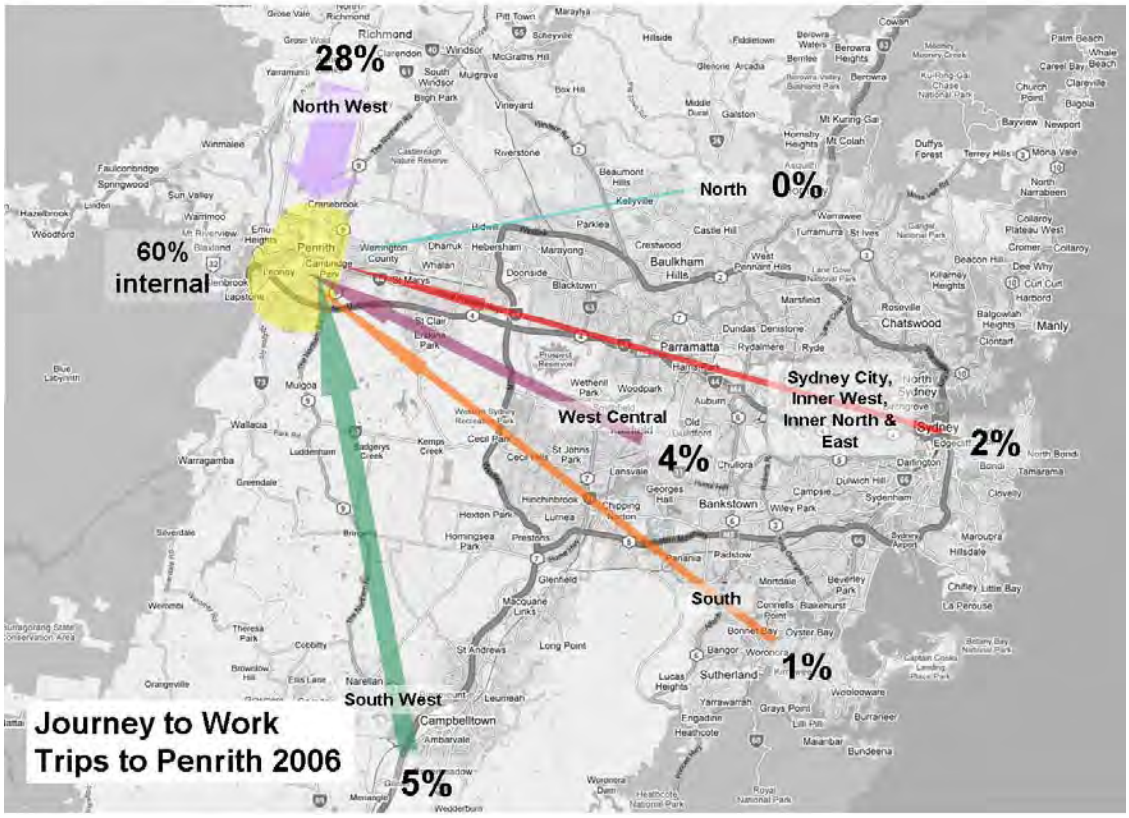
Figure 2.2 and **Figure 2.3** illustrate the Journey to Work (JTW) trip distribution to and from Penrith LGA in 2006.

Figure 2.2: Journey to Work Trips from Penrith 2006



Source: Census 2006

Figure 2.3: Journey to Work Trips to Penrith 2006



Source: Census 2006

This clearly shows the following JTW trip distribution from Penrith LGA recording (37%) internal trips with the highest amount of external trips going to the North West region (19%) followed by the West Central Parramatta area (17%) followed by trips to the Sydney CBD (11%).

Most of the inbound JTW external trips to Penrith come from the North West Region (28%). The remainder of trips are predominantly from the South West and West Central areas.

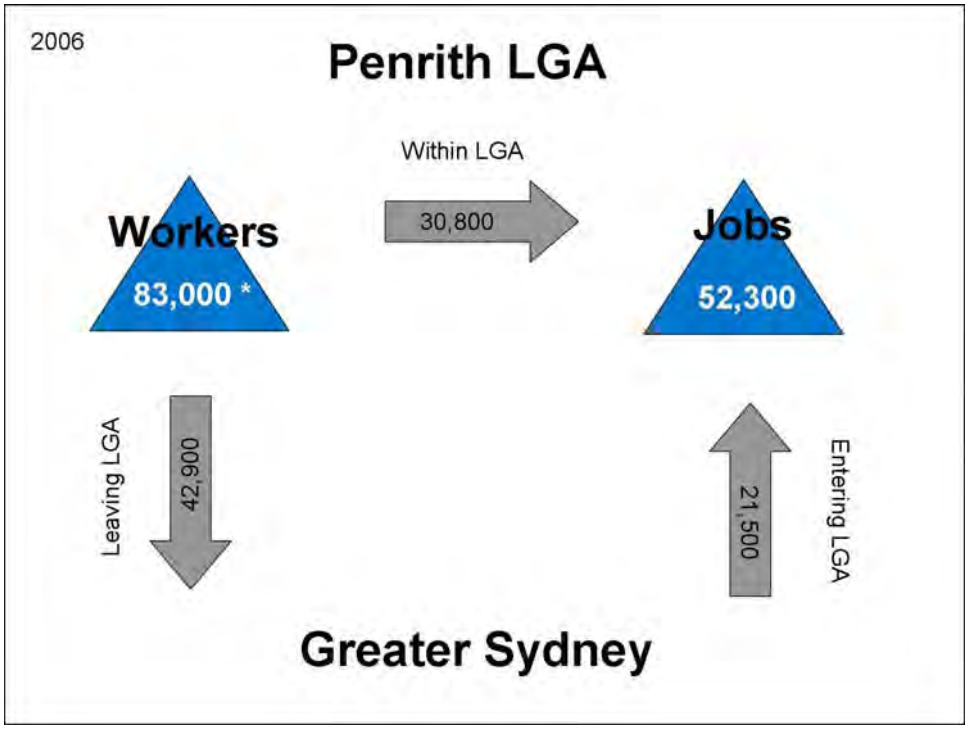
2.2.6 Trip Containment

In order to achieve trip containment a mix of land uses is needed within a catchment area to meet the daily needs of the population including work, shopping, education and recreation needs. If there is a sufficient mix of uses there will be reduced demand for local residents to travel outside their areas.

The 2006 Census records employment and workforce travel flows. The Penrith LGA workforce was estimated at 83,000, approximately of these 30,800 (37%) work within the Penrith LGA whilst 42,900 (52%) work outside the LGA. There are approximately 9,300 jobs (11%) of which their job destinations are not disclosed.

There are an estimated 52,300 jobs in the LGA of which 30,800 (59%) jobs are filled by Penrith LGA residents and 21,500 (41%) of jobs are filled by non Penrith residents. This creates a flow of people travelling to work into, and out of and within the LGA.

Figure 2.4: Employment and Workforce Travel Flows 2006



Source: 2006 Census

* - There are 9,300 jobs of which their destinations are not disclosed.

2.3 Summary

A summary of key constraints and opportunities for the transport network of Penrith LGA is provided below:

2.3.1 Constraints

- North / south road connections are constrained by the barrier effect of both the M4 motorway and the Western Railway line which create pinch points. The number of lanes under these barriers should be extended.
- Penrith's arterial road network is inadequate with upgrades and construction of new arterials required to serve the existing population.
- Rising patronage figures on the railways is a challenge that is resulting in overcrowding on peak hour rail services that are carrying more than the 135% of seated capacity.
- There are no bus services in 58% of the Penrith LGA.
- The low density of the outer urban and rural areas is likely to deter private bus operators bidding to provide services on these routes due to the low patronage that will be generated.

2.3.2 Opportunities

Existing Road Network

- Penrith Council's Road Safety Plan should be implemented to ensure a high standard of safety by restricting speed which will reduce the severity and number of accidents.

Key new road infrastructure identified to improve the existing road network includes:

- Werrington Arterial.
- Erskine Park Arterial – Erskine Park Employment area / M7 Link Road.
- Jane Street extension.
- Bus Lane underpass under the Penrith to Kingswood railway line from Belmore Street to Penrith North Army Land.
- Mamre Road / M4 overpass duplication at St Marys.
- Intersections at Mulgoa Road/ Great Western Highway and Jane Street / Castlereagh Street Road require upgrading.

Existing Rail Services

- Existing peak hour rail services require to be extended as capacity is being reached.
- UWS station is required to fill a gap in the RSWC (rail station walking catchment) along the rail line between Kingswood and St Marys station.
- City Rail announced in July 2008 that commuters from western Sydney on the Western, Richmond and Carlingford lines will be offered a 50 per cent discount on their train tickets to the city if they travel outside the morning and afternoon peaks in an attempt to ease chronic overcrowding on the CityRail network.

Existing Bus Services

- Existing bus services need to be extended as only 42.6% of the Penrith LGA is served by a bus or train.
- The frequency of services also needs to be improved with around 18% of the Penrith LGA being served by buses with a frequency of 30 minutes or less, 11% with 30-60 minute frequency, 13% with a frequency of over 60 minutes and the balance 58% with no bus services.

Transport Interchanges

- There are opportunities to further improve the five existing rail bus interchanges in the Penrith LGA.
- RailCorp have been working on a programme to improve station accessibility and are currently carrying out upgrade improvements at Werrington Station.
- The Ministry of Transport has recently announced a study of the Penrith Interchange.

