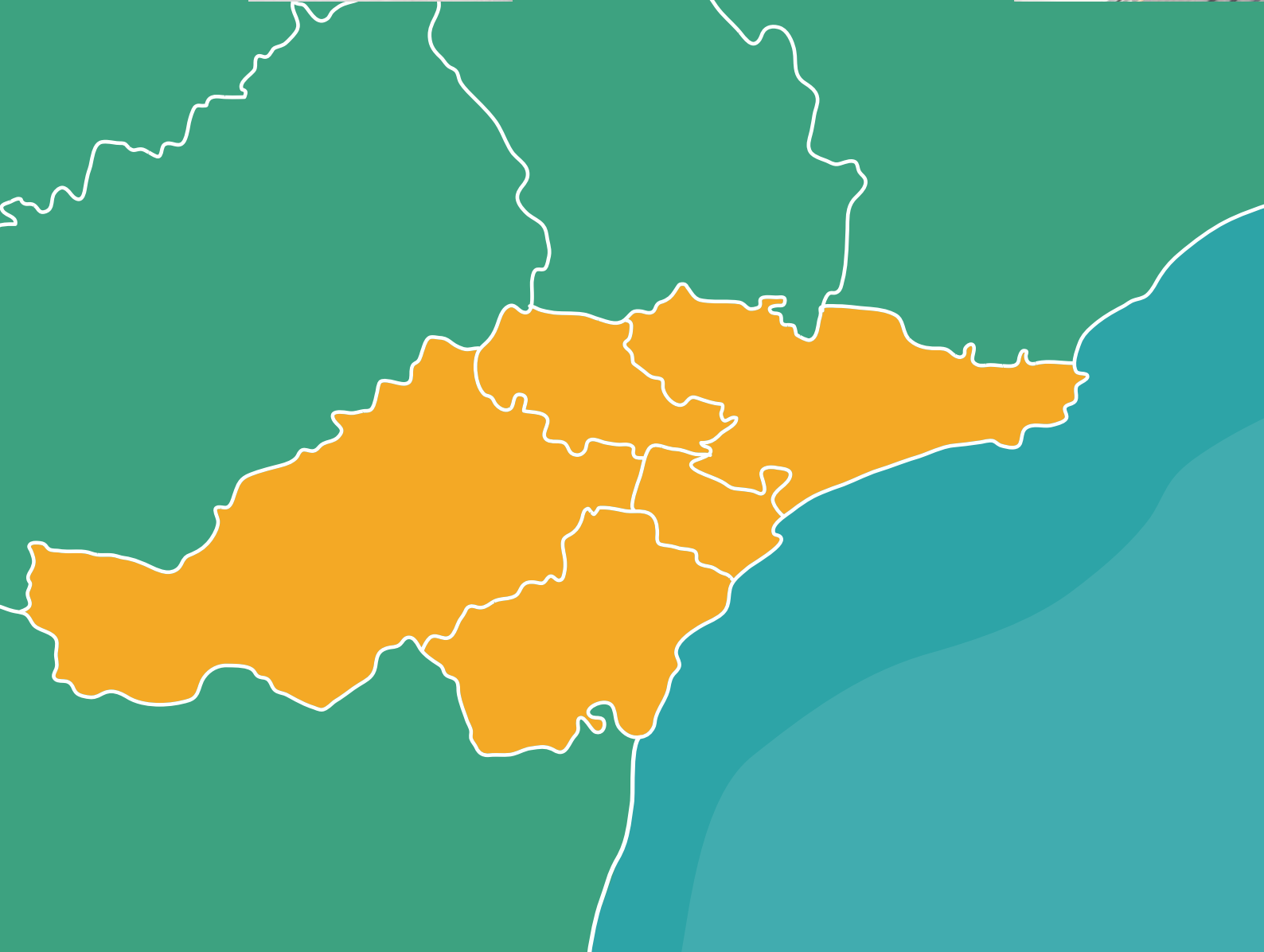


HUNTER STRATEGIC 2013 INFRASTRUCTURE PLAN

PRODUCTIVITY · SUSTAINABILITY · LIVEABILITY



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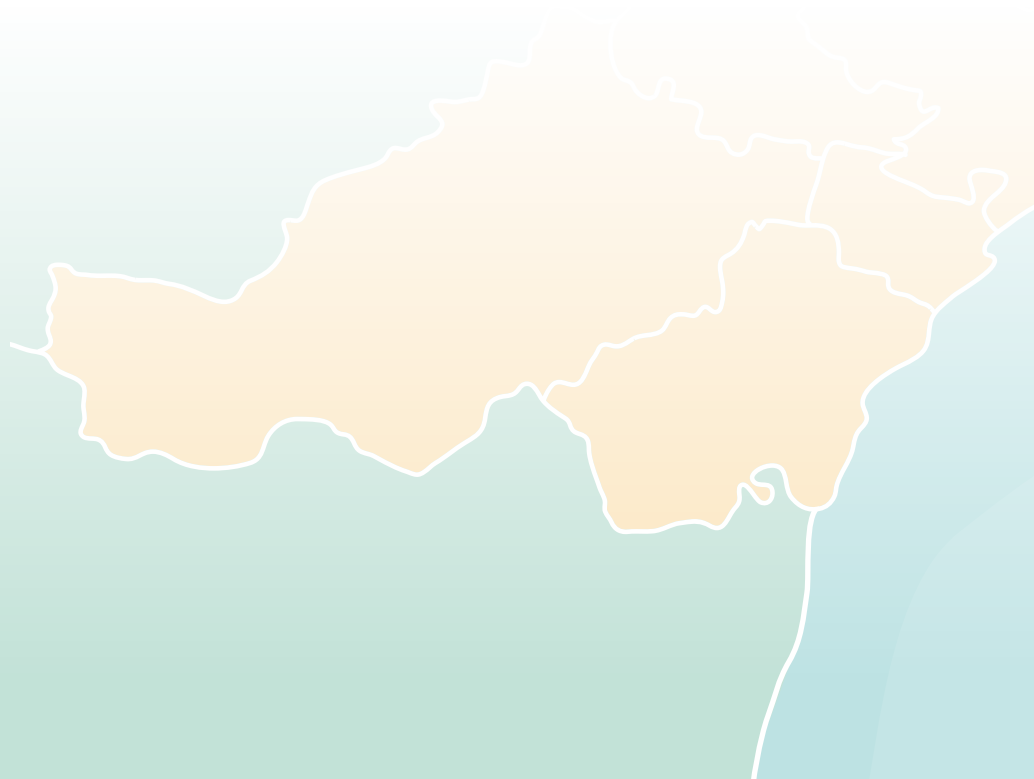
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PRODUCTIVITY · SUSTAINABILITY · LIVEABILITY

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EXECUTIVE SUMMARY

The Hunter Strategic Infrastructure Plan (HSIP) is a part Commonwealth-funded initiative responding to the Council of Australian Governments (COAG) Major Cities Agenda focussing on productivity, sustainability and liveability. This 20-year plan considers the Hunter Metropolitan Area (HMA) which comprises the five Lower Hunter Local Government Areas (LGAs) of Newcastle, Lake Macquarie, Maitland, Cessnock and Port Stephens. Collectively, these LGAs are identified by the Commonwealth as one of the eighteen major cities in Australia.

The HSIP aims to provide the strategic infrastructure framework to inform future urban growth of the HMA. The plan defines the overarching goals for the HMA and its potential to help deliver on national priorities. The plan identifies and assesses the obstacles to reaching this potential and achieving these goals. The plan proposes options at a strategic level to mitigate these problems and optimise the respective opportunities. It does so recognising the strategies proposed need to deliver priority outcomes within both the HMA and the wider regional, state and national urban framework.

The HSIP considers key economic and social infrastructure requirements to support a growing liveable regional city over the next 20 years. It has a very spatial perspective as it deals with how best to manage the metropolitan footprint, growth and connectivity over time. The HSIP has a strong alignment with the Lower Hunter Regional Strategy (LHRS) and considers the inter-relationships with the Upper Hunter and associated Hunter Valley Coal Chain (HVCC) which connects the Upper Hunter coal fields with the HMA. In its recently released Lower Hunter Regional Strategy Discussion Paper the NSW Department of Planning and Infrastructure observes: “The strong Upper Hunter economy generates development, infrastructure and transport links between the two regions. With the two regions’ housing markets and economies now more closely aligned and interdependent, it is evident the two will develop an integrated Hunter economy”.

In addition the HSIP identifies strategic opportunities to leverage off nation building infrastructure initiatives currently under construction such as the Hunter Expressway. It also briefly considers future nation building proposals which will help to shape the city beyond the immediate scope of this plan. The HSIP explores land use and infrastructure options through a suggested strategic infrastructure framework utilising analysis derived from a purpose-built regional Geographical Information System (GIS), known as the Integrated Infrastructure Planning Tool (IIPT). Through the use of tools such as the IIPT the HSIP details priority construction and infrastructure planning projects supported by a suggested sequencing and staging strategy covering 0-5 years, and 6-20 years increments.

In coalescing the elements of the HSIP and other strategies identified within this report - including the Hunter Regional Transport Plan, Hunter Economic Infrastructure Plan, Lower Hunter Growth Plan and Lower Hunter Water Plan - the NSW Government intends to produce a Hunter Infrastructure Strategy (HIS). The HIS will represent the first unified assessment of regional and subregional infrastructure in the Hunter and, as such, the HSIP will be a key input.

COAG Agenda

The Federal Government through COAG has recognised cities as the key drivers of economic value and growth as they generate some 80% of the nation's production and wealth. The fundamental logic of the COAG Liveable Cities Agenda is to ensure cities, as the powerhouse of the economy, continue to grow and operate in the most efficient and productive manner possible. This same agenda recognises people live, work, learn and recreate in cities and their economic growth and development must be in tune with their evolution as liveable and sustainable places. This agenda very firmly establishes the nexus between economic growth and improved productivity of cities and their affordability and attractiveness for residents and businesses.

There is growing understanding that the nation's overall economic health and the quality of life of its community are inextricably tied to the way in which cities grow. Further the platform of infrastructure in these cities, both economic and social, will very strongly determine the rate, pattern and nature of growth and very directly impact on the productivity, efficiency, attractiveness and liveability of cities.

The COAG Agenda recognises the way in which cities are planned the framework set by infrastructure and the positioning of catalyst projects will drive the nation's capacity to maintain and grow wealth which underpins our quality of life. The HSIP seeks to position the HMA as a viable and attractive option for an increasing share of the nation's businesses to locate in and as a desirable place to live. Its role will be to support the growth of the HMA as an appealing option for families and business seeking a set of environmental conditions and an urban environment not available in other major cities such as Sydney. The HSIP aims to position the HMA as an attractive option on a different scale to many of the state capitals. It is fundamentally important to the nation as a whole that a range of options, with different key drivers and characteristics, are available to its businesses and residents.

The HSIP seeks to lay the framework and set out an infrastructure platform to allow the HMA to realise its potential in a national and regional context. It has a relationship with the suite of Hunter infrastructure plans and analyses key infrastructure issues which specifically shape the HMA. The spatial and performance models outlined in the HSIP aim to direct the focus of projects for funding and investment over the next 20 years.

Hunter Metropolitan Area

The HSIP establishes the data and research that provides a better understanding of the spatial and infrastructure systems of the HMA. The growth of the HMA reflects a series of economic and social developments over past decades. The HMA was founded on the mining of coal and the making of steel and its export through the port. As coal exploration and mining moved west up the Hunter Valley, a series of townships connected by road and rail to Newcastle and the port emerged. These towns were focused on providing coal or agricultural products to the growing Newcastle and global markets. Newcastle, in turn, emerged as a city supplying higher order services and retail products to an ever-expanding hinterland. A strong east-west corridor has emerged which still dominates movement and activity in the HMA and beyond. The further coal mining pushed west and the more the regional and national economy became reliant on the mining sector and coal exports the stronger the east-west pull and, hence the more demand on this corridor. No other city in Australia has evolved around a coal freight spine in the way the HMA has.

The environmental quality and amenity of the water bodies of Port Stephens and Lake Macquarie to the north and south of Newcastle respectively have, over time, attracted residents and tourists alike. As the urban fabric of Newcastle expanded with regional shopping and employment centres, they soon became part of the wider HMA. In more recent times, this has led to the rapid growth within the north-south corridor of residential communities and employment nodes.

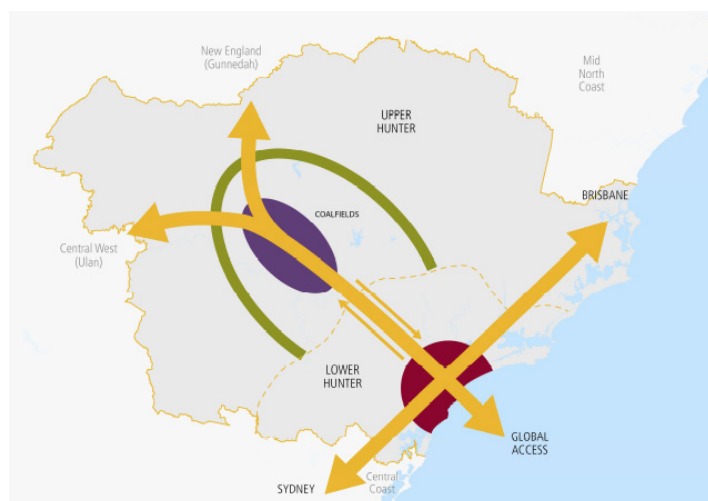
The HMA has developed along these two key axis with concentrated new development on the Tomaree Peninsula and at Charlestown and Maitland. Catalyst development like Newcastle Airport and infill residential, decentralised retail and service developments have refocused growth away from the city centre in Newcastle which has declined since the 1970s. Wetlands, flooding and high environmental and scenic amenity in areas around Port Stephens and Lake Macquarie have provided natural constraints to growth north and south and surrounded urban areas with high-quality natural spaces and agricultural lands.

This footprint and mix of land uses has been guided by both the LHRS and local planning instruments. However, given the lack of an overarching regional infrastructure plan, congestion is now evident in some locations and critical pinch points have emerged which create inefficiencies and impact negatively on productivity and liveability. At the same time, spatial equities in service provision and underutilisation of capital investment in infrastructure is creating less than optimal outcomes.

Land use planning has not been supported with timely planning and investment decisions around critical infrastructure. The resultant urban footprint is not as efficient or effective as it could be to assist the HMA achieve its potential both from a regional and nation perspective. This has been exacerbated by the embedded nature of coal haulage through the core of the urban area. This plan seeks to redress those inefficiencies and negative impacts.

Figure E1 illustrates these development drivers and influences. It aims to focus attention on the performance and operation of the HMA in terms of its structural form. It also helps identify the areas of focus for improved performance in terms of the HMA's growth, productivity and sustainability and the strategic solutions required in terms of new and enhanced infrastructure.

Figure E1 – Hunter Macro Region



- RED** Metropolitan core
- PURPLE** Hunter Valley coal fields
- YELLOW** Key road and rail linkages

HSIP Objectives and Targets

The HSIP seeks to ensure the HMA has an infrastructure platform that underpins and supports:

- a cost-effective and competitive coal export industry as a continued driver of growth;
- a diversified and sustainable economy offering employment choice;
- an attractive investment opportunity for the private sector across a range of market sectors;
- minimal internal travel times;
- well-located, serviced, affordable and connected employment centres and business/industrial lands;
- affordable and efficient residential land supply for growth;
- communities with access to jobs, education, health, social and recreational facilities;
- well-protected and maintained open spaces and natural environments;
- strong and efficient connections to national and global markets and services; and
- a clear sense of identity, purpose and future.

To achieve these outcomes/objectives the HSIP has identified the following strategic infrastructure targets:

- effective east-west and north-south transport corridors to support growth and investment;
- efficient and effective connections to key nodes and facilities;
- improved national and global connections;
- adequate supply of fit-for-purpose social infrastructure including education and health;
- greater internal connectivity and access; and
- identified growth corridors with clear sequencing strategies for investment.

Key Issues and Opportunities

The HSIP has identified the key issues, pinch points and opportunities for improvement which need to be addressed to achieve these outcomes/objectives. These include:

- integrated transport system including the delivery of light rail in the Newcastle city centre;
- passenger servicing limitations at Newcastle Airport to accommodate continued growth in both passenger and freight markets while maintaining critical defence operations, N.B., this is about on-ground facilities, not airspace capacity;
- transport access constraints between Newcastle Airport and key regional markets and business clusters;
- inadequate growth capacity in the existing road and rail access network into the port;
- ongoing utility and availability of port related land;
- ensuring adequate capacity of port infrastructure;
- effectiveness and efficiency of east-west road and freight rail connections;
- effectiveness and efficiency of north-south road connections;
- connectivity restrictions, conflicts and congestion impacting on the liveability and productivity of the urban area such as at Adamstown, Charlestown and Rutherford;
- underutilisation of public and private sector investment in infrastructure, impacting on affordability and sustainability;
- significant areas of zoned land (industrial and residential) unable to be economically serviced and developed within reasonable timeframes;
- adequate provision of health and education facilities to meet population projections to 2036; and
- need for more innovative and risk-sharing funding mechanisms to deliver infrastructure in a timely manner.

Economic Drivers

To ensure the HSIP is forward-looking, it identifies the key drivers that have and are likely to continue to propel the economy and support the community. It recognises that, while the Hunter's economy has diversified – particularly in respect to health and tertiary education services, defence, energy sector (CSIRO) and the like – resource extraction (primarily coal) is likely to continue to be the key economic driver in the region. This situation is unlikely to change over the next 20 years. However, although the needs of the resource industry must be accommodated in order for the regional economy to prosper the impact on communities in mining areas and around transport corridors must be thoroughly assessed and, where necessary, appropriate mitigation and amelioration measures implemented.

The HSIP notes the Hunter has not experienced the full impact of the Global Financial Crisis (GFC) and has successfully avoided global economic pressures over the last ten years. During this period the Hunter has maintained growth in employment terms. This has been achieved largely due to the strength and growth of the mining sector. However, such a reliance exposes the economy and the community to a downturn in the event of global decline in the mining sector if the market for resources contracts. The Hunter, while working to support the economic viability of the mining industry, also needs to be moving toward having an even more robust and diversified economy.

The HSIP also recognises the tension between the macro economic value of the mining sector at a national level and the micro level impacts on communities and related environments within the Hunter. Regional land use planning and improved infrastructure delivery – for both the mining sector and for the multitude of communities that make up the HMA – will go a long way to reducing this tension. The rapid expansion in the number of mines and the volume of product being transported has exacerbated these issues. It is, therefore, timely that the HSIP now seeks to bring an appropriate priority and focused response by way of infrastructure investment to address these issues.

Pattern of Growth

As the mining sector and augmentation of regional diversity continues to underpin jobs and investment in the Hunter the HMA will continue to attract population growth. New residents need to be accommodated in new and expanded communities. There has been and will continue to be pressure on the housing sector and service providers to meet this demand in an efficient and affordable manner. Thus the HMA must have a very clear picture about how this growth is to be accommodated, including how much of this growth is likely to occur around the urban fringes and how much will be infill development capitalising on excess capacity in existing infrastructure.

In the HMA, private motor vehicles are the predominate means of transport. As this is unlikely to change in the short-to-medium term, this needs to be recognised and planned for while also supporting the transition to other modes of public mass transit.

The current key drivers influencing settlement patterns are predicted to remain strong. These include the progressive suburbanisation of the population, retail and services and the drift inland of resource extraction and associated employment. These are occurring simultaneously and resulting in pull factors away from the Newcastle city centre, resulting in a consolidation of housing and employment growth within the Maitland growth corridor.

Liveability and Choice

This observed pattern needs to be balanced with efforts to renew investment, activity and jobs in the Newcastle city centre. Newcastle city is a fundamental anchor of the HMA's urban framework and market offer and needs to provide a mix of employment, housing and lifestyle alternatives in a sustainable fashion. If not, HMA will fail to attract diversified investment and employment in new service sectors. For example the HMA will not satisfy the lifestyle needs of the innovative, educated 25 to 35 year olds who typically work in, own and use these services; it will be unable to offer “empty nester” alternatives to suburban living for baby boomers; and it will fail to be seen as a viable option for families seeking high quality living close to good education, health providers and recreational facilities.

The HMA boasts:

- robust economy;
- solid platform of infrastructure (particularly around the port and Newcastle Airport);
- access and connectivity to Sydney, Brisbane and the globe;
- world-class educational and medical facilities; and
- lifestyle options and residential amenity,

meaning it has all the attributes to support a modern second-tier or ‘midi’ city on a global scale.

The HMA has the capacity and momentum to develop into an urban area capable of offering high quality living and sustainable investment growth. It has the potential to become a more productive, sustainable and liveable city but it needs specific, targeted, properly sequenced and funded infrastructure to reduce existing operational inadequacies and to build a platform for ongoing improvement.

Priorities and Phases

The immediate priority is to respond to the rapid growth in resource development which has resulted in congestion and inefficiencies at critical pinch points. There is a need to facilitate the movement of freight and people within the existing road and rail-based transport network. Observed friction in the transport system can be reduced by alleviating existing pinch points, supported by targeted enhancements that leverage off nation building investments.

The next phase in the transition to a more sustainable growth footprint is the formulation of a comprehensive spatial picture which considers lead infrastructure capacity, capability and estimated cost. This, in turn, will result in the identification of affordable growth paths and rank areas already earmarked as urban release areas.

Progressive investment into the existing infrastructure backbone will support productivity, sustainability and liveability outcomes. This could include:

- a greater emphasis on public transport systems;
- examination of an integrated transport network including light rail in the Newcastle city centre; and
- other active modes of travel;

with strategic infrastructure corridors linking existing and emerging centres and employment clusters.

Employment land can be utilised to buffer residential land from any negative impacts associated with the coal chain. Growth can be guided to locations away from the coal corridor where practical, targeting locations with good infrastructure capacity and/or capability and away from high cost, infrastructure deficient areas.

Future phases can then reinforce and consolidate strategic corridors with next generation public transport investment when the business case is proven, further consolidating the HMA's growth footprint. The HSIP identifies key corridors/precincts within the HMA which generally align with the Lower Hunter Regional Strategy (LHRS), including the:

- Metropolitan Core (Newcastle/Charlestown/Kotara/Glendale);
- seaport/airport corridor;
- Maitland growth corridor (Maitland to Branxton in the long term);
- Freeway Corridor (Morisset/Cooranbong); and
- Hunter Expressway growth corridor (Killingworth to Kurri Kurri).

Figure E2 Linkages, Growth Precincts and Corridors



- 1 Metropolitan core – Established Urban Area & Renewal
- 2 Port and Airport Corridor – Key Economic Drivers/International Gateways
- 3 Maitland Growth Corridor – Existing Growth Plan
- 4 Upper Hunter Coal and Energy Corridor & Western Gateway – Key Economic Drivers
- 5 Hunter Expressway Corridor – Energy Growth Path
- 6 M1/Pacific Highway Corridor – Hexham Infrastructure Hub
- 6A Northern Gateway – North Raymond Terrace/Heatherbrae
- 6B Southern Gateway – Morisset

Informed Decision Making

Planning and ongoing decision making for the provision of infrastructure needs to be better informed with the ability to determine the yields and benefits of alternative investment decisions. There is also a need to understand and predict the trends and pressures emerging in the economy that influence demand for infrastructure. In this context, it is strategically important there is a funding commitment (subject to a satisfactory business case) for the ongoing maintenance and enhancement of two key regional decision support tools: the Regional Economic Model (REM) and the Integrated Infrastructure Planning Tool (IIPT). These will improve the quality of decision making in relation to infrastructure/land use decisions in the HMA.

The IIPT has been developed in collaboration with government agencies and infrastructure providers to better understand infrastructure capacity and capability in the region. The IIPT assembles and spatially integrates available data to identify the most logical and efficient areas for growth in the HMA based on infrastructure cost.

The next logical refinements to the IIPT include:

- capturing and modelling data on transport and mine subsidence;
- introducing a market feasibility layer; and
- giving consideration to extending its application to the Upper Hunter.

At present the REM focuses on the mining sector. It seeks to map its size, location and value and covers direct, first and second round multiplier impacts. Its enhancement to encompass other sectors such as the education, health and associated tertiary support sectors will be of increasing importance. The REM should also be developed to provide spatial forecast in term of areas of demand for projected growth sectors.

Shovel Ready Projects 0-5 Year Priorities

There is a suite of built infrastructure projects which deserve immediate (0-5 years) priority. These projects focus on removing immediate critical performance problems in the operation of transport infrastructure. They deliver on existing government commitments and related community expectations and respond to risk assessment and mitigation evaluations. Included in these priorities, in no particular order, are the following:

- duplication of Tourle Street Bridge and approaches;
- construction of Pennant Street Bridge, Glendale Stage 1;
- Newcastle Urban Renewal implementation and supporting integrated transport system including the delivery of light rail in the Newcastle city centre;
- Newcastle Airport Terminal Expansion;
- development of the University of Newcastle CBD Campus; and
- continuation of the National Highspeed Broadband Strategy.

Planning Ready Projects 6-20 Year Priorities

During the next five years, there should also be the necessary planning to deliver a set of infrastructure projects for the following 6–20 years. These include:

- New England Highway – Belford to Golden Highway (Planning Phase);
- Pacific Motorway (M1, previously F3)/Weakleys Drive Intersection (Planning Phase);
- Pacific Motorway (M1) extension to Raymond Terrace (Planning Phase);
- Newcastle Inner City Bypass – Rankin Park Link (Planning Phase);
- regional transport enhancements – connections to port, airport, strategic employment lands and major centres;
- Adamstown Rail Level Crossing (Planning Phase);
- Lower Hunter Freight Corridor (Planning Phase);
- priority recommendations arising from Lower Hunter Water Plan;
- proposed new Lower Hunter (Maitland) hospital (Planning Phase); and
- investigate feasibility of expanding light rail from Newcastle city centre to surrounding suburbs, beaches and the broader Hunter Region (Planning Phase).

At a more general level, once the HMA growth footprint is more clearly defined and individual projects capable of assessment using the IIPT have been assessed, planning and capital investment needs to occur to provide adequate social facilities and other infrastructure including:

- primary, secondary schools and higher education;
- ancillary and primary health services; and
- regional open space and sporting facility provision and enhancement.

Planning for urban expansion should be closely aligned with plans for infrastructure investment in water, sewerage, electricity, telecommunications and stormwater drainage at a regional catchment level. Similarly, major road and intersection upgrades need to be planned for and funded. Funding for this infrastructure needs to be timely and targeted where there is an ability to maximise yields and achieve positive outcomes in terms of private and public sector investment. It should optimise existing capacity, minimise upgrade and lead-in costs and share the burden and benefit. This will require innovative solutions which factor in yields that are attractive to private sector investors and the competing demands on government funding.

This is the role of the Lower Hunter Regional Strategy review which is currently underway. The HSIP will contribute to this review process.

HMA Delivers Regional, NSW and National Priorities

The HMA has significant potential to become both a more productive and efficient place for business to invest and grow and a more liveable and sustainable place for communities to live, learn, recreate and work. Improving the liveability and productivity of the HMA is not only beneficial to the local and regional community but is in the state and national interest.

The HSIP provides the strategic platform and structural framework in which the future footprint of the HMA can grow and regenerate. It aims to identify the infrastructure necessary to overcome existing gaps and ensure optimal productivity, efficiency and liveability moving forward.

The nation's ability to grow and thrive economically to drive the income base to fund increasing social and environmental priorities and maintain and enhance the community's quality of life, is critically linked to strengthening the economic productivity and efficiency of our major cities. This means ensuring each of the nation's eighteen major cities is as efficient and productive as possible while improving their liveability and sustainability. This will mean as a whole the nation can offer the investment and business sector, individuals and families the widest range of urban locations at different scales and with different core attributes, resulting in enhanced global competitiveness and attractiveness. The HSIP lays out a plan to deliver on these regional, state and national agendas. The priority projects are listed in Table E1 and rated in terms of how they measure against National Urban Policy Goals.

What the HMA Can Be

The most liveable cities in the world have many things in common. They are concentrations of dynamic commerce, culture and lifestyle. Australia's ability to compete on a global scale depends on the quality, diversity, productivity and innovation of its cities.

The HMA will never be a New York, a Sydney or a London nor does it want to be. It aims to satisfy a niche in the market, one which is socially, economically and environmentally important. With the right vision, planning, action and resources the HMA over the next 20 years will be:

- a vibrant university city, attracting domestic and international students;
- a city nationally recognised as a centre of business excellence based on research and learning;
- a city providing high order retail, legal, health and business services to a growing robust region;
- a regular destination for international cruise ships and conference delegates;
- home to more than 700,000 residents who enjoy a vibrant, safe and affordable lifestyle;
- a highly accessible, bike and pedestrian friendly city with great public transport;
- a city connected to the nation by road and rail and the world by sea and air;
- a city standing ready with a 40,000 seat capacity venue to welcome teams of the Asia Cup; and
- a city known for the quality of its heritage buildings, its new architecture, its public art, public domain and the beauty of its coastline.

It will be a metropolitan area built around its mining history; its valuable coal fields; and its freight rail lines, port and industry. An urban area that offers lifestyle and housing choices and options: from hobby farms to inner city apartments; from new greenfield estates to historic restoration. It will offer choices of access to beaches, bays, lakes, wetlands or mountains; and homes close to work, education, farmlands, shops, hospitals, galleries and café strips.

The HMA can evolve into a polycentric urban place: an area diverse in its offer, proud of its roots and confident about its future.

Individuals and families:

- worn by the journey to work in major cities;
- unable to afford increases in the cost of living;
- priced out of the housing market;
- in need of greater work/life balance or specialist health care;
- aspiring to a career in health sciences the law, the arts or business services; or
- who want a safe place for their children and teenagers to grow up

will all have a choice outside the nations' capital cities.

It will be an alternative where there is a diversity of jobs, business opportunities, high level retail, commercial, entertainment and cultural facilities and services.

Businesses, for a long time aware of the quality and innovation provided by tertiary qualifications from both the Hunter TAFE and University of Newcastle, will seek to locate close to these facilities. They can link into undergraduate programs and post graduate research and innovation as the basis of their own commercial success.

The critical mass provided by the co-location of the State and Commonwealth Law Courts, legal services, University law libraries and the University Law School will attract businesses and clients from far afield. Development sites at competitive prices, fully serviced, with good private and public car parking and transport options, which enjoy a view of the busy harbour with its massive coal ships and burgeoning pleasure craft and where workers, shoppers and visitors can easily access the public domain, are rapidly being developed and occupied with happy tenants. The mix of students and business people provides a vibrancy that pervades the city's night economy and its growing design and graphics sector.

In essence the Hunter Strategic Infrastructure Plan analysis has identified that the dynamic Hunter Metropolitan Area (Lower Hunter) and the Upper Hunter economies and infrastructure networks are increasingly linked and interdependent. Firstly the plan notes and supports the current momentum toward the progressive integration of land use and infrastructure planning initiatives. Secondly the plan recognises the potential for the HMA to accommodate population growth subject to considered investments in strategic infrastructure. Productivity, sustainability and liveability outcomes can be tangibly enhanced in the short-to-medium term by focussing on a series of transport connectivity, urban renewal and health network enhancements that have individual and collective merit and should be supported as project priorities. Thirdly, the plan recognises the current NSW Planning Reform initiatives, as articulated in the White Paper, are the appropriate vehicle to integrate, align and review the performance of infrastructure planning in the HMA.

Table E1 Priority Projects List






Project	Productivity	Sustainability	Liveability	Governance	Assessment
0 to 5 years					
Duplication of Tourle Street Bridge and approaches	H	M	H	H	The Tourle Street Bridge is the critical link for residents living on the Tomaree Peninsula and employment, coal and the port, mixed cargo and Kooragang berths, business travellers and the airport, tourists and the vineyards, defence force personnel and the Air Force Base. It affects the productivity, growth capacity, liveability, connectivity and competitiveness of the HMA now and moving forward. Duplication of the bridge is fundamentally important to the continued competitiveness of the mining sector, the residential and tourist development of the Tomaree Peninsula, growth of the airport and development of aviation, industrial and tourist facilities around Williamstown.
Pennant Street Bridge, Glendale Stage 1	H	M	H	M	The project will unlock the growth potential of the Cardiff and Glendale industrial and business precincts, enabling them to attract new and diversified investment and business. This will enable them to become substantial employment centres offering affordable land with good access to Sydney markets and jobs close to growing residential communities. Focused growth in this corridor is consistent with local, regional and state growth strategies.
Newcastle Urban Renewal and supporting integrated transport system including the delivery of light rail in the Newcastle city centre	H	H	H	H	The project will significantly help the Newcastle city centre re-establish as a core business, employment, entertainment and service centre for the Hunter. It will establish Newcastle as a well-connected, vibrant, attractive and diversified urban space, enabling it to attract residents and visitors. It will offer the community a wider range of tertiary sector jobs in easy access of increasingly dense and popular residential communities. It will enable the utilisation of decades of investment in infrastructure the public domain open space to be better utilised and the embedded energy to be unlocked. It will establish inner Newcastle as a more liveable and sustainable urban space and acts on widely-held community expectations and priorities.
Newcastle Airport Terminal Expansion	H	M	H	M	Increasing the HMA's connectivity nationally and globally through expanded and improved airport facilities enhances the region's ability to be competitive as a business, tourist and residential location. It will contribute to improving the productivity of the workforce and business and the area's liveability and attractiveness for residents. This project will relieve pressure on Kingsford Smith Airport for regional derived domestic flights. The facility will underpin growth in jobs and investment in a range of ancillary and associated sectors and help underpin a more diverse and robust economy. The project does not challenge the defence role of Williamstown Air Force Base and is consistent with state and national policy and priorities for both aviation and defence.
University of Newcastle CBD Campus	H	H	H	H	The University of Newcastle is a key selling attribute of the HMA growth plan for business competitiveness and attraction, foreign investment, residential growth, employment diversification, urban revitalisation and cultural growth. It is critical as a catalyst for the renewal of Newcastle's city centre, generating not only jobs, students and activity but adding to the vitality, vibrancy, diversity, cultural and social mix of the inner city. It is essential for the HMA to compete as a progressive, second-tier city nationally and globally.
National Highspeed Broadband Strategy (NBN)	H	H	H	H	Connectivity is essential to the competitiveness of the nation. Reducing the number of jobs that have to be delivered in centralised Sydney metro locations will take the pressure off the future growth of Sydney and deliver social and environmental benefits at a national level. The NBN will offer companies and individuals employment and business options based in the HMA and allow business to compete and communicate globally. The optimisation of the NBN delivers social, economic and environmental benefits associated with teleworking and business competitiveness.
Integrated Infrastructure Planning Tool (IIPT) development and use	H	H	H	H	The IIPT will provide the evidence base and planning tool essential to improved decision making regarding the optimal growth footprint for the HMA. It will lead to greater yields and better outcomes from government and private sector investment in growth infrastructure. It will enable communities to be better serviced, connected and more affordable. Improved access to commercial, community, health and educational facilities will lead to more liveable and sustainable communities. The IIPT will help drive more equitable and effective funding solutions.
Regional Economic Model (REM) development and use	H	M	M	H	The REM as a partner tool to the IIPT will help identify and quantify the region's economic drivers and ensure the planning for growth takes place within the context of the viable and robust operation of the regional economy. It will provide the mechanism to better connect employment and communities, infrastructure and economic growth, demand and supply.