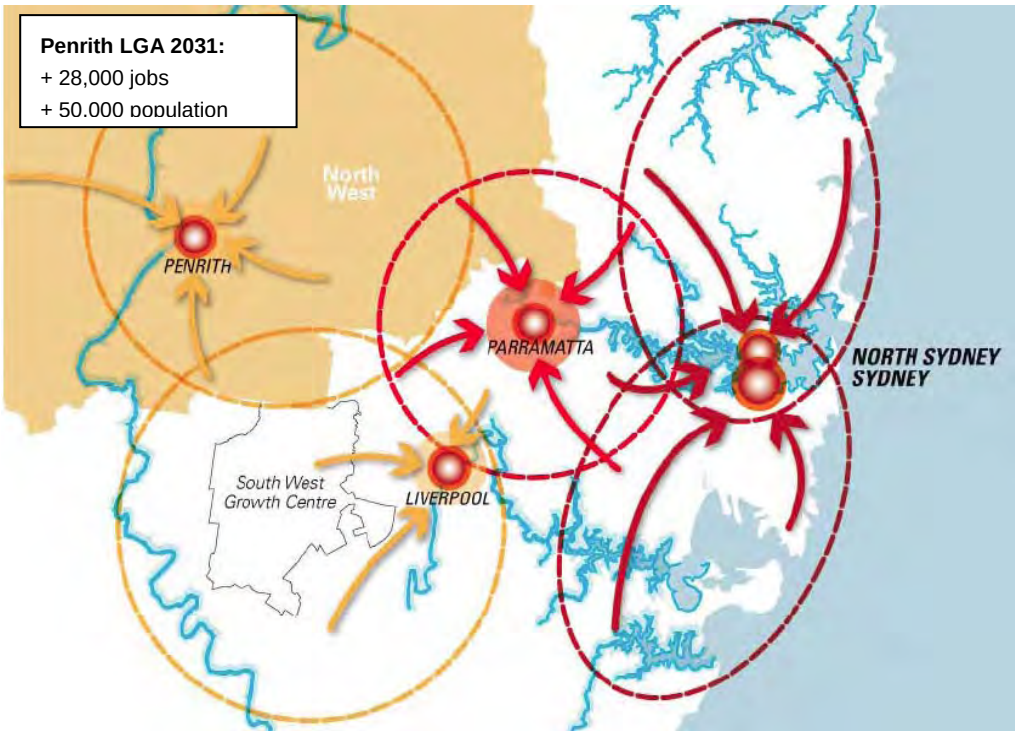
3.0 Future Conditions

3.1 Planned Growth

3.1.1 Metropolitan Strategy

The City of Cities Metropolitan Strategy 2005 highlights that Penrith is designated as a Regional City to serve the north-west region. The NSW State Government officially designated Penrith as a Regional City in its Metropolitan Strategy "City of Cities", confirming Penrith's role in Sydney's growth during the next 25 years. The Metropolitan Strategy is the Government's long term plan for efficient and sustainable growth in the Sydney region over the next 25 years.

Figure 3.1: Penrith as Regional City



Source: Draft North West Subregional Strategy, p.18

3.1.2 Draft North West Sub Regional Strategy

The Draft North West Sydney Metropolitan Region is managed under the Metropolitan Strategy for Sydney Plan 2005-2031. The Draft North West Sub Regional Strategy 2007 outlines the strategy for the area. It outlines the key actions and directions in the subregion. The North West is the largest and fastest growing of Sydney's subregions. The subregion comprises a mix of urban areas, greenfield sites for future urban growth, valuable rural and resource lands and nationally and internationally significant environmental assets. Already home to over 760,000 people, the North West will have the greatest share of Sydney's future housing growth (23 per cent) and future jobs (24 per cent) over the next 25 years. The North West Subregion is forecast to grow by more than 350,000 residents that will further expand Penrith the city's population catchment area.

3.1.3 Growth Centres

The Growth Centres are defined areas in Sydney's North West and South West. The Growth Centres will accommodate thirty to forty percent of Sydney's new housing over the course of the land release program. In total, the Growth Centres will provide around 181,000 new dwellings. The Growth Centres Commission is the NSW Government agency charged with managing and coordinating the urban development of the North West Growth Centre, an area of around 10,000 hectares. The NW Growth Centre covers parts of the Blacktown, Baulkham Hills and Hawkesbury Local Government Areas (LGAs) and is located to the north west of the Penrith LGA. The North West Growth Centre is planned to accommodate around 66,000 new homes in the next 30 or so years, supported by local and regional infrastructure and significant land for employment. Three Council areas have suburbs in the South West Growth Centre - Liverpool, Camden and Campbelltown. The South West Growth Centre, comprising eighteen precincts, is approximately 12,300 developable hectares and is planned to accommodate around 115,000 new homes.

3.1.4 Penrith Regional City

The most recent ABS Estimated Resident Population data indicates that there were 176,661 people living in Penrith City in 2007. Penrith Regional City is expected to grow over the next 25 years by around 50,000 people and 25,000 dwellings. Significant growth is forecast to be located within Penrith city centre including 10,000 new jobs and 10,000 additional residents.

It is already an important location for services and facilities within the subregion. Part of the Western Sydney Employment Hub is located within Penrith local government area and these areas will be a focus for employment growth in the future. The University of Western Sydney, Penrith Campus at Kingswood and the Nepean Hospital are important assets within the local government area. Penrith Regional City is expected to be a focal point for regional transport, employment, retail and major educational and health facilities together with an extensive range of commercial businesses, cultural entertainment and regional activities for a catchment area that currently exceeds 500,000 in population.

3.1.5 Western Sydney Employment Hub

The Western Sydney Employment Hub is a major new employment area at the intersection of the M7 and M4 Motorways, covering 2,450 hectares and creating potential for up to 36,000 jobs. It was announced in the Sydney Metropolitan Strategy in 2005.

3.1.6 Western Sydney Employment Lands Investigation Area

In March 2007, the State Government released an "Action Plan for Sydney's Employment Lands". A major feature of the Action Plan was the Western Sydney Employment Lands Investigation Area (WSELIA). The area identified is located between the existing Western Sydney Employment Hub and the reserved site for Badgerys Creek airport site. The designation of approximately 9,000 ha that extends over Penrith, Liverpool, Fairfield and Blacktown LGA’s as the Western Sydney Employment Lands Investigation Area for employment and economic development will provide significant opportunities to meet the job supply targets for the area.

3.1.7 Penrith Urban Release areas

Penrith Council has identified 13 major Urban Release Areas, in addition, existent urban areas will be intensified and Penrith City Centre as well as St. Marys Town Centre will experience significant intensification with infill development. The urban release areas are proposed to contain 14,377 dwellings, 39,000 population and 24,400 jobs approximately.

The urban release areas are mostly located on the urban fringe. Their location will require them to have adequate road and public transport links connecting them with established town centres where most of the regional facilities such as train stations, regional educational and health centres are located.

3.2 Proposed Infrastructure Improvements

3.2.1 Regional Road Improvements

Investment in strategic regional transport links to Penrith LGA has not kept pace with population growth and urban expansion. Both the Metropolitan Strategy and the Draft NW Sub Regional strategy highlight the need for further investment in the strategic transport network. In many cases these proposed strategic transport improvements do not have committed funding programmes for upgrading. Consequently strategic regional road links including the M4 and Greater Western Highway and the Western City Rail line networks are reaching capacity and are not keeping pace with the proposed future economic expansion and jobs growth in the area.

There are no significant regional road improvements to cater for the proposed growth as specified in the Metropolitan Strategy and the Draft North West Subregional Strategy.

3.2.2 District Road Improvements

The district road network that includes arterial and sub arterial roads requires to be upgraded to provide greater accessibility to future expansion areas. The Penrith City Strategy 2006 and the Access and Transport Analysis of Penrith City Centre & St Marys Town Centre revealed that intersections at Mulgoa Road/ Great Western Highway and Jane Street / Castlereagh Street Road are operating at a poor level of service with vehicles and buses experiencing significant delays during the morning and evening peak. These intersections need to be considered for upgrading. Greater connectivity is required at the district level between the city centres, employment and residential areas. Congestion delays and costs are rising on the critical journey to work trips at peak periods between residences and employment areas.

Future recommended district road improvements to cater for local urban areas development are illustrated in the figures at the end of the report in Figures 5.1 to 5.3.

3.2.3 Public Transport

Public transport networks need to be improved in the Penrith LGA. Connections require to be better integrated between existing and new areas and the quality of interchanges needs to be improved to contribute to the quality and character of the Penrith LGA. At a regional level the following improvements are required:-

- Comprehensive public transport services along the M4/ Greater Western Road / Parramatta Road corridor;
- Upgrading of rail / bus transport interchanges and improved commuter parking areas;
- Secure integrated intra regional transport networks through establishment of core regional transit corridors and regional services that provide improved intra-regional access.

3.2.4 Bus Services

Current bus networks and services will need to be extended into the new urban release areas as there are many areas of the Penrith LGA that are not currently connected to the local bus network. At the strategic level there needs to be full implementation of the State Government's strategic bus corridor and transitway program that will provide sub regional connections to surrounding areas. There are proposals for a shuttle bus to service the needs of the community within Penrith city centre. There also needs to be improved integrated transport interchanges of bus stations with the railway stations in the area.

3.2.5 Future Rail Services

The current capacity of the Western Rail line services at peak periods is not satisfactory and requires to be improved. Future population and employment growth will generate additional demands which require to be catered for. The proposed quadruplication of the line between St Marys and Penrith will add capacity. However, the main Western Rail line from Sydney CBD to the Blue Mountains is coming under increased pressures from expanding population and employment growth in the western Sydney Growth Corridor. People's choice of travel mode will depend on what is provided, if the rail services continue to be overcrowded. Sustainable transport choices are possible but they will require support and funding from the state level or joint ventures with the private sector. The following is necessary:

- Development of a new train station, Werrington UWS railway station (to support the WELL precinct);
- Expansion of the rail network and ongoing capacity improvements to support access to the metropolitan labour market and facilitate efficient non-intrusive freight movement across the region to key economic infrastructure;
- Fast and efficient rail links to Parramatta;
- Upgrade of both the Penrith and St Marys station's rail / bus interchanges;
- Double track from St Marys to Penrith by 2017;
- Expansion of commuter parking areas at the main Railway Stations that were possible should be integrated with surrounding commercial centres.