H=High M=Medium

Project	Productivity	Sustainability	Liveability	Governance	Assessment
	Contribution to National Urban Policy Goals				
6 to 20 years					
New England Highway – Belford to Golden Highway (Planning Phase)	H	M	M	M	The Belford to Golden Highway connection is the next step in the expansion of the HMA's east-west corridor as a conduit for workers, supplies, coal and wheat travelling between the Upper Hunter and the port/urban/industrial complexes. Removal of this pinch point will increase the efficiency of existing linked infrastructure, reduce route delays, conflicts, congestion and risk and improve the overall productivity and growth capacity of the economy.
M1 Pacific Motorway/Weakleys Drive Intersection (Planning Phase)	H	M	H	M	This intersection connects the M1, Pacific and New England highways and its operation affects the flow of passengers and freight traffic on the Sydney Brisbane corridor. It is a nationally pivotal location and has attracted significant industrial development. The improved operation of this intersection will reduce north-south travel times, freight journey costs, improve route reliability and reduce conflicts between different forms of transport and cross region east-west traffic movements. In so doing, it will improve the HMA and nation's productivity and efficiency. It will also reduce the commute time between Maitland and Newcastle, enhancing the HMA's internal connectivity and liveability.
Pacific Motorway (M1) extension to Raymond Terrace (Planning Phase)	H	M	M	H	Improved traffic flows and reducing travel delays will, in turn, improve productivity for freight travelling on the Sydney to Brisbane corridor and to the port. The extension would also provide better access to Newcastle Airport and the State Significant designated Tomago Employment Lands. The project would provide a significant value add to the existing M1 Pacific Motorway.
Newcastle Inner City Bypass – Rankin Park Link (Planning Phase)	H	M	H	H	Completing this final section of a long term Newcastle Inner City Bypass validates decades of government planning and expenditure on the HMA's north-south axis route. It will improve north-south traffic flow in the inner suburbs; improve connectivity and access to key regional facilities including John Hunter Hospital and Newcastle University; and reduce congestion on primary routes to major employment and retail centres in Bennetts Green, Charlestown and Jesmond. This link would increase the productivity of the HMA by reducing travel distance, time and delays and enhance the liveability of the HMA by improving the community's access to key social, retail and educational infrastructure.
Regional Transport Enhancements	M	M	H	M	Connections to port, airport, state significant strategic employment lands and major centres resulting in improved traffic flows and reducing travel delays will, in turn, improve productivity for freight and people moving within the metropolitan core.
Adamstown Rail Level Crossing (Planning Phase)	H	M	H	H	Adamstown level crossing epitomises HMA freight/residential transport conflicts. Improvements to the level crossing will reduce freight haulage time through Newcastle, reduce disruption, delays, risk and travel times for residential communities and improve the operational efficiency of the road network. It is in line with national safety standards and will reduce noise impacts for residential communities associated with existing deceleration and acceleration of freight trains. It is a high priority community and governance issue.
Lower Hunter Freight Corridor (Planning Phase & Reservation)	H	M	H	M	This project is fundamentally focused on the productivity and growth capacity of the HMA but generates social benefits for communities on the existing freight line, enhances the living environments of these communities and reduces lost time, risk and capacity constraints associated with the current Sydney-Brisbane freight haulage route.
Priority recommendations arising from Lower Hunter Water Plan	H	H	H	H	Securing a potable and industrial water supply for the HMA is fundamentally important for the security and growth of industry, the community's quality of life, sustainability and efficiency of the urban footprint. The HMA has long marketed its reliable and high quality water supply to residents, governments and business and it is a fundamental plank to support future growth.
New hospital in Maitland Growth Corridor	M	M	H	H	The new hospital at Metford will respond to the emerging growth patterns and population increase in the HMA. It supports a more productive and liveable community.

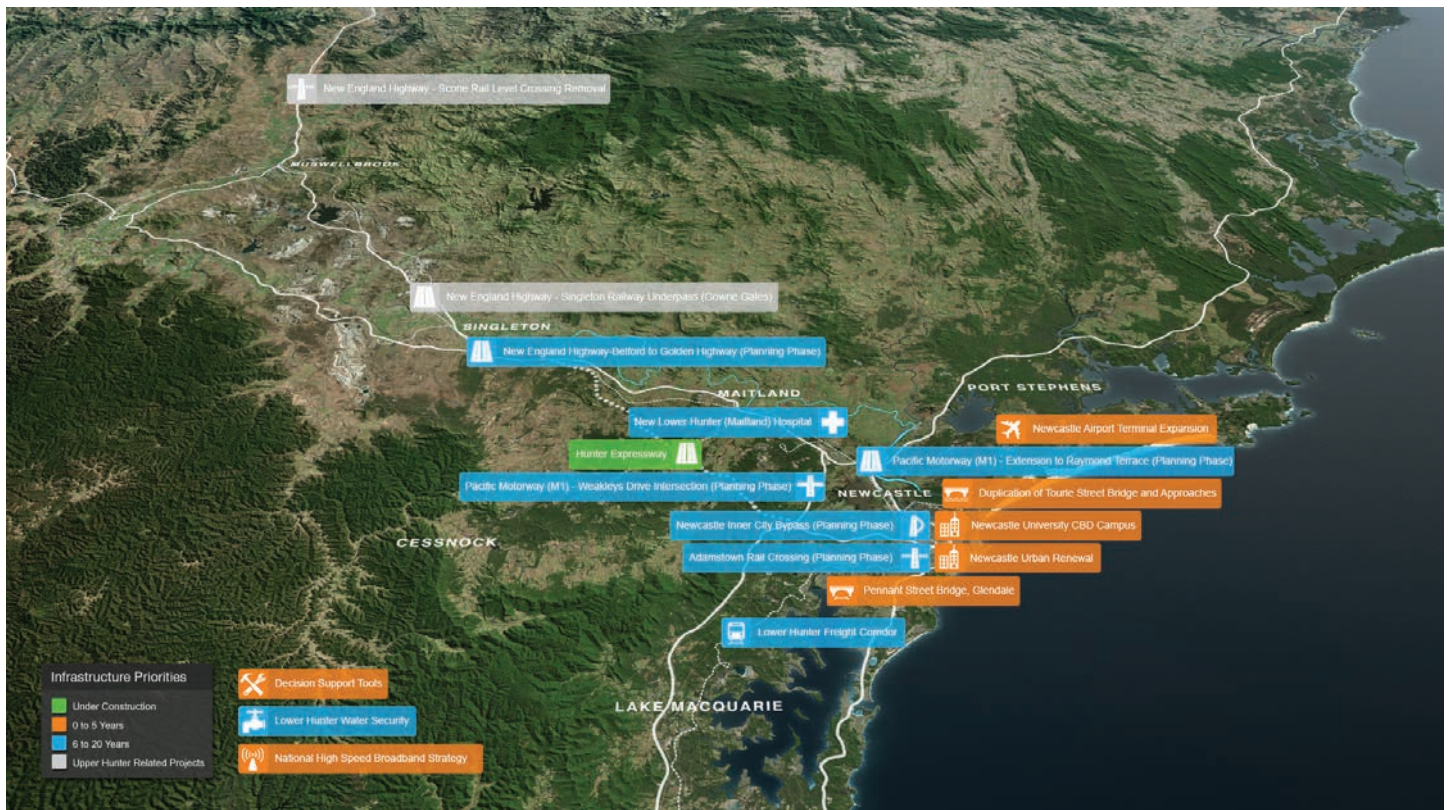
H=High M=Medium

Hunter Strategic Infrastructure Plan – Visual Summary

Line of Sight	Plan Hierarchy and Interaction in the Region			
National			Infrastructure Australia National Infrastructure Strategies	Identification of and funding for nation building infrastructure planning and construction priorities. Delivery by or on behalf of the Commonwealth Government.
State		NSW 2021	State Infrastructure Strategy	Identification of and funding for State infrastructure planning and construction priorities. Project funding may be for planning or construction. Delivery by or on behalf of the State Government.
Regional		Regional Strategies Hunter Region Action Plan	Hunter Region Infrastructure Plans	Identification of regional infrastructure planning and construction priorities suitable for funding by State and/or Commonwealth Government. Delivery by or on behalf of the State and/or Commonwealth Government.
Local		Community Strategic Plans	Hunter LGA Infrastructure Strategies	Identification, funding and delivery of local infrastructure priorities by local government. State and/or Commonwealth Government subject to grant funding arrangements.

This table illustrates the line of sight and relationships between all three tiers of government in respect to infrastructure provision in the Hunter Metropolitan Area.

Strategic Infrastructure Plan



Source: Hunter Development Corporation (<http://www.hunterinfrastructureplan.com.au>)

The above illustrates the key strategic corridors and spatial relationships in respect to infrastructure planning, a more detailed picture of existing and emerging strategic linkages within the Hunter and a suggested overall strategic infrastructure plan for the region, including priority infrastructure projects.

A Snapshot of the Hunter Metropolitan Area

- The region is home to the Darkinjung, Awabakal, Wonnarua and Worimi Aboriginal people.
- Covers an area of 4,291 square kilometres, approximately 160km north of Sydney.
- Seventh largest city in Australia and second largest city in NSW.
- The Hunter Metropolitan Area (HMA) accommodates 7.5% of the state's population and about 2.4% of the nation's population.
- The HMA (Lower Hunter) population in 2011 was approximately 540,000 people – up from 444,900 in 1991 and 490,000 in 2001 (Estimated Residential Population).
- HMA annual growth of about 4,500 people per annum for the period 1991 to 2001, increasing to almost 5,000 per annum for the period 2001 to 2011.
- In 2011/12 the Hunter Region contributed \$36.9 billion – more than 8% of Gross State Product and 2.6% of GDP.
- Hunter Valley Coal Chain is a key element of the economy.
- Largest coal export port in the world.
- Mining is highest share of value-add to Hunter Regional economy at 17%.
- Hunter coal production has grown 76% since 2002.
- Newcastle Port exported 108M tonnes of coal valued at \$13.5 billion in 2010/11. In 2011/12, total coal production from around the Hunter was around 136 million tonnes per annum (Mtpa), of which some 121Mtpa was exported through the Port of Newcastle.
- Heavy reliance on private motor vehicles for transport with 2.1 million trips generated daily in Newcastle – 80% private motor car and 4% public transport.
- Road traffic in HMA forecast to grow by up to 4.1% per annum (Hyder, 2009).
- HMA residents have higher car ownership than Sydneysiders, averaging 1.7 vehicles per household compared to 1.5.
- Public transport usage is much lower than in Sydney.
- 550 truck trips per day across the Newcastle LGA are attributed to supporting coal mining.
- HMA characterised by spatial dispersal – scattered urban settlements ringing the Hunter River and its floodplain, Lake Macquarie and Port Stephens which contributes to infrastructure costs.
- Maitland is fastest growing LGA – population growth 2.7% per annum, employment growth 5.2% per annum.
- In 2002 the unemployment rate in the Hunter was approximately 7.5% compared to the NSW average of 7% (HVRF). By 2012, it had fallen to approximately 4% in the Hunter compared to 5% in NSW (SGS 2012).
- Although unemployment levels are currently below the state average and unemployment in the Upper Hunter is extremely low, this is a recent phenomenon.
- The University of Newcastle has more than 40,000 students and is internationally recognised for its research in the fields of health, science, energy and environment.
- Regional educational attainment is low and lags behind the NSW average in terms of Year 12 retention rates and qualifications at diploma level and above.
- Most Hunter LGAs have a degree of socioeconomic disadvantage. Health data shows reduced life expectancy and higher rates of chronic diseases are evident in some parts of the Hunter.

CHAPTER 1.

INTRODUCTION AND METHODOLOGY SETTING THE SCENE

Maitland City Council (on behalf of Hunter Councils Inc.), in collaboration with Hunter Development Corporation (HDC) and the NSW Department of Planning & Infrastructure (DP&I), has prepared the Hunter Strategic Infrastructure Plan (HSIP). A Project Control Group (PCG) involving Infrastructure NSW (INSW), NSW Trade and Investment (NSWT&I), Regional Development Australia Hunter (RDAH), NSW Treasury, Department of Premier and Cabinet (DP&C) and the Commonwealth Department of Infrastructure and Transport (DoIT) has provided additional consultation resources. Specialist Geographical Information System (GIS) support has been provided by Hunter Water Corporation (HWC)/Hunter Water Australia (HWA), Ausgrid and consultants, GHD.

This plan sets out short and medium-to-long term infrastructure priorities in the Hunter Metropolitan Area (HMA) based on 0 to 5 year and 6 to 20 year increments for consideration in strategic land use plans and sectoral plans for New South Wales. For consistency, this plan adopts the INSW Infrastructure Capability Assessment (ICA) definitions and process (refer to Appendices A and B) and applies the framework to the appraisal of regional infrastructure (Infrastructure NSW 2012). Figure 1 illustrates the framework.

Figure 1 Infrastructure Capability Assessment summary

Infrastructure NSW guiding principles	Analysis	Options assessment	Options sequencing	State Infrastructure Strategy
<ul style="list-style-type: none"> Incremental improvements Investing in NSWs' strengths Affordability and fiscal responsibility 	<ul style="list-style-type: none"> Macro-economics challenges and trends Capability assessment Gap analysis 	<ul style="list-style-type: none"> Strategic <ul style="list-style-type: none"> - connectivity? - a better life? - resilience? Economic <ul style="list-style-type: none"> - are benefits in excess of costs? Risk <ul style="list-style-type: none"> - can delivery be adequately managed? 	<ul style="list-style-type: none"> Immediate 0-5 years Planning for growth and longer term vision 6-20 years 	<ul style="list-style-type: none"> Specific investment and reform recommendations Value for money Funding Private and public provision Assurance and delivery

The terms of reference for the plan are broad and have included general descriptions for the plan to “identify economic, social and environmental objectives; identification of deficiencies in the Lower Hunter’s infrastructure; an assessment of options available to deal with those identified deficiencies; and identification of projects that will deal with those identified deficiencies”.

This plan represents the first unified assessment of regional and subregional infrastructure in the HMA. It considers both qualitative and quantitative inputs based on best available data. Importantly, while the focus of this plan is the HMA, it treats the entire Hunter Region as one interdependent infrastructure system. The HSIP provides a consolidated regional resource and reference document and outlines a suggested blueprint for integrated regional infrastructure provision in the HMA.

HSIP Goals

The specific goals of the HSIP are to:

- develop a comprehensive, integrated and credible 20-year infrastructure plan for the HMA;
- provide infrastructure input into the current review of regional land use strategies;
- integrate qualitative and quantitative analysis of infrastructure on a regional scale;
- formulate a staging and sequencing plan based on 0–5 year and 6–20 year increments optimising land use and infrastructure considerations; and
- demonstrate the case for an ongoing program of systematic data collection, analysis and reporting on regional infrastructure capacity and capability progressively linked to regional economic modelling.

HSIP Objectives and Targets

The HSIP seeks to ensure the HMA has an infrastructure platform that underpins and supports:

- a cost effective and competitive coal export industry as a continued driver of growth;
- a diversified and sustainable economy offering employment choice;
- an attractive investment opportunity for the private sector across a range of market sectors;
- minimal internal travels times;
- well-located, serviced, affordable and connected employment centres and business/industrial lands;
- affordable and efficient residential land supply for growth;
- communities with access to jobs, education, health, social and recreational facilities;
- well-protected and maintained open spaces and natural environments;
- strong and efficient connections to national and global markets and services; and
- a clear sense of identity, purpose and future.

To achieve these outcomes/objectives the HSIP has identified the following strategic infrastructure targets:

- effective east–west and north–south transport corridors to support growth and investment;
- efficient and effective connections to key nodes and facilities;
- improved national and global connections;
- adequate supply of fit-for-purpose social infrastructure, including education and health;
- greater internal connectivity and access; and
- identified growth corridors with clear sequencing strategies for investment.

Key Issues and Opportunities

The HSIP has identified the key issues, pinch points and opportunities for improvement which need to be addressed to achieve these outcomes/objectives. These include:

- passenger servicing limitations at Newcastle Airport to accommodate continued growth in both passenger and freight markets while maintaining critical defence operations, N.B., this is about on-ground facilities, not airspace capacity;
- transport access constraints between Newcastle Airport and key regional markets and business clusters;
- inadequate growth capacity in the existing road and rail access network into the port;
- the ongoing utility and availability of port related land;
- ensuring adequate capacity of port infrastructure;
- effectiveness and efficiency of east–west road and freight rail connections;
- effectiveness and efficiency of north–south road connections;
- connectivity restrictions, conflicts and congestion impacting on the liveability and productivity of the urban area such as at Adamstown and Charlestown;
- underutilisation of public and private sector investment in infrastructure impacting on affordability and sustainability;
- significant areas of zoned land (industrial and residential) unable to be economically serviced and developed within reasonable timeframes;
- adequate provision of health and education facilities to meet population projections to 2036; and
- the need for more innovative and risk-sharing funding mechanisms to deliver infrastructure in a timely manner.

Why Do We Need This Plan?

Infrastructure provides the critical arteries that sustain economic growth, underpinning the productivity, sustainability and liveability of the Hunter. Friction and delays associated with infrastructure provision reduce efficiency, stymie productive capacity and progressively erode the competitive advantages of the region.

Put simply the HMA needs the right infrastructure, providing the optimal capacity and reliability, delivered at the right time and at least cost.

Given the substantial public and private investment and risk associated with infrastructure provision, all stakeholders are increasingly demanding streamlined, evidence-based, predictable and integrated infrastructure planning and delivery processes. This requires a systems or network view to better understand critical supply chains and services that underpin the region by:

- identifying deficiencies in the region's infrastructure;
- assessing options available to deal with those identified deficiencies; and, importantly,
- identifying projects that will deal with those identified deficiencies.

The infrastructure landscape is influenced by multiple interdependent inputs including, but not limited to: land use, population/demographics, market factors, environmental, finance and time considerations.

The HMA is characterised by an extensive geographical area with an historic settlement pattern that comprises multiple development fronts. Providing essential infrastructure to service and support existing and emerging residential and employment lands is proving increasingly challenging and costly for infrastructure agencies.

This situation has been exacerbated by the absence of an agreed staging and sequencing plan for essential infrastructure. A plan is needed to provide predictable signals for the public and private sectors and the community at large, to guide significant and strategic investments in the HMA based on 0-5 year and 6-20 year increments.

The HSIP makes a positive contribution toward the efficient and effective integration of land use and infrastructure planning in the HMA by strengthening regional relationships and strategic alignment across local, state and federal governments in the Hunter. In addition, it conclusively demonstrates the case for an ongoing program of systematic data collection, analysis and reporting on regional infrastructure capacity and capability. Accordingly the HSIP provides a key input into the current review of regional planning strategies.

Study Area

The study area covers the Lower Hunter Region which is described throughout this report as the HMA. It comprises the five Local Government Areas of Newcastle, Lake Macquarie, Port Stephens, Maitland and Cessnock (see Figure 2). Contextually the HMA interacts with the immediately adjoining Central Coast, Mid North Coast and the Upper Hunter as well as the nearby Central West, North Western, North Coast and New England regions.

The Hunter is the largest regional area in Australia and is the nation's 7th largest city/region. It is located approximately 160km to the north of Sydney and is situated on major transport links servicing the east coast of Australia. The HMA is also favourably located in respect to major connections to the rest of NSW.

In economic terms the Hunter is the largest regional area in Australia with a Gross Regional Product (GRP) valued at \$36.9 billion (B) (Deloitte Access Economics 2013). With a GRP predicted to be \$64.8B by 2036 (an increase of 75%) the Hunter is an important contributor to the state and national economies (Deloitte Access Economics 2013).

Figure 2 Study Area

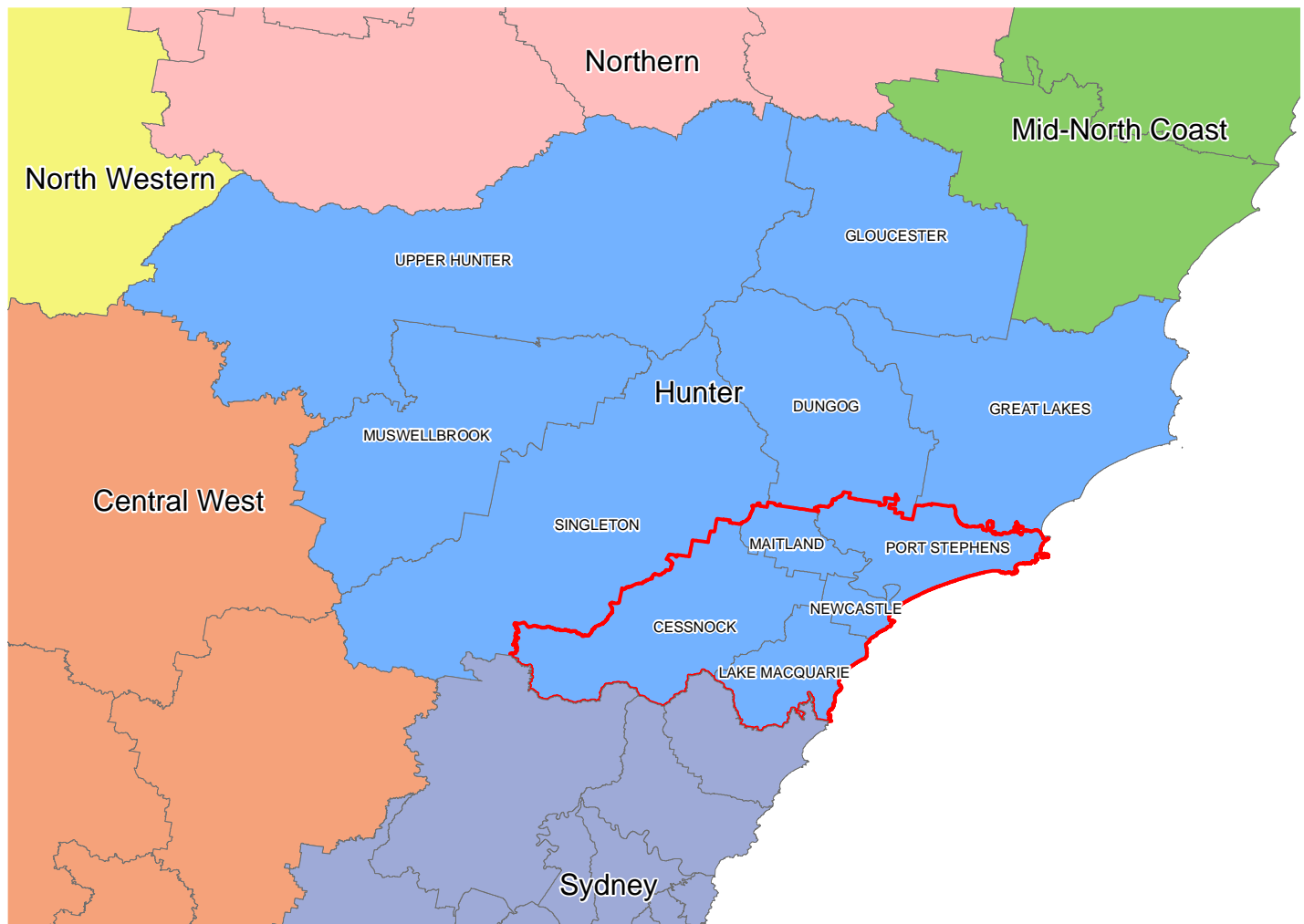
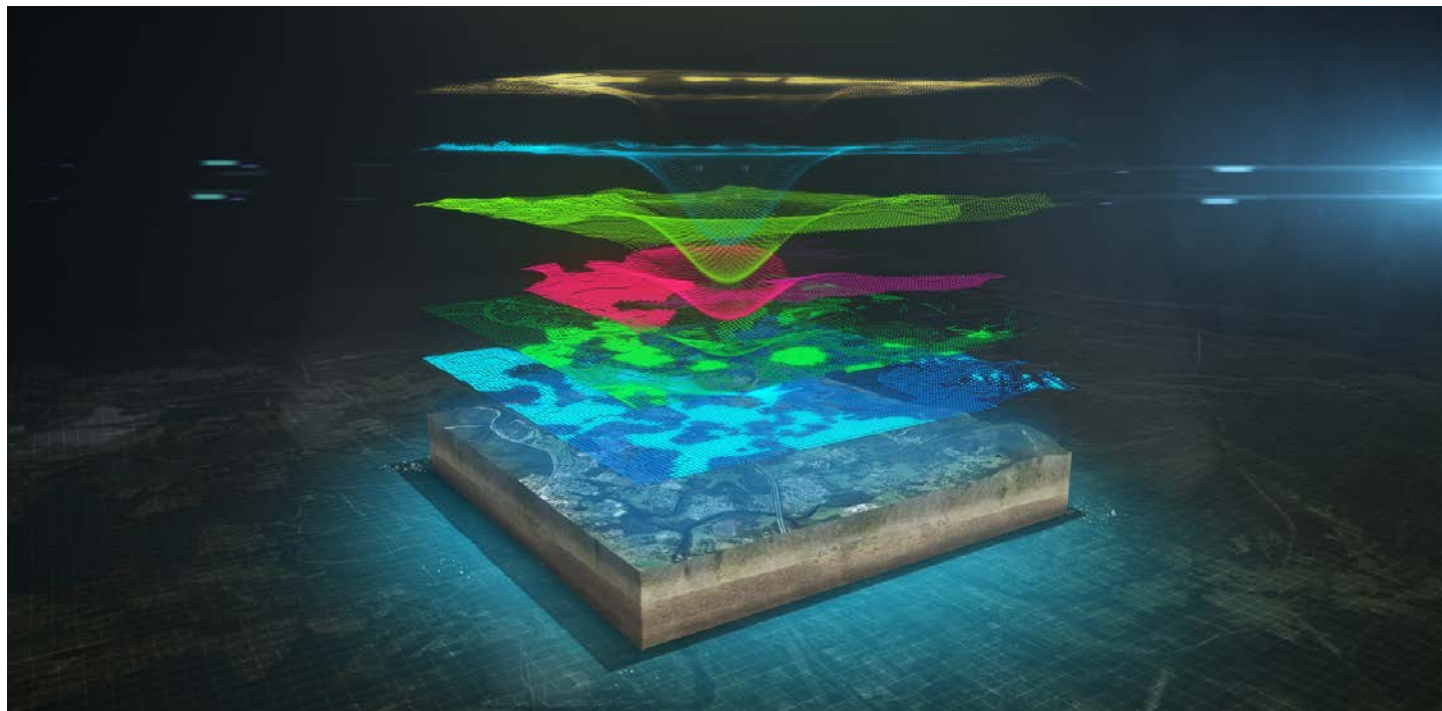


Figure 3 Representation of Infrastructure Data Layers Comprising Integrated Infrastructure Planning Tool



Source: Hunter Development Corporation (<http://www.hunterinfrastructureplan.com.au>)

Qualitative Assessment – Agency Consultation

A comprehensive agency consultation process was undertaken in 2012 to assist in the formation of this plan. This consultation included a qualitative survey involving key government agencies and, in most cases, was then followed up by face-to-face interviews. This consultation, in addition to extensive research into Commonwealth and State Government plans, sectoral plans, and funding submissions, has guided this plan.

The following key challenges have been identified as generally applying to all infrastructure sectors to varying degrees:

- regulatory uncertainty;
- sequencing of development;
- funding of capital works/competing priorities;
- customer needs, willingness/ability to pay; and
- planning and decision making complexity.

These issues are considered in more detail in Chapter 4 of this report.

Quantitative Assessment

An integrated quantitative assessment tool called the Integrated Infrastructure Planning Tool (IIPT) has been developed in collaboration with government agencies and infrastructure providers to better understand infrastructure capacity and capability in the region.

The IIPT is a purpose-built, regional scale Geographical Information System (GIS) which examines relationships across:

- land use,
- water,
- power, and
- ecological sensitivity

and has scoped mine subsidence and market dynamics as they impact upon infrastructure provision and, consequently, development.

The IIPT assembles and spatially integrates available data to identify the most logical and efficient areas for growth in the HMA based on infrastructure cost.

The IIPT is being progressively developed and refined to simultaneously consider the feasibility/revenue side.

This results in the first major step toward achieving the objectives of:

- supporting the affordable delivery of development;
- promoting sustainable and efficient growth; and
- encouraging efficient investment in infrastructure.

The IIPT generates a “heat map” of infrastructure provision across the region based on the capacity and cost, conditioned by other sustainability factors (see Figure 3). It will be a tool to help infrastructure decision making, funding, land use planning and infrastructure provision across the HMA.

Stage 2 of the IIPT development includes building a market layer and potentially developing a user interface. Infrastructure insights derived from the IIPT Stage 1 analysis are considered in Chapter 4.

Regional Economic Model

Following extensive desktop analysis, this plan identified a need to establish a regional baseline to better understand employment dynamics of the mining sector given its importance to the regional economy. National and state data is generally available through reliable sources such as the ABS and more recent reports by the Reserve Bank of Australia (Reserve Bank of Australia 2013). To address the gap and avoid future ad hoc reviews reacting to the boom and bust characteristics of this sector the Hunter Valley Research Foundation (HVRF), in association with Monash University, was commissioned to prepare a Regional Economic Model using the industry recognised “The Enormous Regional Model” (TERM). The study examined a production profile of mining in the Hunter to determine the mining sector contribution to employment. The preliminary outputs from this analysis are considered in Chapter 3.

Key Assumptions of the HSIP

This plan is based on information provided by infrastructure agencies as at the date of collection and is subject to routine review and updates. This plan adopts population, demographic and land use inputs from the current regional strategies and contemporary updates where available.

The HSIP is a part Commonwealth-funded plan responding to the Council of Australian Governments (COAG) Major Cities Agenda focussing on productivity, sustainability and liveability (Commonwealth Department of Infrastructure and Transport 2011). This 20-year plan considers the HMA which, collectively, is identified as one of 18 major cities in Australia. The plan also considers the wider Hunter Region on a contextual basis where relevant.

The HSIP considers the economic, social and environmental forces that influence and shape the regional landscape with a specific focus on infrastructure planning and implementation at the regional and subregional scale.

In essence, the HSIP considers the relationships and processes influencing people and productivity in the HMA and analyses the core issues surrounding inputs supporting the HMA's economic drivers and external impacts associated with infrastructure funding, provision and/or operations.

This plan adopts a systems or network approach to identify and understand the key relationships, processes and interdependencies between infrastructure sectors, infrastructure funding organisations, infrastructure users and infrastructure providers as embodied in the IIPT.

The primary objective of this plan is to identify and prioritise economic and social infrastructure where it is needed, at the right time for the least cost. While the plan identifies potential funding sources, it does not specify, commit or allocate funding sources. Timeframes are indicative and subject to budgetary and agency approval processes.

In addition, the HSIP responds to two key priorities of the Australian Government, namely:

1. enhancing productivity, sustainability and liveability through the Liveable Cities Program; and
2. supporting initiatives targeting mining affected regions and communities through the Regional Infrastructure Fund (RIF) which specifically targets the Hunter.

Therefore, the process of infrastructure planning and provision is complex. National, state and local governments all play vital roles. Within each level of government, there are a number of specialist agencies, ranging from the big picture scene setters – such as Infrastructure NSW (INSW) and Department of Planning and Infrastructure (DP&I) – through to service delivery agencies such as Transport for NSW (TfNSW), health and education departments and water authorities. Each of these delivery agencies also undertakes strategic planning exercises to determine regional needs.

It is not the job of the HSIP to replicate or second guess the outcome of all these processes. Instead, this plan seeks to achieve the following:

1. Set major infrastructure issues in the context of the COAG Major Cities Agenda and the NSW Government's program of reform which includes reform of the overarching planning system through the White Paper (NSW Department of Planning and Infrastructure 2013) and the development of state infrastructure plans and state and regional transport plans.
2. Assess some issues which are particularly important in the Hunter, e.g., resource development and some of the specific Hunter spatial characteristics, to ensure the various infrastructure planning and delivery processes take appropriate account of these characteristics.
3. Identify and promote specific infrastructure initiatives that flow from consideration of (1) and (2).
4. Establish a soundly-structured process with formal review in 2015 to ensure these macro reforms and the HSIP guide the desired, on the ground benefits and reinforce the HMA's contribution to national and NSW productivity, sustainability and liveability outcomes.

This HSIP focuses on major regional and subregional infrastructure needs and priorities and outlines potential known funding opportunities and considerations. It draws on the conclusions of the NSW Government's State Infrastructure Strategy and NSW Long Term Transport Master Plan. It does not set out to replicate the routine decisions flowing from the asset management plans of infrastructure providers such as the transport and education departments, energy distributors and water authorities where there are established asset planning and management practices. In these cases the important thing is to ensure the major regional scale assets are in place and they are consistent with the aspects of planning policy, in particular land use planning. Similarly, local infrastructure issues such as cultural, sporting and entertainment facilities and cycleways are not considered within the scope of this plan.

The HSIP also notes that while tertiary education is generally a Commonwealth responsibility the plan identifies the University of Newcastle's new city campus as a key catalyst project supporting a suite of urban renewal initiatives.

This plan notes and supports existing strategies for Newcastle Port and Newcastle Airport and refers only to strategic linkages to the national freight network and urban centres. These issues, including operational issues specific to the Hunter, will be considered as part of the Hunter Transport Plan anticipated to be released late 2013.

In the case of urban water supply the Lower Hunter Water Plan is in an advanced stage of completion. Accordingly the HSIP simply notes the issue of water security is being addressed by a separate process. In respect to waste water, this is considered an operational matter responding to actual demand. Similarly the adequacy of future power generation is a national and state issue which is not specific to the HMA and is not addressed in this plan.






The HSIP does not set out a strategy for the provision of infrastructure at the local level. This is seen as the responsibility of local government. The HSIP takes the regional perspective which has historically been missing. The Lower Hunter Regional Strategy (LHRS) provided a list of required regional infrastructure in an appendix but failed to provide any coherent strategy for the rationale behind the need for this infrastructure or a sequenced delivery strategy. The HSIP seeks to fill this void and provide valuable input into the revision of the LHRS which is currently underway.

CHAPTER 2.

CONTEXT

WHAT DO WE NEED TO CONSIDER?

Figure 4 Line of Sight

Line of Sight	Plan Hierarchy and Interaction in the Region			
National			Infrastructure Australia National Infrastructure Strategies	Identification of and funding for nation building infrastructure planning and construction priorities. Delivery by or on behalf of the Commonwealth Government.
State		NSW 2021	State Infrastructure Strategy	Identification of and funding for State infrastructure planning and construction priorities. Project funding may be for planning or construction. Delivery by or on behalf of the State Government.
Regional		Regional Strategies Hunter Region Action Plan	Hunter Region Infrastructure Plans	Identification of regional infrastructure planning and construction priorities suitable for funding by State and/or Commonwealth Government. Delivery by or on behalf of the State and/or Commonwealth Government.
Local		Community Strategic Plans	Hunter LGA Infrastructure Strategies	Identification, funding and delivery of local infrastructure priorities by local government. State and/or Commonwealth Government subject to grant funding arrangements.

Strategic Linkages to Plans and Strategies

The Commonwealth-funded Hunter Economic Infrastructure Plan (HEIP) and the Hunter Strategic Infrastructure Plan (HSIP) address specific terms of reference in respect to the Commonwealth's scope on mining affected communities and the liveable cities agenda.