3.3 Future Travel Patterns

3.3.1 Modal Split

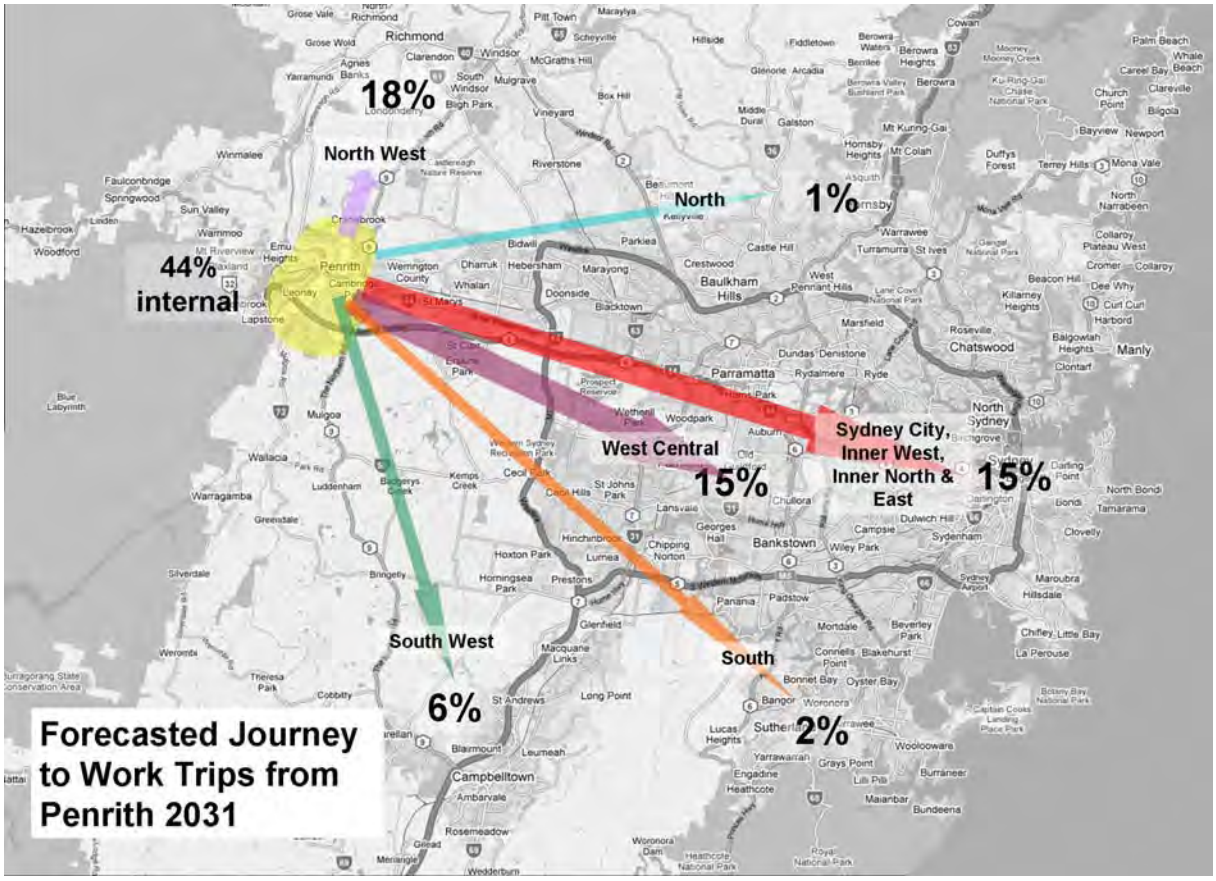
To achieve an increase in modal split to public transport, walking and cycling, Penrith City Council in agreement with the Roads and Traffic Authority has adopted a 10% reduction of private vehicle trips. This assumption of 10% reduction of private vehicle trips usage has been incorporated in the Penrith Arterial Roads Study for future release area traffic assessments.

There are a greater number of public transport trips exiting Penrith City Council area than entering it. The forecast increase in dwellings and population by 50,000 people and 25,000 dwellings for the Penrith LGA will increase journey to work trips which will have a substantial impact on the demand for public transport and road space. Penrith City Council aims by 2031 to increase the use of public transport by 10% over current levels to 20%. This will require additional public transport infrastructure for rail, buses, cycles and pedestrians and additional road network capacity to meet vehicle trip demands.

3.3.2 Trip Distribution

The principal changes in future trip distribution patterns will be as result of future population and employment growth to 2031 in the surrounding growth areas according to the Metropolitan Strategy. As illustrated on **Figure 3.2** forecast JTW trips for 2031 will include 44% internal trips within Penrith LGA and 15% of external trips towards West Central and to Sydney City, Inner West Inner North and East respectively, 18% towards North West, 6% to the South West as further employment expansion occurs.

Figure 3.2: Forecast Journey to Work Trips from Penrith 2031



Source: Census 2006

3.3.3 Trip Containment

Future trip containment will be increased from 37% to 44% as the increase in population is more significant than the forecast increase of 28,000 jobs in Penrith City LGA. It should be noted that Council "Jobs Challenge 2031" paper has identified a strategy to provide an additional 40,000 in the City by 2031.

3.4 Summary

3.4.1 Growth

There are major proposals for future growth both within Penrith LGA and the surrounding western region including the SW Growth Centre, NW Growth Centre and major western Sydney employment sites designated for development. Significant investment in both local and regional infrastructure will be required to accommodate this future growth with support needed from the State Government for Penrith to fulfil the Government's expectations within the Metropolitan and the Draft NW Sub Regional Strategies. Particular consideration needs to be given to upgrading existing infrastructure elements such as arterial roads, together with the provision of new road, freight and public transport including rail and bus infrastructure networks to accommodate significant forecast growth to traffic numbers.

3.4.2 Lack of regional links

An examination of the NW and SW Growth centres plans reveals there are no plans to link these major population and employment centres to Penrith the designated regional city for the north-west region. The major regional growth points need to be integrated with Penrith City which has regional facilities including commercial and employment centres, retail, cultural, educational and health

facilities as well as regional transport links. The regional transport links need to be supplemented to accommodate future growth by:

- Restructuring existing transport corridors through widening lanes to provide greater connectivity and capacity to meet future transport demands from the major residential and employment release areas, North West and South West Growth Centres;
- Expanding the grid of existing transport corridors to afford greater connectivity to the newly expanding growth areas including the Western Sydney Employment Lands Investigation area;
- Investigation of new public transport corridors for bus and rail to enhance existing transport accessibility in the region.
- Integrating the transport network to enhance accessibility throughout the city region to adjacent growth centres and the Western Sydney Employment Hub and Western Sydney Employment Lands Investigation area.

3.4.3 Connections required

Regional transport networks need to be re-structured in the Penrith Regional City to meet forecast growth demand and enable people to make sustainable transport choices. Transport plans need to be fully integrated with land use planning to ensure that they are adequate to service the activities proposed. Decisions on urban form will influence the split between different modes of transport. Density and mix will be a major influence on the needs for and types of travel.

Increased Public transport routes throughout the region and legible connections to significant new urban release areas and the North West and South West Growth sectors and the proposed Western Sydney Employment Hub and Investigation areas and new activity centres will ensure that rail and bus networks can operate efficiently and attract users.

4.0 Transport Infrastructure Needs

4.1 Examples of Best Practice

The Growth Centres Commission and South East Queensland provide good examples of advanced infrastructure planning in areas designated by government for future growth and development. The main issues and solutions put forward by these government authorities to solve the problems of rapid growth are highlighted in the table below:

Table 4.1: Examples of best practice

Number	Issues	Solutions	
		Growth Centres Commission	South East Queensland
1	Government Authorities with Plan making powers and direct State and Federal Government support	**Yes**	**Yes**
2	Advanced comprehensive long term structure planning linked to funding strategies	**Yes**	**Yes**
3	Advanced commitments to state infrastructure funding	**Yes**	**Yes**
4	Advanced detailed Transport Infrastructure planning	**Yes**	**Yes**
5	Advanced social and community infrastructure planning	**Yes**	**Yes**
6	Innovation in Project delivery	**Yes**	**Yes**
7	Co-ordination with State Agencies and State Infrastructure providers	**Yes**	**Yes**

Source: Growth Centres Commission / South East Queensland Authority

The main issues and solutions put forward by the Growth Centres Commission and South East Queensland are similar to those confronting Penrith City regional development.

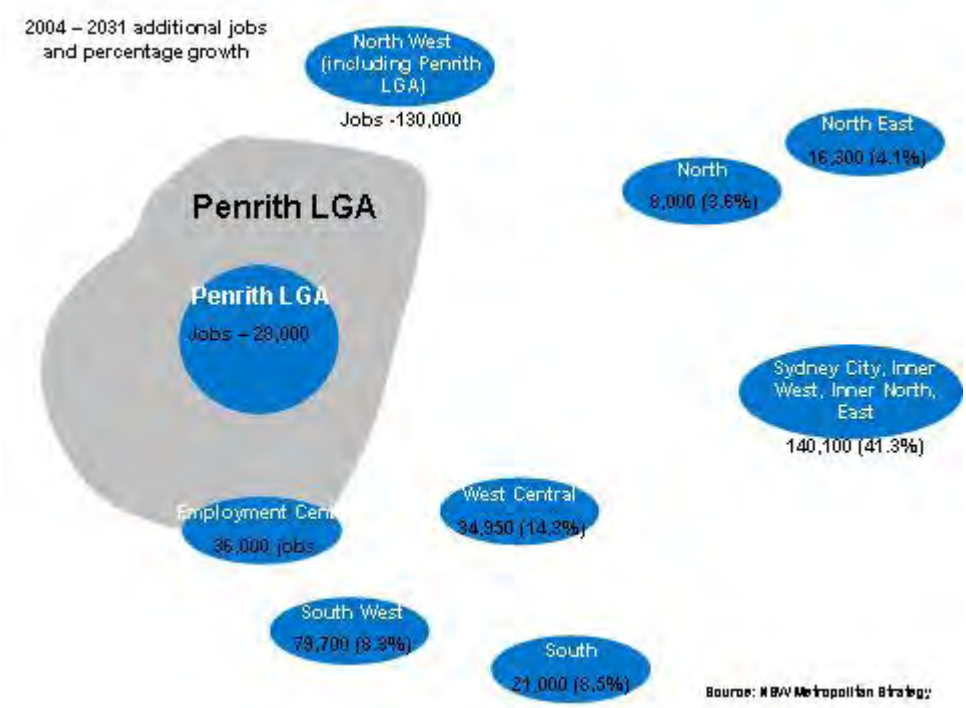
In summary, adopting the advanced infrastructure planning being applied by the two above agencies Penrith Regional development would be able to provide certainty on infrastructure provision that would lead to the support of the preferred pattern of development and achieve the policy outcomes being sought. By obtaining long term financial commitments from government for advanced investment in infrastructure, integrated regional transport connections and facilities can be realised.

4.2 Strategic Analysis of demand from planned employment growth

4.2.1 Employment Growth

Figure 4.1 indicates the forecast jobs growth in the Penrith LGA and the surrounding regions. As may be seen there are significant employment centres forecast to expand in the adjacent sub regions that will have impacts on future trip distribution by 2031. It should be noted Penrith City Council has a higher target for employment growth than the Metropolitan Strategy and is anticipating 40,000 jobs growth by 2031. The Draft NW Subregional Strategy identifies an additional 130,000 jobs are to be delivered in the north-west by 2031.