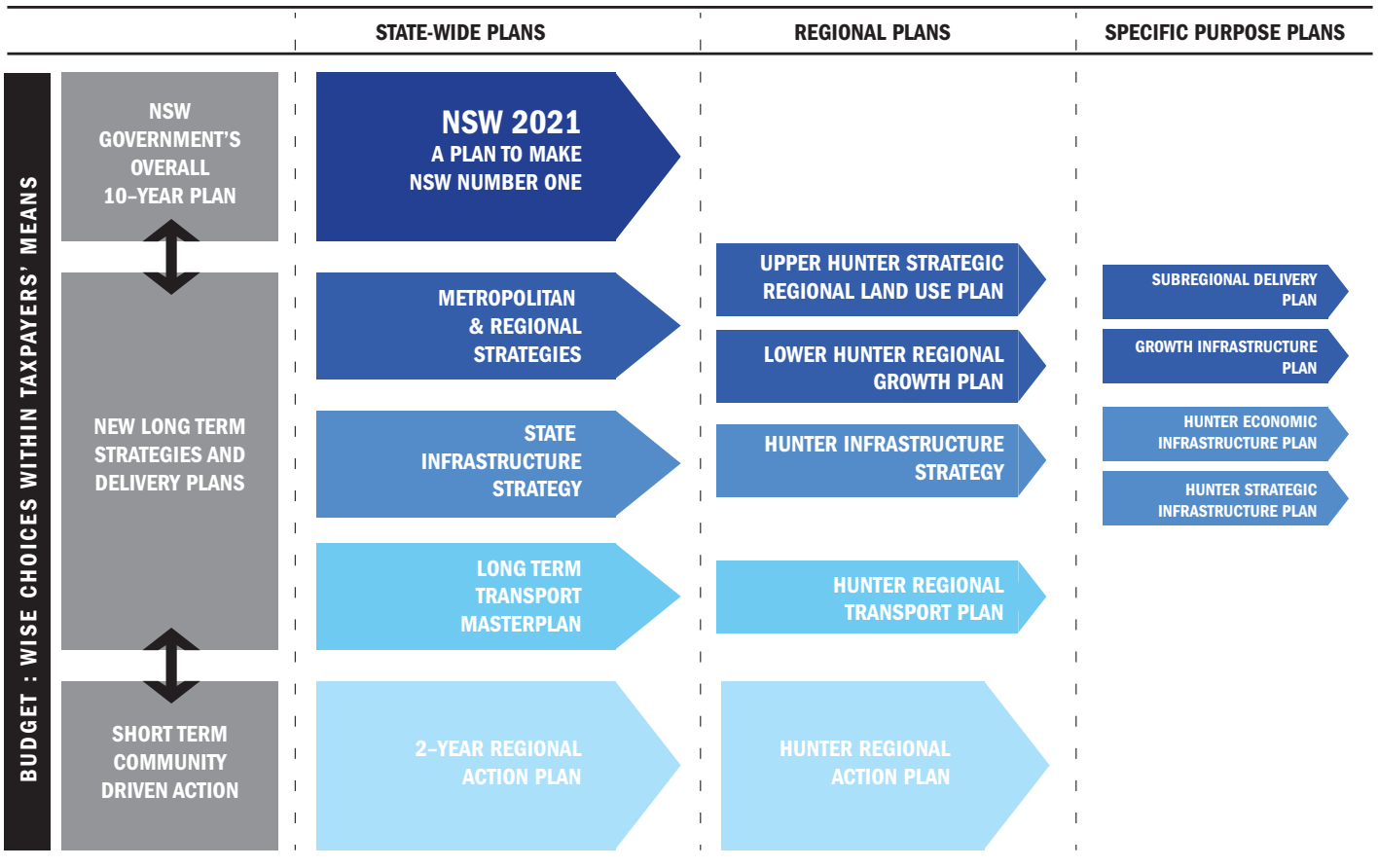
It is intended that the State Government will subsequently produce a Hunter Infrastructure Strategy (HIS) to align a suite of State and Commonwealth planning initiatives in the Hunter which involve the consideration of economic and/or social infrastructure. The HIS will integrate this effort across multiple portfolios and the three tiers of government. Major issues will be addressed in greater detail in individual plans responding to specific terms of reference.

The key plans and relationships are listed and illustrated in Figures 4 and 5 and summarised in Appendix C. These plans include:

- NSW State Plan – NSW 2012;
- State Infrastructure Strategy;
- NSW Long Term Transport Master Plan;
- Hunter Region Action Plan;
- Hunter Infrastructure Strategy;
- Hunter Economic Infrastructure Plan;
- Hunter Transport Plan;
- Regional Growth Plan (proposed in NSW Planning Reforms);
- Regional Land Use Planning Strategies;
- Upper Hunter Strategic Regional Land Use Plan;
- Lower Hunter Regional Strategy (under review);
- Hunter New England Health – Clinical Services Plan;
- Resources for Regions – Economic Assessment of Mining Affected Communities; and
- Mine Subsidence Working Group Strategy.

Figure 5 Levels of Plans

PLAN HIERARCHY – STATE AND REGIONAL PLANS



National Urban Policy

The HSIP has had due regard to the National Urban Policy which was developed by the Commonwealth in association with other levels of government (Commonwealth Department of Infrastructure and Transport 2011). The National Urban Policy has three main goals, namely: Productivity, Sustainability and Liveability. Each of these goals is referred to in the following pages and, where relevant, commentary is provided to demonstrate the contribution which the HSIP can make to the achievement of these goals.

Productivity

- Supporting Education and Research – the Commonwealth and State Governments have announced funding for the establishment of the University of Newcastle campus in the Newcastle city centre. This joint initiative is an excellent example of a project that has the potential to achieve urban renewal and increased productivity goals.
- Increased densities surrounding transport corridors, activity centres and interchanges – the Review of the Lower Hunter Regional Strategy (LHRS) and the draft SEPP for Newcastle Urban Renewal are promoting increased densities in key locations.
- Emphasis on non-car transport options – there is significant potential for increasing the attractiveness of other forms of transport in the HMA given the heavy reliance on private vehicles for the vast majority of trips generated

- Integration of Land Use Planning and Infrastructure Planning – the review of the LHRS will be informed by the HSIP in terms of infrastructure provision.
- Returns on investments in infrastructure to be assessed using triple bottom line accounting – the HSIP has taken a holistic approach in assessing the benefits of proposed infrastructure and highlights social and environmental issues as well as economic considerations.
- Improving digital connectivity through the rollout of the broadband network – this rollout is taking place in various suburbs throughout the HMA.

Sustainability

- Protection of natural/built environments including building water/energy/waste efficiencies into future urban development.
- Increasing resilience to climate change by ensuring new infrastructure considers siting and design.
- Considers affordability as an indicator of sustainability.

Liveability

- Balancing infill and greenfield development – the HSIP is focused on providing infrastructure to support both infill and greenfield developments.
- Improving public health outcomes – upgrading transport infrastructure will allow efficiencies to be achieved and some existing urban areas to be bypassed which will reduce stress and travel times and improve air quality for some HMA residents.
- Improving the quality of the public domain – new and upgraded infrastructure will be designed to meet community expectations in terms of visual impact and aesthetics.

Macro Planning Issues

This plan needs to consider a range of macro planning issues and drivers operating at the national scale guiding policy within the infrastructure space. These issues are identified in the following pages and provide context for Chapter 3 which addresses issues specific to the HMA.

The Economics of an Ageing Population

The Intergenerational Report prepared by the Commonwealth Government (Commonwealth Treasury 2010) documents the challenges facing the national economy over the next 40 years, particularly in light of the ageing Australian population. This report highlights three key challenges which are likely to present themselves, namely:

- slower economic growth as participation in the labour force declines as baby boomers retire;
- government expenditures will increase significantly in areas like health and social welfare as the population ages; and
- labour shortages will be evident, particularly in the medical profession and related service industries.

In response the Commonwealth Government is proposing a three-pronged approach to addressing these challenges (Commonwealth Treasury 2010) which comprises increasing:

- productivity;
- participation in the labour force; and
- population.

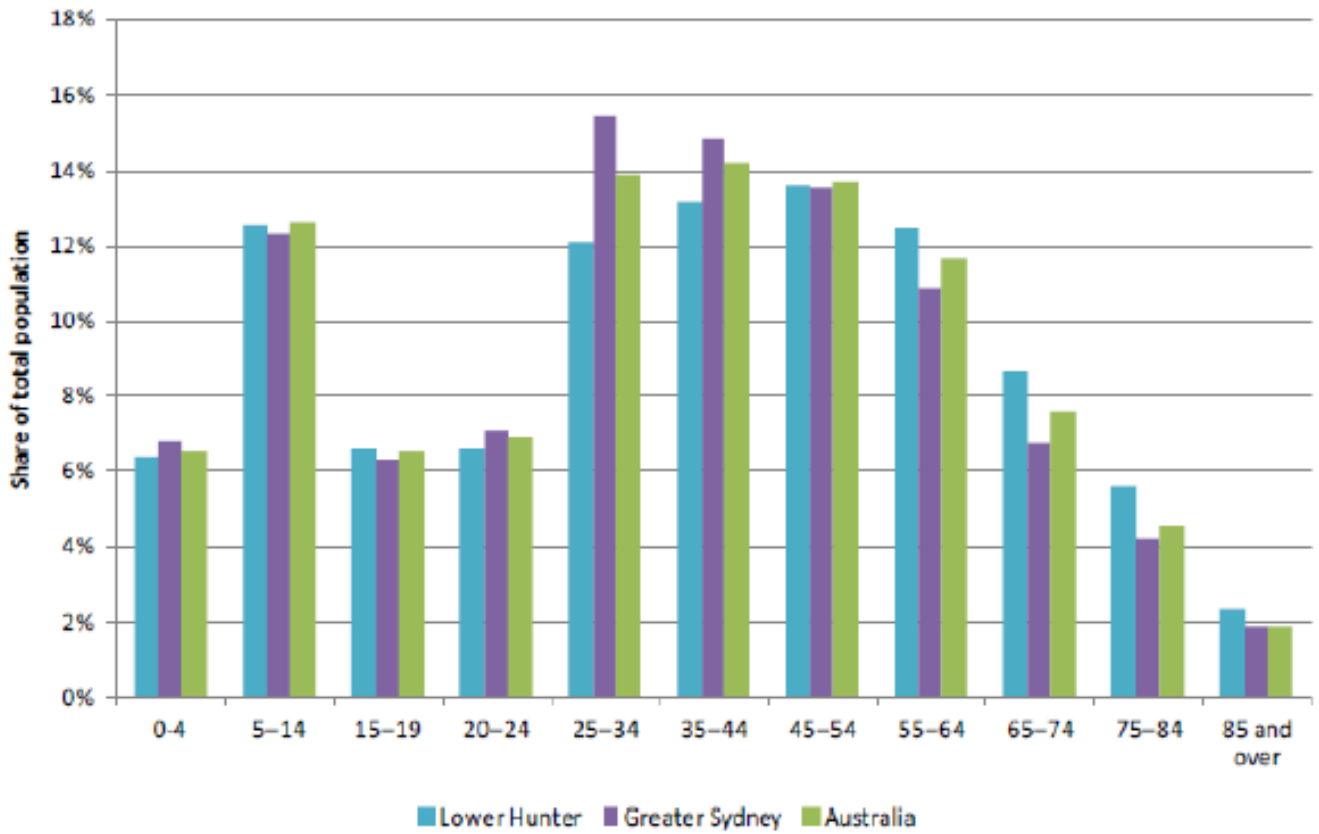
Figure 6 shows the HMA has a larger percentage of residents over the age of 55 than the national average and the Greater Sydney Metropolitan Region. People aged 65 years and over are the fastest growing age group in Australia and in the HMA. This trend is set to continue as the population ages and this is particularly the case in the HMA as illustrated in Figure 7. There is a trend for people to move away from regional areas to the coast and this can have a dramatic impact on age structure of coastal communities.

A concentration of elderly people places additional demands, especially for health care facilities. This is reflected in the dependency ratio for the HMA. By 2036 the dependency ratio for NSW is projected to be 62.6%. In the HMA and Upper Hunter, this ratio is expected to be 74.6% and 87.8% respectively by 2036.

The ageing of the population in the Hunter is likely to have direct economic implications as set out below (Deloitte Access Economics):

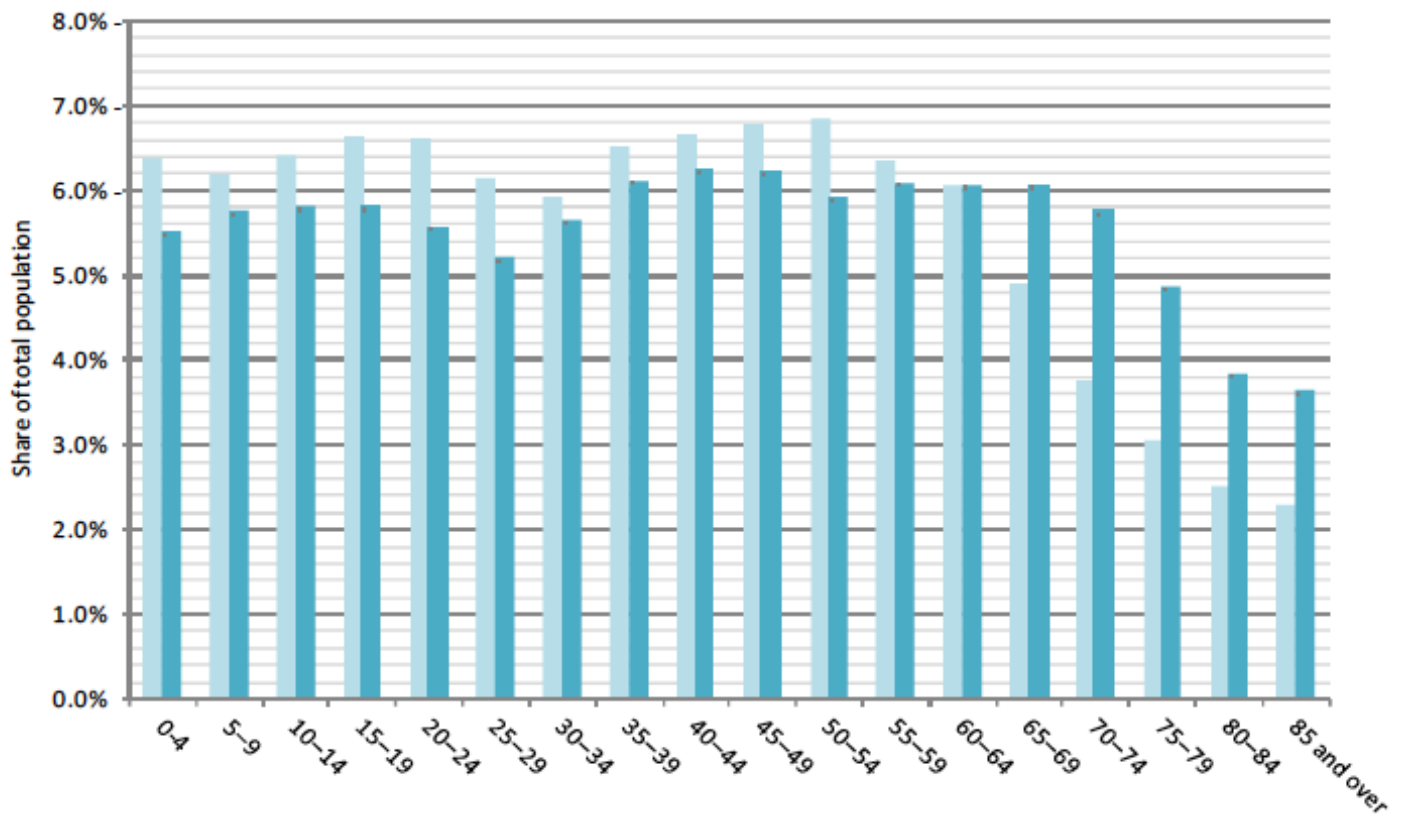
1. As skilled workers retire there could be a significant skill shortage which will impact on the productivity of the economy.
2. The demand for goods and services will change as the population ages. For example, there is likely to be greater demand for financial products, recreational services, health care products, etc.
3. Demand for health care facilities and aged care facilities are likely to dramatically increase.

Figure 6 HMA Age Profile in the HMA, Greater Sydney and Australia 2011



Source: SGS 2012

Figure 7 HMA Age Profile Projection, 2012 and 2036



Source: SGS 2012

The Link Between Population Growth and the Economy

Infrastructure has a key role to play in assisting to drive improvements in productivity. However, even if gains are made in the productivity and labour force participation, these gains could be eroded if the population growth which is sought is not achieved. The Hunter has traditionally accommodated approximately 3% of Australia's population. If this proportion of the nation's population continues to live in the Hunter, over the next 20 years the Hunter's population could be expected to increase by 215,000 (Hunter Valley Research Foundation 2011). This equates to an annual population increase of 10,250 compared to the average population increase between 1999 and 2009 of 7,105 per annum. The vast majority of this growth could be expected to take place in the HMA.

The HVRF has documented research which suggests the major Australian cities of Sydney, Melbourne, Brisbane, Perth and Adelaide generate negative externalities which cannot be overcome with additional population growth. In contrast, medium-sized Australian cities like HMA can accommodate population growth without the same negative externalities as larger cities and, therefore, have the potential to make a far greater contribution to national productivity and wellbeing.

Some of the reasons in support of seeking a substantial increase in the population of the HMA include:

- relieving employment pressures – particularly as baby boomers retire and leave the workforce;
- housing affordability – additional people can be housed more economically in the HMA than in many areas in Sydney and other regional areas, e.g., Wollongong; and
- lifestyle attributes – e.g., the standard of living and access to natural areas and man-made amenities and facilities in the HMA are superior to many areas in Sydney.

With increased population comes additional economic activity as the new residents generate demand for a wide range of goods and services. The relationship between economic growth and population growth is well understood and accepted.

Stimulating Housing Delivery

The HMA faces a number of challenges that impact the supply and affordability of new housing, including impacts on the HMA's biodiversity, economic considerations and the delivery of new infrastructure. One of the major impacts since the release of the 2006 Lower Hunter Regional Strategy has been the Global Financial Crisis (GFC) and subsequent difficulties for the land and property development sectors in securing finance for commercially viable projects. The ongoing uncertain financial environment continues to work against efforts to encourage more housing and jobs into the HMA's major centres.

The rate of production of new housing nationally and in NSW declined significantly during the GFC. The National Housing Supply Council confirmed the nationwide net dwelling supply gap has increased from 23,400 dwellings in 2002 to 178,400

dwellings in 2009. In the HMA, dwelling construction fell in the GFC from the all-time highs of the period 2002 to 2005 when around 3,500 dwellings were constructed each year to just 1,075 new dwellings in 2007-08. However, housing construction recovered to almost 3,000 new dwellings in 2011 (NSW Department of Planning and Infrastructure 2013). This is still well below the target of 4,600 new dwellings a year established in the LHRS which has never been achieved since the introduction of the LHRS in 2006.

Release area management is one means to stimulate housing delivery and the Department of Planning and Infrastructure is seeking to address this issue by preparing an Urban Development Program (UDP) and Growth Infrastructure Plans (GIPs) to help coordinate service agencies and allow intervention when blockages arise. GIPs are proposed to be introduced as part of the planning reforms underway in NSW and are discussed in further detail under the section on Integrating Land Use and Infrastructure.

Infrastructure and Climate Change

Consideration of the potential impacts of climate change upon infrastructure assets and the need for proactive adaption is an emerging issue for many infrastructure sectors. The location and design of infrastructure must have regard to the likely impacts of climate change and the potential for infrastructure to contribute to global warming. In particular, in coastal areas of the HMA there are concerns being raised about sea level rise, increased storm surge and more frequent and intense storm activity in future and what the consequences of this might be for infrastructure planning and delivery.

This concern was recently addressed when the Commonwealth Government made a grant available under its Coastal Adaption Pathways Initiative to assist seven coastal councils (including Port Stephens, Newcastle and Lake Macquarie) to prepare a handbook to support decision making in vulnerable coastal areas (Commonwealth Department of Climate Change and Energy Efficiency 2013). It applies to existing coastal hazards and those projected to worsen due to climate change. It emphasises there is a need to give careful consideration when making decisions about siting infrastructure in potentially vulnerable areas. During the design phase, regard needs to be given to the likely impacts of climate change. It is important that during the design life of the structure it is not rendered inoperable or suffer a decline in effectiveness/productivity.

Climate change is referred to in the Intergenerational Report (Commonwealth Treasury 2010) as "the defining intergenerational issue of our time." The impacts of climate change will emerge in various ways and will affect both the economy and the environment. As one of the hottest and driest countries on the planet, Australia is likely to suffer severe impacts. Conservative estimates suggest unmitigated climate change would reduce Australia's Gross Domestic Product (GDP) by 8% by 2099 compared to a world without climate change.

There has been closer examination of likely future climate change impacts in the Hunter over recent years. This body of work (Commonwealth Department of Climate Change and Energy Efficiency 2011) predicts that by 2050 we can expect:

- temperatures to rise;
- sea levels to rise;
- rainfall to decrease in winter and increase in summer, impacting flooding behaviour;
- more severe short-term droughts and less severe medium and long-term droughts; and
- changes to fire regimes.

These changes have the potential to impact agriculture, water supply, settlements, employment, infrastructure, natural resources, biodiversity and human health. Adapting to these predicted impacts from climate change will be a priority in order to protect property and infrastructure and maintain economic wellbeing and natural and urban environments.

As part of the Strategic Assessment being completed by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities, investigations are underway into the feasibility of developing a modelling tool to assist in enhancing community resilience to natural hazards. The potential exists to integrate the findings and recommendations contained in the HSIP – including the modelling available through the IIPT – into this work being undertaken by the Commonwealth.

The IIPT tool could also be further refined to add other layers of information, for example, to incorporate climate change modelling work undertaken by Hunter Councils and the impact on infrastructure planning and delivery.

Infrastructure and Biodiversity

One of the critical considerations when designing and assessing the design and siting of new infrastructure in the HMA is the biodiversity value of any vegetation communities on site. In order to compensate for the loss of biodiversity, it is common practice to require offsets to be put in place so projects do not have a negative impact on biodiversity. Biodiversity offsets related to infrastructure projects can add significant cost and create operational constraints, particularly if large areas of vegetation are proposed to be removed, e.g., establishing a new road corridor. The IIPT has a biodiversity layer incorporated in its modelling which has supported the preparation of the HSIP. In making decisions about the location of future urban release areas the IIPT will actively seek to avoid areas with high biodiversity values. Thus the IIPT will guide any investment in new infrastructure away from areas with high biodiversity sensitivity.

Unlike Sydney where the growth centres are formally designated in the south west and north west sectors the HMA does not have the benefit of having urban release areas subject to bio-certification. In order to address this issue the Commonwealth and State Governments have joined together to undertake a Strategic Assessment and work together to prepare a Hunter Region Sustainability Plan (NSW Department of Premier and Cabinet 2013). This plan is due to be finalised late in 2013.

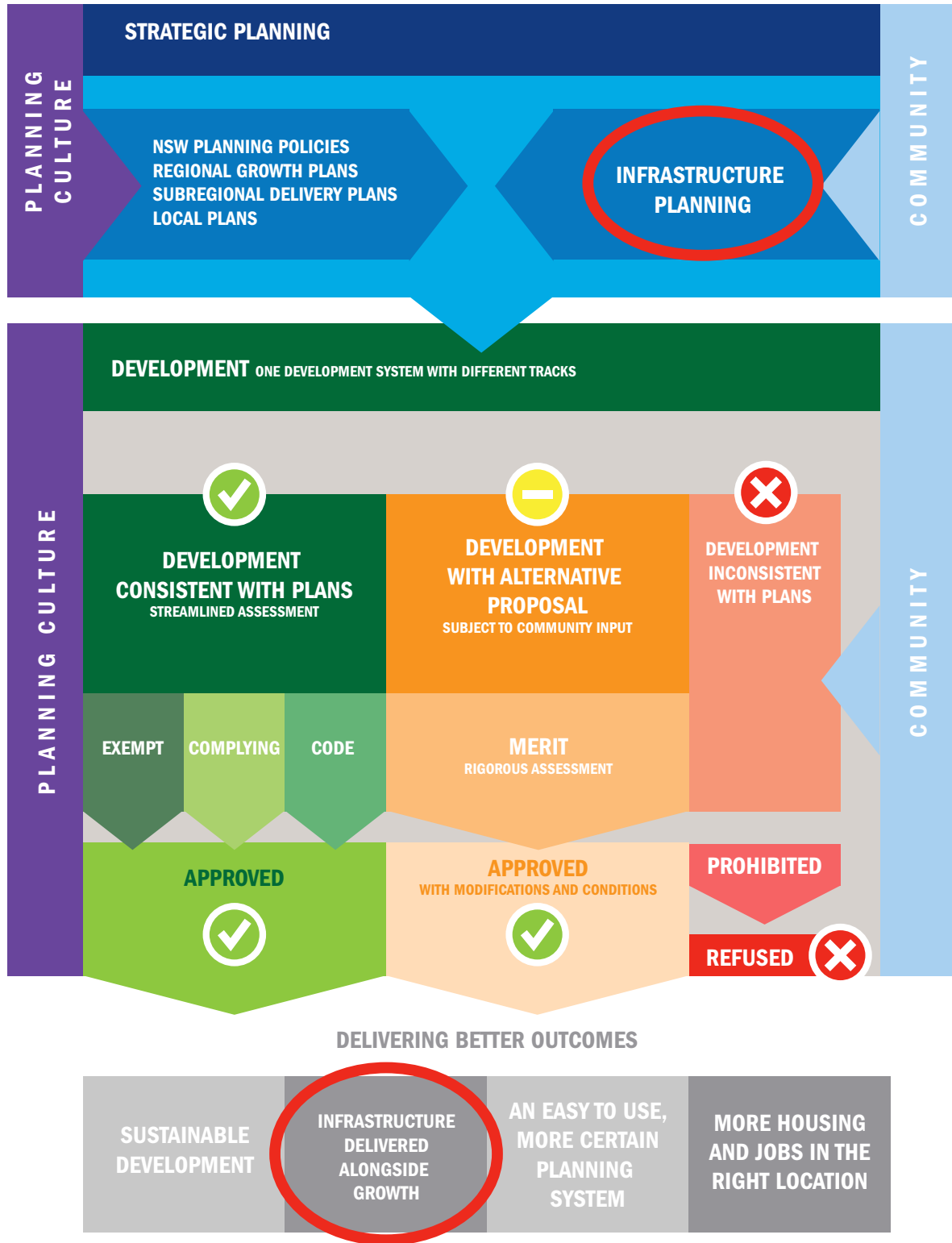
Integrating Land Use and Infrastructure – NSW Planning Reforms

A key emphasis of the NSW planning reforms is to support economic growth and infrastructure provision. Investment in infrastructure is intended to play a prominent role contributing to the realisation of Goal No. 1 of the State Plan 2021 (NSW Department of Premier and Cabinet 2012) which aims to improve the performance of the NSW economy. A key platform of the recently released White Paper is a clear framework to integrated land use planning and infrastructure planning in NSW (NSW Department of Planning and Infrastructure 2013).

Based on this direction, it is anticipated the HSIP can make a positive contribution toward a better understanding of infrastructure issues in the HMA. The NSW Government is currently developing its infrastructure planning approach to support the delivery of planning reforms. While existing strategic infrastructure plans will be the basis for where this begins, agencies will need to be involved in the interactive infrastructure capacity analysis process going forward to be coordinated by the Department of Planning and Infrastructure. Sensitivity analysis will be undertaken to identify how responsive the existing strategic infrastructure plans are to the different growth scenarios at a regional level. Recommendations will then be made to address possible infrastructure shortfalls where identified. It is envisaged a separate infrastructure planning document will be prepared to accompany each Regional Growth Plan (RGP) with the finding in that report explicitly influencing the RGP. It is anticipated these plans will be seen as a priority by the State Government and be in place by 2015.

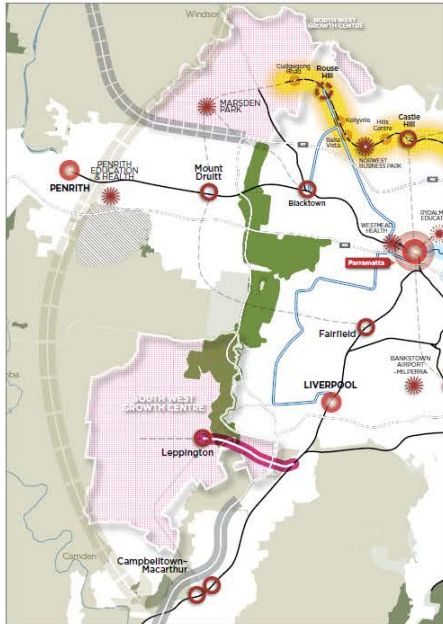
A key element of the Draft Planning Bill accompanying the White Paper is the identification and streamlined process to support the delivery of Public Priority Infrastructure. In addition, an improved approach to the collection and distribution of infrastructure contributions is foreshadowed in the White Paper linking contributions to specified and costed pieces of infrastructure. The Department of Planning and Infrastructure is well advanced in preparing for the implementation of the new planning system from 2014 onwards. The key processes identified in the White Paper relevant to the HSIP are illustrated in Figures 8 and 9 and in Table 1.

Figure 8 The New Planning System Proposed for NSW



Source: NSW Government 2013

Table 1 Integrating Land Use and Infrastructure Planning



METROPOLITAN REGIONAL GROWTH PLANS

National, state and regional infrastructure examples:

- rail
- roads
- energy
- regional water supply
- state and regional roads
- ports
- infrastructure corridors
- hospitals
- universities
- airports

Spatial location of approved government plans for regional, state and national infrastructure (including corridors) — sets out clearly the integration with major employment and housing growth

Indicates existing major infrastructure, including supply chains

Plans include Public Priority Infrastructure projects



SUBREGIONAL DELIVERY PLANS

Subregional infrastructure examples:

Future and existing:

- corridors
- regional road networks
- water and sewerage distribution
- energy distribution
- schools
- regional open space

Spatial location of government plans for regional, state and national infrastructure, including Public Priority Infrastructure—sets out clearly the specific integration with major employment and housing growth in subregions

Highlights the investigation area for future priority infrastructure corridors that are firmly identified

Identifies prospective infrastructure corridors or other forms of infrastructure and directly rezones land where needed

Broad zones for infrastructure corridors to protect priority corridors

Growth Infrastructure Plans to meet subregional service delivery outcomes. These plans will include 10 year infrastructure plans with five year infrastructure plans for approved funded projects.



LOCAL PLANS PART 4 — CONTRIBUTIONS

Local infrastructure examples:

- local open space
- local collector roads
- local drainage
- libraries

Local and regional infrastructure contributions

Source: NSW Government 2013

Figure 9 Strategic Infrastructure Corridors and Regional Growth Plans



Source: NSW Government 2013

The White Paper proposes greater emphasis on strategic planning for communities in terms of desired growth, built form outcomes and infrastructure provision. The White Paper also proposes strategic planning will make greater use of evidenced based planning.

Regional Growth Plans (RGPs) will be prepared by the NSW Government and will provide the strategic basis for planning across the Hunter. They will include housing, employment and environmental targets to be implemented through subregional delivery plans and local plans.

Growth Infrastructure Plans (GIPs) aim to address uncertainty in relation to infrastructure delivery for the growth area under investigation. GIPs will coordinate infrastructure agencies planning, funding and delivery of infrastructure to meet the population growth as identified in the RGP, subregional delivery plans and local plans.

Full details of NSW Planning Reforms and specifically infrastructure provision can be found at https://majorprojects.affinitylive.compublic/307bc552bc2c3e0cf9aceb1cff3fe9ac/White_Paper_Chapter7.pdf.

Funding Infrastructure

In terms of economic and social infrastructure, during 2012 the Commonwealth and State Governments contributed approximately \$2B each (Commonwealth commitments include \$1.5B for the Hunter Expressway with expenditure over multiple years). Of these amounts, about \$1.85B is directed to economic infrastructure (road, rail and the like). This equates to 48% and 52% in percentage terms which is generally consistent with the 50/50 funding agreement. It should be noted the observed cost shared funding between the NSW and Australian Governments fluctuates over time in response to economic cycles, infrastructure priorities and availability of funding.

When considering the cost of infrastructure, it is important to look at the complete lifecycle of infrastructure projects, particularly in respect to maintenance or recurrent expenditure. For example the maintenance expenses across the total NSW asset base comprises about one third of the annual infrastructure spend which compounds on an annual basis.

For this reason, it is critical the right decisions are made in terms of infrastructure that best benefits the community. Even if a project has capital funds available, it may still not be a good investment when considering the whole lifecycle of the infrastructure asset.

With this in mind, this plan builds on the principles of First Things First: A State Infrastructure Strategy 2012–2032 (INSW 2012) which explains why prioritisation of funding is important to maximise the return on investment.

“Simply put, being number one again requires infrastructure investment that will drive the State economy and create the biggest return to taxpayers. Given the limitations on available public funding, it requires prioritisation – of dealing with first things first to gain the earliest possible return to the State – and on leveraging private capital and expertise wherever possible.” (INSW 2012)

Not all infrastructure projects can be funded in the short-to-medium term. Furthermore, simply spending money does not mean ‘critical’ infrastructure needs are being met. The purpose of this plan is, therefore, to identify priority projects and link these to available funding sources, ideally with strong prospects to attract funding in the short-to-medium term.

New capital spending on infrastructure projects and planning initiatives such as those outlined in Chapter 6 could be funded in one of two broad ways:

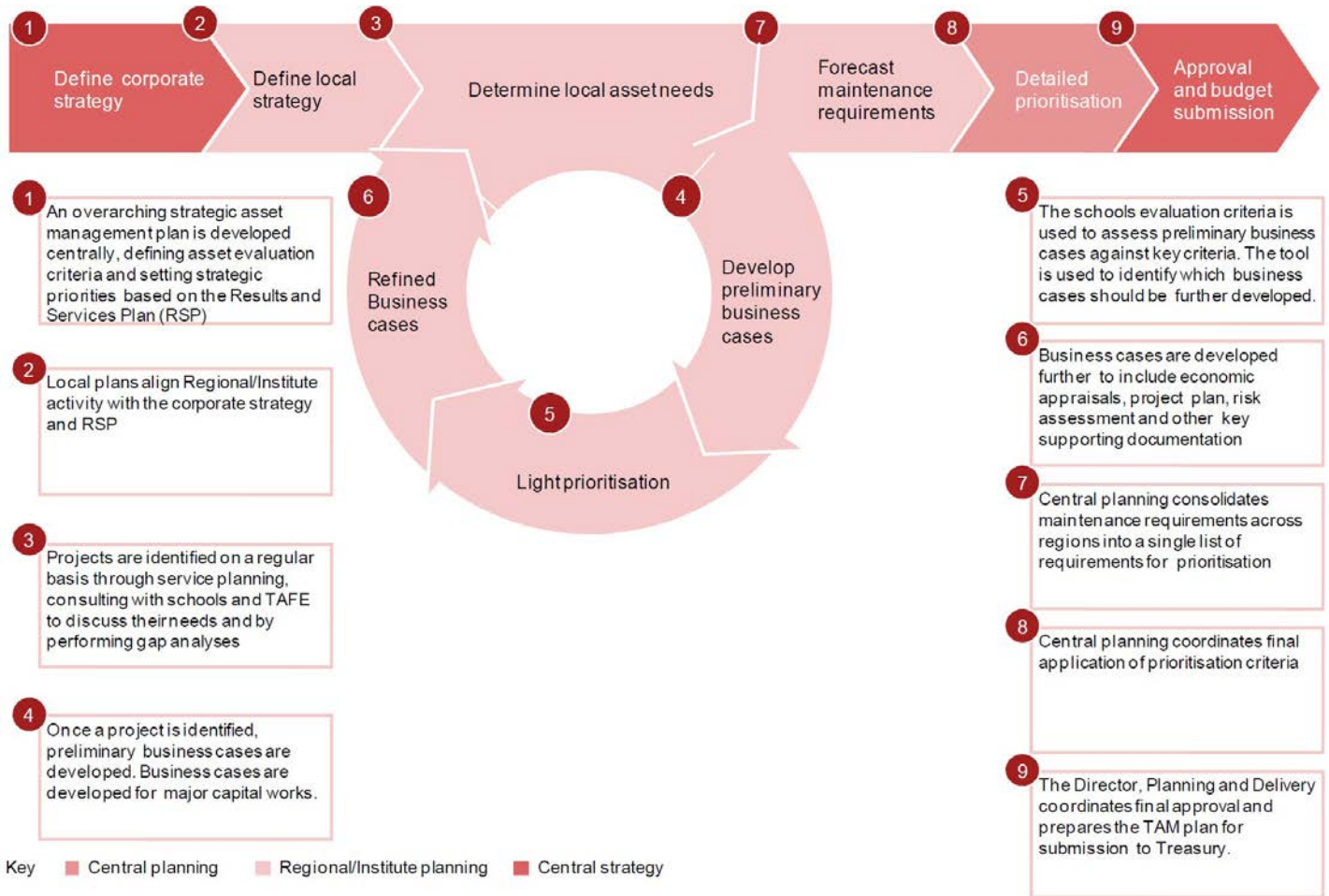
- directly funded through the State or Commonwealth agency budgets as specific identified projects; and/or
- seek funding through special State or Commonwealth programs.

Established Infrastructure Funding Process

There exists a wide range of established mechanisms for funding allocation for capital works including infrastructure provision based on established formula. Examples include education facilities, emergency facilities and the like in response to demand or annual grants programs which support enhancements to sporting, cultural facilities and the like.

The process applying to schools is illustrated in Figure 10.

Figure 10 NSW Department of Education and Communities Asset Planning and Funding Process



Each agency employs its own strategy to produce its forward infrastructure plan and determine the funding requirements for delivery of the plan. Agencies that deliver enabling infrastructure (leading infrastructure), such as roads, water and sewer services, and electricity services generally refer to regional and subregional planning strategies in the development of forward plans.

In particular, the Roads and Maritime Services (RMS) and the Hunter Water Corporation (HWC) have identified the Lower Hunter Regional Strategy (2006) as a key source of data used for defining emerging development fronts throughout the HMA. Ausgrid's forward plan is approved by the Australian Energy Regulator (AER) to which a detailed submission must be submitted every year to seek approval for the proposed works program and cost recovery structure. Hunter Water Corporation (HWC) follows a similar process with IPART in obtaining approval for its fee structure.

Agencies that deliver supporting infrastructure, typically social infrastructure such as schools and health services, develop forward plans based on projected demographic changes. The Department of Education and Communities programs infrastructure requirements within the framework of a 10-year Total Asset Management (TAM) Plan.

Similarly, NSW Health Infrastructure develops a Clinical Services Plan (CSP) to map the need for additional health services in a proposed project area. The CSP takes into consideration local demographics to determine the types of health services required as well as current and advancing medical technology which impacts on the demand for services and duration of hospital stays. The CSP informs the NSW Health TAM plan.

In both cases the available, albeit limited, pool of funding is distributed across the highest priority projects.

Other Potential Funding

Infrastructure Contributions

The suite of projects identified in Chapter 6 includes economic infrastructure priorities related to the mining industry. Accordingly, there is a clear nexus to fund these projects in part through infrastructure levies from mining related developments. As noted previously in this plan, this issue is subject to a detail review by the Department of Planning and Infrastructure.

Public Private Partnerships (PPPs)

This plan notes key observations and adopts the recommendations contained within the INSW State Infrastructure in relation to Public Private Partnerships or PPPs. Under PPP arrangements, new infrastructure is financed by the private sector. This finance is repaid either through user charges (such as tolls) or availability payments from the government. PPPs are most commonly used for large, complex projects which, by their nature, tend to involve significant risks and a high public profile. The primary purpose of pursuing a PPP model is to better manage project risks and, thereby, deliver better value-for-money outcomes.

Special Funding Programs

Both the State and Commonwealth Government's have a number of special funding programs that could be a source of potential capital funding for the projects outlined under Chapter 6. Potential known funding sources include:

Commonwealth

- Regional Infrastructure Fund – which partly funded the Hunter Economic Infrastructure Plan;
- Regional Development Australia Fund; and
- Nation Building Program
 - National Network,
 - Roads to Recovery,
 - Black Spot Program,
 - Heavy Vehicle Safety and Productivity Program,
 - Off Network and
 - Liveable Cities Program (which partly funded this plan).

State

- Restart NSW;
- Resources for Regions;
- Local Infrastructure Renewal Scheme;
- Transport Access Program;
- Regional Industry Investment Fund;
- Hunter Infrastructure and Investment Fund; and
- Housing Acceleration Fund.

A detailed review of potential funding sources is contained in Appendix D.

CHAPTER 3.

UNDERSTANDING THE HUNTER METROPOLITAN AREA

WHAT IS IMPORTANT IN THE HUNTER?

A Snapshot of the Hunter Metropolitan Area

The Hunter is a diverse region with thriving industries including tourism, manufacturing, coal mining, power generation and winemaking. The Port of Newcastle is the world's largest coal export terminal and exports other cargoes including grains, vegetable oils, alumina, fertiliser and ore concentrates. It is also a popular international and domestic passenger cruise ship destination. The University of Newcastle boasts more than 40,000 enrolments and is internationally recognised for research in the fields of health; science and engineering; energy and the environment.

The Hunter covers 4,291 square kilometres and is centred on the Hunter River which has a catchment of 2.2 million hectares (Department of Planning and Infrastructure 2006). Among the many outstanding natural features within the HMA are sandy beaches, estuaries, rugged headlands, sweeping floodplains, vast lakes and a natural port at the mouth of the Hunter River. Several national parks, state forests and nature conservation reserves coexist with urban and rural areas. It is the seventh largest city/region in Australia (NSW Department of Planning 2006) and is strategically located on the east coast of Australia, accessible by major transportation links to/from major cities including Sydney, Melbourne and Brisbane as well as the rest of NSW. The Hunter Region is the second most populous region (641,000 people ERP) in NSW behind Sydney. The HMA (Lower Hunter) contains the majority of this population with 540,000 (NSW Department of Planning and Infrastructure 2013). It accommodates around 7.5% of NSW's population and about 2.4% of Australia's population.

In economic terms the Hunter is the largest regional area in Australia with a gross regional product (GRP) valued at \$36.9B (Deloitte Access Economics 2013). With a GRP predicted to be \$64.8B by 2036 (an increase of 75%) the Hunter is an important contributor to the state and national economies (Deloitte Access Economics 2013).

While geographically close the HMA faces different issues to Sydney in respect to infrastructure planning and provision. The HMA includes part of the wider Hunter Valley Coal Chain which comprises numerous coal mines and transport links delivering coal for export from the Port of Newcastle. This is the largest coal export port in the world and is forecast to double throughput between 2009 and 2015 when it is predicted 213 million tonnes per annum of coal will be transported overseas (Australian Rail Track Corporation 2012). The liveability, sustainability and productivity of the HMA will be directly influenced by how infrastructure and land use planning deals with this growth. Provision of infrastructure and land use planning needs to be closely integrated so that:

- impacts on communities are managed;
- secondary industries and urban development can leverage off infrastructure investment; and
- the environment and natural resources, such as the vineyards and water security, are well protected.

The dispersed pattern of urban settlements in the HMA means there is a heavy reliance on private motor vehicles for transport. Public transport usage is much lower than in Sydney and given the lower density of development the reliance on walking and cycling is also reduced in the Lower Hunter compared to Sydney.

This has implications when planning for growth in the HMA. Servicing multiple development fronts places additional strains on infrastructure and service agencies. In addition, in certain areas of the HMA a development constraint is the legacy of mining which has left a honeycomb of old underground workings. The cost of building over old mine workings can be prohibitive where multi-storey development is proposed.

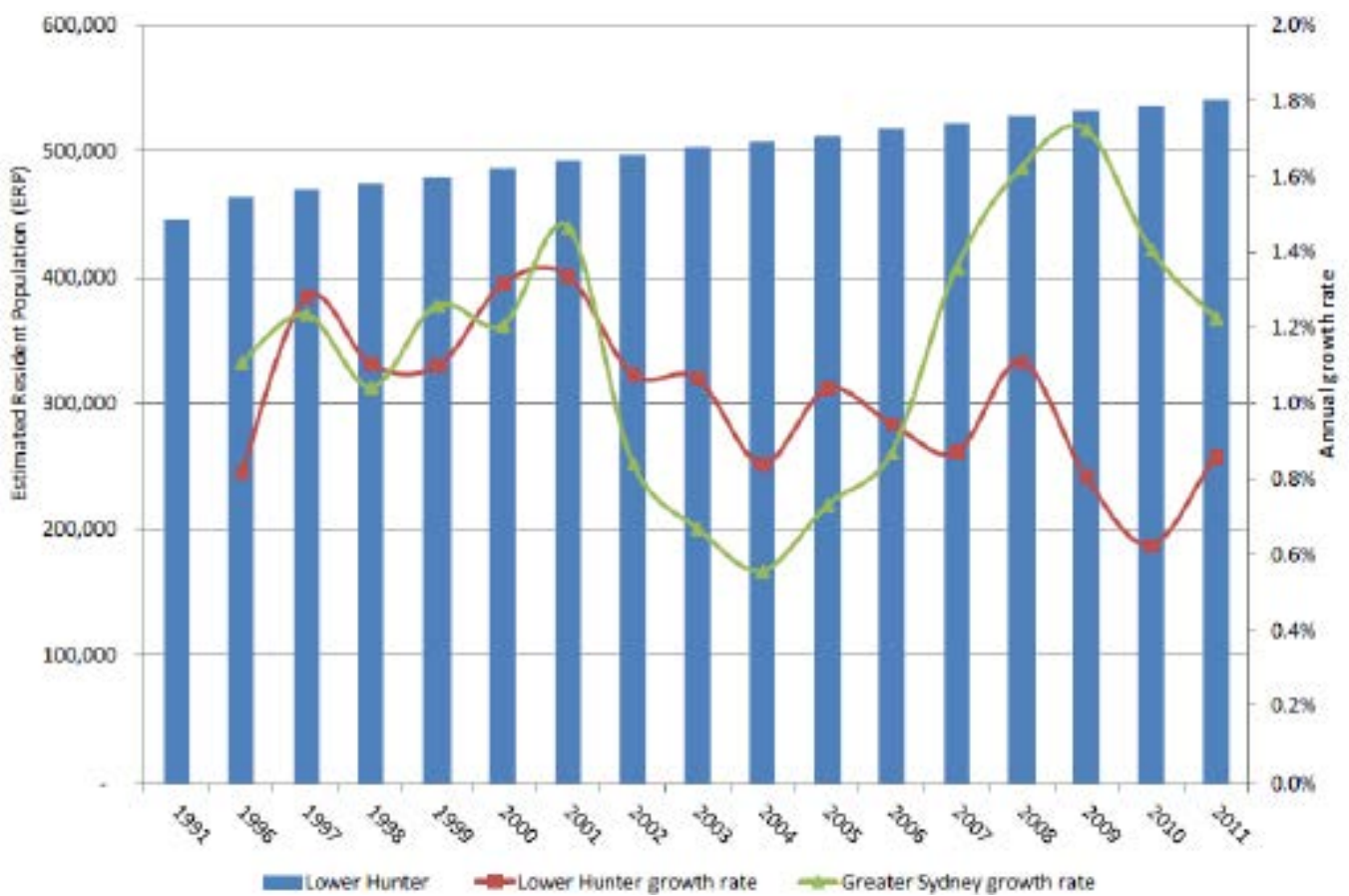
Population Growth

The population in the Hunter Region has grown from around 532,000 people in 1991 (ERP) to about 641,000 in 2011 (ERP). This represents annual growth of about 5,500 per year over the 20 year period. Annual growth since 2006 was 4,700 per annum (from a base of 617,600 in 2006).

The HMA has the greatest concentration of the Hunter's population which has grown from around 444,900 people in

1991 to about 540,000 (ERP) in 2011. This represents annual growth of about 4,750 per year. In the most recent intercensal period, growth was about 4,500 per year. Compound Annual Growth Rates (CAGR) have fluctuated against those for Sydney. They were at about 1% between 2001 and 2006 (with the Sydney region at 0.8%) and about 0.85% between 2006 and 2011 (with the Sydney region growing very strongly in this period at around 1.5% (SGS Economics 2012).

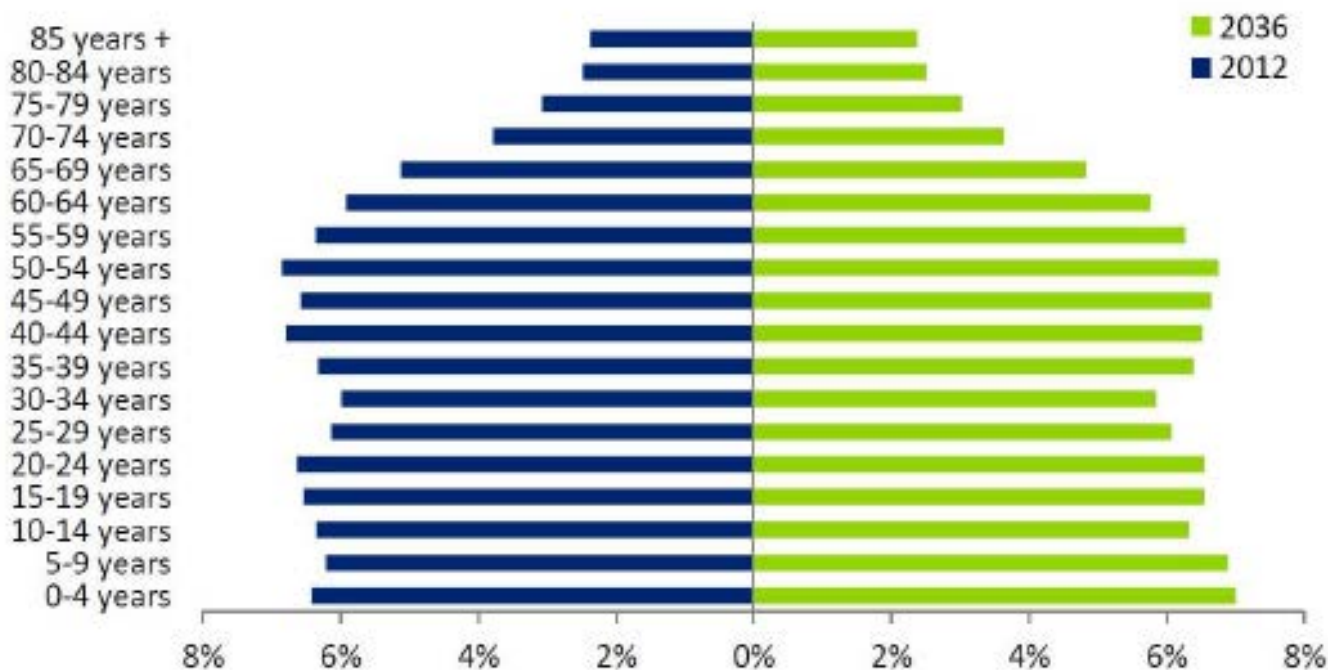
Figure 11 HMA Population Growth 1991 to 2011



Source: SGS Economics 2012

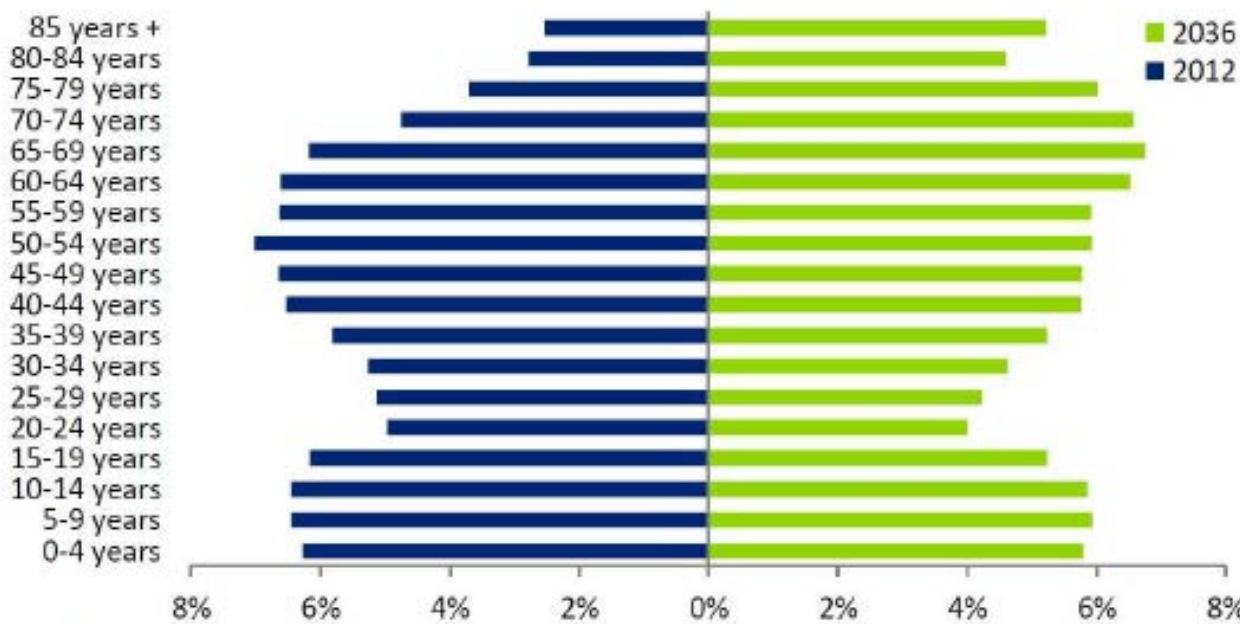
Population projections for the HMA are shown in Figure 12 and the Upper Hunter is shown in Figure 13 for general comparison and reference purposes.

Figure 12 HMA Population Projections



Source: Deloitte Access Economics 2013

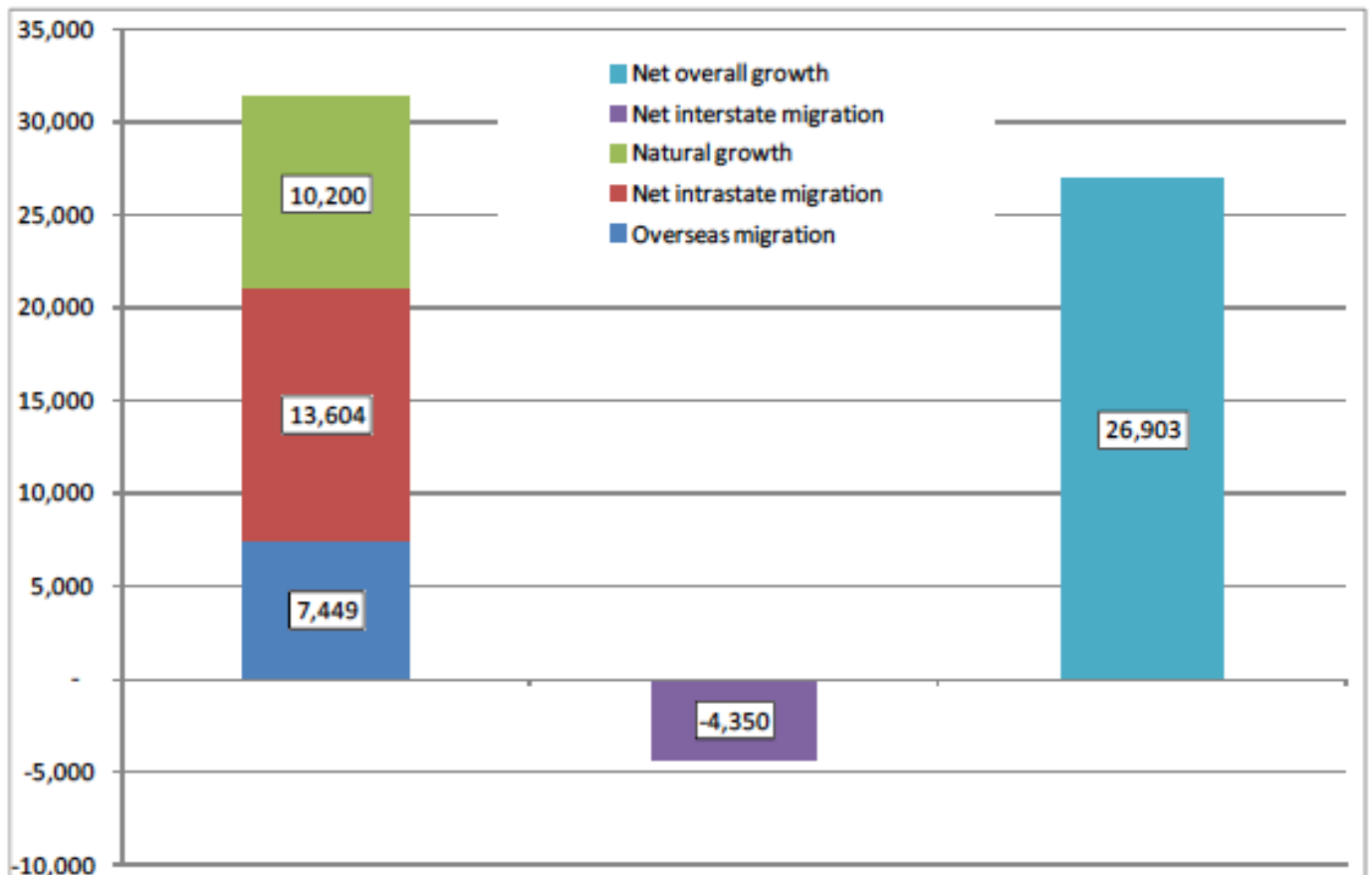
Figure 13 Upper Hunter Population Projections



Source Deloitte Access Economics 2013

This represents annual growth of about 4,750 per year (SGS Economics 2012). Net migration intake from overseas and other parts of Australia is a key component of population growth in the HMA. The components of growth for the period 2001-2006 are shown in Figure 14.

Figure 14 Breakdown of HMA Population Growth 2001 to 2006



Source SGS 2012

The factors likely to attract increased net migration are:

- availability of job opportunities, underpinned by good economic prospects; and
- lifestyle and amenities including:
 - availability, cost and quality of housing;
 - quality and access to education; and
 - quality of services and infrastructure.

The Hunter Economy – Current Conditions, Economic Cycles and Outlook

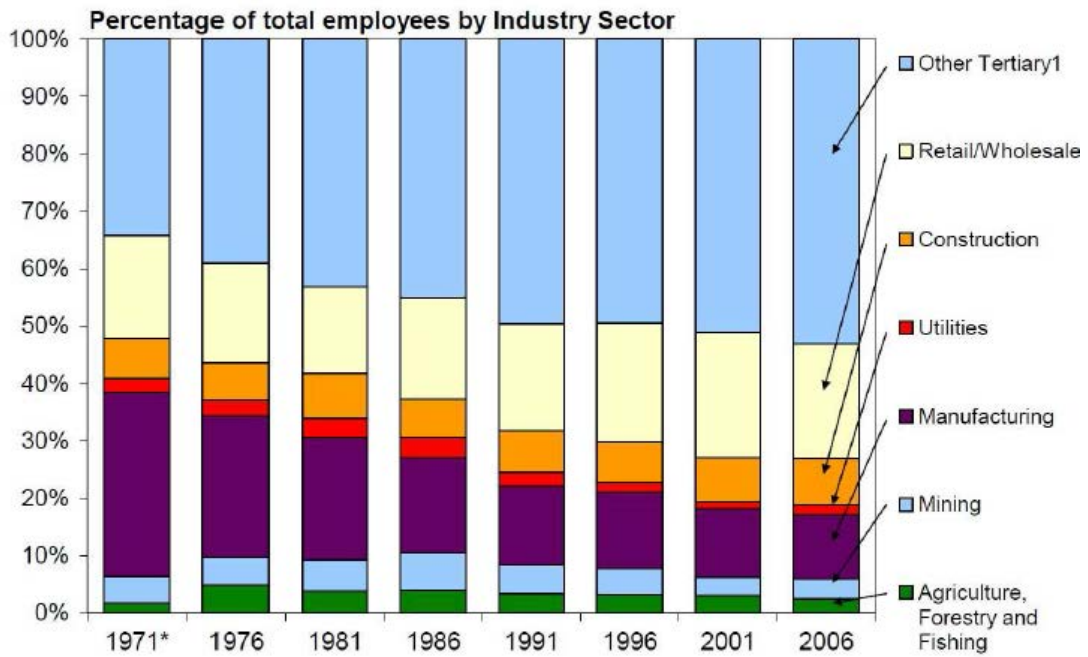
The economy of the HMA has undergone huge changes over the past 40 years. It has emerged in the 21st century as a more diversified and resilient economy able to withstand the boom and bust cycles evident in the national and global economies.

The HMA has successfully transitioned from a narrow economic base to a more diversified economy at the same time as the Australian economy has gone through a similar process. According to the Hunter Valley Research Foundation (2011) the reasons this diversification took place include:

- tariff reductions;
- financial deregulation;
- industry deregulation; and
- international trade opening up.

Figure 15 illustrates this transition of the Hunter economy over the period 1971 to 2006.

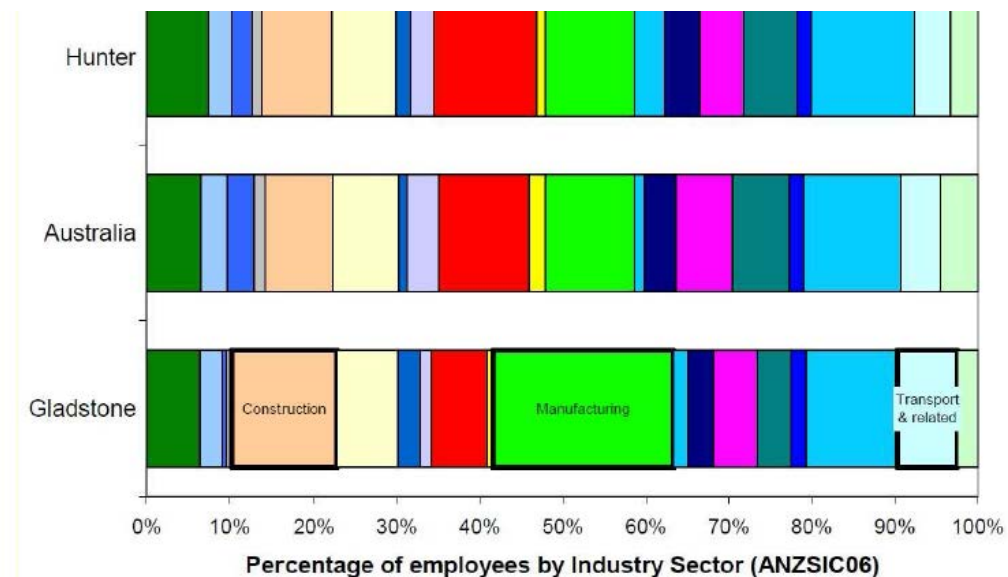
Figure 15 Employment by Industry Sector, as a Percentage of Total Employment, Hunter Region



Source: HVRF 2013

The point has been reached where the Hunter economy now closely resembles the more diversified Australian economy (see Figure 16).

Figure 16 Employment by Industry Sector, as a Percentage of Total Employment, 2006



Source: HVRF 2013

The Hunter Valley Research Foundation (2011) identifies the main factors shaping the long term economic outlook for the HMA as:

- Demand for Regional Commodities – coal and agricultural produce is likely to remain in strong demand from rapidly-growing Asian nations;
- Existing Infrastructure – infrastructure such as the port, coal chain, national highway network, airport and electricity grid have not been made obsolete by changing technologies and are likely to remain a vital part of the regional economy in future;
- Transition to a Low Carbon Economy – as the Hunter has generous reserves of black coal it is likely to be less impacted than areas elsewhere in Australia which have brown coal reserves. Approximately 10% to 15% of major industries in the Hunter are exposed to a shift to a low carbon economy which means the bulk of industry does not have significant exposure;
- Property Market – the HMA has a large supply of zoned, undeveloped urban land which can be brought to the market at competitive prices. This contrasts with Sydney where greenfield sites are in short supply and the majority of new housing is infill development at higher densities; and
- Growth in the Services Sector – the services sector is the largest employer in the HMA and includes the University of Newcastle, John Hunter Hospital and other key education and health facilities. There is significant potential for the service sector to expand and, in the process, provide employment opportunities for more highly-skilled workers.

The HMA has traditionally been below state and national educational benchmarks given the large percentage of blue collar workers in the labour force. However, this trend may be reversed with the increased demand for more highly-skilled workers in the services sector in future. This provides opportunities for the University of Newcastle and other tertiary education institutions to expand their offerings and develop new and expanded campuses in places like the Newcastle city centre.

Furthermore the HMA's economy is moving into knowledge-based and technology industries. This requires not just connections between regions but connectivity infrastructure to maximise the strengths of individual regions. Connecting regions by upgrading physical transport connections and knowledge technology, such as reliable high-speed telecommunications and online technologies, are increasingly being acknowledged as a prerequisite to economic growth (HVRF 2011).

Economic Cycles

Since the 1950s the HMA has undergone two structural shifts in employment which have influenced settlement patterns. The first was from primary to secondary industry during the period 1950 to 1970. During this time, BHP became the dominant employer in the region. The second was from the secondary to the tertiary sector. This occurred from the 1970s to 1990s and came about as a result of the reduction of tariffs and the subsequent decline of the manufacturing industry. Employment in the secondary sector fell from 24.6% in 1976 to around 11% in 2011 in the Hunter (SGS Economics 2012).

As a result the HMA is a more economically diverse region now than it was in the past when it relied very heavily on particular industries. The correlation between economic diversification and long-term economic strength of a region is well known. As a result, diversification is pursued given the benefits which accrue including reduced exposure to negative external shocks, increased productivity and competitiveness and less volatile growth and economic cycles (SGS Economics 2012).

Despite this decline in the relative importance of secondary industry, when measured by share of value add to the regional economy, manufacturing in the HMA still accounts for 13% and is second only to mining which accounts for 17%. Other key sectors are health care and social assistance (7%), financial and insurance services (7%), public administration and safety (6%) and construction (6%) (Deloitte Access Economics 2012).

The change in economic structure away from manufacturing toward the service sector and mining has seen an accelerated rate of population growth in areas around Maitland and further west and an increase in commuting to the inland coalfields. Maitland is the fastest growing LGA in the Lower Hunter when measured in population growth terms. Between 2001 and 2006 Maitland LGA grew by an average of 2.7% per annum which was nearly three times higher than the regional growth rate of 1% per annum (Urbis 2012). It is also the fastest growing LGA when measured in job creation terms. During 2001 and 2006 there were 4,415 jobs created in the Maitland LGA which represented an average growth rate of 5.2% per annum (SGS Economics 2012). Between 2006 and 2011, average growth rate reduced to around 3% per annum but this was still 50% higher than the growth rate in the other LGAs in the HMA.

The growth during the same period in the upper Hunter LGAs of Muswellbrook and Singleton was 4% and 3% respectively which is up to four times the regional average. Much of this growth in jobs in the Upper Hunter was driven by mining and associated industries.

There has also been a shift of employment to an inner ring of activities centred on the University of Newcastle (Shortland and Jesmond), the John Hunter Hospital complex (Lambton and New Lambton) and the major retail centres at Charlestown and Kotara (Phillip O'Neill, Newcastle Herald 2012). The 2011 Census shows the number of jobs in these three centres was 6,879, 8,789 and 5,989 respectively. This has implications for Newcastle city centre and for transport links in and around the urban areas in the HMA. While jobs may be closer to home resulting in reduced travel time to work, there is a heavy reliance on travel by private motor vehicle causing congestion on the road network.

McGuirk (2007) claims the major driver of population growth in the lower Hunter is internal migration by older groups. During the period 2001–2006 the HMA population increased by almost 27,000 and more than 40% of this growth was attributable to interstate migration (SGS 2012). Natural increase and overseas migration made up the balance of this increase. Part of the reason for this shift to the HMA may be the growing disparity in house prices between the Hunter and Sydney which increases the attractiveness of the HMA as a place to live and work (SGS Economics 2012).

The Economic Outlook

The Hunter is the largest regional area in Australia and accounts for 8% of the NSW economy with regional output valued at \$36.9 billion (Deloitte Access Economics 2013). It is estimated the regional economy will grow at an average growth rate of 2.4% (which is above the NSW average of 2.1%) over the next two decades with regional output valued at \$64.8 billion in 2036 (Deloitte Access Economics 2013).

Table 2 shows the current and predicted percentage of the regional economy which the various industry groupings make up in 2012 and 2036 respectively.

Table 2 Projected Industrial Composition of the Hunter, 2012-2036,

INDUSTRY	2012 (%)	2036 (%)	Δ (%)	AVERAGE ANNUAL GROWTH (%)
Mining	22.3	24.2	▲ 1.9	2.8
Manufacturing	11.7	11.2	▼ -0.5	2.2
Health Care and Social Assistance	7.7	8.4	▲ 0.7	1.9
Financial and Insurance Services	6.5	6.3	▼ -0.2	2.7
Construction	6.0	6.1	▲ 0.1	2.5
Education and Training	5.6	6.1	▲ 0.5	1.9
Retail Trade	5.0	4.9	▼ -0.1	2.4
Transport, Postal and Warehousing	5.1	4.8	▼ -0.3	2.3
Public Administration and Safety	5.4	4.7	▼ -0.7	1.9
Professional, Scientific and Technical Services	4.8	4.6	▼ -0.2	2.6
All other industries	19.9	18.7	▼ -1.2	1.8
Total value added	100	100		2.4

Source: Deloitte Access Economics (2013)

Table 3 shows the current employment by industry groupings within the region.

Table 3 Hunter Employment by Industry, 2012

INDUSTRY	Employment (FTE)	Employment (%share)
Agriculture, Forestry and Fishing	4,500	1.8
Mining	17,700	7.2
Manufacturing	24,900	10.2
Electricity, Gas, Water and Waste Services	4,700	1.9
Construction	20,100	8.2
Wholesale Trade	6,450	2.6
Retail Trade	25,150	10.3
Accommodation and Food Services	16,200	6.6
Transport, Postal and Warehousing	10,850	4.4
Information Media and Telecommunications	2,250	0.9
Financial and Insurance Services	6,850	2.8
Rental, Hiring and Real Estate Service	4,200	1.7
Professional, Scientific and Technical Services	15,750	6.4
Administrative and Support Services	6,800	2.8
Public Administration and Safety	16,600	6.8
Education and Training	16,350	6.7
Health Care and Social Assistance	31,000	12.7
Arts and Recreation Services	2,650	1.1
Other Services	12,000	4.9
Total	245,000	100.0

Source: Deloitte Access Economics (2013)

By 2036, mining is predicted to generate almost one quarter of the region's outputs by value and is more than double the second largest industry group which is manufacturing.

The major factors likely to influence the economy of the HMA over the next 20 to 40 years have been identified by Deloitte Access Economics (2013) as:

- Integration with Asia – coal is expected to perform strongly over the long term despite the transition to more sustainable forms of energy production. There are likely to be opportunities for the agricultural, health, education and tourism sectors to service the growing middle class in Asia over the coming decades. Approximately 60% of the world's middle class (3 billion people) are likely to live in Asia by 2036 (Deloitte Access Economics 2013);
- Changing Settlement Patterns – continued growth along the coastal areas of the HMA and in and around Maitland is expected to bring new residents to the HMA which, in turn, increases the demand for goods and services locally;
- The Evolving Digital Economy – recent rapid advancements in technology which have seen technologies like broadband, smart phones, the cloud and social media transform the way business is conducted are likely to continue to evolve. The rollout of the National Highspeed Broadband Strategy (NBN) will provide a high speed open access network with initial speeds of 100 Mega Bytes per second (Mbps) over fibre to premises to 93% of the nation's population. Wireless and satellite technologies will provide the remaining 7% with speeds up to 12 Mbps. Some 50 suburbs in the HMA are expected to have access to the NBN by the end of 2013; and
- Transitioning to a less carbon intensive economy – while the Hunter's economy has a relatively high emissions profile given its comparative strengths in metals processing and electricity generation, a future carbon constrained economy will have implications for a number of industries over the longer term. There will be opportunities for the existing workforce to transition into new industries provided their skills are transferable and/or retraining is provided.

Among the key strategic sectors likely to expand and generate future employment opportunities in the decades ahead are (Deloitte Access Economics 2013):

- Newcastle Airport has grown at an annual average growth rate of around 5% and has potential to expand its operations and generate employment in service industries associated with aviation;
- Williamstown RAAF Base requires support services which are likely to expand in the immediate vicinity of the airport;
- Research Institutes – including the Hunter Medical Research Institute, the Hunter Valley Equine Research Centre, the Newcastle Institute for Energy and Resources, the Clean Energy Innovation Centre and the Australian Solar Institute – in association with the University of Newcastle and other tertiary education bodies have the potential to attract funding and generate future employment opportunities; and
- Expansion of the Coal Chain, including the Port of Newcastle, is likely to result in additional export of coal and other products which will also generate significant employment within the Hunter.

Employment

The HMA is a more economically diverse region now than it has been in the recent past, where it relied more heavily on particular industries, such as manufacturing. As noted above, over the past 30 years the HMA's economy has transformed to a strong and diversified resource, manufacturing, services and business economy that now more closely reflects the national economy.