Figure 4.1: Regional Jobs Growth by 2031



Note: the total figure for jobs in the Draft NW Subregional Strategy for the North West is 130,000 jobs including Penrith LGA.
Source: City of Cities Source: Metropolitan Strategy 2005 and the Draft NW Subregional Strategy 2007

4.2.2 Transport Demand and Infrastructure Need

A future transport demand analysis has been undertaken according to the forecast growth in regional jobs as set out in the City of Cities Metropolitan Strategy for 2031 and the Draft NW Sub Regional Strategy together with the forecast travel pattern as suggested in **Section 3.3**. The regional transport demands by mode for a four hour peak period are summarised in **Table 4.2**. The worksheets used to develop this table are attached in the Appendices to this report.

Table 4.2: Transport Demand 2031 by mode

Regions	JTW Trips (2006)	JTW Trips (2031)	Trip Distribution (2031)	JTW Trips by Mode (2031)				Peak Direction Car Trips per Hour (2031)	Total number of lane required (peak traffic direction)
				Train	Bus	Car	Other		
Penrith	30,800	51,700	44%	5,800	1,300	30,300	14,300	7,600	-
South West	2240	6,500	6%	1,100	100	4,400	1,000	1,100	1
North West	15,700	21,000	18%	2,900	300	15,200	2,600	3,800	3
South	700	1,900	2%	500	0	1,200	200	5,500	4
North	700	1,200	1%	200	0	900	200		
West Central	14,200	17,600	15%	3,900	200	11,700	1,900		
Sydney City, Inner West, Inner North, East	9,300	17,800	15%	6,300	200	8,200	3,100		
Total	**73,700**	**117,700**	**100%**	**20,700**	**2,100**	**71,900**	**23,300**	**18,000**	

Source: Source: City of Cities Metropolitan Strategy 2005 growth forecasts to 2031

The hourly car trip demand is then used to determine the total number of traffic lanes required in one (peak traffic) direction. The following indicative lane capacities are required to meet forecast peak period traffic demands in the main road transport corridors:

Penrith LGA internal links – additional lane capacity can be provided through widening of existing minor and major road corridors and the provision of additional grid road links between growth areas.

South West regional links – 1 lane in each direction is required for the south west road corridor during peak hour. Additional demand can be catered by widening the existing Northern Road and Mulgoa Road.

North West regional links – 3 lanes in each direction are required linking Penrith and the north west region at peak hour. This demand can be provided by widening the existing Northern Road and Castlereagh Road as well as additional east west grid road links connecting Northern Road and Castlereagh Road.

Four lanes are required at peak hour to meet forecast traffic demand in the main road transport corridors leading to the **South, North, West Central and Sydney City sub regions**. Further additional demand can be accommodated to these sub regions in the M4 motorway and Great Western Highway transport corridors and through upgrades and widening of existing arterials and provision of new grid roads and intersections upgrades within Penrith LGA.

The forecast increase in train patronage is significant (from approximately 18,500 to 21,000 commuters leaving Penrith LGA) during the peak periods. The forecast demand will need to be catered for by increased train frequency, which requires the quadruplication of the line between St Marys and Penrith to provide additional capacity to remove bottlenecks.

The increase in bus patronage will be met by the implementation of bus corridors between Penrith and St Marys as well as Mt Druitt. Within the Penrith LGA existing bus networks and service frequencies need to be extended to the outer residential areas and into the new urban release areas as there are many areas of the Penrith LGA that are not currently connected to the local bus network. There also needs to be improved integrated transport interchanges at bus and railway stations with expanded commuter parking facilities to create greater accessibility and encouragement to use public transport networks in the area.

5.0 Transport Strategy

5.1 Introduction

Penrith City Council has developed the Penrith Integrated Transport and Land Use Strategy (PITLUS) for the City. The PITLUS is a key step in providing more sustainable transport options and a convenient, liveable, accessible and sustainable city for communities for the Penrith Local Government Area (LGA). The PITLUS strategy was adopted by Penrith City Council on the 23 June 2008 Ordinary Council meeting.

The PITLUS Strategy will inform Council's Management plan providing and encouraging the use of more integrated accessible and environmentally friendly transport for environmental, social and economic policy. The Strategy will provide guidance to both policy development and infrastructure programs.

The approach in this report builds on the PITLUS Strategy recommending establishing a Regional Transport Hierarchy that balances future needs for public transport, freight, general motor traffic, non motorised transport and travel demand reductions. A key aim of this new approach is to provide sustainable transport options as a way of reducing private vehicle trips. The development process surrounding integrated land use and transport planning shifts the emphasis away from the movement of vehicles to the movement of people and goods. It supports better designed communities, reducing the need to travel through provision of local services and facilities. The Hierarchy also encourages the promotion of self containment of vehicle trips through provision of local employment and services within the region.

To achieve an increase in modal split to public transport, walking and cycling, Penrith City Council in agreement with the Roads and Traffic Authority has adopted a 10% reduction of private vehicle trips. This assumption of 10% reduction of private vehicle trips usage has been incorporated in the Penrith Arterial Roads Study for future release area traffic assessments.

5.2 Objectives

The preceding sections described the emerging growth patterns and characteristics of the Penrith Regional City that could be co-ordinated to reflect a smart regional city. The following are suggested objectives for developing a smart regional transport hierarchy:

1) ***Integrated Structure*** – a smart regional city has a strong integrated transport structure; with key activity centres developing around multi modal public transport hubs;
2) ***Connectivity*** – a smart regional city is one in which movement between areas is not dependent on private vehicle travel and instead there are multiple public transport, pedestrian and cycling options;
3) ***Restraining the growth of peak period car travel demands*** – by reducing the predominance of single occupant vehicle travel, increasing ride sharing, improving public transport quality and frequency, eliminating unnecessary trips through provision of local facilities, better distribution of traffic loads around the network to maximise use of the existing transport network;
4) ***Providing efficient and sufficient road capacity*** – by planning to meet expected traffic demand at an appropriate level of service through provision of additional sub regional grid roads to respond to growth of urban release areas, growth centres and proposed employment areas;
5) ***Ensuring the efficient movement of freight*** – by high quality rail, road and intermodal facilities;
6) ***Providing for pedestrians and cyclists*** – by providing safe secure and integrated facilities and networks;
7) ***Co-ordinating transport and land use planning*** – by supporting more compact better designed urban development which promotes trip containment, supports public transport and allows people to walk and cycle more; and

8) ***Maintaining environmental quality*** - by accommodating more sustainable transport networks that encourage environmentally friendly transport modes, using cleaner environmentally friendly vehicles and ecologically sustainable design in transport infrastructure provision.

9) ***Flexibility*** – a smart regional city does not limit its potential but facilitates responsiveness to changing needs and demands by providing transport infrastructure that enables future needs and demands to be accommodated and well connected.

5.3 Future road links

The designation of Penrith as a regional city in the Sydney Metropolitan Strategy coupled with the designation of two major residential growth zones of the North West and South West Growth Centres and the designation of the Western Sydney Employment Lands highlights the need for a more sustainable transport system to cope with future demands to 2031.

As highlighted in **Table 4.2**, regional road links and sub regional transport networks need to be re-structured in the Penrith region to meet forecast growth demand.

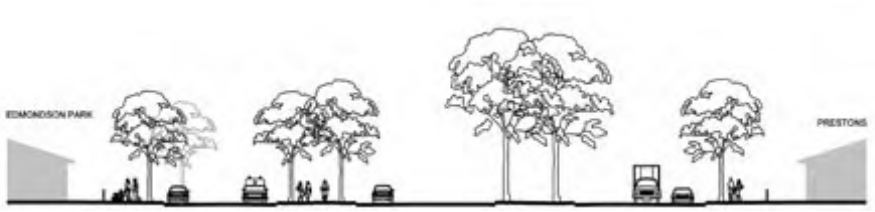
These proposed links will follow the existing road network wherever possible and involve:

- widening existing minor road to provide key transport corridors to incorporate public transport provision;
- widening existing major roads to provide key transport corridors to incorporate public transport provision;
- developing a new grid road hierarchy of transport links to urban release areas and growth centres;

The proposal for an outer west orbital motorway stretching from Casula in the southwest to Penrith then north to Rouse Hill in the northwest was assessed. After examining the forecast Trip to Work forecasts for 2031 and the inter-regional transport demand forecasts that indicate trip distribution will be predominantly in an easterly direction, consequently an outer western orbital motorway would be under utilised. It was considered a grid of roads would provide much greater connectivity and dispersal of traffic to the many proposed growth areas as well as offer greater flexibility to incorporate public transport routes and services to residents and employment areas in the region.

The following illustrations of cross sections provided by the Growth Centres Commission of road cross-sections for Edmondson Park supplied by the RTA indicate how a balance between all transport users can be achieved including pedestrians, cyclists, cars and buses. In addition amenity and property access can be protected as well as preserving the environmental quality and urban character of the neighbourhood.

Illustration 5.1: RTA Arterial Road Section



Source: Edmondson Park Locality DCP Template, Liverpool City Council

Illustration 5.2: RTA Sub-Arterial Roads

Source: Edmondson Park Locality DCP Template, Liverpool City Council

As illustrated above additional road links can be designed to incorporate public transport corridors including bus services, cycle ways and pathways to link the emerging residential and employment areas, educational, health and recreational facilities. The recommended transport links based on forecast traffic demands are illustrated on the following figures 5.1, 5.2, 5.3, 5.4 and 5.5.

It should be noted that further details of the proposed location of road, rail and bus improvements, junction upgrades, lengths, probable costs, are contained in the Appendices

Figure 5.1: Proposed Regional Transport Diagram – Backlog of upgrading Road Works

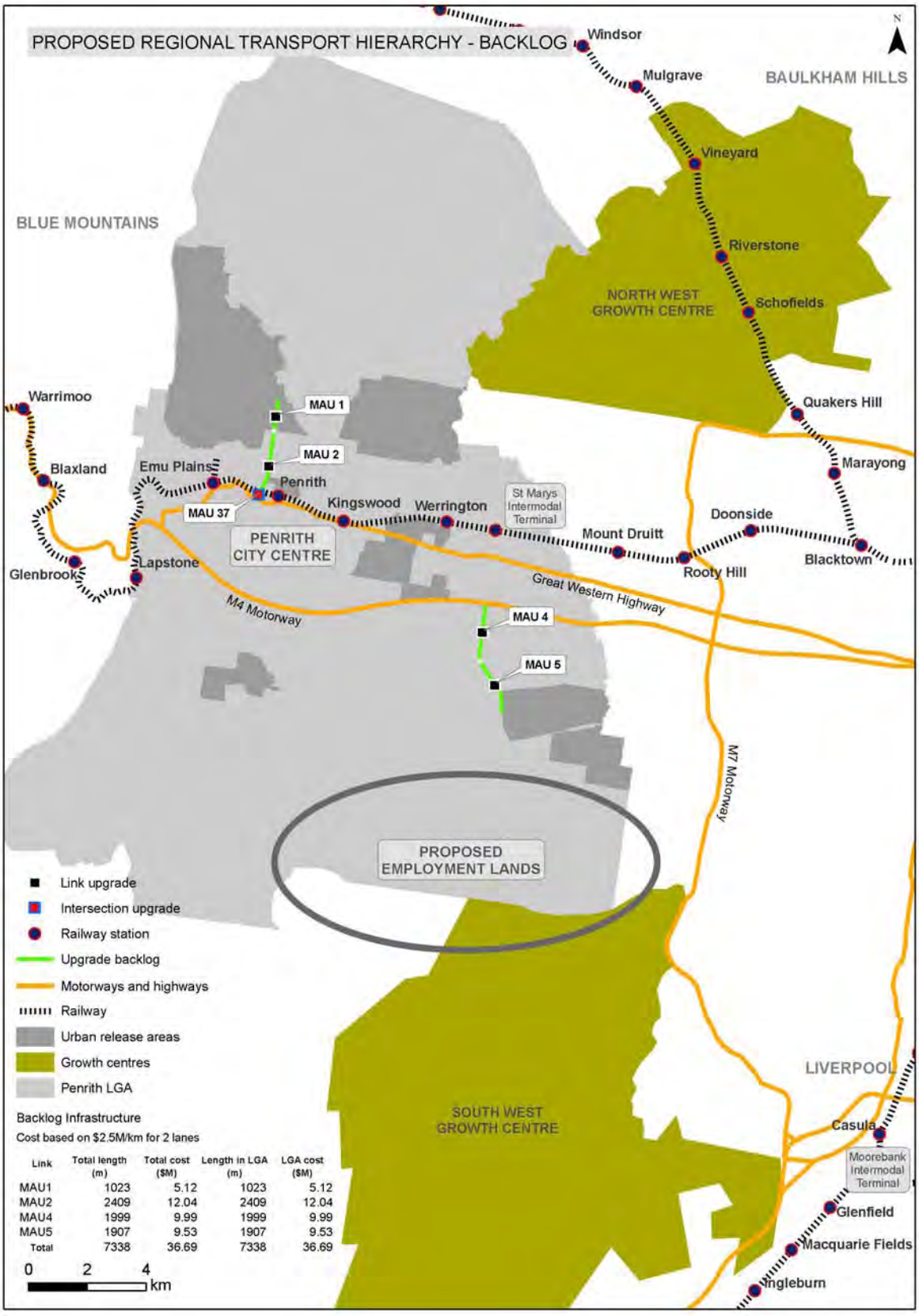
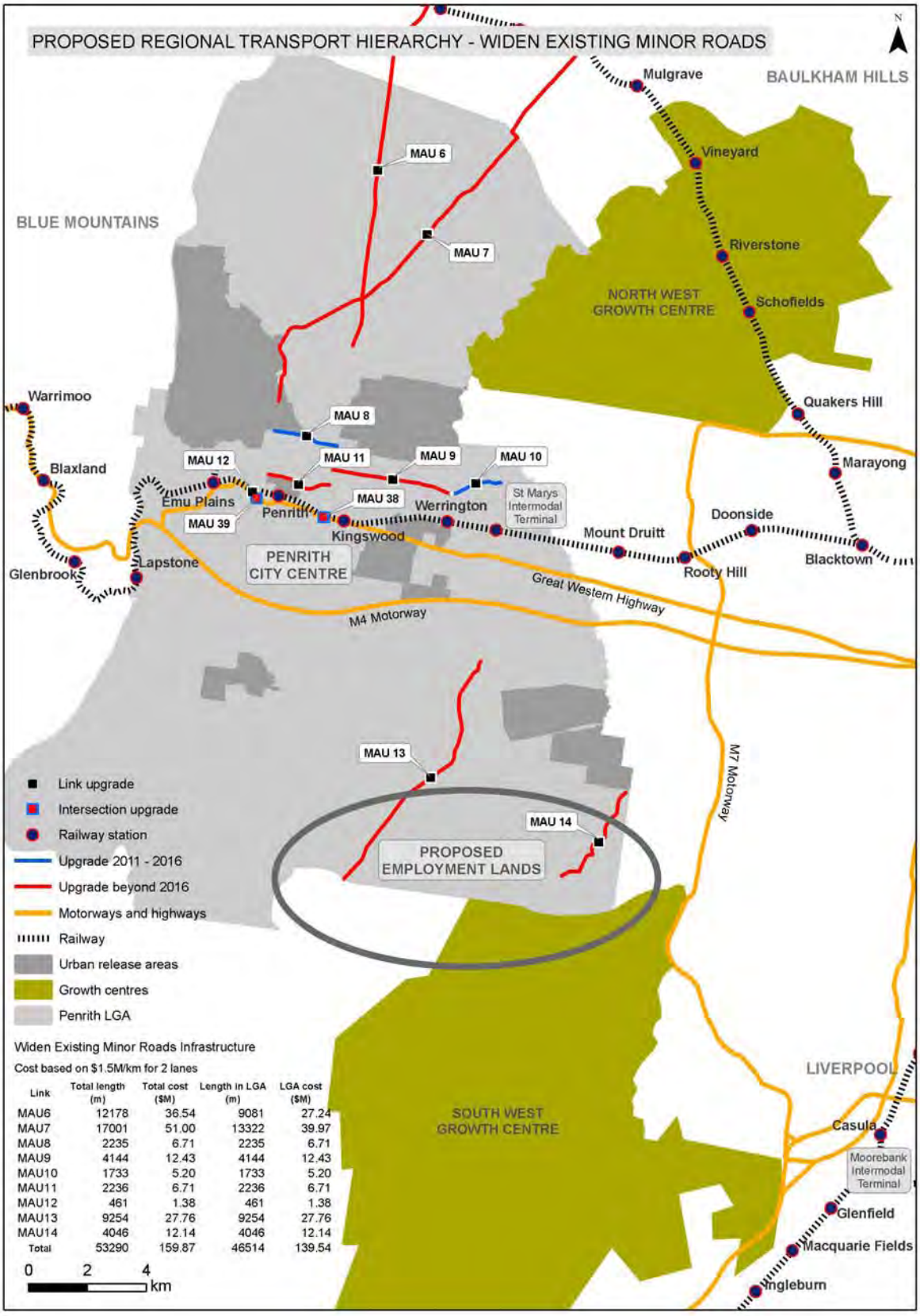
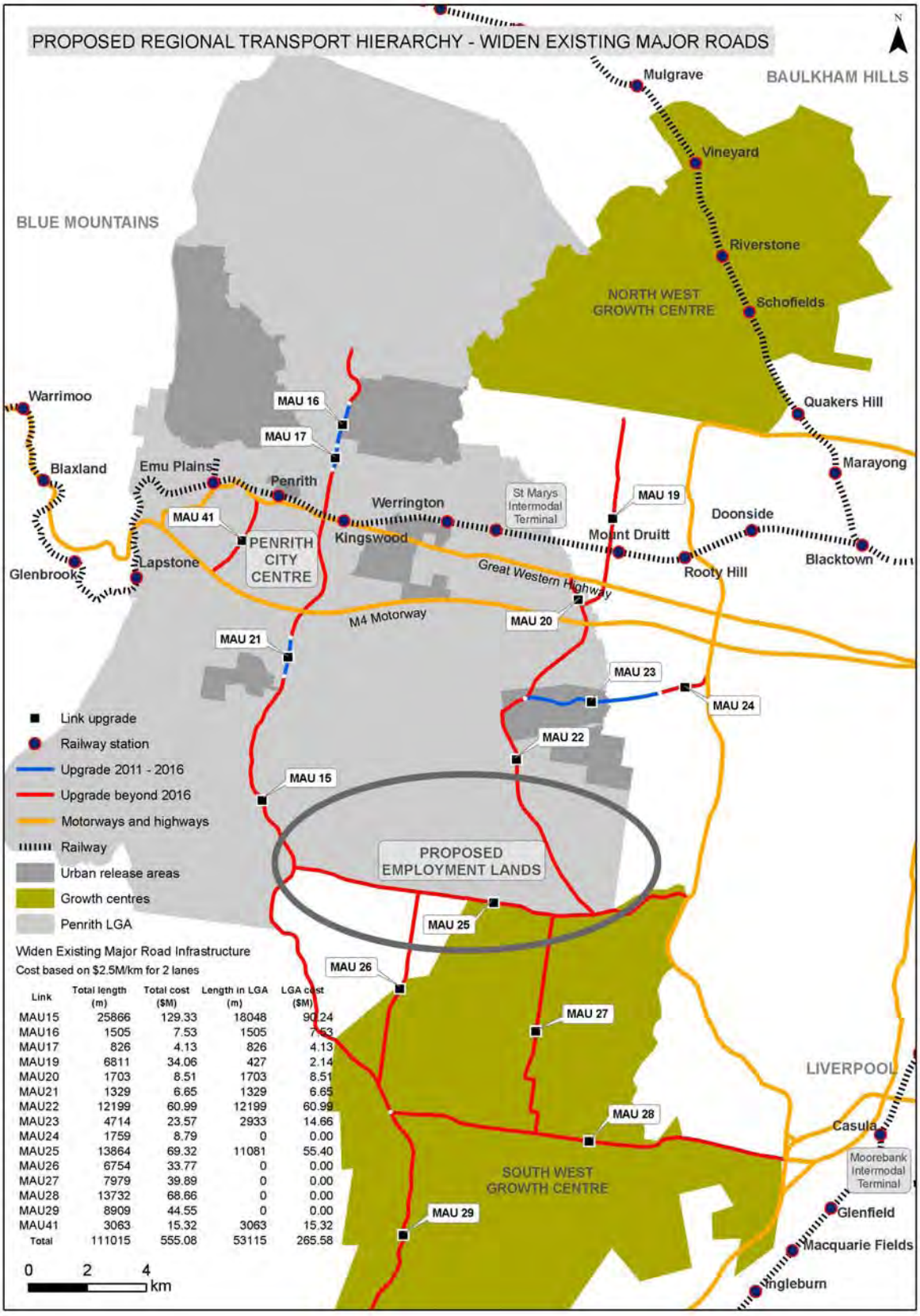