Benefits from economic diversification include:

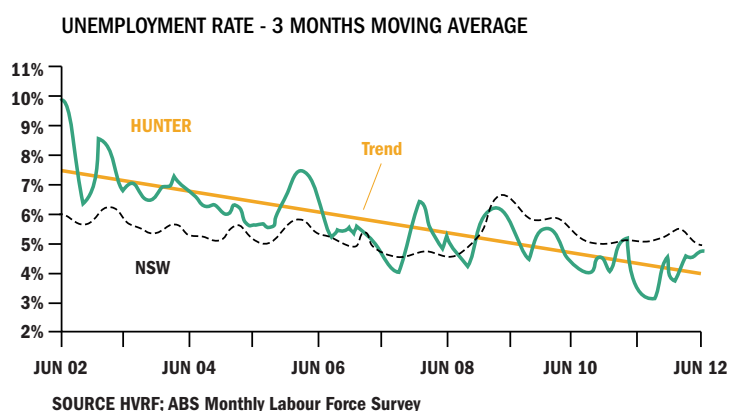
- reduced exposure to negative external shocks (these can be known, unknown, man-made or natural);
- increased productivity and competitiveness;
- less volatile growth and economic cycles; and
- economic stability and sustainability.

This transition over the period 1971 to 2006 was illustrated in Figure 15.

Employment share in the secondary sector in the Hunter fell from 24.6% in 1976 to only 14.1% in 1996 (Hunter Valley Research Foundation, 2011) and was at 11% in 2006.

The unemployment rate for the HMA is close to the NSW average of approximately five percent and, as illustrated in Figure 17, has been declining from a high of 11% since June 2002. This reflects structural adjustment and increased employment in the local economy.

Figure 17 Unemployment Rate – Three Month Rolling Average 2002–2011



Research by the Hunter Valley Research Foundation (2013) has identified the spare capacity in the regional labour market has been rapidly eroded over the past four years and could become an increasing inhibitor upon regional economic growth. For this reason, they believe this may contribute to a higher population growth scenario for the Hunter as labour resources migrate to the region.

The Coal Chain

All important to the HMA's economy is the Hunter Valley Coal Chain. Coal has been a part of the local economy since Newcastle was first settled. From a global perspective, Australia is an important supplier of coal to other nations. Australia is estimated to have 44,000 million tonnes of coal reserves – the fifth largest reserves of any country in the world. Australia is responsible for 6% of global coal production, is the world's fourth largest producer of coal and leading exporter of coal with almost one third of all coal being exported from Australia (Access Deloitte Economics 2012). By 2036 the mining sector is expected to generate almost one quarter of the Hunter's outputs by value. The demand for coal is expected to remain strong over the next few decades (Deloitte Access Economics 2012).

NSW plays a key role in the production of coal, accounting for 40% of Australia's coal production. The Hunter produces 84% of NSW's coal and contains 60% of the state's coal reserves. The Port of Newcastle exported 108 million tonnes (Mt) of coal valued at \$13.5 billion in 2010/11 which represented 96% of NSW's coal exports (Deloitte Access Economics 2012). Over the past five years, 80% of coal exported from the Port of Newcastle has gone to Japan, South Korea and Taiwan.

This plan adopts the analysis contained within the Hunter Economic Infrastructure Plan (HEIP) which considers the coal export growth path for the purpose of inbound freight volume forecasting (Hyder 2013).

The HEIP notes the Draft Strategic Development Plan for the Port of Newcastle (February 2013), prepared by Newcastle Port Corporation (NPC) forecast coal exports from the port would exceed 250 Mtpa by 2020 and continue to grow towards 300 Mtpa in the long term. Domestic coal demand is assumed to continue growing in line with production, remaining at around 10 to 15 per cent of total Hunter production.

This growth has been accompanied by a continued shift of production and associated employment inland, particularly in the Upper Hunter. The Upper Hunter was estimated to produce around 85% of the Region's coal in 2010/11. Following the expansion of the industry the Upper Hunter is estimated to produce around 90% of the Region's coal from 2012/13 with this share remaining largely consistent over the next two decades. Naturally the proportion of direct operational employment follows this redistribution (HVRF 2013a). Notwithstanding the recent announcement delaying construction of a fourth coal loader (Port Waratah Coal Services 2013), Terminal 4 (T4) is still critical to the Port of Newcastle being able to meet the demand for the export of coal in the medium-to-long term.



As a consequence the growth of mining production has led to a range of benefits and pressures in the region:

- at the peak of activity in 2012/13, employment is anticipated to be boosted by around 6,000 jobs due to the industry's expansion. As the capital expansion phase passes the economic and employment benefits subside. However, during the subsequent 'operational' phase (2015 to 2030), real GDP is anticipated to remain 7%–10% higher than prior to the expansion in the Upper Hunter and 1.5%–2.0% higher than prior to the expansion in the Lower Hunter (HVRF 2013a);
- predicting the rate of growth of the sector is difficult for both the private and public sectors;
- land use planning and control of cumulative social and environmental impacts is made more difficult; and
- observed traffic congestion accessing key components of the coal chain (Kooragang Island – Port and the New England Highway at Branxton) in proximity to concentration of Hunter Valley mines.

With success comes challenges. The location and extent of growth in the coal resources sector is difficult to predict. Mining booms tend to generate the need for 'catch up' expenditure reacting to the boom and bust contractions characteristic of a sector responding to global and national economic pulses. Where 'catch up' projects are identified, they need to be funded and implemented. Accordingly the Commonwealth and State Governments accept joint responsibility to ensure major economic arteries such as the Hunter Valley Coal Chain flow efficiently for the national as well as regional benefit.

In addition, Commonwealth has signalled a commitment to fund projects to help mining affected communities deal with effects of resource development. This has given rise to the joint funding of State/Commonwealth infrastructure studies such as the Hunter Economic Infrastructure Plan (HEIP). These studies inform and coordinate significant public infrastructure investments on a prioritised basis, while acknowledging the need for both government and private sector to be nimble but not over-commit to high growth scenarios which may not materialise.

The output side of the coal chain is generally well understood and managed through the Hunter Valley Coal Chain Coordinator (HVCCC) and Australian Rail Track Corporation (ARTC). However the input side, in terms of the movement of materials and people, is less well understood. For example the Bureau of Transport Statistics (BTS) has estimated 550 truck movements per day in the Newcastle LGA are attributed to supporting coal mining (NSW T&I 2013). In addition, Upper Hunter water security is an important consideration underpinning mine production and, in turn, productivity. These issues are both addressed in the Hunter Economic Infrastructure Plan (HEIP) in further detail.

HSIP's contribution to better understanding the coal chain and its intrinsic relationship with HMA is twofold. As previously noted, a Regional Economic Model has been developed to determine coal mining's direct and indirect contribution to regional employment. The modelling found that in 2011 the coal industry generated approximately 5.5% of the value add within the Lower Hunter and approximately 33% of value add within the Upper Hunter.

As a result of the expansion the coal industry's contribution to regional value add is expected to rise up to an additional \$471 million per annum by 2028 in the Lower Hunter and an additional \$1,283 million per annum in the Upper Hunter respectively. The findings from this analysis confirm the significant contribution coal mining plays in the region. The modelling under the central scenario estimates employment in the coal mining industry in both regions during the operational phase (2015-2030) will, on average, be 1,550 positions higher than the baseline (HVRF 2013[a])

The second consideration is unusual in that a significant part of one of the world's largest coal chains is inextricably intertwined within the 7th largest city in Australia. This has not happened overnight but is ingrained in the fabric of the city, reflected in the settlement pattern, history and culture of the HMA.

Population in proximity to the rail corridor and rail network that supports the coal chain invariably presents challenges for both the coal chain in terms of productivity and the metropolitan area in terms of liveability. The two have coexisted and very much grown together through booms and busts. With increasing scale and throughput, potential impacts and negative externalities (if unattended) will increase. These cumulative impact issues are big issues in the community and will need to be addressed holistically.

In response the Department of Planning and Infrastructure has commenced preparation of a cumulative impact methodology to guide strategic land use planning and development assessment. The outcome of this important initiative is anticipated to be progressively released from 2014 onwards. It is also noted the ARTC has initiated a program of targeted rail attenuation projects to minimise and mitigate impacts where practical and this program is supported. As the HMA continues to grow, spread and evolve, Chapter 5 (Foundations of a Liveable City) specifically considers how both the coal chain and the urban areas in the HMA can continue to coexist and prosper through sensible land use planning integrated with informed infrastructure planning.

Patterns of Development – Spatial Dispersal, Infrastructure Patterns and Urban Development

The HMA region is strategically situated on the major north-south corridor along the east coast of Australia servicing the movement of people and freight between Sydney and Brisbane. It also intersects with the east-west Hunter Valley coal chain corridor servicing the movement of people, materials and coal from the Upper Hunter to the port. Observed development patterns in the HMA are generally a response to two factors:

- natural topography – coastline, valley floor, river flood plain and fringing ranges; and
- transport technology – firstly the river, then rail, followed by road transport.

This simple axis has its origins in a collection of discrete coal mining settlements which have evolved into a metropolitan core situated along the coastal fringe and immediate hinterland centred on Newcastle, Lake Macquarie, Maitland, Port Stephens and Cessnock LGAs. The progressive suburbanisation of housing, employment and retail is well documented and has gradually eroded the role of city centres such as Newcastle as population advanced generally westwards within the Maitland growth corridor seeking good proximity to both jobs and services within the Hunter. This has been complemented by lifestyle-driven locations offered in the Hunter including Port Stephens, southern Lake Macquarie and Cessnock Wine Country.

The Maitland LGA has also played a significant role in the HMA and finds itself strategically located in proximity to key national road links with good access to existing and emerging employment opportunities in the Hunter, in part explaining its consistent strong population and employment growth since the 1990s.

The DP&I (DP&I 2013) recognises the HMA's transport network and connections are dependent on the arterial road system. The critical road connections are the:

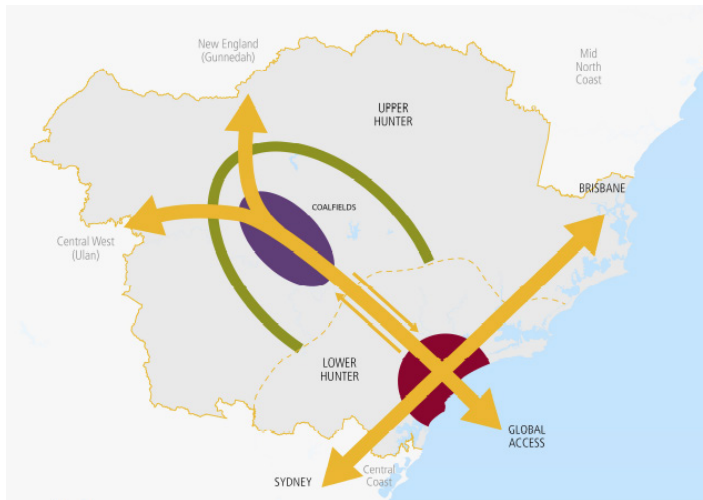
- M1 Pacific Motorway, providing connections to Sydney and the Central Coast;
- New England Highway from Newcastle through Maitland to the Upper Hunter which is currently the region's key east-west corridor;
- Newcastle Road corridor connecting east-west to the urban areas of Newcastle and Lake Macquarie;
- Pacific Highway extending from the Central Coast in the south through the urban areas of Newcastle and Lake Macquarie to the North Coast; and
- Newcastle Inner City Bypass – the other major north-south inner urban arterial route connecting Newcastle and Lake Macquarie.

Other corridors serving major land use areas include Nelson Bay Road serving Newcastle Airport, the Lake Road/Toronto Road corridor serving western Lake Macquarie and John Renshaw Drive, Wine Country Drive and Cessnock Road serving areas around Cessnock, Kurri Kurri and Maitland. The arterial road network faces congestion and road capacity challenges.

The Hunter Expressway will connect the M1 Pacific Motorway and the broader Newcastle/Lake Macquarie areas to the Upper Hunter and beyond. The Hunter Expressway will relieve congestion on several routes, particularly on the New England Highway through Maitland.

Figure 19 illustrates the basic structural characteristics of the HMA and Upper Hunter.

Figure 19 Macro Region



- RED** Metropolitan core
- PURPLE** Hunter Valley coal fields
- YELLOW** Key road and rail linkages

For purposes of integrating regional land use planning and infrastructure planning, this plan adopts the centres and corridors typology per the existing Lower Hunter Regional Strategy (LHRS) but expands this typology to include employment clusters responding to observations from the Hunter Employment Lands Review (HDC 2011). It is also noted the LHRS is currently under revision and will need to transition to a Regional Growth Plan. Ideally, this process should be accelerated and piloted in the HMA as a blueprint for other regions as was the case for the 2006 LHRS.

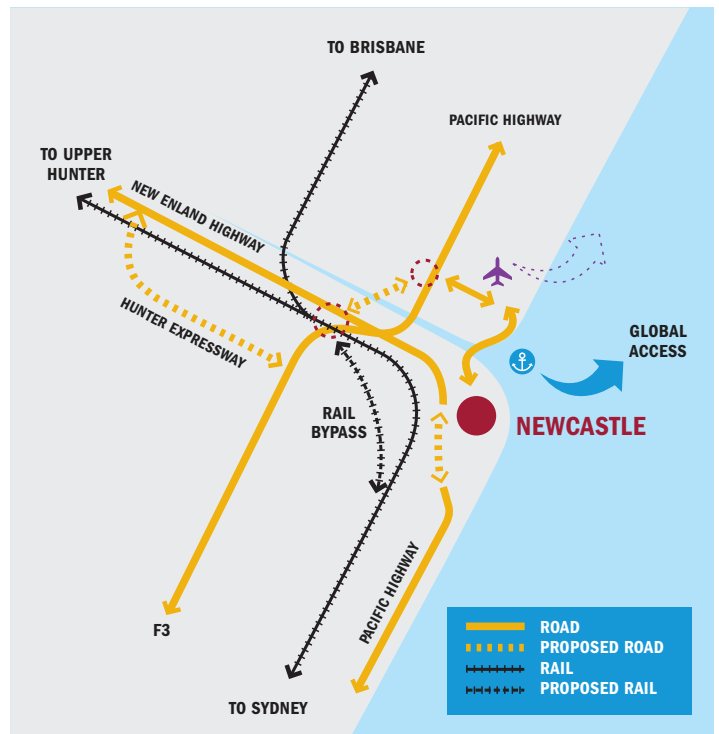
The major conclusions relevant to this plan that arise from Figure 19 are:

- there is a metropolitan core comprising established urban centres (red shading); seaport/airport corridor comprising key regional economic drivers;
- Maitland growth corridor recognised as existing growth path;
- Hunter Expressway corridor identified as an emerging growth path;
- Freeway/Pacific Highway corridor identified as an existing growth path; and
- existing and emerging convergence of strategic infrastructure in the vicinity of Hexham – herein referred to as the Hexham infrastructure hub.

Figure 20 illustrates these strategic connections and patterns at a more detailed scale, noting the following:

- the need for efficient connectivity to Kooragang Island (Newcastle Port), the airport and links to the Pacific Highway/M1 (National Freight Network);
- the need for efficient road and rail access to/from the Upper Hunter (coal fields), the imminent opening of the Hunter Expressway and potential pinch points;
- the need for the completion of the Newcastle inner city bypass around the John Hunter Hospital;
- urban renewal initiatives focussed firstly on the Newcastle city centre and progressively on other urban centres detailed in the LHRS;
- existing and emerging international gateways and key economic drivers in the form of the port and airport; and
- the future need to re-direct freight rail around, rather than through, established urban areas.

Figure 20 HMA Strategic Connections



Note: Strategy to also investigate delivering integrated transport network to inner Newcastle.

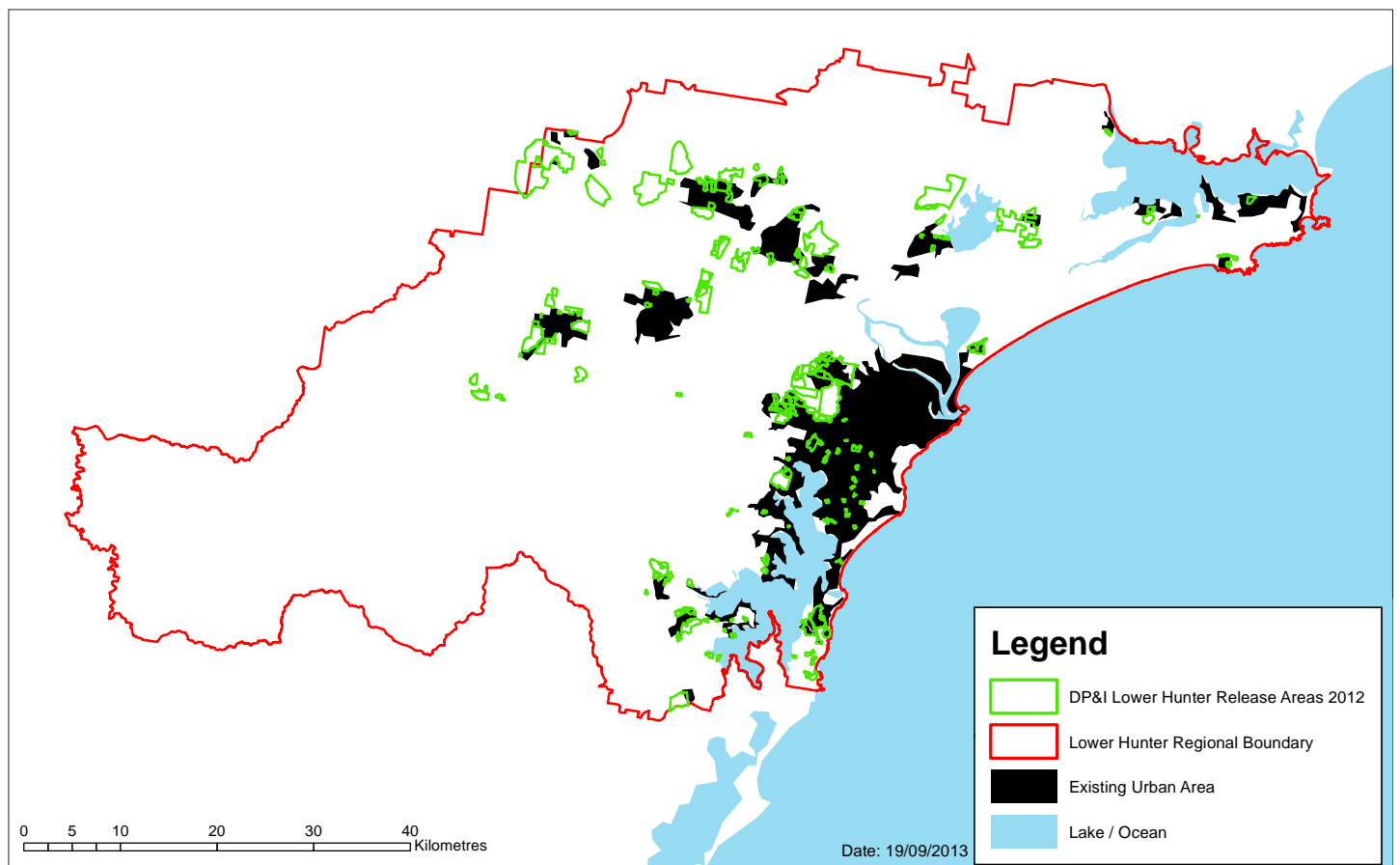
Patterns of Development – Spatial Dispersal, Infrastructure Patterns and Urban Development

The growth of the HMA has been shaped by its history as a coal mining area. It grew from a collection of scattered coal mining towns clustered around pit heads, through its industrial and manufacturing heyday to a modern and diverse region. The heavy reliance on private motor transport is in part a reflection of the dispersed nature of the settlements in the HMA. There are significant challenges associated with linking urban areas with the transport infrastructure required. The dispersed pattern of settlements also presents challenges when infrastructure and services must be provided to service the growth of these urban areas.

Settlement patterns in the HMA have been strongly influenced by topographic and landscape features which, in turn, influence infrastructure planning and service provision for these communities. For example, extensive water bodies, coastal lakes, river and estuarine systems result in isolated and dispersed settlement typical in Lake Macquarie and Port Stephens LGAs. The extensive Hunter and Williams River floodplains result in a linear band of “island” settlements occupying the higher ground as evident in Maitland. This gives way to more rugged terrain where settlements, such as in the Wollombi quarant, have sought out favourable elevated plateaus and valley floors.

Figure 21 identifies the existing and emerging urban centres in the HMA.

Figure 21 Hunter Metropolitan Area – Existing and Emerging Urban Extent



Given historical settlement patterns and an emphasis on decentralised industries and employment, population densities in the HMA are lower than Sydney. HMA residents have higher car ownership than Sydneysiders, averaging 1.7 vehicles per household compared to 1.5. The average distance travelled per trip is higher in the HMA at 25 Vehicle Kilometres Travelled (VKT) than in Sydney where it is only 18 VKT. However the level of congestion in the HMA is less than Sydney as evidenced by journey to work times which, are on average, 34 minutes in Sydney compared to just 25 minutes in the HMA (Bureau of Transport Statistics 2012).

The Bureau of Transport Statistics (2012) also identifies that HMA residents use private vehicles more than Sydneysiders who walked and used public transport more frequently (see Figures 22 and 23).

McGuirk (2007) has described the structural elements which drive demographic and settlement patterns in the Hunter as illustrated in Figure 25. In terms of settlement processes, McGuirk describes Newcastle as the main focus for urban consolidation while the surrounding LGAs are identified as spill over locations. The coal, wine and equine areas of the Upper Hunter LGAs are identified as being located within a commodities-handling corridor stretching to the north-west of Newcastle while the environmental constraints to the north are recognised as the fortress areas.

Figure 22 Modal Split Lower Hunter 2012

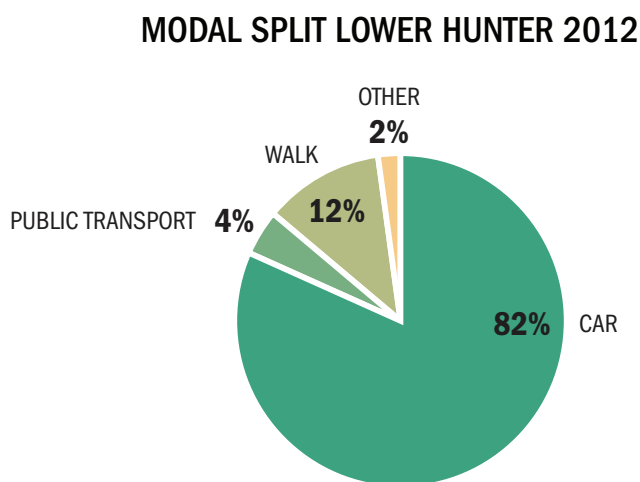


Figure 23 Modal Split Sydney 2012

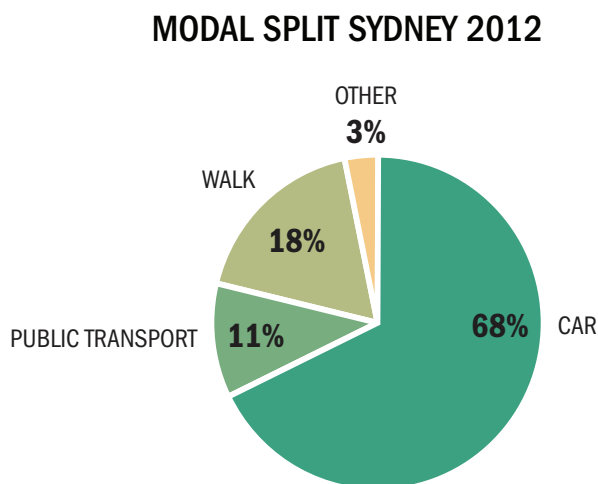
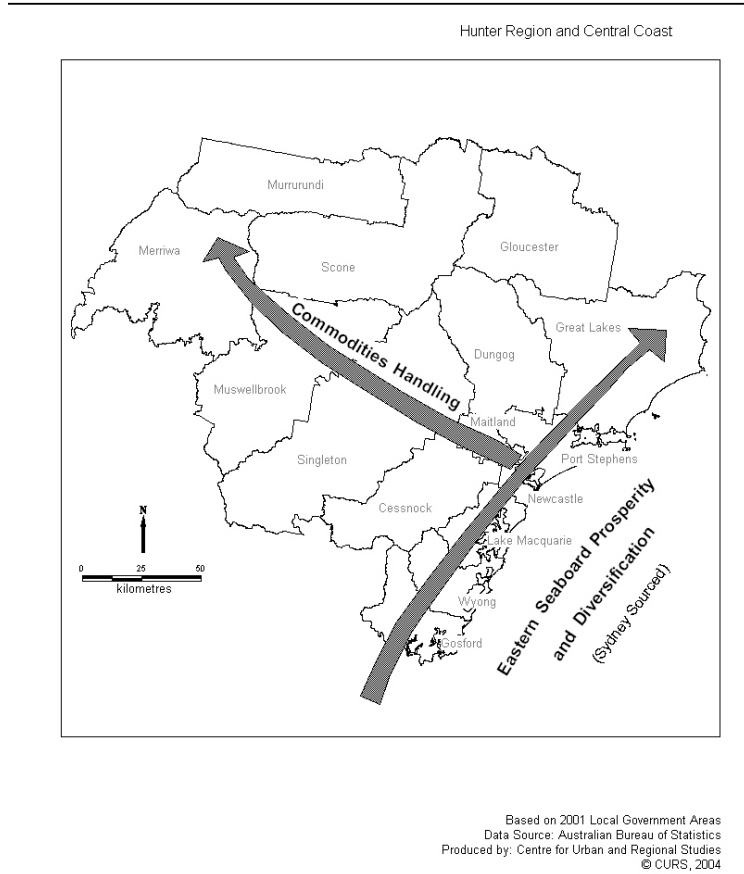
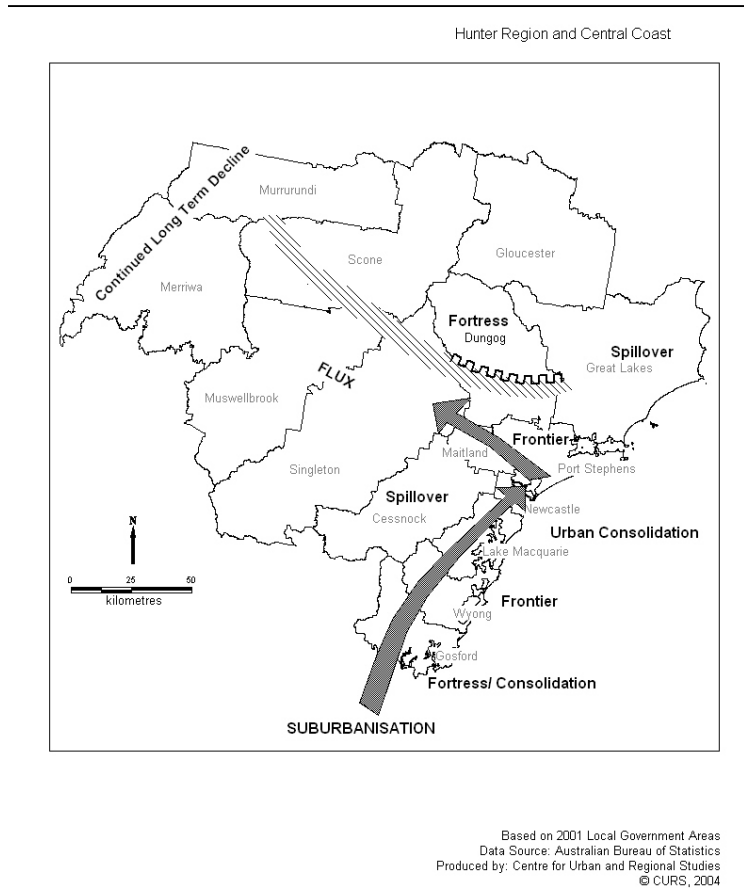


Figure 24 Economic and Settlement Processes in the Hunter

ECONOMIC PROCESSES



SETTLEMENT PROCESSES



Source: McGuirk 2007

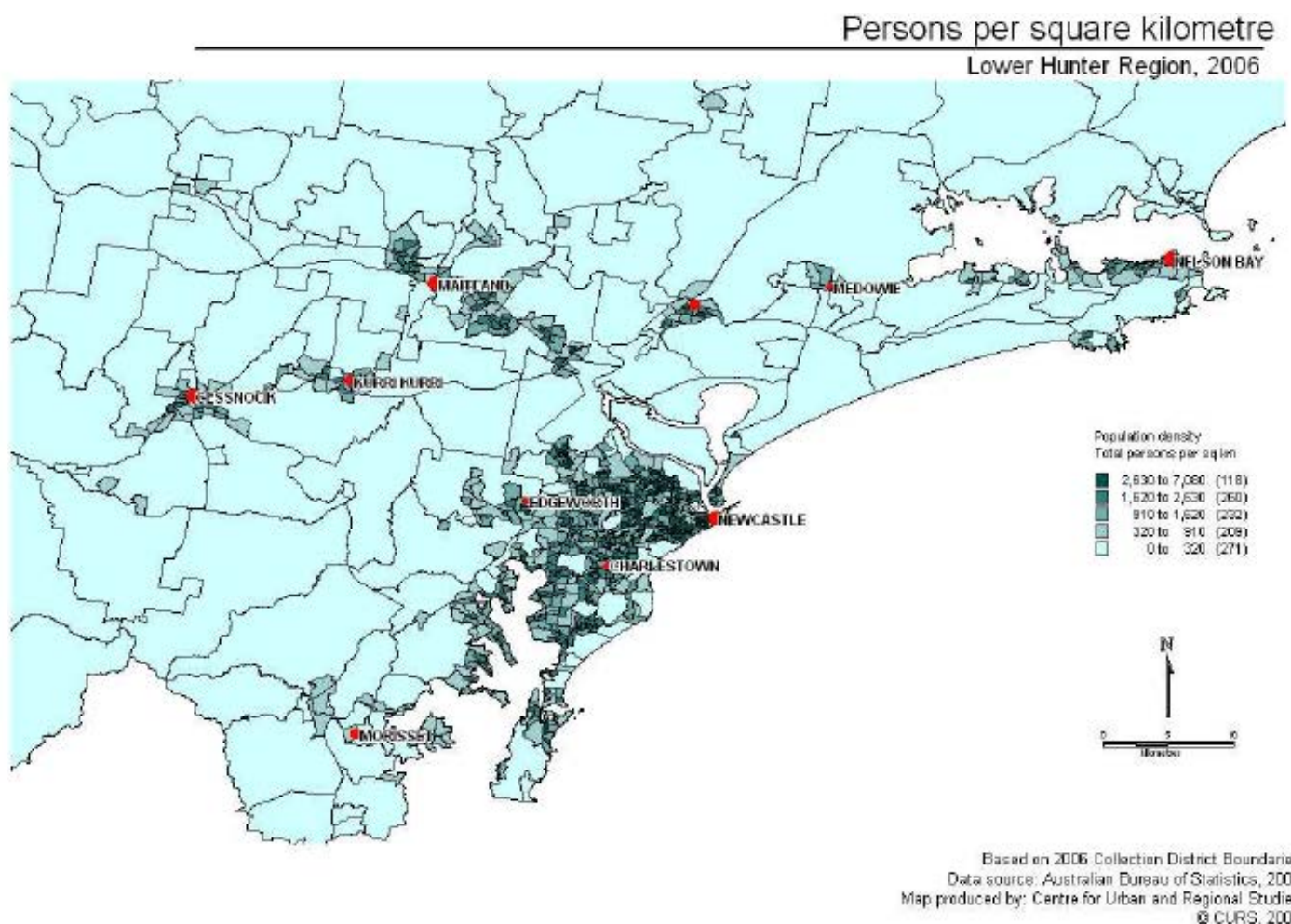
This broad characterisation provides some context for the population growth which has been experienced in recent years and the dynamic economy of the Hunter. Industries have been moving up the valley in response to the changes in resource and agricultural industry practices. Coal mining technologies are more focussed on open cut mining than historic underground mining and the viticultural and equine industries have expanded and adapted to technological changes as well.

Moving forward, two key drivers will influence emerging settlement patterns. The region is witnessing the progressive suburbanisation of population, retail and services and the regionalisation inland of resource extraction and associated employment simultaneously. This is resulting in pull factors away from the Newcastle city centre and consolidation of housing and employment growth toward the Maitland growth corridor.

The change in economic structure away from manufacturing toward service sector and mining has seen faster rates of population growth in areas around Maitland and further west and an observed increase in commuting to the inland coalfields. There has also been a shift of employment to an inner ring of activities centred on the University, the John Hunter Hospital complex and major retail centres at Charlestown and Kotara. O'Neill (2012) points out there are now several separate major concentrations of employment in and around Newcastle city centre. While the city centre still had more than 15,500 jobs at the 2011 Census, Hamilton/Broadmeadow had almost 11,000, Jesmond/Shortland had more than 6,800, Lambton had more than 8,700 and Kotara/Adamstown had almost 6,000 jobs.

The population density of the HMA is illustrated in Figure 25 which shows all the major urban centres within the HMA.

Figure 25 Settlement Patterns and Density



Source: McGuirk 2007

Liveability – The Case for Urban Renewal

Newcastle holds a special place in the regional hierarchy of urban centres. However, parts of the city of Newcastle are in urban decline and need an injection of funds and investment to facilitate successful urban renewal.

The Australian City Liveability Index survey (2012) of residents in ten Australian cities found that, in relation to Newcastle, 73% of residents agreed the region has a quality natural environment and 66% of residents agreed the region has good educational and healthcare services. However, only 55% of residents felt the region has quality urban design, recreation and cultural opportunities and amenities. This was the lowest ranking of the ten cities surveyed.

The Property Council of Australia released its Liveable Cities report in early 2013 which rated Newcastle as the fourth most liveable city in Australia out of the eleven cities included in the survey. Like the Australian Liveability Index survey, this survey also found residents believed it had access to good health care. They also believed it was a safe place for people and their property and an affordable place with a good living standard.

However, residents did not rate their city as having an attractive look or design, as being clean, well maintained and unpolluted nor as having good employment and economic opportunities. Just like the Liveability Index survey, this survey rated the attractiveness and design of the city lower than other residents rated their cities.

Urban renewal has a key role to play in relation to improving the liveability of the Newcastle city centre. The draft SEPP recently placed on public exhibition for the Newcastle city centre and the State Government's announcement that it will provide funding for key infrastructure works within the city centre have the potential to facilitate high-quality infill development, improve housing supply, upgrade public transport and see the delivery of high quality public domain. One of the key constraints which will need to be addressed, however, is that of potential mine subsidence. Along with other issues, mine subsidence has the potential to render otherwise viable projects unfeasible.

Mine Subsidence – What Lies Beneath

Mine subsidence is a unique risk in the HMA directly impacting on land use planning, infrastructure planning and the development and redevelopment of urban areas in the HMA. Potential impacts are widespread as illustrated in Figures 26 and 27, affecting development in existing and emerging centres such as Newcastle, Charlestown and Glendale and major infrastructure works such as the Hunter Expressway in the vicinity of Kurri Kurri. It should be noted not all mined areas are captured by the Mine Districts identified in Figures 26 and 27. Thus detailed due diligence enquiries with the Mine Subsidence Board is a prerequisite prior to undertaking development.