Figure 5.2 - Proposed Regional Transport Diagram – Widen Existing Minor Roads



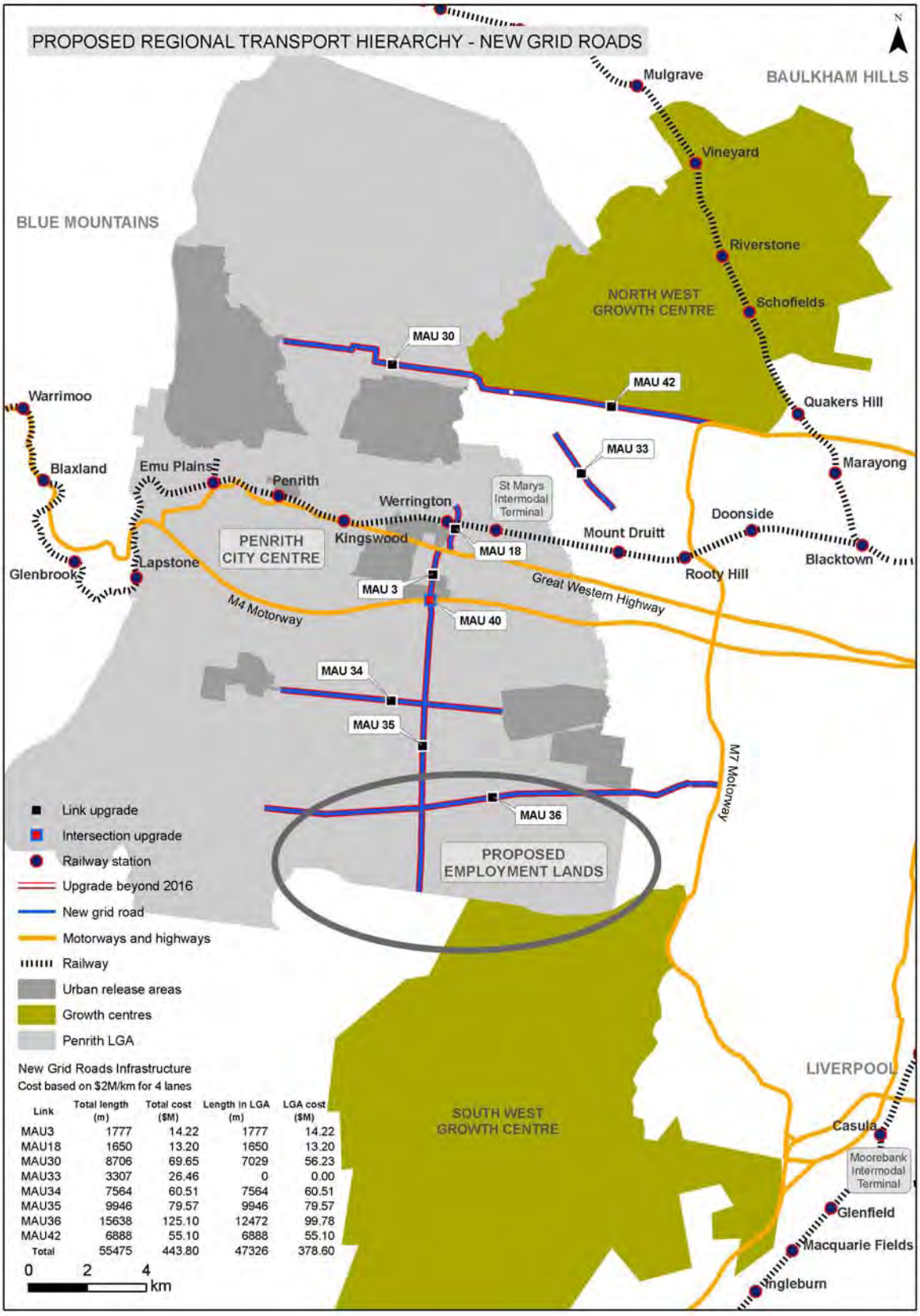
Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU6	12178	36.54	9081	27.24
MAU7	17001	51.00	13322	39.97
MAU8	2235	6.71	2235	6.71
MAU9	4144	12.43	4144	12.43
MAU10	1733	5.20	1733	5.20
MAU11	2236	6.71	2236	6.71
MAU12	461	1.38	461	1.38
MAU13	9254	27.76	9254	27.76
MAU14	4046	12.14	4046	12.14
Total	53290	159.87	46514	139.54

Figure 5.3 - Proposed Regional Transport Diagram – Widen Existing Major Roads



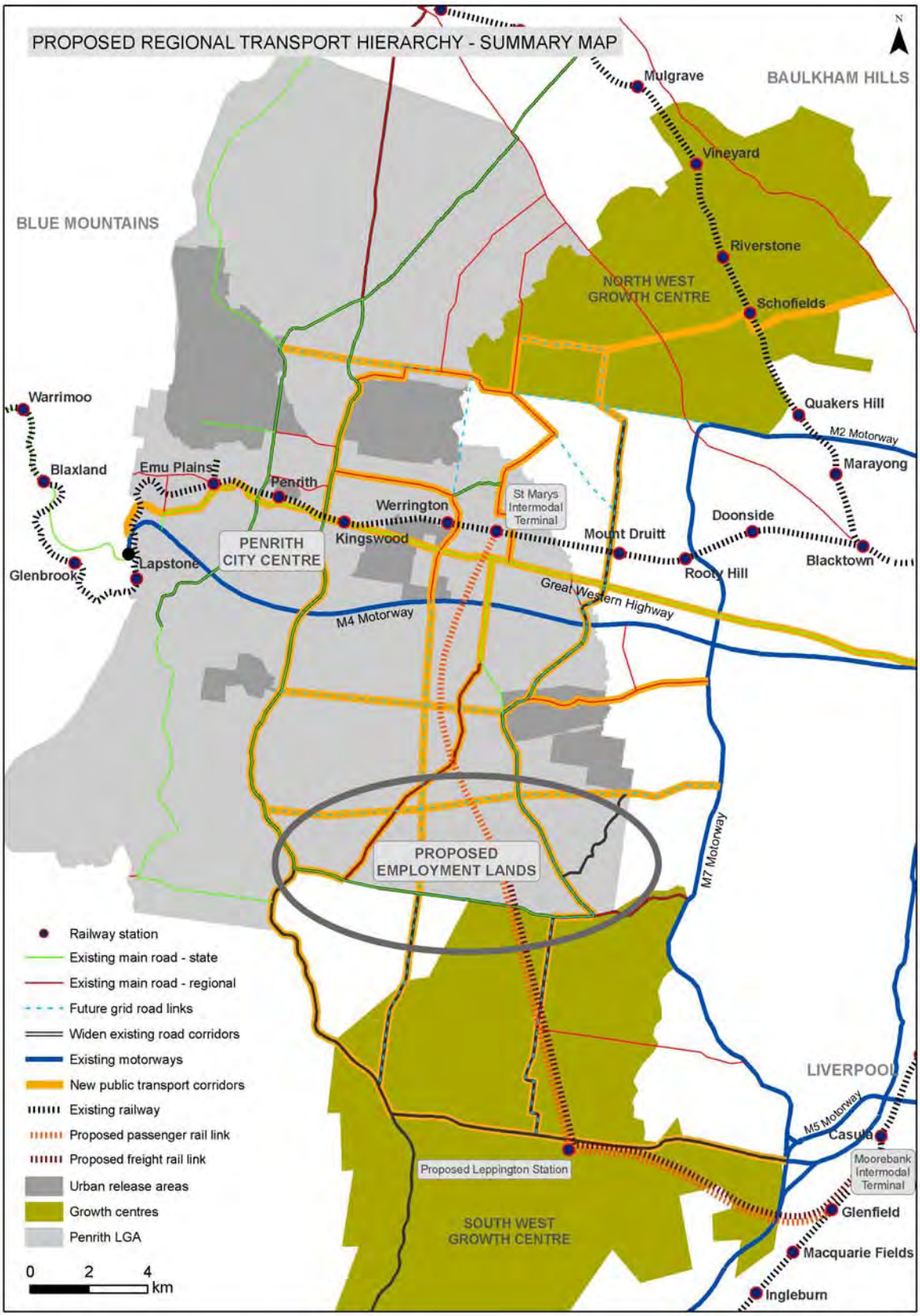
Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU15	25866	129.33	18048	90.24
MAU16	1505	7.53	1505	7.53
MAU17	826	4.13	826	4.13
MAU19	6811	34.06	427	2.14
MAU20	1703	8.51	1703	8.51
MAU21	1329	6.65	1329	6.65
MAU22	12199	60.99	12199	60.99
MAU23	4714	23.57	2933	14.66
MAU24	1759	8.79	0	0.00
MAU25	13864	69.32	11081	55.40
MAU26	6754	33.77	0	0.00
MAU27	7979	39.89	0	0.00
MAU28	13732	68.66	0	0.00
MAU29	8909	44.55	0	0.00
MAU41	3063	15.32	3063	15.32
Total	111015	555.08	53115	265.58

Figure 5.4 - Proposed Regional Transport Diagram – New Grid Roads



Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)
MAU3	1777	14.22	1777	14.22
MAU18	1650	13.20	1650	13.20
MAU30	8706	69.65	7029	56.23
MAU33	3307	26.46	0	0.00
MAU34	7564	60.51	7564	60.51
MAU35	9946	79.57	9946	79.57
MAU36	15638	125.10	12472	99.78
MAU42	6888	55.10	6888	55.10
Total	55475	443.80	47326	378.60

Figure 5.5 - Proposed Regional Transport Diagram – Summary Map



5.4 Future Freight Link

The South West Growth Centre will be served by a branch line from Glenfield Station to Leppington in the centre of the Growth Centre. The South West Rail Link will cost $1.36 billion for the 13 kilometre rail line from Glenfield to Leppington. Construction will commence in 2009 and be completed in 2012. An additional 1,650 commuter car parking spaces will be constructed, with bus interchanges at Leppington and Edmondson Park. The line will have capacity for eight trains an hour to the city.