Figure 26 Mine Subsidence Districts in the HMA

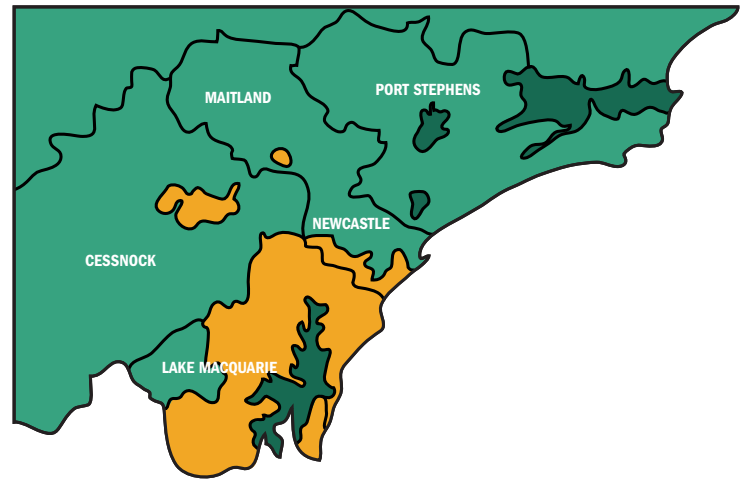


Figure 27 Mine Subsidence Districts in the Hunter



Mine subsidence, in association with other more common constraints, has impacted on the viability of major new developments and significant redevelopment, particularly in the Newcastle city centre. Compounding this issue the concept of mine subsidence is not widely understood and the associated risks are not apparent to those unfamiliar with living in a mining area.

The magnitude of mine subsidence impacts varies in accordance with a number of factors including the method of coal extraction, depth of workings, geology of overlying strata, period of time since the seam was mined and the nature of building/improvement works proposed. One of the critical factors surrounding mine subsidence is the unpredictable nature of risk mitigation works and the variability in the extent and cost of remediation works. The final cost of mine grouting works is often impossible to define upfront making this the quintessential “wicked problem”.

The Hunter Region office of the Department of Premier and Cabinet is currently coordinating the Hunter Region Mine Subsidence Taskforce which comprises membership from a range of state agencies including the Mine Subsidence Board, Department of Planning & Infrastructure, Hunter Development Corporation, NSW Urban Growth, Newcastle City Council, Lake Macquarie City Council and local industry groups.

The Taskforce is currently focussed on developing a strategy for the Newcastle city centre; however the proposed strategy for remedial works will require external funding. The Taskforce proposes to commence work on a strategy for defining mine subsidence risks and mitigation options for the Charlestown and Glendale CBD areas in the near future.

This plan has identified a need to develop a mapping system that defines the impact of mine subsidence on surface development throughout the HMA. The project would essentially validate the existing mapping information to achieve an appropriate level of accuracy, identify development constraints for defined areas and quantify the likely extent of remedial work required for developable land throughout the HMA. The project should focus initially on existing urban centres and identified development fronts and growth precincts, for example the Newcastle city centre, Charlestown centre, Glendale growth precinct and Maitland-to-Branxton growth corridor, including the proposed Huntlee new town.

In the longer term the project could evolve to cover the entire urbanised area of the Hunter. The development of land information databases is an emerging global trend with the recent advances in Geographical Information Systems (GIS) technologies and broader adoption by administrative agencies.

A strategy, involving all tiers of government, needs to be developed to deal with this issue which is an impediment to growth, negatively impacting productivity and affordability and detracting from key liveability goals, particularly in respect to much-needed urban renewal initiatives. The strategy is considered essential to the advancement of urban development in the HMA.

Urban Development

In addition to mine subsidence issues the HMA faces a number of challenges that impact on the supply of housing which has seen new housing fall well short of the targets established in the Lower Hunter Regional Strategy in recent years (Department of Planning 2006). One of the most significant impacts was the Global Financial Crisis (GFC) which saw the urban development sector struggle to assemble and secure financing for commercially viable projects. The rate of new housing production has fallen from the record levels of 2002 to 2005, when around 3,500 dwellings were constructed annually, to just over 1,000 dwellings being constructed in 2008. More recently, this has increased to almost 3,000 new dwellings in 2011 (NSW Department of Planning and Infrastructure 2013). However, this is still well short of the 4,600 dwellings per annum which the LHRSS states is required to accommodate the projected population to be accommodated in the HMA until 2031 (NSW Department of Planning 2006).

The Lower Hunter Regional Strategy aimed to increase the percentage of new dwellings in established urban areas from 25% to 40% by 2031. During the period 2006 to 2011, 70% of new dwellings have been constructed on small infill sites or as part of medium-density housing projects within established urban areas. The proportion of new housing being constructed in urban release areas is at an historical low.

The failure of urban release areas to come on line is part of the explanation why housing in greenfield areas has been at such low levels. The reasons for this include the GFC, the requirements for biodiversity offsetting, riparian corridors to protect watercourses and asset protection zones to minimise bushfire hazard, the complexity of the planning approval system and the lack of lead-in infrastructure. In order to overcome these challenges, a number of programs have been initiated by the State Government. One of these initiatives is the preparation of an urban development program (UDP) and growth infrastructure plans (GIPs) for the region which will not only monitor land supply but also manage the delivery of land and housing supply to ensure adequate stocks of land are maintained.

When operational the GIPs will provide valuable information which will be integrated into the HSIP to assist in identifying areas with infrastructure capacity within the designated urban footprint and those urban release areas that have the ability to efficiently be served by extending existing networks.

In addition, specific infrastructure funding packages such as the Hunter Infrastructure and Investment Fund (HIIF) have been established by the State Government to assist in addressing infrastructure deficiencies which are impacting on the housing supply chain. In association with the management of urban release areas, funds like the HIIF will be available to facilitate targeted intervention by the Department of Planning and Infrastructure which would coordinate service agencies so a more structured approach to delivering land and housing is put in place.

Regulatory uncertainty – characterised by a continuous cycle of increased requirements in terms of health and safety, environmental standards, compliance and related requirements reflecting community expectations and changes to legislation – has also impacted on the housing supply chain. The difficulty of successfully engaging with and navigating the planning system, coupled with balancing community expectations, has resulted in a commitment from the State Government that the Environmental Planning and Assessment Act 1979 will be replaced by a simplified planning system. A Green Paper was released in 2012 and a White Paper released in April 2013 (NSW Department of Planning and Infrastructure 2013). One of the outcomes of the new planning system should be a simplified and streamlined planning approvals regime.

Regional educational attainment is low and lags behind the NSW average in terms of Year 12 retention rates and qualifications at diploma level and above. Although unemployment levels are currently below the state average and unemployment in the Upper Hunter is extremely low, this is a recent phenomenon. Over a longer period, Hunter unemployment levels have been above the state and national average and, even now, there remains a sizeable pool of long-term unemployed plus large numbers of people who are not in the labour market. That fact, plus the national/COAG agreement to boost workforce participation, has implications for Vocational Education and Training (VET).

Social Outcomes – Health and Education

Health and education outcomes in the Hunter are lower than NSW and national benchmarks. Significant population growth is projected in Cessnock, Maitland, Muswellbrook and Singleton LGAs over the next 20 years. In addition, most Hunter Valley LGAs have a degree of socio-economic disadvantage (refer Table 4). Health data shows reduced life expectancy and higher rates of chronic diseases are evident in some parts of the Hunter. It is also noted the Upper Hunter faces some unique challenges in terms of health needs and impacts on social infrastructure related to increased mining activity.

Table 4 Index of Relative Socio-Economic Disadvantage (IRSD) by SLA

SLA	SEIFA 2011IRSD Score ¹	State Rank	HNE Rank (lowest - highest)
Cessnock (C)	936	33	7
Great Lakes (A)	932	316	10
Gloucester (A)	951	52	12
Muswellbrook (A)	968	76	14
Newcastle (C) - Outer West	994	107	16
Upper Hunter Shire (A)	981	94	19
Lake Macquarie (C) - West	995	108	22
Port Stephens (A)	980	117	25
Maitland (C)	993	106	26
Dungog (A)	989	100	28
Singleton (A)	1013	118	29

Source: Socio-economic Indexes for Areas (SEIFA) 2011, released March 2013

Notes: 1. A score of <1000 indicates disadvantage
A=LGA, C=City

CHAPTER 4.

INFRASTRUCTURE CAPABILITY ASSESSMENT WHERE ARE WE NOW?

A comprehensive agency consultation process was undertaken in 2012 to assist in the formulation of the HSIP. The consultation included a qualitative survey involving key infrastructure agencies and, in most cases, was then followed up by face-to-face interviews. This consultation, in addition to extensive research into Commonwealth and State Government Plans, Sectoral Plans, and funding submissions has guided this formulation of the HSIP.

Key Observations

The following key observations flow out of the consultation process with key infrastructure agencies.

Planning Horizons

Strategic planning horizons for infrastructure plans varied from 10 to 30 years. Ten year time horizons are typically associated with the social infrastructure sectors surveyed, while 20 to 30 years was typical for economic infrastructure sectors.

Qualitative Analysis

Unsurprisingly, an ageing infrastructure asset base was identified as a universal challenge facing all infrastructure sectors within the HMA. The HMA has benefited from the investments of previous generations, notably the public works eras of the early 1900s to 1950s, 1960s and 1970s.

In some cases the situation has been reached where critical infrastructure assets are rapidly approaching or have arrived at the end of their economic and, in many cases, their practical design life. In these circumstances, infrastructure renewal is required. This represents a significant and sustained investment in economic and social infrastructure now and in the coming decades. The NSW Government SIS has adopted a planning horizon of 20 years over two phases (0 to 5 years and 6 years to 20 years) to prioritise and stagger investment over time.

Infrastructure and the GFC

A consistent comment made during agency consultations in 2012 suggested the Global Financial Crisis (GFC) allowed many infrastructure agencies to catch up and address the growing infrastructure backlog emerging in each sector. This was the case for lead water, waste water and electricity providers. As a consequence, these agencies at that time were at, or close to where they would like to be in respect of containing infrastructure backlog but also having some capacity to respond to future growth.

Climate Adaption and Infrastructure

Consideration of potential impacts of climate change upon infrastructure assets and the need for proactive adaption is an emerging issue for many infrastructure sectors. The location and design of infrastructure must have regard to the likely impacts of climate change and the potential for infrastructure to contribute to global warming. In particular, in coastal areas of the Hunter where there may be concerns about sea level rise, increased storm surge and more frequent and intense storm activity in future, there is a need to give careful consideration when making decisions about siting infrastructure in potentially vulnerable areas. Similarly, during the design phase, due regard to the likely impacts of climate change must be factored in so during the design life of the structure it is not rendered inoperable or suffer a decline in effectiveness/productivity.

Key Challenges

The following key challenges have been identified as generally applying to all infrastructure sectors to varying degrees.

Regulatory Uncertainty

The current environment is characterised by a continuous cycle of increased requirements in terms of health and safety, environmental standards, compliance and related requirements, reflecting general community expectations and legislative changes.

Sequencing of Development

Accurately anticipating the location of market demand was identified as a very difficult task in the absence of clear staging and sequencing signals in adopted government land use strategies. It was noted that individual agencies often act independently involving significant allocations of capital, based on the available (and often incomplete) information.

Funding of Capital Works/Competing Priorities

Irrespective of the funding source(s), availability of funds is constrained. Capital rationing and risk management is used to determine public capital works program priorities.

Customers Needs, Willingness/Ability to Pay

Matching customer (developers and end users) needs and reconciling willingness and/or ability to pay is a challenge with which many infrastructure agencies must grapple.

Planning and Decision Making Complexity

Difficulties encountered navigating the myriad of planning and environmental legislation, regulations and approval processes coupled with balancing community expectations was a common theme identified in agency feedback.

Quantitative Analysis – IIPT Insights

As noted in Chapter 1 the Integrated Infrastructure Planning Tool is technically feasible at a regional scale. The IIPT Stage 1 development has generated a much-improved picture of lead infrastructure costs. Progressive refinement of the IIPT will improve the tool, enabling consideration of both cost and revenue elements to support land use and infrastructure planning in the region. Given the scale and complexity of the data sets assembled during the development phase, there is a need to undertake a comprehensive data audit and quality control check. The results should, therefore, be considered preliminary or indicative only at this stage.

Notwithstanding its early stage of development the IIPT can provide some valuable insights to inform the current review of the LHRS and supports the basis for a suggested strategic infrastructure framework and identifies issues for further investigation (see Figure 29).

It is generally assumed existing major centres (the subject of urban renewal) contain adequate infrastructure capacity and capability given the observed decline in population and/or businesses reflected in declining infrastructure loadings. For the purposes of this plan the IIPT has been used to identify locations within existing major centres that have either spare capacity in respect to water supply, sewerage and electricity due to significant land use changes or locations with service catchments that have modest augmentation costs to accommodate urban renewal and/or growth. In most cases these locations need to be considered in conjunction with mine subsidence affectation which is identified as part of future IIPT Stage 2 development.

This preliminary analysis has identified the following localities for further investigation within existing major centres:

- Newcastle (cost relative to scale of development),
- Glendale/Cardiff,
- Maitland – Rutherford; and
- Raymond Terrace.

Other centres warranting further investigation are Warners Bay and Kurri Kurri.

In respect to suggested priority development fronts in the HMA with infrastructure capacity the IIPT can provide useful inputs for consideration in the LHRS review.

In respect to greenfield development fronts the existing urban release precincts have been overlaid on the IIPT Stage 1 outputs. Analysis suggests there is generally good alignment in terms of capacity with the exception of some locations where significant augmentation is required to support further releases and growth. In these instances, it is recommended available agency resources be directed to exhausting locations which utilise existing capacity first and then direct resources to those locations that have the greatest potential population to spread the cost of infrastructure upgrades and support affordability.

The following locations within the HMA have been identified as generally having good existing capacity and future capability at reasonable cost, as well as having strong alignment with the LHRS and the Suggested Infrastructure Framework (see Figure 29):

- Medowie – proximity to airport corridor;
- Anambah and Lochinvar – part of West Maitland growth corridor;
- Thornton North – part of East Maitland growth corridor
- Gillieston Heights – straddles existing Maitland growth corridor and emerging Hunter Expressway corridor;
- Tanilba Bay – lifestyle residential location in Port Stephens LGA;
- Wyee – southern most extent of M1 corridor fringe HMA; and
- Minmi/Fletcher – western fringe of metropolitan core.

The IIPT has also noted the Lower Hunter service catchments for potable water and waste water extend west into the Upper Hunter in the vicinity of Whittingham. It is also noted Ausgrid's service catchment overlaps into the Upper Hunter.

Figure 28 Suggested Strategic Infrastructure Framework



- 1 Metropolitan core – Established Urban Area & Renewal
- 2 Port and Airport Corridor – Key Economic Drivers/International Gateways
- 3 Maitland Growth Corridor – Existing Growth Plan
- 4 Upper Hunter Coal and Energy Corridor & Western Gateway – Key Economic Drivers
- 5 Hunter Expressway Corridor – Energy Growth Path
- 6 M1/Pacific Highway Corridor – Hexham Infrastructure Hub
- 6A Northern Gateway – North Raymond Terrace/Heatherbrae
- 6B Southern Gateway – Morriset

Sector Gap Analysis

Transport

Road and Rail

As transport inefficiencies significantly impact on productivity (which is a major economic driver) the key focus in terms of road and rail transport infrastructure improvements is the elimination of pinch points. This requires road and rail improvements, particularly in relation to the movement of freight around the HMA and to key nodes outside the HMA. Significant progress has been made in recent years with the construction of projects like the Hunter Expressway, due to open in late 2013. This is a joint Commonwealth/State funded project representing an investment of approximately \$1.7B to address congestion in the road network. It will benefit both the HMA and the resource sector based in the Upper Hunter.

There is a need to identify and preserve strategic infrastructure corridors across a range of economic infrastructure categories and this is particularly the case with road and rail infrastructure. Economic hubs, including the port and Newcastle Airport, need to be better linked with existing and emerging urban centres, residential communities and employment lands. The reservation of strategic corridors is especially important given the demand to upgrade the regional road/rail network outstrips available funding based on current funding models. This makes a strong case that strategic corridors are set aside until a strong business case to construct the required infrastructure can be made. This can result in significant savings in terms of avoiding having to acquire land at a later date at inflated prices.

One example of infrastructure planning and delivery failing to support key economic drivers experiencing sustained growth is the duplication of Tourle Street Bridge and approaches and the upgrading of Cormorant Road. The expansion at the port and at Newcastle Airport which has been observed in recent years has been impacted by poor road linkages in the vicinity of Kooragang Island. Regional road and rail improvements need to be aligned with growth precincts to ensure the necessary transport links are in place to allow the efficient functioning of the economy.

Road traffic in the HMA is forecast to grow at around 4% per annum over the next decade (Hyder 2009). This increase is expected to be largely fuelled by population and employment growth. Given the existing levels of congestion experienced in critical areas around the HMA at peak times, projects like the Newcastle Inner City Bypass will need to be brought online to avoid a worsening of congestion which would result in reduced productivity and restrict access to essential health services.

At present there are some 2.1M trips generated daily in the Newcastle region with 80% of these being via private cars and only 4% via public transport. The key factors influencing the mode of transport in Newcastle are the low frequency and patronage of bus services, ready availability of car parking in the Newcastle city centre and dispersed destinations on bus networks, resulting in indirect service availability (NSW Transport 2012). As noted in Chapter 3, public transport patronage in the Lower Hunter is very low.

By contrast the heavy rail network is focussed on freight. This is evidenced by the fact there has not been any expansion of the passenger rail network over the past 30 years, despite the substantial growth in residential communities over this time period within the HMA.

NSW Long Term Transport Master Plan

The recently adopted NSW Long Term Transport Master Plan (Master Plan) provides a 20-year blueprint for a world class transport system for NSW. It notes that growth in the Hunter Region will be focussed in the Newcastle, Lake Macquarie and Maitland areas and the regional road network will require upgrading to support this growth. In particular the Newcastle Inner City Bypass, the Newcastle Link Road and Newcastle Road corridor improvements are identified as a priority. Improving the connections to the port and Newcastle Airport from the national highway network is also seen as a priority.

The Master Plan identifies two strategic corridors within the Hunter Region, namely Newcastle to Tweed Heads (highway and rail) and Newcastle to Wallangarra (major commodities such as wheat and coal are transported to the Port of Newcastle by rail which is at capacity in the Hunter component of this corridor).

Several transport projects are underway including:

- the Hunter Expressway which is due for completion in late 2013 at a cost of \$1.7B;
- M1 Pacific Motorway/Weakleys Drive Intersection to Broadmeadow Road improvements;
- Nelson Bay Road Upgrade which is due for completion in 2015 at a cost of \$10M;
- New England Highway Upgrade from Maitland Hospital to Maitland Railway Station which is currently at the design stage and has an estimated cost of \$45M;
- Hunter Wine Roads Upgrade which is due for completion in 2015 at a cost of \$20M; and
- Newcastle Inner City Bypass Stage 4 (Shortland to Sandgate section) is due for completion in 2013.

In conjunction with the Master Plan the Government State Infrastructure Strategy and Hunter Regional Action Plan have collectively identified a range of issues, gaps and opportunities for improvement. The key projects relevant to the HMA are:

- Newcastle Link Road;
- Growth Plan for the Port of Newcastle;
- Strategic Freight Rail Corridor for Fassifern and Hexham bypasses;
- extending the M1 to the Pacific Highway at Raymond Terrace;
- encouraging transport preferences away from private motor vehicles which will require coordination of rail, bus and other active transport options;
- integrating transport plans and strategic planning to deliver increased transport efficiency at the same time as protecting the environmental wellbeing and sustainability of local communities;
- Mainline Acceleration Program – rail line passenger service journey time improvements between Sydney and Newcastle;

- planning for the duplication of Tourle Street Bridge & Approaches, Kooragang Island;
- planning for the Newcastle Inner City Bypass Stage 5 (Rankin Park to Jesmond);
- investigation into the Adamstown Level Crossing; and
- Regional Transport Enhancements – connections to port, airport and state significant strategic employment lands and existing and emerging major centres.

Hunter Regional Transport Plan

The NSW Long Term Master Plan is to be supported by a series of regional transport plans to assist with implementation. Delivering these plans will require an effective partnership between the NSW and Australian Governments in collaboration with local government. The Hunter Region Transport Plan is anticipated for release in late 2013. It will outline the investment program to deliver improved transport outcomes for the Hunter Region.

Key challenges to be addressed in the Hunter Region Transport Plan include revitalising Newcastle's city centre, balancing passenger and freight needs, improving the integration of public transport and providing faster and more frequent connections to Sydney and surrounding regions.

Port

The Port of Newcastle is NSW's largest port in terms of throughput and exports more coal than any other port in the world. In 2011/12 approximately 121M tonnes of coal was exported from three terminals. A fourth coal loader, known as T4, is seeking the necessary land use and environmental approvals which would have the effect of lifting throughput to more than 280 million tonnes. At time of writing, a commitment to construction has been put on hold.

The channel is, therefore, considered a key economic artery of the Hunter. This plan notes and supports the recently released Port Strategy which further consolidates the role and functions of Newcastle Port in the context of the NSW Three Ports Strategy reflected in the State Environmental Planning Policy – Major Development.

The key issues identified in the above documents include:

- channel maintenance;
- connectivity to national road and rail freight linkages; and
- increasing the export capacity of the port and diversifying the range of exports are seen as high priorities from a regional, state and national perspective.

In respect to the scope of this plan, connectivity between the port and national freight networks is the critical consideration to the overall productivity of the Hunter Region and is addressed in Chapter 6.

Airport

Newcastle Airport is used by more than 1.2M passengers annually and is a key regional transport hub located on a 28ha site adjoining Williamstown RAAF Base 19km north of the Newcastle city centre.

The airport is recognised as a key driver of regional economic growth, in part driven by general economic growth and the mining sector. The airport has witnessed significant passenger growth since 2002, growing from 214,000 to approximately 1.2M passenger movements per annum in 2012. It is undergoing a corporate restructure to raise finance to invest in the growth of its operations. Plans to upgrade the airport terminal and associated support facilities have been recently approved by Port Stephens Council.

The airport's role in the region will become increasingly important in response to industry structural change and workforce mobility. Business travel grew 56% and leisure 44% in 2012. While air defence and aviation are generally the Commonwealth Government's responsibility, in this instance the civilian airport component is jointly owned by Newcastle and Port Stephens Councils. The State Government also has a key role to play in enhancing access to and from the airport to support growth. This issue will be addressed by the Hunter Transport Plan, currently under preparation by TfNSW and anticipated for release in late 2013.

This plan notes the current airfield review by the Department of Defence in anticipation of the deployment of the new Joint Strike Fighter (JSF) at RAAF Williamstown. The HSIP supports the airport expansion in accordance with the Newcastle Airport Master Plan. This plan also supports defence initiatives that enhance civilian airport capacity and flexibility along with future growth and investment within and immediately surrounding the airport precinct.

Water

Water infrastructure across the region is administered by Hunter Water Corporation (HWC). The Metropolitan Water Directorate, in conjunction with HWC, is currently preparing a Lower Hunter Water Plan (LHWP) to provide a strategy to ensure the Lower Hunter has adequate supplies of potable water to meet expected demand given anticipated population growth, climate change scenarios and the expansion of industry. The plan is in the community consultation phase and is expected to be completed in 2013. Water security is generally well managed in the HMA.

Energy

Power generation and transmission is part of a national regulated energy market and is, therefore, outside the scope of a regional scale infrastructure capability assessment. The electricity network is generally in good condition and capable of meeting demand in the short-to-medium term, however, some assets are nearing the end of their design life. This plan also notes the potential for a third base load power station

to be situated in the Upper Hunter in proximity to the HMA taking advantage of the existing mature infrastructure networks situated with an established coal and energy corridor.

In respect to electricity transmission within the HMA the network is generally in good condition and capable of responding to population growth and industry demand. Tools such as the IIPT can support agency planning.

Gas transmission is serviced by the private sector and its distribution network is also in good condition. Gas exploration has increased in recent years and is privately funded. The fact that many of the reserves of coal seam gas (CSG) are located close to existing pipelines improves the commercial viability of extracting CSG. The introduction of Renewable Energy Certificates as well as the Carbon Tax will continue to shift the mix of energy sources in favour of renewables, as well as demand management measures to temper growth in peak demand.

Telecommunications

The NBN is currently being rolled out by the Commonwealth Government around the nation based on a fibre to the premises (FTTP) network. It aims to provide 90% of schools, homes and workplaces with broadband services through fibre to the premises connections. The remaining 10% will be supplied with next generation wireless and satellite broadband services. By providing cheaper and more effective ways to connect suppliers and customers and create new work opportunities for employees and others with access to markets, leisure opportunities and education, the NBN will open up new opportunities.

Notwithstanding recent Commonwealth announcements expanding the list of areas identified for priority rollout, there is limited penetration into the region at this time. This plan notes and supports the practice of new greenfield residential area incorporating reticulated fibre in place in readiness for future connection. Enhanced 4G mobile coverage has been released in Newcastle city centre and provides another foundation for urban renewal. Moving forward, this plan identifies opportunities to align subregional delivery plans as proposed under the White Paper (NSW Department of Planning and Infrastructure 2013) with priority rollout areas incorporating key economic drivers and/or employment clusters.

Health

The HMA comprises a substantial portion of the Hunter New England Local Health District. As the population increases and the demographics change the demand on health facilities and services in the region will also change. Health infrastructure, therefore, needs to refurbish and reconfigure to cater for future demand. The following information is derived from the Hunter New England Local Health District (HNEH 2013).

Planning for the future development and delivery of health services across the region is facilitated through a Clinical Services Plan (CSP) process that includes an extensive review of relevant data, policies and literature on the current and future health service delivery. This involves consultation with key stakeholders, such as patients, community representatives, clinicians and managers. Following the endorsement of a Clinical Services Plan, capital works priorities are identified in the Hunter New England Health – Asset Strategic Plan and the NSW Health Total Asset Management (TAM) Plan which consider a 10-year timeframe.

A number of Clinical Services Plans have been endorsed by the Hunter New England Health Board recently and outline key infrastructure issues:

1. The Hunter Valley Clinical Services Plan

- The Hunter Valley Clinical Services Plan covers residents from the LGAs of Maitland, Cessnock, Dungog, Upper Hunter, Muswellbrook and Singleton. It also analyses the demands from residents in bordering LGAs of Lake Macquarie, Port Stephens and Newcastle.
- This plan recommends a new, major referral hospital in the Maitland/Lower Hunter area servicing the local population of greater Maitland and providing rural referral services for residents westwards to the Hunter Valley coalfields.

The plan makes recommendations to adapt existing facilities to accommodate the significant changes that have occurred in the way health services are delivered.

These changes include: an increased focus on community-based services, preventative care and chronic disease management; increasing specialisation of services; and new and different roles for acute hospitals. Hospitals are implementing innovative models of service delivery and care which is resulting in shorter hospital stays, with traditional “hospital” care increasingly provided in people’s homes or from clinics closer to where people live.

2. John Hunter Hospital Paediatric ICU Services Statement

This plan describes the building works to establish a six bed paediatric intensive care unit (ICU) co-located with the general ICU. It will provide critical care to children from northern NSW and the Hunter metropolitan area who may require intensive care and tertiary infrastructure support. This service will assist in reducing transfers to Sydney children’s hospitals, creating greater access to care for children locally and from within our extended Children and Young People’s network (up to the Queensland border).

3. John Hunter Children’s Hospital Neo-Natal Clinical Services Plan

This plan recommends new models of care for neo-nates in a larger footprint on the John Hunter Campus, providing access to contemporary space for newborn and premature babies and their families, addressing safety, access and comfort issues. This tertiary service provides a statewide role and is extremely important for the whole state.

4. Lower Mid North Coast Clinical Services Plan

This plan outlines the future service delivery models for residents of Gloucester, Great Lakes and Greater Taree LGAs. It focuses on delivering services for ageing residents and increasing levels of chronic disease, best delivered by ambulatory and community-based services, as well as the role of acute hospitals in the area.

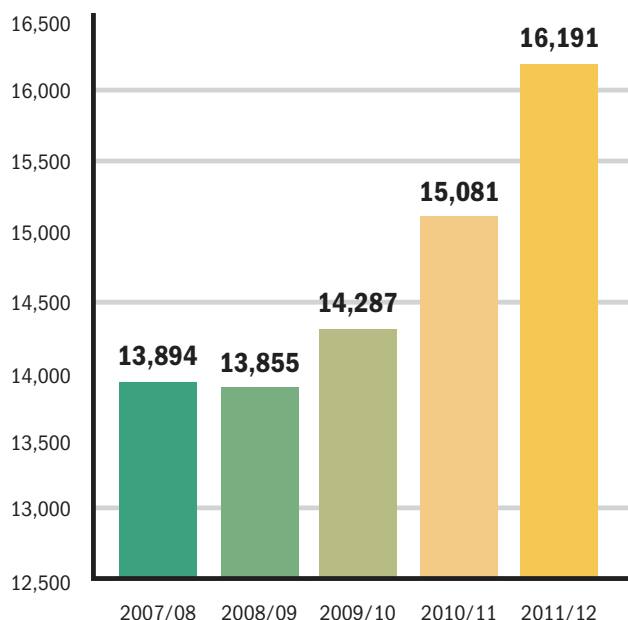
Population

Significant population growth is projected for several LGAs across the Hunter including Cessnock, Maitland, Muswellbrook and Singleton LGAs. The LHRs projects even higher population increases for Maitland and Cessnock with the population of these LGAs projected to increase by more than 70,000 people to 2031. Coupled with this projected growth, there will be an ageing of the population across all Hunter LGAs, as well as increasing numbers of children and young people in Maitland and Cessnock in particular. With the expansion of mining in the Upper Hunter the community of Muswellbrook is seeing a large increase in the number of mobile workers which is generally creating pressure on local services and infrastructure. The demand on health services is generally from the resident ageing population with increased levels of chronic disease.

These population pressures are also impacting on local health services, in particular on numbers of emergency presentations which have increased by 13% at Maitland Hospital between 2007/08 and 2011/12.

Maitland Hospital has seen a significant increase in activity over the last five years. In that time, there has been an increase of 17% in admissions to Maitland Hospital (see Figure 29) with almost 2,300 more patients treated there in 2011/12 than in 2007/08.

Figure 29 Total Admissions to Maitland Hospital



Maitland Hospital has a wider role as the major referral hospital for residents of Upper and Lower Hunter LGAs, however, the lack of bed capacity and acuity of services increases the admission of patients to John Hunter Hospital and Calvary Mater Newcastle. In 2011/12, Cessnock and Maitland LGA residents made up 15% of admissions to John Hunter Hospital and 8% of Calvary Mater Newcastle. These percentages do not include patients with diagnoses requiring tertiary level care provided at these two hospitals.

Development of a new facility in the Maitland area is essential to the provision of future services to residents of the Hunter Valley and the bordering residents of greater Maitland. Facilities planning has commenced but the timing of actual construction is not known but likely to be within 5–10 years. The NSW Government has identified a site for the new hospital.

Education

The expanded University of Newcastle city campus is identified as a key catalyst project supporting the urban renewal of the Newcastle city centre. The NSW Government has committed \$25M toward the \$95M expansion of the city campus. The balance of funding required will come from a Commonwealth grant of \$30M and university funding valued at \$40M. This initiative is strongly supported as it will generate employment and bring young people to the city centre. It will also assist in skills development which is a high priority to ensure the region is well-placed to meet the challenges of the future. The demand for associated student accommodation is also expected to generate significant investment in and around the city centre. Construction of the expanded city centre campus is anticipated in the short term.

INSW (2012) anticipates new schools will be required to be constructed in the Hunter and Central Coast Regions over the next 20 years to accommodate predicted growth in student numbers. Public schools within the region are governed by the NSW Department of Education and Communities. Control of

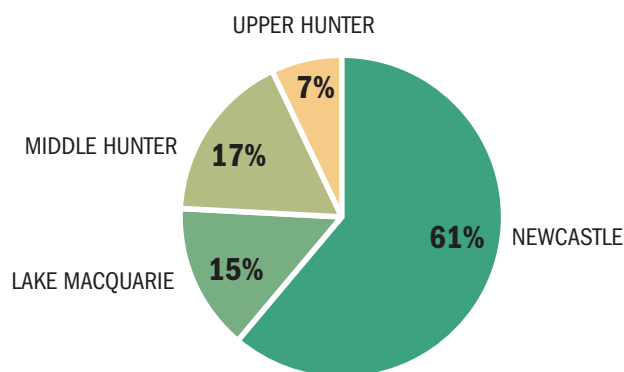
school expansion and upgrade is generally managed via central analysis of demographic trends and capital allocated as per the established process administered by the Department. It is understood that priorities are focussed on special needs and areas of sustained population growth of school aged children.

The Hunter Institute (TAFE) is the public provider of vocational education and training in the region and is focussed on upgrading infrastructure to meet community expectations, rapidly changing technologies and industry standards when delivering courses. There are 15 TAFE campuses servicing the Central Coast and Hunter regions with annual enrolments in excess of 62,000 (including 14,000 apprentices and trainees).

As shown in the chart below, the Hunter Region has experienced strong growth in demand for VET services over the past five years, in line with the relative strength of the regional economy. The black coal mining sector has been one key driver, with a flow-on effect to related manufacturing and engineering. The service sector has also been strong and long-term growth can be expected in services – particularly those related to health/wellbeing and aged care. The construction industry, currently experiencing a slow period, is cyclical and will return to growth. TAFE NSW – Hunter Institute also delivers significant entry level and employability skills education and training and continually adjusts its service delivery profile to meet evolving regional needs. It is now also offering a limited selection of Higher Education Degree and Associate Degree programs.

Figure 30 TAFE Enrolments Share by Subregion (Hunter)

ENROLMENT SHARE BY SUBREGION



This HSIP supports the capital improvements for the following facilities in line with the current strategy being implemented:

- construction of a new facility for Plastering and Building Finishes at Maitland Campus;
- expansion of the Plant and Heavy Vehicle Mechanical and Electrical Training Centre at Kurri Kurri Campus; and
- planning for future development of the Maitland Campus as the key centre for Building Trades.

TAFE is using funding it has secured to work with employers and community members to help maximise the benefits of the National Broadband Network in delivering education and training.

Gap Analysis

Table 5 Summary of Gap Analysis

Assessment of State Infrastructure		
Sector	Asset Class	Issues
Transport	Roads	<ul style="list-style-type: none"> · Hunter Transport Plan will prioritise road infrastructure projects · Emphasise connectivity between port/airport/national/regional road network · M1 Extension to Heatherbrae identified in SIS as medium term State Priority
	Rail	<ul style="list-style-type: none"> · Newcastle Freight Bypass currently route selection stage (concept only) · High Speed Rail link to Sydney and beyond seen as long-term venture
	Port	<ul style="list-style-type: none"> · Adequate capacity to service current demand · Significant investment needed, e.g., T4, to meet future demand
	Airport	<ul style="list-style-type: none"> · Major Terminal Upgrade required to increase capacity · Improved connections to M1 and Newcastle Urban Area required · Infrastructure required to service airport/aerospace employment node
Energy		<ul style="list-style-type: none"> · Carbon Pricing is likely to increase demand for renewable energy production · Coal Seam Gas (CSG) reserves close to existing pipeline – huge economic potential
Water		<ul style="list-style-type: none"> · Lower Hunter Water Security investigations underway · Funding issues to be resolved after findings are known
Health		<ul style="list-style-type: none"> · New hospital at Metford in the next 10 years (subject to recommendations of Clinical Services Plan) · Shift likely from care in hospitals to preventative care facilities
Education		<ul style="list-style-type: none"> · Four new schools required in Hunter/Central Coast by 2032 (refer INSW 2012) · University of Newcastle CBD Campus has major upside for all stakeholders
Telecommunication		<ul style="list-style-type: none"> · NBN rollout will open up new possibilities for business/leisure around the Hunter

CHAPTER 5.

FOUNDATIONS OF A LIVEABLE CITY

WHERE DO WE WANT TO BE?

Growing a Network of Liveable Cities

Australia is one of the most urbanised countries in the world. The functioning of our cities in large part determines Australia's global competitiveness in an increasingly urbanised world. Our cities play a pivotal role in securing the economic, social and environmental wellbeing of our nation. Yet our cities are not only centres of economic activity but home to the vast majority of Australians and, increasingly, home to migrants who seek a future in Australia.