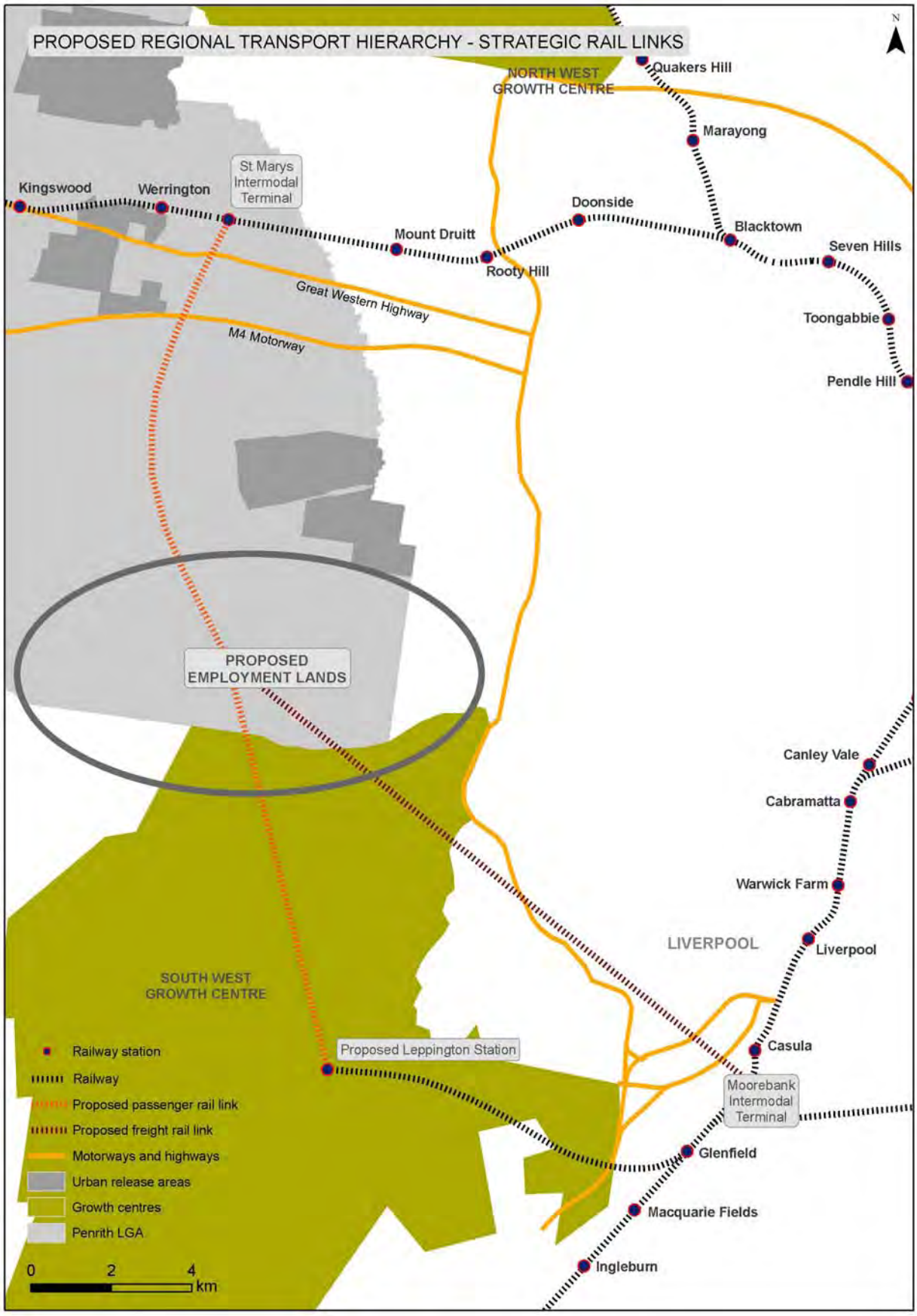
The feasibility of extending this line north to connect to the adjacent Western Sydney Employment Lands and then northwards to the Penrith Regional City urban area where potential employees will be resident should be investigated. If similar unit costs were incurred for the 22 kilometres of track to join with the Western Line with two stations one in the centre of the Western Sydney Employment Lands and one in the expanding urban areas south of Penrith Regional City the costs would be in the order of $2.3 billion.

The Western Sydney Employment Lands will generate a demand for effective rail connections both for passengers and rail freight. A Freight Rail Link will lower freight movement impacts on the road network and serve the Logistics Warehousing and Freight activities.

Current Rail Freight lines are located approximately 14 kilometres to the east at Moorebank where an intermodal terminal is proposed and 10 kilometres north at St Marys with a proposed Intermodal Terminal on the Western Rail Line. The feasibility of extending Freight Rail links to either of these Intermodal terminals should be investigated. If similar unit costs were incurred as for the South West Rail Link the Freight Rail line cost from the proposed Employment area to Moorebank for 17 kilometres of track would be $1.78 billion and to connect to St Marys intermodal terminal 10 kilometres approximately $1.04 billion. In the case of the proposed Freight rail link to St Marys to the north the option of using part of the proposed passenger rail corridor for freight services should be investigated.

If no freight rail links are constructed there will be a dramatic increase in road freight truck movements, generated by the proposed employment lands resulting in increased noise, vibration, pollution and damage to the environment and increased risk of exposure to road accidents on the already congested road network.

Figure 5.6 - Proposed Regional Transport Diagram – Strategic Rail Links Map



5.5 Opinion on probable costs

In undertaking the preparation of the opinion of probable construction cost, Maunsell Australia Pty Ltd (Maunsell) advises that it has no control over the cost of labour, materials, equipment or services furnished by others, nor has it control over contractors' methods for determining prices, competitive bidding or market conditions. The opinion of probable construction cost provided by Maunsell is made on the basis of its judgement as an experienced and qualified engineering consultant, familiar with the construction industry. As Maunsell is not a qualified Quantity Surveyor, nor does it employ quantity surveyors, Maunsell cannot and will not guarantee that tenders or actual construction costs will not vary from the opinion of probable construction cost.

The opinion on probable construction costs are contained in **Appendix A**.

Table 5.1: Opinion on probable costs for Proposed Regional Transport

Total Transport Costs	$ Millions	$Millions
Roads		
Backlog of upgrading road works	**$37**	
Widen Existing Minor Roads by 2 lanes	**$160**	
Widen Existing Major Roads by 2 lanes	**$555**	
Create New Grid Roads 4 lanes	**$444**	
Sub Total Roads		**$1,196**
Rail		
South West Rail Link Passengers from Leppington to Western Rail Line	**$2,300**	
South West Rail Link for Freight from Employment area to Moorebank	**$1,780**	
Sub Total Rail		**$4,080**
Buses		
1 Bus per 1,200 people	**$0.25**	
Running costs for 50 buses to serve 25,000 new dwellings		**$13**
Total costs		**$5,289**

5.6 Findings

Current planning for future transport networks in the western region is short-sighted and will not accommodate the extent of development planned in the Metropolitan Strategy and the Draft NW Sub-Regional Plan. There is a danger of continuing with past practice which has left a legacy of unsafe and poor amenity roads and poor public transport services in most of Sydney.

The preliminary analysis in this study has identified a need for major investment in transport infrastructure. For example, there is a need to provide direct links between the Growth Centres, Urban Release Areas, Penrith Regional City and major employment areas. This will require expansion of the strategic regional road network and planning for a future grid of roads to provide inter-regional accessibility. Equally important will be the need for strategic public transport corridors including rail extensions.

To achieve this end the planning in the Sub-Regional plans must be taken to the next logical step which is an integrated land use and transport structure plan for the region. This must be a collaborative effort involving all stakeholders.

Appendix A Opinion on probable transport costs

Appendix A.1 Opinion on probable transport costs

In undertaking the preparation of the opinion of probable construction cost, Maunsell Australia Pty Ltd (Maunsell) advises that it has no control over the cost of labour, materials, equipment or services furnished by others, nor has it control over contractors' methods for determining prices, competitive bidding or market conditions. The opinion of probable construction cost provided by Maunsell is made on the basis of its judgement as an experienced and qualified engineering consultant, familiar with the construction industry. As Maunsell is not a qualified Quantity Surveyor, nor does it employ quantity surveyors, Maunsell cannot and will not guarantee that tenders or actual construction costs will not vary from the opinion of probable construction cost.

Appendix A.2 Road Costs

The following table lists a range of case studies that were examined to illustrate varying road costs depending on the type of construction being undertaken including:-

Location	Road name	Road type	Cost per lane per km
Penrith LGA	Lenore Road / Erskine Park Road	New four lane divided road	$2m
SW Growth Sector	Northern Road	Road widening of major existing road	$2.5m
SW Growth Sector	Denham Court Road	Lane widening of two lane road	$1.5m

The following table lists an opinion on probable construction costs for proposed roads in the area. The costs are based on unit costs based on case studies illustrated above of recent road projects in the Penrith area. It should be noted until detailed road designs are prepared for individual road projects estimates of construction costs are approximate only.

Road type	Cost per lane per km
New four lane divided roads	$2m
Road widening of existing major roads	$2.5m
Road widening of existing two lane roads	$1.5m

These costs have been applied to the three types of roads proposed namely:

- widening of existing major roads by adding additional lanes;
- widening of two lane roads by adding additional lanes;
- creation of a network of new four lane grid roads following wherever possible existing road lines.

These proposed roads will link up to the new urban release areas, the NW and SW Growth centres and the Western Sydney Employment Lands to the Penrith Regional City. The road link numbers are highlighted on the three plans illustrating the proposed road networks to serve the new development areas. The total costs would amount to $1.196 billion approximately.

Opinion on probable road construction costs of proposed roads

Widen Existing Major Roads by 2 lanes
Cost per lane per kilometre $2.5million

SERIES	Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)	Road name/s	Location
1	MAU1	1023	5.12	1023	5.12	Cranebrook Rd	Nepean St - Andrews Rd
1	MAU2	2409	12.04	2409	12.04	Castlereagh Rd	Andrews Rd - Great Western Hwy
1	MAU4	1999	9.99	1999	9.99	Mamre Rd	M4 Mwy - Luddenham Rd
1	MAU5	1907	9.53	1907	9.53	Mamre Rd	Luddenham Rd - Erskine Park
	Total	7338	36.69	7338	36.69		
5	MAU37(Intersection)		24.00		24.00	Intersection Upgrade	Jane St and Castlereagh Rd

Widen Existing Minor Roads by 2 Lanes
Cost per lane per Kilometres $1.5million

	Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)	Road name/s	Location
2	MAU6	12178	36.54	9081	27.24	Paget St, Londonderry Rd, The Northern Rd	March St - Seventh Ave
2	MAU7	17001	51.00	13322	39.97	George St, The Northern Rd, Cranebrook Rd, Mulgoa	Bell St - Nepean St
2	MAU8	2235	6.71	2235	6.71	Andrews Rd	Castlereagh Rd - The Northern Rd
2	MAU9	4144	12.43	4144	12.43	Dunheved Rd	Richmond Rd - Christie St
2	MAU10	1733	5.20	1733	5.20	Christie St	Forrester Rd - Werrington Rd
2	MAU11	2236	6.71	2236	6.71	Coreen Ave	Castlereagh Rd - Richmond Rd
2	MAU12	461	1.38	461	1.38	Jane St Extension	Jane St - Victoria Bridge
2	MAU13	9254	27.76	9254	27.76	Luddenham Rd	Mamre Rd - Elizabeth Dr
2	MAU14	4046	12.14	4046	12.14	Kerrs Rd, Mt Vernon Rd, Capitol Hill Dr	New Grid Road - Mamre Rd
	Total	53290	159.87	46514	139.54		

Widen Existing Major Roads by 2 lanes
Cost per lane per kilometre $2.5million

	Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)		
3	MAU15	25866	129.33	18048	90.24	The Northern Rd	Seventh Ave - Bringelly Rd
3	MAU16	1505	7.53	1505	7.53	The Northern Rd	Borrowdale Way - Andrews Rd
3	MAU17	826	4.13	826	4.13	The Northern Rd	Andrews Rd - Dunheved Rd
3	MAU19	6811	34.06	427	2.14	Carlisle Ave	Luxford Rd - Roper Rd
3	MAU20	1703	8.51	1703	8.51	Hewitt St, Roper Rd	Great Western Hwy - M4 Mwy
3	MAU21	1329	6.65	1329	6.65	The Northern Rd	Glenmore Parkway - Bradley St
3	MAU22	12199	60.99	12199	60.99	Erskine Park Rd, Mamre Rd	M4 Mwy - Elizabeth Dr
3	MAU23	4714	23.57	2933	14.66	Lenore Lane	Erskine Park Rd - Old Walgrove Rd
3	MAU24	1759	8.79	0	0.00	Erskine Park Arterial	Lenore Lane Extension - M7 Mwy
3	MAU25	13864	69.32	11081	55.40	Elizabeth Dr	The Northern Rd - M7 Mwy
3	MAU26	6754	33.77	0	0.00	Badgerys Creek Rd	Elizabeth Dr - The Northern Rd
3	MAU27	7979	39.89	0	0.00	Devonshire Rd, King St	Elizabeth Dr - Bringelly Rd
3	MAU28	13732	68.66	0	0.00	Bringelly Rd, Camden Valley Way	The Northern Rd - M7 Mwy
3	MAU29	8909	44.55	0	0.00	The Northern Rd	Bringelly Rd - Cobbitty Rd
3	MAU41	3063	15.32	3063	15.32	Mulgoa Rd	
	Total	111015	555.08	53115	265.58		
5	MAU38 (intersection)		16.00		16.00	Intersection Upgrade	Parker St and Great Western Hwy
5	MAU39 (intersection)		24.00		24.00	Intersection Upgrade	Castlereagh Rd and Mulgoa Rd

Create New Grid Roads 4 lanes
Costs per lane per kilometre $2million

	Link	Total length (m)	Total cost ($M)	Length in LGA (m)	LGA cost ($M)		
1	MAU3	1777	14.22	1777	14.22	Werrington Arterial Stage 1	Great Western Hwy - M4 Mwy
3	MAU18	1650	13.20	1650	13.20	Werrington Rd	Parkes Ave - Great Western Hwy
4	MAU30	8706	69.65	7029	56.23	New Grid Road	Cranebrook Rd - Stony Creek Rd
4	MAU33	3307	26.46	0	0.00	New Grid Road	Forrester Rd - Carlisle Ave
4	MAU34	7564	60.51	7564	60.51	New Grid Road	The Northern Rd - Erskine Park Rd
4	MAU35	9946	79.57	9946	79.57	New Grid Road	M4 Mwy - Elizabeth Dr
4	MAU36	15638	125.10	12472	99.78	New Grid Road	The Northern Rd - M7 Mwy
4	MAU42	6888	55.10	6888	55.10		
	Total	55475	443.80	47326	378.60		
5	MAU40 (intersection)		N/A		N/A	Intersection Upgrade	M4 Mwy and Gipps St

Intersections - all have been incorporated.

5	MAU37	24.00
5	MAU38	24.00
5	MAU39	16.00
5	MAU40	

Appendix A.3 Rail Costs

Cost estimates

The costs are to be used as a guide only and further detailed estimation is required to determine the actual cost of these options. These figures are not intended to be used in any detailed calculations or to determine the feasibility of the options listed. These guide costs do not take into account other infrastructure requirements such as signalling. This infrastructure cannot be accurately defined at this level and would need to be further developed to detailed concept design stage to obtain greater certainty of the figures.

A.3.1 Passenger and Freight Line costs

Passenger Lines

If similar unit costs were incurred as those for the South West Rail Link the 22 kilometres of track to join proposed Leppington Station in the centre of the South West Growth Centre with the Western Line and the Penrith Regional City with two stations one in the centre of the Western Sydney Employment Lands and one in the expanding urban areas south of Penrith Regional City the costs would be in the order of $2.3billion approximately.

Freight Lines

If similar unit costs were incurred as for the South West Rail Link the Freight Rail line cost from the proposed Employment area to Moorebank for 17 kilometres of track would be $1.78 billion approximately and to connect to St Marys Intermodal terminal 10 kms approximately $1.04biillion.

A.3.2 Electrification

As a guide, the cost of constructing new overhead wiring would be approximately $0.5-$1 million/ km. Many factors will influence this cost including the connection to substations, relocation of existing infrastructure and final configuration of the track layout. Two areas where high capital costs are required are overhead wiring construction (i.e. electrification) and the provision of new rolling stock.

A.3.3 Passenger and Freight Rolling Stock

The quantity of Passenger and Freight rolling stock sets required will depend on the operational layout and timetabling requirements at the time.

A.3.4 Electric Rolling Stock

The latest electric rolling stock to be procured in NSW was through the Private Public Partnership (PPP) contract between the NSW state government and Reliance Rail. This contract was signed in December 2006 and the scope was to design, construct and maintain (for 30 years) 78 x 8-car double deck electric sets. The cost of this contract is reported to be $3.6 billion[2] which equates to approximately $46 million per 8-car set.

An earlier contract for the procurement of the 'Millennium Train' (Stage 1 October 1998 and Stage 2 December 2002) was a similar arrangement with the maintenance period being for only 15 years. For this situation the contract included the delivery of 141 (81 Stage 1 and 60 Stage 2) individual carriages or approximately 18 x 8 -car sets. The contract value was reported to be approximately $588 million[3] which equates to approximately $32 million per 8-car set.

[2] http://www.reliancerail.com.au/MediaRelease1.pdf

[3] http://www.audit.nsw.gov.au/publications/reports/performance/2003/millennium_train/Millennium Train- June2003.pdf

Appendix A.4 Bus Costs

As a general rule, the Ministry of Transport recommends the provision of 1 bus per 1200 people.

The annual cost of running a bus amounts to approximately $250,000. This cost is levied between the developer and the State Government at 75% and 25% respectively. However, the developer must commit to a five year subsidy before the bus service can commence.

A.4.1 Funding Start –Up Bus Services

Legislative Framework

Under the EP&A Act, planning agreements (introduced by the Amendment Act) can be used to fund construction or operation of public amenities and services, including start-up bus services.

Four options are available under the EP&A Act for obtaining contributions towards start-up bus services:

- Planning Agreements;
- Section 94 Contributions;
- Fixed Section 94 Levy (S94A Developer Levies); and
- Special Infrastructure Contributions.

Note that, the existing Section 94 contribution and development levies for local capital infrastructure and services are only able to be expended on capital costs associated with providing or augmenting local public amenities or services, not recurrent costs. Only Special Infrastructure Contributions and Planning Agreements can be used to fund the recurrent costs of start-up bus services.

It is up to the consent authority to determine which contribution system best suits its particular needs. For this reason, the NSW Ministry of Transport must be able to respond to all four potential situations in order to ensure ongoing funding for infrastructure. The choice of contribution mechanism rests with the local authority or the NSW Government currently, of which the choice of mechanism limits whether the funds can fund recurrent or infrastructure costs. Under the current EP&A Act system, only Special Infrastructure Contributions and Planning Agreements can be used to fund the recurrent costs of start-up bus services.

Background

Developer contributions to support an improved public transport system can be obtained for various purposes to pay for:

- Infrastructure, such as bus priority measures, bus shelters, interchanges and waiting areas;
- Start-up costs for new bus services, including the cost of new vehicles, driver allocation, marketing and promotion; and
- Recurrent costs for bus services, either partially or fully covered.

Types of bus service funding where the costs can to be allocated or covered by developers include:

- Developer funding the full service for a new shuttle route that would operate exclusively from the new development to a railway station;
- Partial funding because a bus route is an extension from an existing route into the new development; and
- No funding required because existing bus services can be extended through or to the new development without any significant cost (i.e., a cross-regional bus service that can operate

through the new development or a bus service that would be extended through the area to connect to a new regional centre).

In Sydney, the current policy for introducing a new bus service is based on bus operators developing a business case which must include:

- The patronage and revenue of the proposed network changes;
- The kilometre revenue from the NSW Ministry of Transport; and
- A comparison of the cost recovery ratio between the present and the proposed network (revenue/costs) to ensure the new network is more effective.

In accordance with the provisions of the new bus contracts, a bus operator must make application to the Director General for bus service changes to implement the integrated network plan, where the bus operator is “of the view, having regard to the procedures for the ongoing review of the Bus Services established under the Service Planning Guidelines, that the proposed change will improve efficiency and increase patronage while maintaining an appropriate level of access to public transport services for all persons in the Contract Region”. (MoT 2006).

The Director General can reject the proposed changes and require the bus operator to amend them if they are found to be in opposition to:

- Contract Service Plan/Guidelines;
- Applicable provisions of the contract;
- The overall objective of providing an efficient and integrated passenger bus service in the contract region while maintaining an adequate level of access to public transport services for all persons in the contract region;
- Payment guidelines.

The bus operator must develop and present a detailed project plan/ timeline for the implementation of the Integrated Network Plan. A major service review for an Integrated Network Plan can take 12 months from start to finish.