Quite reasonably, Australians expect their cities to provide a variety of social and economic opportunities, while also protecting valuable environmental and cultural resources. Australians and future Australians will make choices about where they will live and work based not only on the economic and employment opportunities of a location but, increasingly, in terms of that location's liveability.

In a competitive global marketplace, employees, entrepreneurs and company executives all make choices about where they will live, work and invest. For many, liveability has, or will, become the key determinant of location. For Australia to continue to grow its economy, population, capital investment, to improve its quality of life and to expand its delivery of social and environmental programs, it must develop cities that are attractive and liveable in a global context. Growth and liveable cities are mutually achievable and must be desirable goals.

Growing liveable cities means ensuring that within and across cities there is a diversity of lifestyle choices, ranges of affordability, options for lifecycle changes, variations in character, cultural offer, design and access to amenity and natural areas. All city residents are not the same and are not driven by the same preferences and all cities and spaces within cities should not be the same.

The National Urban Policy recognises there are 18 major cities across the country making up an urban fabric of diverse character, functionality, form and potential. It recognises that growing and improving Australia's social and economic performance means growing and improving each of these 18 cities. The HMA is well-placed to take up this challenge and improve its liveability and, in doing so, not only improve the quality of life of its residents but contribute to the development of a network of liveable cities across Australia.

By focusing on improving the liveability and productivity of all 18 major Australian cities the National Urban Policy is providing wider options for Australians to live, work and invest in different scaled and designed cities. This means families and business will have the opportunity to locate where the "fit" is best. This will help take the pressure off cities such as Sydney where growth is both a burden and a benefit. The overall aim is to distribute growth more evenly, reduce the negative impacts of growth and optimise the positive outcomes over the whole network of Australian cities. With appropriate interventions and supports across all our cities the urban options available will increase and better meet the needs of all Australians.

What is Liveability?

Liveability refers to the way the urban environment supports the quality of life and wellbeing of communities. Having meaningful employment is fundamentally important to quality of life and the liveability of a community. However, having employment is not enough to ensure a good quality of life. Quality of life and wellbeing encompasses much more than this. Mental and physical health, happiness and life satisfaction for individuals and supportive social relationships in communities contribute to quality of life. Quality of life is enhanced by environmental sustainability, in particular with regard to pollution and access to quality open space and natural landscapes. Liveable cities offer a high quality of life and support the health and wellbeing of people who live and work in them. Liveable cities are equitable, socially inclusive, affordable, accessible, healthy, safe and resilient. They have attractive built and natural environments and provide a diversity of choices and opportunities for people to live their lives, share friendships and raise their families to their fullest potential.

Enhancing the liveability of our cities is both a governance and political obligation of all levels of government and an essential component in ensuring their economic viability and competitiveness. In cities the challenges and opportunities of productivity, sustainability and liveability are part of an interrelated and dynamic system. Addressing one goal can have an impact, either positively or negatively, on the others. For example, efficient public transport can ease congestion and improve access to jobs and opportunity (productivity); it can also reduce greenhouse gas emissions (sustainability); and enable affordable access to education, health and recreational facilities (liveability).

Likewise, access to affordable high-speed broadband will speed up business transactions (productivity); reduce the need for physical movement and transportation of people and documents (sustainability); and enable enhanced social, cultural and educational participation (liveability).

Liveability is neither generic nor static. The components of liveability for an individual will vary in importance with age, family formation stages, culture, recreation and entertainment preferences, lifestyle choices, education and experience. There are components that rate highly across all or most demographics and establish a threshold standard for communities such as access to health care, education services and facilities, connectivity and levels of congestion, air quality, personal safety and affordability.

The dynamic nature of communities means no one spatial location can consistently deliver “liveability”. Different cities and locations within those cities need to define and develop their niche and competitive advantages while ensuring the economic fundamentals are sound. The HMA offers a range of urban spaces which are quite different to other options in NSW. They are eminently liveable places with capacity to grow, evolve and renew.

Making Cities More Liveable

The National Urban Policy Framework states the COAG goal in terms of Liveability is to “enhance the liveability of our cities by promoting better urban design, planning and affordable access to recreational, cultural and community facilities.”

This goal targets the planning and design of cities at three levels:

- the spaces and places within cities – localities, suburbs, precincts and streets;
- the amalgamation of spaces and places that make up the overall city, its footprint, framework, relationships, uses and activities; and
- the spread, diversity, connections, identity and function of different cities in a regional, state and national system.

For the HMA, this means shared responsibilities for local, state and Commonwealth Governments.

COAGs Urban Policy sets out a suite of liveability objectives and strategies including:

- Facilitate the supply of appropriate mixed income housing by:
 - encouraging a range of housing types to suit diverse households across all parts of cities; and
 - supporting the development of aged persons accommodation, including medium and high care.
- Support affordable living choices by:
 - locating housing close to facilities and services, including jobs and public transport, in more compact mixed use development; and
 - supporting new outer metropolitan housing with access to facilities, services and diverse education and employment opportunities.

- Improve accessibility and reduce dependence on private vehicles by:
 - improving transport options; and
 - reducing travel demand by co-location of jobs, people and facilities.
- Support community wellbeing by:
 - providing access to social and economic opportunity;
 - improving the quality of the public domain;
 - improving public health outcomes;
 - redressing spatially concentrated disadvantage; and
 - enhancing access to cultural, sporting and recreational activity.

The key measures of liveability as defined by the Commonwealth Government include the following:

- balancing infill and greenfield urban development;
- ensuring adequate mixed income housing supply;
- reducing dependence on private motor vehicles;
- improving the quality of the public domain;
- improving public health outcomes; and
- redressing spatially concentrated social disadvantage.

The Character of the HMA

The HMA does not know itself by this name. While socially, economically and environmentally it functions as a metropolitan area, its residents sometimes see themselves as part of the wider Hunter Region including the Upper Hunter with its intendant coal fields, equine and vineyards but more often they see themselves as residents of localities within the HMA such as Maitland, Lake Macquarie, Newcastle or Nelson Bay. This association with the wider area at one level and with smaller communities at another defines the HMA's greatest weakness and its greatest opportunity.

While there is often a perceived lack of a shared direction, vision and collaborative action and an environment where LGAs appear to compete as rivals for investment, grants, facilities and residents, there are opportunities to unite the HMA around strategic infrastructure investment and catalyst projects. The collaborative effort to deliver this document confirms this commitment.

The character and identity of each of the localities within the HMA offers something different within an hour's drive of a wide range of other lifestyle offerings. Greenfield housing in Maitland, inner city living in Newcastle, lakeside tourist and medium-density living on the edge of Lake Macquarie, rural residential, bushland and water based communities in Cessnock and Port Stephens.

The urban footprint of the HMA has reflected these different lifestyle choices and opportunities and developed over a wide area with a dispersed population and relatively low population density.

Progressively the spaces in between these urban areas are being developed. This has not resulted in the most efficient development footprint and use of infrastructure. It has reduced the overall liveability and productivity of the HMA. Distance, a lack of adequate road connectivity, poor public transport utilisation, traffic pinch points and a lag in infrastructure provision has made daily access to work, school, recreational and retail facilities increasingly time-consuming, unpredictable and costly. The negative impact on liveability is exaggerated by the long held community perception that “traffic problems” are a characteristic of big cities and should not be plaguing regional cities. In some cases, it is what HMA residents have sought to get away from by locating away from Sydney.

Growth patterns have seen a shift in the centre of population away from Newcastle and the eastern suburbs to the Maitland growth corridor. This has meant a growth and shift in demand for facilities such as hospitals and schools. It has also meant underutilisation of infrastructure in some locations. Development has occurred across numerous fronts simultaneously including Fletcher/Cameron Park, Thornton North, Rutherford/Aberglasslyn, Raymond Terrace/Medowie, Anna Bay and Booragul/Toronto. This has driven the demand for lead-in infrastructure such as water, sewerage and power across numerous locations increasing per lot up-front cost, reducing service efficiency and pushing up overall development costs. Service authorities are planning for ultimate development capacity and designing at this ultimate threshold level but in some cases sales have been slow which leads to suboptimal usage. Councils have developed detailed Section 94 Contribution Plans but as development is scattered across numerous locations the time it takes to reach a payment threshold is delayed, resulting in a lack of on-ground facilities to service new communities. There is often a long lag time between payment of levies and the realisation of facilities. Investment in major new infrastructure such as the Hunter Expressway has shifted the focus of residential growth, leaving some serviced areas in a situation of low demand.

There is no mechanism in place for government to recoup part of this uplift in land value that has resulted as a direct consequence of public investment (asset value capture). Conversely, as investment and jobs, followed by housing and retail development, have increasingly suburbanised and moved west and away from Newcastle city centre, underdeveloped sites, suboptimal infrastructure utilisation and deteriorating assets requiring maintenance have become more commonplace. This inefficient land use pattern impacts negatively on liveability as it reduces relative access to facilities, increases the urban footprint and reduces connectivity, increases distance to work, delays the provision of community and recreational facilities and tends to result in poor urban design/amenity outcomes due to underinvestment and poor asset preservation. Lack of street level activity and utilisation of developable land (both in suburban and inner city contexts) can also lead to the perception and reality of a loss of safety and appeal.

There is an opportunity to plan for infill development in a holistic way that enhances the HMA's connectivity, permeability and efficiency. More efficient development will lead to increased affordability, access and enhanced environmental outcomes, thereby improving liveability. The Hunter Valley Research Foundation (HVRF) has documented research which suggests medium-sized Australian centres like the HMA can accommodate population growth without many of the negative externalities associated with growth in much larger cities and, therefore, have the potential to make a far greater contribution to national productivity and wellbeing (HVRF 2011).

The preliminary finding of the IIPT indicates additional growth can be accommodated in the HMA subject to appropriate infrastructure investment without significantly impacting on the environmental attributes of liveability so highly valued by the community such as access to water bodies, beaches, bushland, recreational space and protected environmental habitats.

The HMA has the fundamental platform of liveability which needs to be protected, strengthened and enhanced. It has strong natural population growth and low out migration. It has a robust economic base and an increasingly diverse employment profile and investment matrix. It has a dispersed settlement pattern with relatively good accessibility to jobs, schools and urban services. Notwithstanding the observed pinch points, relatively low congestion across the entire system suggests latent capacity in the HMA to accommodate additional growth. The HMA presents an opportunity to guide growth toward liveable locations with infrastructure capacity, or capability to augment at a reasonable cost, delivering both improved productivity and liveability.

As well as visually attractive areas, natural settings and amenity associated with heritage landscapes, the HMA offers access to facilities not available in smaller urban communities. The HMA enjoys the advantages and attraction of having an internationally recognised University, an established and extensive regional TAFE network, a world-class teaching hospital and Medical Research Institute, a conservatorium of music, numerous art galleries, museums and performances spaces. The HMA also enjoys a comprehensive network of private, public and secular primary and secondary schools. It has national and international standard sporting venues for hockey, all codes of football, swimming, netball, ice hockey, horse racing, athletics and gymnastics. It enjoys the representation of sporting teams in national leagues for many of these sports. These venues and teams help build community spirit and identity; underpin healthy communities and nurture aspirations and achievement.

The HMA has the ingredients and underpinnings of an eminently liveability city. This needs to be recognised and efforts made to protect, enhance and embed this liveability both for present and future generations who will be provided with an opportunity to enjoy a sustainable future.

Improving the Liveability of the HMA – the Strategic Infrastructure Response

There are a number of key challenges to ensuring the continued liveability of the HMA including:

- the heavy reliance on private motor transport which is, in part, a reflection of the dispersed nature of the settlements in the HMA;
- overcoming pinch points and capacity constraints, particularly in the road and rail transport network;
- balancing the demands of freight and passenger movements;
- servicing growth on numerous development fronts simultaneously;
- meeting community expectation on the provision of facilities and amenities;
- managing the fact the coal chain is physically woven into the community;
- minimising the negative externalities of coal haulage on communities and the environment;
- distributing infrastructure over a low density urban area efficiently;
- the difficulty of predicting economic growth and socio-demographic responses;
- securing safe access across areas of floodplain;
- maintaining high quality water supplies; and
- funding increasing expectations.

Liveability of the HMA can be protected, enhanced and embedded by:

1. Continuing to value and protect its existing quality of life drivers such as employment, safety and access to services.
2. Sustaining current strategies and practices which contribute to quality of life improvement.
3. Developing and implementing new strategies toward increased liveability.
4. Enacting strategies to reduce existing factors that negatively impact on liveability.

Continuing to value and protect its existing quality of life drivers can be achieved by:

- providing adequate protection for bushland, beaches, lakes and rural amenity (local plans and an updated LHRS);
- building amenity/environment into the IIPT (use the IIPT to consider visual amenity, historic and cultural amenity and environmental parameters as well as servicing capacity and productivity);
- balancing greenfield, urban infill and inner city housing options as part of an overall plan (targets to be revised in LHRS and local Settlement Strategies updates); and
- use of liveability indicators to inform decision making (embed wellbeing and quality of life indicators on planning process).

The HSIP provides the infrastructure framework around which to establish planning parameters for urban growth and environmental protection which can be expressed in the LHRS review and implemented by key stakeholders, including government agencies and councils. Clear definition of what determines quality of life of residents of the HMA needs to be articulated and planned for. Ensuring jobs, services and housing are co-located and well-connected must be a priority. So must the protection of environmental amenity, both in appropriately zoned landscapes and in residential communities.

Sustaining Current Strategies and Practices Which Contribute to Quality of Life Improvement

The HMA's high quality of life and liveability is the product of both natural growth and very targeted and deliberate interventions by government. Councils, the NSW and Commonwealth Governments have developed a suite of policies and programs aimed at protecting and enhancing the quality of life and liveability of the HMA. These have been implemented both independently at a local level, e.g., town centre planning in Maitland and Raymond Terrace) and as a concerted collective response at a regional level (Newcastle city centre and Glendale). The LHRS very clearly recognises the value of the HMA as a liveable place is in large part due to its diverse offering of spaces and places to work, live and recreate. Under the umbrella of the LHRS, government agencies and councils have worked to qualitatively define their respective communities in a way which offers something different and unique.

Some of these existing plans and commitments which are focused on improved liveability include:

- Newcastle revitalisation strategies;
- supporting intergrated transport system including the introduction of light rail in Newcastle city centre plus investigation to potentially expand light rail system;
- expanded University of Newcastle campus in Newcastle city centre;
- regional cycleway and pedestrian paths;
- public domain enhancement at Honeysuckle and the harbour foreshore;
- town centre improvement plans (Raymond Terrace, Cardiff, Maitland, Kurri Kurri, Cessnock and Charlestown);
- well-planned new residential communities (Aberglasslyn, Anna Bay, Sanctuary/Fletcher, Cameron Park and Thornton North);
- foreshore access and parkland treatment of Lake Macquarie;
- planning to ensure public transport access (predominantly bus) for emerging communities;
- review of Lower Hunter Regional Strategy;
- NBN rollout to improve access to online services;
- continue to encourage jobs and residents back to the Newcastle inner city;
- development and application of Section 94 Contribution Plans to provide community facilities and amenities; and
- delivery of community building and cultural development programs, public art and event sponsorship and support.

Many of these activities and initiatives undertaken by councils are supported by the NSW Government with joint funding. These are not the specific focus of the HSIP but the HSIP recommends strategic infrastructure that will help shape the overall growth footprint, connectivity and serviceability of the HMA. In this way the HSIP will assist in enhancing the liveability of the HMA by determining major growth areas, connections and development opportunities. These liveability programs will need to inform, fit within and support the development footprint promoted by the HSIP.

Developing and Implementing New Strategies Toward Increased Liveability

The HSIP makes recommendations about key strategic infrastructure that can remove existing constraints and open up growth opportunities. There needs to be a suite of matching strategies that seek to leverage the full regional benefits from these investments in a way that enhances the liveability of the HMA. In terms of the nearly completed Hunter Expressway these strategies may include developing plans and actions around:

- optimising residential growth along the Hunter Expressway corridor to connect to employment centres;
- establishing employment zones in close proximity to the Hunter Expressway;
- creating land use and landscaping buffers between this corridor and adjoining residential communities;
- connecting major hubs such as the port and airport to this corridor; and
- the feasibility of an express passenger bus service on the Hunter Expressway.

The HSIP also makes recommendations which need to be followed up at a local level to ensure the expected liveability outcomes are delivered.

Table 6A identifies some of the initiatives and project priorities identified in the HSIP that would help enhance the liveability of the HMA.

Table 6A HSIP Recommendations and Priority Initiatives

HSIP recommendations and priority initiatives	Liveability outcomes
New Lower Hunter Hospital	Better access to health care particularly for families in the western growth corridor of Maitland/Singleton. Employment creation. Education links with University of Newcastle. Ability to service a wider regional catchment.
Support Asian Cup Football 2015	Enhanced community identity, pride and engagement. Improved access to world class events. Tourism promotion and flow on events attraction potential. Direct and indirect employment creation.
Expand Newcastle Airport passenger facilities	Greater access to domestic destinations. Business attraction and employment growth and diversification. Enhanced tourism opportunities and related facilities enhancement which are also available to local residents. Increased options to tele-work but remain physically connected.
Coordinate priority areas of senior living and aged care facilities across the HMA	Better located seniors living opportunities increasing access to services and amenities. Improved long term affordability associated with access to services. Increased dwelling densities associated with freeing-up detached housing in existing suburbs for families.
Strategies for noise and dust attenuation on coal corridors using screening land uses between the line and residential communities	Improved quality of life for neighbouring residents. Improved market reputation and community building. Increased attractiveness of existing residential areas.
Aligning agency infrastructure planning to regional land use planning using digitised planning decision support tools such as IIPT	Potential to reduce development costs and contain retail land prices. Reduce travel expenses and cost of living by improving accessibility. Decreasing the lag time between land development and the provision of community and recreational facilities.
Improving inter agency communication and coordination	Better align services to community needs. Reduce the lag time between planning and delivery. Ability to achieve multiple outcomes from a single investment/policy platform. Reduced cost of services. Development of GIPs & SRD & Regional Boards.
Ensuring the development of numerous employment hubs, e.g., Tomago, Thornton, Rutherford, Kotara, Charlestown, HEZ, etc	Helps to ensure jobs are located close to where people live. This reduces commute time, travel costs, dislocation, family disruption and environmental impacts. It improves worker productivity, lifestyle choices sense of community connectedness.
Develop a way to better handle mine subsidence to reduce or remove barriers to inner city renewal in localities such as Newcastle city centre, Charlestown and Glendale.	Reduces total development costs and allows more affordable and mixed use development in areas close to employment. Enables higher development densities and an increase in the number of residents able to access accommodation in key locations.

Enacting Strategies to Reduce Existing Factors that Negatively Impact on Liveability

The HSIP recommends projects that seek to resolve existing conflicts, remove or reduce inefficiencies and enhance existing system performance should be given first phase implementation priority. In most cases the inability of existing infrastructure to cope with current demand levels and performance requirements mean they are negatively impacting on both the productivity and the liveability of the HMA. Road and rail congestion generate negative externalities for business and communities.

Table 6B Infrastructure Project Solutions.

Infrastructure project solutions	Existing negative liveability impacts
Lower Hunter Freight Corridor (Planning) <i>Adamstown Rail Crossing</i>	The passage of freight trains through the inner city suburb of Adamstown at grade requiring a level crossing on one of the area's most highly-used roads causes significant liveability impacts including: significant safety risks, numerous commuter delays and disruptions, use of "back street" alternatives, noise, vibration and dust disturbance to surrounding residents, visual blight, pedestrian mobility difficulties associated with overhead bridge and rails in pavement.
Newcastle Inner City Bypass – Rankin Park Link (Planning)	It is critical to connect major employment hubs such as the John Hunter Hospital and the University to the surrounding regional road network. Existing congestion increases journey to work or study and the cost of travel.
Tourle Street Bridge Doubling of Capacity	Tourle Street Bridge is a two lane bridge crossing of the Hunter River and is a significant bottleneck generating negative liveability impacts including lengthy delays and long commutes from the Tomaree and Tilligerry Peninsulas to Newcastle. As a consequence, regular accidents and delays impact on passengers travelling to Newcastle Airport, commuters seek to avoid delay but cause congestion on lower order roads.
New Lower Hunter Hospital	Population has and will continue to focus strongly on the Maitland growth corridor. These communities have generated both a shift and an absolute increase in the demand for hospital facilities in the Maitland growth corridor. All community indicators of wellbeing and liveability reflect a high demand for accessible medical services.
Noise attenuation strategies and measures where practical for existing urban areas abutting principle freight rail corridor	The haulage of coal by road and rail down the spine of the HMA causes negative liveability impacts such as noise, vibration, safety and dust.
Location of a university campus at Civic	The location of part of the Newcastle University campus to the city centre of Newcastle is a fundamental plank in the Newcastle Renewal Strategy adopted by the NSW Government. The project has tri-level government support. The campus will enliven and activate the city centre, attracting young people, retail, accommodation and businesses. It will help make the city centre a more attractive place to live and work.
Urban renewal and supporting integrated transport system including light rail in the Newcastle city centre	At present the rail line from Wickham to Newcastle largely cuts off the city centre from its water frontage and divides the city, making it car dependant and difficult to move within. It creates extremes in urban quality and levels of development viability resulting in abandoned and dilapidated buildings. After decades of dispute the NSW Government has supported the removal of the rail line and decided to provide a transport interchange that helps activate the city. The interchange and associated opening up of the city to the harbour will improve its open space and public domain, increase connectivity and permeability, make the city centre walkable, reduce traffic delays and travel time, offer a superior public transport system that connects more places and people and encourages a mix of development.
National Highspeed Broadband Strategy (NBN)	The HMA as a centre of commerce and government has been historically driven by decisions, bureaucracies and businesses located in Sydney. The rollout of the NBN will open up the opportunities to engage in teleworking and increase the potential of the digital economy. This will mean business will be able to locate outside the Sydney basin and small business can operate from the HMA without disadvantage. This will enhance the liveability of the HMA as it offers alternate lifestyle options.

The cost of not implementing the priority strategies emerging from this analysis on both productivity and liveability are significant. Adopting a “do nothing” scenario will have immediate and long-reaching impacts on the liveability of the HMA which will negatively impact on the quality of life of existing residents and undermine its potential to attract and retain residents in the future.

What the HMA Can Be

The most liveable cities in the world have many things in common. They are concentrations of dynamic commerce, culture and lifestyle. Australia’s ability to compete on a global scale depends on the quality, diversity, productivity and innovation of its cities.

The HMA will never be a New York, a Sydney or a London nor does it want to be. It aims to satisfy a niche in the market, one which is socially, economically and environmentally important. With the right vision, planning, action and resources the HMA, over the next 20 years, will be:

- a vibrant university city, attracting domestic and international students;
- a city nationally recognised as a centre of business excellence based on research and learning;
- a city providing high order retail, legal, health and business services to a growing robust region;
- a regular destination for international cruise ships and conference delegates;
- home to more than 700,000 residents who enjoys a vibrant, safe and affordable lifestyle;
- a highly accessible city with great public transport which is bike and pedestrian friendly;
- a city connected to the nation by road and rail and the world by sea and air;
- a city standing ready with a 40,000 seat capacity venue to welcome teams of the Asia Cup; and
- a city known for the quality of its heritage buildings, its new architecture, its public art, public domain and the beauty of its coastline.

The metropolitan area will be built around its mining history; its valuable coal fields; its freight rail lines, port and industry. The urban area will offer lifestyle and housing choices and options: from hobby farms to inner city apartments; from new greenfield estates to historic restoration; with choices of access to beaches, bays, lakes, wetlands or mountains; homes close to work, education, farmlands, shops, hospitals, galleries, and café streets. The HMA can evolve into a polycentric urban space: an urban area diverse in its offer, proud of its roots and confident about its future.

Individuals and families:

- worn by the journey to work in major cities;
- unable to afford increases in the cost of living;
- priced out of the housing market;
- in need of greater work/life balance or specialist health care;
- aspiring to a career in health sciences the law, the arts or business services; or
- who want a safe place for their children and teenagers to grow up

will all have a choice outside the nations’ capital cities.

It will be an alternative where there is a diversity of jobs, business opportunities, high level retail, commercial, entertainment and cultural facilities and services.

Businesses, for a long time aware of the quality and innovation provided by tertiary qualifications from both the Hunter TAFE and University of Newcastle, will seek to locate close to these facilities, to link into undergraduate programs and post graduate research and innovation, as the basis of their own commercial success. The critical mass provided by the co-location of the State and Commonwealth Law Courts, legal services, University Law Libraries and the University Law School will attract businesses and clients from far afield. Development sites at competitive prices, fully serviced, with good private and public car parking and transport options, which enjoy a view of the busy harbour with its massive coal ships and burgeoning pleasure craft and where workers, shoppers and visitors can easily access the public domain, are rapidly being developed and occupied with happy tenants. The mix of students and business people provides a vibrancy that pervades the city’s night economy and its growing design and graphics sector.

CHAPTER 6.

CONCLUSIONS

WHAT IS REQUIRED, BY WHEN?

Leveraging Nation Building Infrastructure

While there is always an immediate and deliberate priority outcome to be achieved from specific nation building investment in infrastructure, because of their catalytic nature there may also be opportunities to leverage further benefits and outcomes. What might ostensibly be an economic initiative around increased productivity and performance of an urban area might be also able to deliver liveability outcomes. Triple bottom line opportunities of nation building infrastructure could be significant for the HMA.

The Hunter Expressway, for example, was partly designed and constructed to improve access to the Upper Hunter coal fields and improve the operation of the coal chain. However, it also has the potential to generate new communities, new business centres and employment nodes, to reduce traffic impacts on other urban roads in the transport network, to improve the access of mining communities to services and facilities in the denser parts of the urban area, to improve road safety and reduce journeys to work. The IIPT could be further developed to assist in analysis of land use and infrastructure opportunities along the emerging Hunter Expressway corridor to leverage the optimal outcomes for this government investment in terms of community benefits.

The ability to leverage benefits from nation building infrastructure investment comes not only from the liveability and planning arenas but also in terms of funding ongoing infrastructure investment. The potential of developing a funding structure which seeks to secure some of the benefit generated by significant investment in infrastructure have been explored across the globe. Mechanisms such as asset value capture benefit taxes and tax increment financing should be further explored at a State and Commonwealth level to help fund long term regional infrastructure investment.

The High Speed Rail (HSR) project is perhaps the next generation of nation building infrastructure. The HSIP supports the HSR initiative in principle as HSR studies foreshadow a range of opportunities in terms of productivity and liveability for the HMA generated by connecting Melbourne, Canberra, Sydney, Newcastle, Gold Coast and Brisbane by high speed rail. The HSIP notes the conclusions, however, a full assessment requires further investigation and national decision making.

The lead times for HSR connecting HMA are in excess of a 20-year horizon and beyond the scope of the HSIP. Therefore the HSIP recommends investigation into HSR and corridor preservation as part of the future Hunter Growth Plan. The priority in terms of passenger rail transport in the short-to-medium term for the HSIP is to reduce rail travel times between Newcastle and Sydney to be better than equivalent travel times by private motor vehicle.

In addition, there is an opportunity to examine an integrated transport solution and the feasibility of linking Newcastle city centre with light rail to surrounding suburbs, beaches and the broader Hunter Region. The Gold Coast light rail system, partly funded by the Commonwealth Government, is a recent example.

Sequencing and Staging – Supporting Smart Growth

The HMA is characterised by an extensive geographical area with an historic settlement pattern that comprises multiple development fronts. Providing essential infrastructure to service and support existing and emerging residential and employment lands is proving increasingly challenging for infrastructure agencies. This situation has been exacerbated by the absence of an agreed staging and sequencing plan for essential infrastructure. A plan is needed to provide predictable signals for the public and private sectors and the community at large. It would guide strategic investments in the HMA based on 0-5 and 6-20 year increments. The future of the HMA relies on securing adequate funding based on the systematic review of needs in a specific timeframe. This means determining timeframes and priorities. These would be divided into shovel ready 0-5 year projects and planning ready 6-20 year initiatives. The Regional Growth Plan will provide the necessary link between projected growth, land use pattern and infrastructure.

Priority funding needs to be allocated to ameliorate or remove the existing infrastructure challenges and to invest in the work necessary to avoid future problems. Major public infrastructure generally has a long lead time involving scoping, planning, design, consultation and staged delivery. Projects in the 0-5 year category will essentially be those which are addressing a long established inadequacy. This long lead time also implies the need to protect corridors and ensure associated strategic planning is consistent with long term deliverables.

Delivering Smart Growth – 3 Steps Toward Smart Growth

1. Immediate Actions (0 to 5 years) – Consolidate existing urban release areas/urban centres targeting places of least infrastructure cost first/most feasible from market perspective. Relieve pinch point in priority connections. Ensure data collection and further development of decision support tools to improve future decision making and outcomes.
2. Planning for Growth (6 to 20 years) – Target development in locations of known least infrastructure cost which facilitates the transition to a more sustainable footprint. Provide underpinning infrastructure to facilitate this development.
3. Building Resilience (20 years plus) – consolidate and consider next generation infrastructure technologies (subject to future reviews by the NSW Government, e.g., State Infrastructure Strategy and Lower Hunter Growth Plan).

Smart growth is about the deployment of scarce resources toward targeted infrastructure delivery and leveraging optimal outcomes. The aim is to deliver outcomes that achieve improvements in the productivity, sustainability and liveability of the HMA. Smart growth delivers more liveable communities in that they are more affordable, have better access to facilities and services (are well connected), have a smaller ecological footprint and ensure the protection of key quality of life assets.

Smart growth and liveable communities do not develop automatically and what might appear to be a highly attractive and liveable location based on an isolated decision may be far from this once the cumulative impact of development is understood. The preferred option to achieve smart growth is to develop a framework which consolidates the growth fronts in the HMA (while being mindful of the need to provide reasonable scope for competition and choice) which exhibit the following characteristics:

- available existing infrastructure capacity satisfy demand for 0-5 years based on existing take-up rates;
- augmentation capability is available at reasonable cost;
- attractive location based on existing market;
- locations of low ecological sensitivity (until such time as bio certification framework implemented);
- localities that offer a variety of affordable housing and lifestyle choice; and
- localities with high accessibility with existing and/or committed transport infrastructure.

Out-of-sequence proposals would need to be subject to the preparation of a business case and demonstrate minimal negative impact on government, the environment and/or the community. The model would then use lead indicators or triggers to initiate either detailed planning or construction of priority infrastructure. The IIPT and Regional Economic Model should be used as decision support tools to assist in the analysis and evaluation of the merits of out-of-sequence proposals. This means developing, enhancing and maintaining these tools to assist decision making so the best outcomes for the community are achieved. Liveability is a dynamic concept that requires constant assessment and policy response.

Delivering Smart Growth

Priority projects as outlined in this chapter are based on the analysis in Chapter 2 and 3, the Infrastructure Capability Analysis in Chapter 4 and Foundation for a Liveable City articulated in Chapter 5. Project summaries are included in the Executive Summary and Appendix E (where appropriate a general assessment against Productivity, Sustainability and Liveability criteria has been provided within these project summaries).

Immediate Actions 0-5 years

- Duplication of Tourle Street Bridge (Planning and Construction).*
- Pennant Street Bridge, Glendale – Stage 1 (Construction).
- Urban Renewal and supporting integrated transport system including light rail in the Newcastle city centre.
- Newcastle Airport expansion.
- Urban Renewal & Education – University of Newcastle City Campus (Construction).
- NBN Rollout – prioritised connections for Hunter economic drivers and priority growth areas.
- Development of Decision Support Tools – including Integrated Infrastructure Planning Tool (IPT) and Regional Economic Model (REM).

Planning for Growth 6–20 years

- New England Highway – Belford to Golden Highway (Planning);*
- Pacific Motorway (M1) – Weakleys Drive intersection (Planning);
- Pacific Motorway (M1) – extension to Raymond Terrace (Planning);
- Newcastle Inner City Bypass – Rankin Park to Jesmond (Planning);
- regional transport enhancements connecting the port, airport, state significant strategic employment lands and major centres to the National freight network –
 - a. light rail feasibility planning,
 - b. port link planning – including planning for Hexham Straight/Industrial Drive (Pacific Highway to port), Nelson Bay Road (port to airport), Tomago and Cabbage Tree Roads (Pacific Highway to airport) and implement where feasible;
- Adamstown Rail Level Crossing – (Planning);
- Lower Hunter Freight Corridor – Planning and Corridor Identification;
- Lower Hunter Water Plan (Planning);
- new Lower Hunter (Maitland) Hospital in Maitland Growth Corridor; and
- intercity rail connection improvements.

Building Resilience

- long term role of Newcastle Airport;
- ongoing preservation of freight corridors; and
- planning for High Speed Rail (HSR) Link.

Table 7 details the priority projects and Figure 32 illustrates the strategic infrastructure plan.

* While these pinch point projects are situated within the HMA and at the gateway to the Upper Hunter, they need to be considered within the context of the east-west movement of freight and people along the Upper Hunter Coal Chain. Pinch points such as the “Gowrie Gates” Rail Underpass and the Scone Level Rail Cross (which are situated immediately west of the study area on the New England Highway), are part of the Coal and Energy Corridor illustrated in Figure 26. These pinch points are addressed in greater detail in the Hunter Economic Infrastructure Plan (HEIP).

Table 7 Priority Projects List

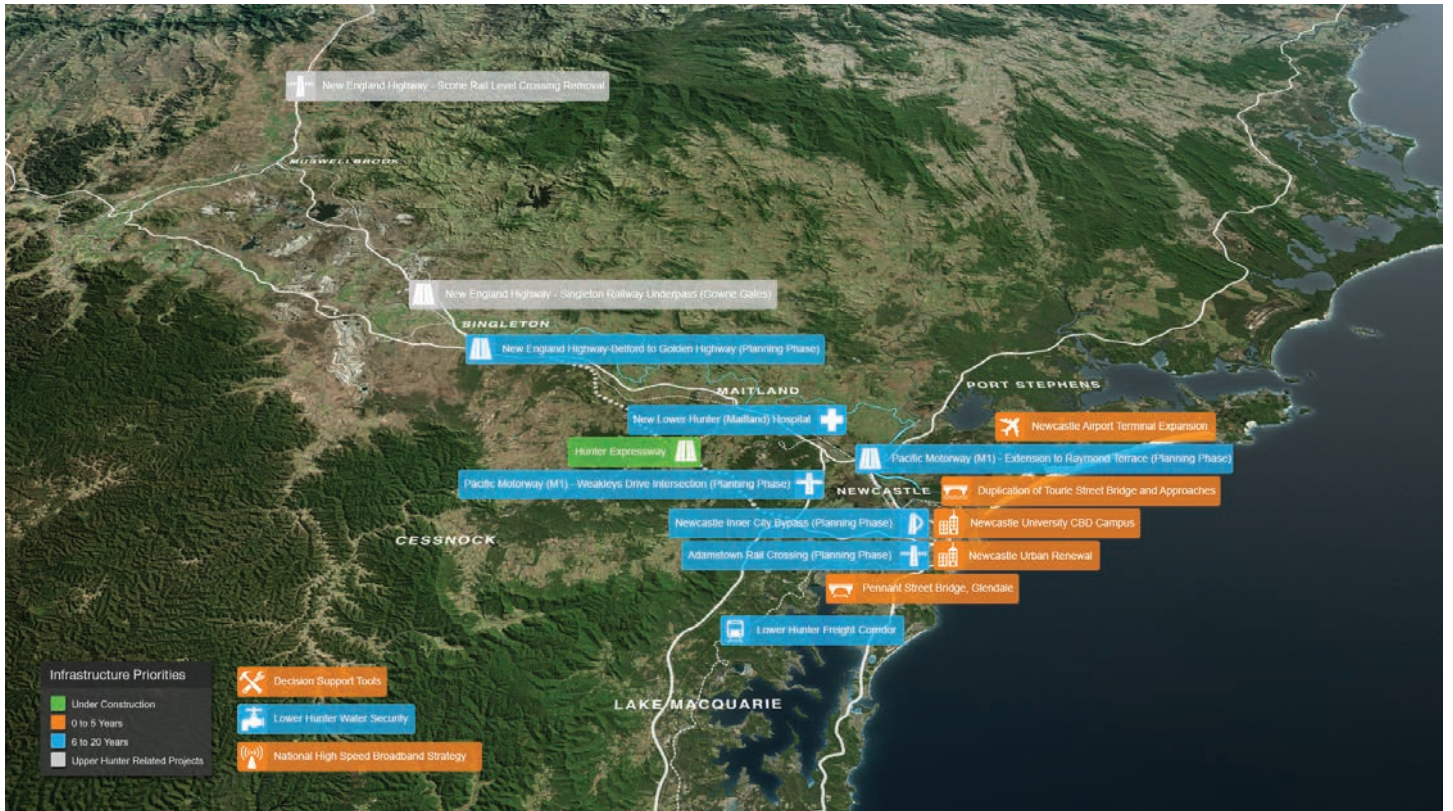
Project	Productivity	Sustainability	Livability	Governance	Assessment
	Contribution to National Urban Policy Goals				
0 to 5 years					
Duplication of Tourle Street Bridge and approaches	H	M	H	H	The Tourle Street Bridge is the critical link for residents living on the Tomaree Peninsula and employment, coal and the port, mixed cargo and Kooragang berths, business travellers and the airport, tourists and the vineyards, defence force personnel and the Air Force Base. It affects the productivity, growth capacity, liveability, connectivity and competitiveness of the HMA now and moving forward. Duplication of the bridge is fundamentally important to the continued competitiveness of the mining sector, the residential and tourist development of the Tomaree Peninsula, growth of the airport and development of aviation, industrial and tourist facilities around Williamstown.
Pennant Street Bridge, Glendale Stage 1	H	M	H	M	The project will unlock the growth potential of the Cardiff and Glendale industrial and business precincts, enabling them to attract new and diversified investment and business. This will enable them to become substantial employment centres offering affordable land with good access to Sydney markets and jobs close to growing residential communities. Focused growth in this corridor is consistent with local, regional and state growth strategies.
Newcastle Urban Renewal and supporting integrated transport system including the delivery of light rail in the Newcastle city centre	H	H	H	H	The project will significantly help the Newcastle city centre re-establish as a core business, employment, entertainment and service centre for the Hunter. It will establish Newcastle as a well-connected, vibrant, attractive and diversified urban space, enabling it to attract residents and visitors. It will offer the community a wider range of tertiary sector jobs in easy access of increasingly dense and popular residential communities. It will enable the utilisation of decades of investment in infrastructure the public domain open space to be better utilised and the embedded energy to be unlocked. It will establish inner Newcastle as a more liveable and sustainable urban space and acts on widely-held community expectations and priorities.
Newcastle Airport Terminal Expansion	H	M	H	M	Increasing the HMA's connectivity nationally and globally through expanded and improved airport facilities enhances the region's ability to be competitive as a business, tourist and residential location. It will contribute to improving the productivity of the workforce and business and the area's liveability and attractiveness for residents. This project will relieve pressure on Kingsford Smith Airport for regional derived domestic flights. The facility will underpin growth in jobs and investment in a range of ancillary and associated sectors and help underpin a more diverse and robust economy. The project does not challenge the defence role of Williamstown Air Force Base and is consistent with state and national policy and priorities for both aviation and defence.
University of Newcastle CBD Campus	H	H	H	H	The University of Newcastle is a key selling attribute of the HMA growth plan for business competitiveness and attraction, foreign investment, residential growth, employment diversification, urban revitalisation and cultural growth. It is critical as a catalyst for the renewal of Newcastle's city centre, generating not only jobs, students and activity but adding to the vitality, vibrancy, diversity, cultural and social mix of the inner city. It is essential for the HMA to compete as a progressive, second-tier city nationally and globally.
National Highspeed Broadband Strategy (NBN)	H	H	H	H	Connectivity is essential to the competitiveness of the nation. Reducing the number of jobs that have to be delivered in centralised Sydney metro locations will take the pressure off the future growth of Sydney and deliver social and environmental benefits at a national level. The NBN will offer companies and individuals employment and business options based in the HMA and allow business to compete and communicate globally. The optimisation of the NBN delivers social, economic and environmental benefits associated with teleworking and business competitiveness.
Integrated Infrastructure Planning Tool (IIPT) development and use	H	H	H	H	The IIPT will provide the evidence base and planning tool essential to improved decision making regarding the optimal growth footprint for the HMA. It will lead to greater yields and better outcomes from government and private sector investment in growth infrastructure. It will enable communities to be better serviced, connected and more affordable. Improved access to commercial, community, health and educational facilities will lead to more liveable and sustainable communities. The IIPT will help drive more equitable and effective funding solutions.
Regional Economic Model (REM) development and use	H	M	M	H	The REM as a partner tool to the IIPT will help identify and quantify the region's economic drivers and ensure the planning for growth takes place within the context of the viable and robust operation of the regional economy. It will provide the mechanism to better connect employment and communities, infrastructure and economic growth, demand and supply.

H=High M=Medium

Project	Productivity	Sustainability	Liveability	Governance	Assessment
	Contribution to National Urban Policy Goals				
6 to 20 years					
New England Highway – Belford to Golden Highway (Planning Phase)	H	M	M	M	The Belford to Golden Highway connection is the next step in the expansion of the HMA's east-west corridor as a conduit for workers, supplies, coal and wheat travelling between the Upper Hunter and the port/urban/industrial complexes. Removal of this pinch point will increase the efficiency of existing linked infrastructure, reduce route delays, conflicts, congestion and risk and improve the overall productivity and growth capacity of the economy.
M1 Pacific Motorway/Weakleys Drive Intersection (Planning Phase)	H	M	H	M	This intersection connects the M1, Pacific and New England highways and its operation affects the flow of passengers and freight traffic on the Sydney Brisbane corridor. It is a nationally pivotal location and has attracted significant industrial development. The improved operation of this intersection will reduce north-south travel times, freight journey costs, improve route reliability and reduce conflicts between different forms of transport and cross region east-west traffic movements. In so doing, it will improve the HMA and nation's productivity and efficiency. It will also reduce the commute time between Maitland and Newcastle, enhancing the HMA's internal connectivity and liveability.
Pacific Motorway (M1) extension to Raymond Terrace (Planning Phase)	H	M	M	H	Improved traffic flows and reducing travel delays will, in turn, improve productivity for freight travelling on the Sydney to Brisbane corridor and to the port. The extension would also provide better access to Newcastle Airport and the State Significant designated Tomago Employment Lands. The project would provide a significant value add to the existing M1 Pacific Motorway.
Newcastle Inner City Bypass – Rankin Park Link (Planning Phase)	H	M	H	H	Completing this final section of a long-term Newcastle Inner City Bypass validates decades of government planning and expenditure on the HMA's north-south axis route. It will improve north-south traffic flow in the inner suburbs; improve connectivity and access to key regional facilities including John Hunter Hospital and Newcastle University; and reduce congestion on primary routes to major employment and retail centres in Bennetts Green, Charlestown and Jesmond. This link would increase the productivity of the HMA by reducing travel distance, time and delays and enhance the liveability of the HMA by improving the community's access to key social, retail and educational infrastructure.
Regional Transport Enhancements	M	M	H	M	Connections to port, airport, state significant strategic employment lands and major centres resulting in improved traffic flows and reducing travel delays will, in turn, improve productivity for freight and people moving within the metropolitan core.
Adamstown Rail Level Crossing (Planning Phase)	H	M	H	H	Adamstown level crossing epitomises HMA freight/residential transport conflicts. Improvements to the level crossing will reduce freight haulage time through Newcastle, reduce disruption, delays, risk and travel times for residential communities and improve the operational efficiency of the road network. It is in line with national safety standards and will reduce noise impacts for residential communities associated with existing deceleration and acceleration of freight trains. It is a high priority community and governance issue.
Lower Hunter Freight Corridor (Planning Phase & Reservation)	H	M	H	M	This project is fundamentally focused on the productivity and growth capacity of the HMA but generates social benefits for communities on the existing freight line, enhances the living environments of these communities and reduces lost time, risk and capacity constraints associated with the current Sydney-Brisbane freight haulage route.
Priority recommendations arising from Lower Hunter Water Plan	H	H	H	H	Securing a potable and industrial water supply for the HMA is fundamentally important for the security and growth of industry, the community's quality of life, sustainability and efficiency of the urban footprint. The HMA has long marketed its reliable and high quality water supply to residents, governments and business and it is a fundamental plank to support future growth.
New hospital in Maitland Growth Corridor	M	M	H	H	The new hospital at Metford will respond to the emerging growth patterns and population increase in the HMA. It supports a more productive and liveable community.

H=High M=Medium

Figure 31 Consolidated Strategic Infrastructure Plan



Source: Hunter Development Corporation (<http://www.hunterinfrastructureplan.com.au>)

CHAPTER 7.

THE PATH FORWARD HOW DO WE GET THERE?

Recommendations

The resources growth dynamic of the Hunter is particularly important when considering the path forward. Recommendations have been grouped as follows:

- Priority Projects and Planning Initiatives;
- Process Improvements – Decision Support Tools; and
- Plan Review and Implementation.

These are addressed in further details in the following pages.

Priority Projects and Planning Initiatives

Priority projects and planning initiatives previously identified in Chapter 6 address one or more of the following:

- Productivity;
- Sustainability; and
- Liveability.

Projects are prioritised based on the following criteria:

- Shovel Ready Projects (0 to 5 year) or
- Planning Ready Projects (6 to 20 years).

Shovel Ready projects are further subdivided into projects:

- Greater than \$100M or
- Less than \$100M.

This is consistent with Commonwealth Government thresholds.

Alternatively, projects identified in this plan are represented in the following categories:

- Road transport;
- Rail transport;
- Air transport;
- Urban renewal;
- Liveability;
 - Health and
 - Education
- Digital communications; and
- Process improvements – decision support tools.

Shovel Ready Projects (0 to 5 years)

Greater than \$100M

- Duplication of Tourle Street Bridge and Approaches, Kooragang Island;
- Urban Renewal – and supporting integrated transport system including light rail for Newcastle city centre;
- Urban Renewal and Education – University of Newcastle City Campus (Construction)*; and
- NBN Rollout – prioritised connections for identified Hunter economic drivers and within priority growth areas.

Less than \$100M

- Pennant Street Bridge, Glendale Stage 1 and
- Newcastle Airport Expansion.

Planning Ready Projects (6 to 20 years)

- New England Highway – Belford to Golden Highway;
- Pacific Motorway (M1) – Weakleys Drive Intersection*;
- Pacific Motorway (M1) – extension to Raymond Terrace;
- Newcastle Inner City Bypass - Rankin Park Link;
- Adamstown Rail Level Crossing;
- Lower Hunter Freight Corridor;
- Priority recommendations arising from Lower Hunter Water Plan
- New Lower Hunter Hospital; and
- Regional Transport Enhancements – light rail feasibility and port link planning.

* Denotes 2013 Commonwealth Budget Funding Commitment

Process Improvements – Decision Support Tools to Complement Existing Tools

Integrated Infrastructure Planning Tool

It is recommended the IIPT be further developed to:

- support the ongoing review of the Hunter infrastructure planning;
- support the NSW Department of Planning and Infrastructure in preparing new Regional Growth Plans and Urban Development Program.
- support the joint Commonwealth and NSW Government biodiversity initiatives in the Hunter Region;
- progress Stage 2 IIPT Development including:
 - user interface;
 - market feasibility layer;
 - transport layer;
 - expansion to cover Upper Hunter; and
 - data audit/quality control review.

Regional Economic Model

It is recommended the Regional Economic Model (REM) be further developed to:

- extend to cover all major sectors;
- examine potential to forecast spatial distribution of employment and population possibly utilising the IIPT; and
- undertake an update to support a review in 2015.

Plan Review and Implementation

1. This plan will be submitted by Maitland City Council on behalf of Hunter Councils Inc. for consideration as part of the current review of the Lower Hunter Regional Strategy (LHRS) in 2013.
2. It is further noted the LHRS is anticipated to transition toward a Lower Hunter Growth Plan which will integrate land use and infrastructure planning in accordance with the directions of the NSW Planning Reforms which are expected to be implemented from 2014.
3. As an initial action the NSW Government will investigate the preparation of infrastructure plans for growth corridors to support the Lower Hunter Growth Plan and where appropriate Subregional Delivery Plans.

4. The NSW Government is proposing to review Hunter infrastructure outcomes in 2015 involving:
 - further development and updating of decision support tools;
 - INSW as part of State Infrastructure Strategy review; and
 - Hunter Infrastructure and Investment Fund (HIIF).
5. The Hunter Region Transport Plan will recommend strategic and operational changes to the metropolitan area transport network and services to support the implementation of the LTTMP and urban renewal initiatives through the Getting Started: Hunter Transport Investment Program expected to be released in late 2013.
6. Transport for NSW has recently advised it has commenced examination of potential options for a Lower Hunter Freight Corridor (LHFC). The investigation and ultimate protection of the corridor is a key action in the NSW draft Freight and Port Strategy. This investigation will consider the Western Newcastle Transport Corridor Newcastle Rail Bypass report prepared to inform the HSIP.
7. Mine subsidence is a unique issue affecting the Hunter Region. Further work is necessary, involving all tiers of government and industry representatives to examine options for reforming the current approach to investigating and remediating mine workings.
8. Maitland City Council/Hunter Councils invites the Commonwealth Government's response to recommendations contained in this plan.

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APPENDICES

A Definitions – Infrastructure

B Infrastructure Capability Assessment Methodology – Adapted from IA and INSW

C Strategic Linkages to Plans and Strategies

D Potential Sources of Funding

E Priority Project Summaries – Shovel Ready Projects (0 to 5 years)

F Priority Project Summaries – Planning Ready Projects (6 to 20 year)

G Infrastructure Planning Tool (IIPT) Example Outputs

A. Definitions – Infrastructure

Infrastructure falls into two broad categories, namely economic infrastructure and social infrastructure. Investment or further investment in these areas should materially improve productivity. The Australian Treasury defines economic infrastructure as “including physical structures that serve as common inputs to many industries, playing a large part in the efficiency and levels of production in the economy”. Economic infrastructure includes: transport infrastructure, such as roads, railways and ports; energy services, such as electricity generation and distribution; water, such as water and wastewater systems; and telecommunications, such as phone lines and internet connections. For the purposes of the HIIF plan, the main focus for economic infrastructure is transport and water.

Social infrastructure includes those assets devoted directly to social expenditure in areas such as schools, hospitals, law and order. We note that alternative definitions of social infrastructure can include, for instance, libraries, recreational facilities and community housing, however, this body of work does not seek to extend to these categories. For the purposes of the HIIF strategy, the main focus for social infrastructure is education and health, however, other elements of this form of infrastructure will be included.

The scope of the HIIF Plan will be concerned with both economic and social infrastructure. The definitions have alignment with classes of infrastructure used in the Metropolitan Plan for Sydney 2036. These classes will be considered broadly in order for the focus categories to be given context.

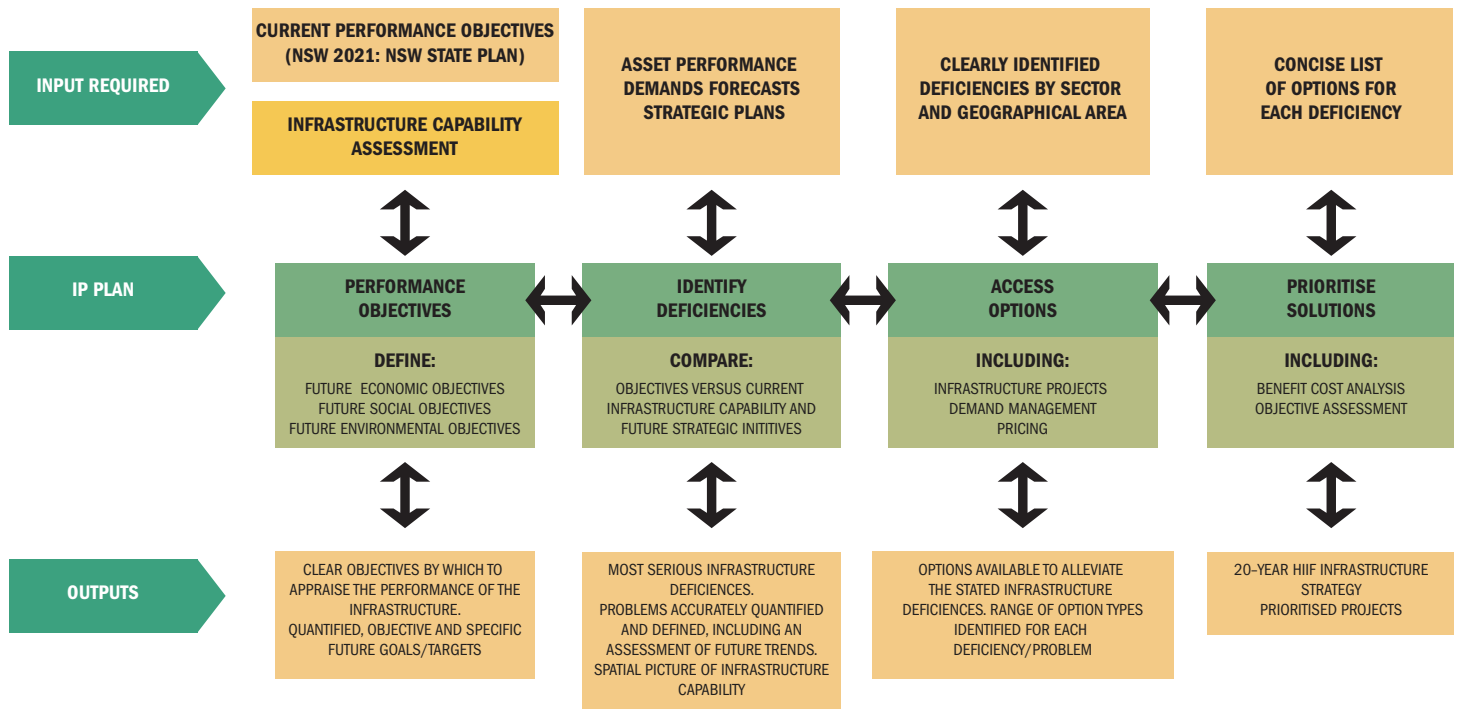
- A. Infrastructure categories that will be investigated and fall within the definition of economic infrastructure include:
 - 1. Transport
 - a. Public Roads
 - b. Railways
 - c. Freight and Ports
 - d. Airports
 - 2. Utilities
 - a. Energy (including electricity distribution and gas)
 - b. Water (including dams and reservoirs)
 - c. Wastewater
 - d. Power Generation Facilities
 - 3. Telecommunications
- B. Infrastructure categories that fall within the definition of social infrastructure include:
 - 1. Education
 - a. Public Primary Schools
 - b. Public High Schools
 - c. TAFE Facilities
 - 2. Health
 - a. Public Hospitals
 - b. Public Health Care Facilities, Clinics and Services
 - 3. Emergency Services
 - a. Police
 - b. Fire and Rescue
 - c. Ambulance
 - d. Law and Order Facilities
 - 4. Other
 - a. Recreational and Sporting Facilities
 - b. Major Cultural and Entertainment Venues

B. Infrastructure NSW – Methodology for Infrastructure Assessment.

APPENDIX C

Figure B1 – Infrastructure NSW Methodology

IP 20-YEAR INFRASTRUCTURE PLAN FRAMEWORK



C. Strategic Linkages to Plans and Strategies

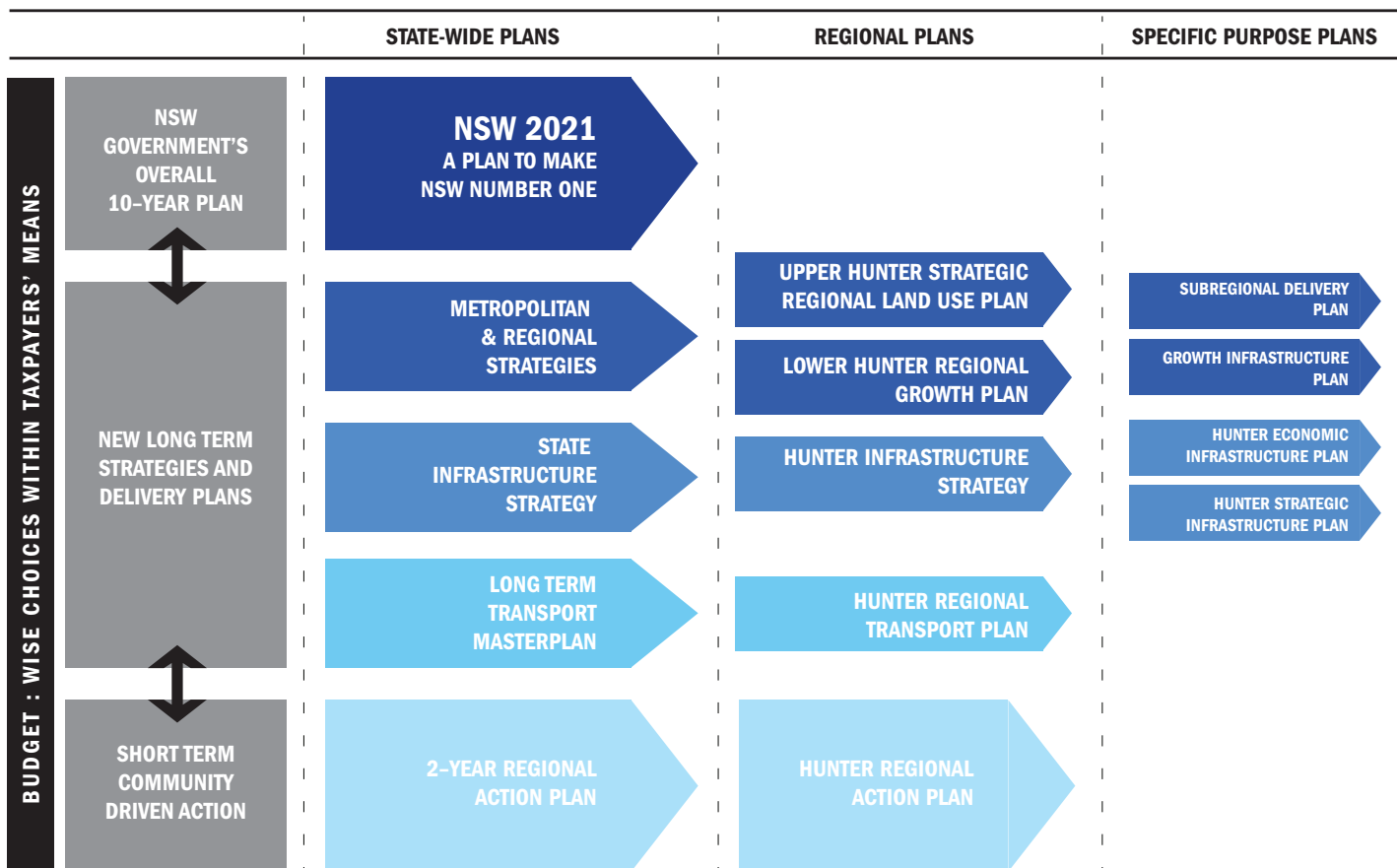
NSW State Plan

The NSW State Plan (NSW 2021 A Plan to Make NSW Number One) is a ten year plan to, among other things, rebuild the State's economy, renovate the State's infrastructure and strengthen the environment and local communities. NSW 2021 has specific goals and associated actions to achieve the stated goals (see Figure C1). In particular, the following goals have direct relevance to the HSIP:

- Goal 1 - Improve the performance of the NSW economy;
- Goal 3 - Drive economic growth in regional NSW;
- Goal 5 - Place downward pressure on the cost of living;
- Goal 7 - Reduce travel times;
- Goal 10 - Improve road safety;
- Goal 12 - Provide world-class clinical services with timely access and effective infrastructure;
- Goal 19 - Invest in critical infrastructure;
- Goal 20 - Build liveable centres; and
- Goal 21 - Secure potable water supplies.

Figure C1 Relationship between NSW/Hunter Plans and Strategies

PLAN HIERARCHY – STATE AND REGIONAL PLANS



Government Infrastructure Strategy

The State Infrastructure Strategy (SIS) is the State Government's adopted 20-year strategy to identify and prioritise the delivery of critical public infrastructure which drives productivity and economic growth. The SIS sits below the State Plan (see Figure C1) and recommends key infrastructure required in the Hunter over the periods 0-5 years, 5-10 years and 10-20 years.

NSW Long Term Transport Master Plan

Alongside the SIS sits the NSW Long Term Transport Master Plan (see Figure C1). Like the SIS, it was adopted by the State Government late in 2012 and is also a 20-year plan for NSW. It provides a blueprint for a world class transport system for the State. It puts forward objectives for transport and identifies the priorities needed to create a transport system that meets the demands expected in the future.

Hunter Regional Action Plan

In order to implement the goals of the NSW State Plan, various regions throughout the State have adopted two-year Regional Action Plans (RAP). In the Hunter the RAP identifies the immediate actions the State Government will prioritise. These actions will complement the long term strategies being prepared for the Hunter and provide the foundation for regional decision making over the next 10 to 15 years and beyond. The key actions within the RAP relevant to the HSIP include:

- complete the 20-year infrastructure plan to address key economic and social infrastructure needs;
- deliver the Hunter Economic Infrastructure Plan and the Hunter Strategic Infrastructure Plan;
- develop a Lower Hunter Water Plan;

- develop the Hunter Regional Transport Plan;
- complete the concept plan for the upgrade of Tourle Street Bridge and Cormorant Road to provide improved access to the regional airport; and
- continue planning for future bypasses of Singleton and Muswellbrook (options report for Singleton bypass due for completion in 2013).

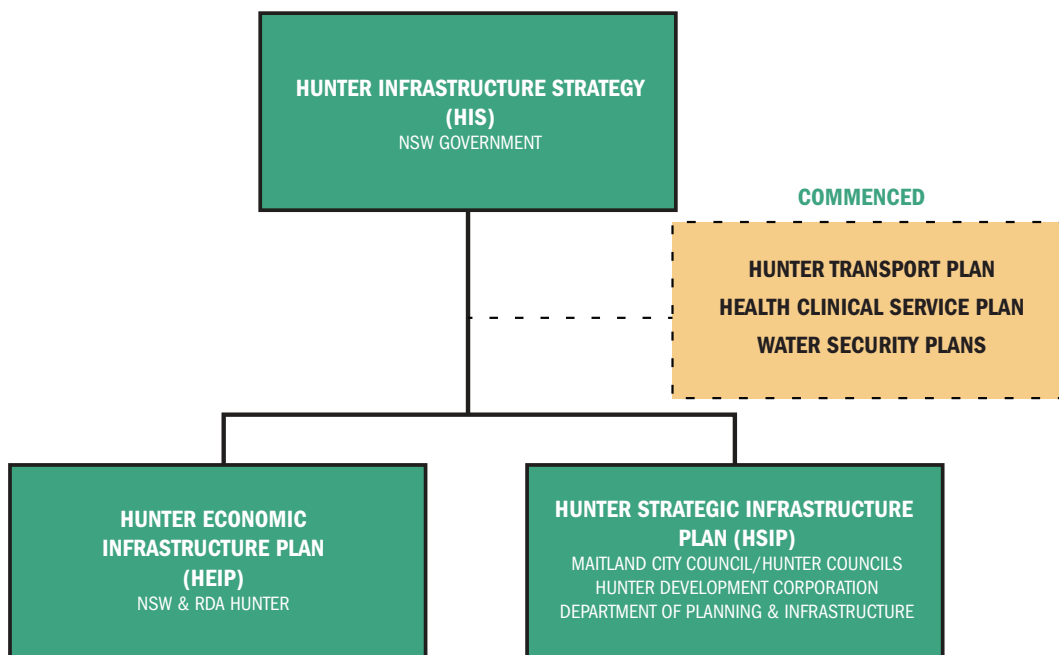
Hunter Infrastructure Strategy

There is a clear opportunity for the State to prepare a Hunter Infrastructure Strategy (HIS) to provide a blueprint for integrated regional infrastructure provision. The primary objective of the HIS would be to identify, prioritise and deliver economic and social infrastructure where it is needed, at the right time for the least cost. The HIS will represent the first unified assessment of regional and subregional infrastructure in the Hunter. Its relationship with other plans and strategies is illustrated in Figure C2.

The HIS will:

- develop a 20-year infrastructure plan for the Hunter;
- provide infrastructure input into the review of regional land use strategies;
- integrate qualitative and quantitative analysis of infrastructure on a regional scale;
- formulate staging and sequencing plans based on 0-5 years and 6-20 year increments optimising land use and infrastructure considerations; and
- demonstrate the case for an ongoing program of systematic data collection, analysis and regular reporting on regional infrastructure capacity and capability.

Figure C2 Relationship between Hunter Infrastructure Plans



Transport for NSW is currently preparing a Hunter Transport Plan building on key directions contained within the NSW Long Term Transport Master Plan (Master Plan) focussing on initiatives that support economic growth through the movement of freight and passengers within and through the Hunter Region.

The Hunter Transport Plan aligns with the 20-year horizon of the Master Plan. It covers both the Lower and Upper Hunter and is targeted for release in late 2013. It will draw on the extensive work of the NSW Long Term Master Plan as it relates to the Hunter, focussing on major agreed pinch points that require attention.

The plan responds to growth in the Hunter Region which will generally be focussed in the Newcastle, Lake Macquarie and Maitland areas and identifies regional road network enhancements and upgrading required to support this growth in the short (0 to 5 years) and medium-to-long term (6 to 20 years).

The plan will identify strategic transport corridors and pinch point investments to improve regional accessibility across all transport modes. It will include specific strategies and actions to support public transport and other active transport options.

Hunter Growth Plan

A key focus of the NSW Department of Planning and Infrastructure is the integration of land use and infrastructure planning initiatives consistent with the directions of the NSW Government's planning reform agenda. The logical next phase is the integration of the Upper and Lower Hunter land use strategies into a single Hunter Growth Plan by 2014, noting that there may be the need for a transitional step prior to full integration. The new consolidated Hunter Growth Plan would be supported by Subregional Delivery Plans, if or when required and a Growth Infrastructure Plan (GIP) specifically focussed on infrastructure delivery.

Hunter Economic Infrastructure Plan (HEIP)

The Hunter Economic Infrastructure Plan (HEIP) is a part Commonwealth-funded infrastructure plan responding to productivity and mining affected communities through the Regional Infrastructure Fund (RIF). The study area comprises the Hunter Valley Coal Chain covering the Upper and Lower Hunter and parts of Ulan Valley and Gunnedah Basin.

The plan primarily considers economic (particularly road transport) infrastructure requirements to support inputs to the coal chain noting that outputs are generally well understood and managed. The plan will identify priority Hunter infrastructure projects for joint NSW and Commonwealth funding consistent with the RIF.

Lower Hunter Water Plan

The Metropolitan Water Directorate, in conjunction with HWC, is currently preparing a Lower Hunter Water Plan to provide a strategy to ensure the Lower Hunter has adequate supplies of potable water to meet expected demand given anticipated population growth, climate change scenarios and the expansion of industry. The plan is in the community consultation phase and is expected to be completed in mid/late 2013. Notwithstanding the outcomes of the LHWP, water security is considered to be well-managed in the Lower Hunter and can be further enhanced by supporting initiatives such as the IIPT.

Regional Land Use Planning Strategies

The Upper Hunter Regional Strategic Land Use Plan (UHRSLUP) and the Lower Hunter Regional Strategy (LHRS) provide the land use vision for most of the region for the future (refer Figure C1). The LHRS was released in 2006 and was to be reviewed every five years. A review has been underway for several years and is due to be finalised by the end of 2013. The UPRSLUP was adopted in 2012 after an extensive public consultation process. It seeks to provide a means of resolving conflict between agricultural and urban land uses and coal mining and coal seam gas exploration and extraction. These plans have a horizon to 2031 and beyond and present a strategy to accommodate the growth expected in the region over this time period.

Health

The region comprises a substantial portion of the population in the Hunter New England Local Health District. Following the successful implementation of the Newcastle Strategy and substantial capital expenditure involved in constructing and commissioning services/facilities, attention has now turned to the health service needs of communities in the Hunter Valley.

Significant population growth is projected in Cessnock, Maitland, Muswellbrook and Singleton LGAs over the next 20 years. In addition, most Hunter Valley LGAs have a degree of socio-economic disadvantage which, evidence shows, results in reduced life expectancy and higher rates of chronic diseases. It is also noted that the Upper Hunter faces some unique challenges in terms of health needs and impacts on social infrastructure related to increased mining activity.

In response, Hunter New England Health is preparing a Clinical Services Plan (CSP) which involves a comprehensive review of the area health network and facilities. The CSP will articulate the future service/care model responding to the above issues and includes details concerning the preferred site and timing of a new Lower Hunter (Maitland) hospital. The CSP is targeted for release in late 2013. The NSW Government has committed \$20M for investigation and planning for a new hospital, including land acquisition.

Resources for Regions/Economic Assessment of Mine Affected Communities

The NSW Government undertakes annual assessment of the impacts of mining activity on regional communities as part of the Resources for Regions program. The Local Government Areas (LGAs) within the Hunter Region eligible for funding in 2013/14 year are Singleton, Muswellbrook and Newcastle. Resources for Regions is informed by an independently-audited assessment which compares State revenue raised from communities affected by mining with the corresponding government expenditure on local infrastructure and services. The definition of 'mining affected communities' has been extended to include non-mining communities which may be indirectly impacted by mining and related activity. In recognition that rapid mining-related growth places pressures on economic as well as social infrastructure in mining affected communities, the Resources for Regions program will be open to economic and social infrastructure projects. Eligible applicants include local government, businesses, non-government organisations and community groups. Funding is allocated through a competitive grants process following consultation with relevant stakeholders.

A new Independent Assessment Panel comprised of senior representatives from Infrastructure NSW, NSW Farmers and Local Government NSW considers applications and makes funding recommendations to the Board of Infrastructure NSW. Funding and successful projects are announced as part of the Budget process. The NSW Government has committed an additional \$120M to this program in the 2013/2014 Budget.

Housing Acceleration Fund

The Housing Acceleration Fund (HAF) is a half billion dollar NSW Government commitment to housing delivery first introduced in 2012. The NSW Government has allocated more than \$300 million from the HAF in the 2013-14 NSW Budget to drive housing growth. The delivery of key infrastructure, such as roads and wastewater, is one of the most critical factors in generating housing supply.

D. Potential Sources of Funding

i) State Government Funding Programs

To facilitate infrastructure in regional areas the NSW Government has the following infrastructure funding programs:

Hunter Infrastructure and Investment Fund (HIIF)

The NSW Government established the Hunter Infrastructure and Investment Fund (HIIF) in 2011 to enhance the Hunter's infrastructure – including transport, education, water and health infrastructure – to support economic growth and enhance the liveability of the region. The State Government allocated \$350M to the fund over four years, commencing in the 2011-12 financial year.

	2011-12 Revised	2012-13 Budget	2013-14 Forward estimate	2014-15 Forward estimate	Four-year total
HIIF	\$9.4M	\$74.0M	\$159.8M	\$106.9M	\$350.0M

Source: 2012-13 NSW Budget Paper 4 – Infrastructure

Restart NSW Fund

In June 2011, the NSW Government established Restart NSW to fund a range of high priority infrastructure projects in NSW. Infrastructure NSW is responsible for independently assessing and making recommendations to the NSW Government for use of the funds. The objective of Restart NSW is to improve the economic growth and productivity of the State by funding essential infrastructure, including:

- public transport;
- roads;
- infrastructure that may improve the competitiveness of the state;
- local infrastructure in regional areas affected by mining operations; and
- health facilities.

Resources for Regions

The NSW Government intends that 30% of Restart NSW funds will be allocated to infrastructure projects in regional and rural areas. Under the Resources for Regions Policy, up to 3% will be allocated to mining-affected communities. Around \$10M has been allocated in the 2012-2013 NSW State Budget. The NSW Government has committed an additional \$120M to the program in the 2013/2014 Budget.

Local Infrastructure Renewal Scheme

The Local Infrastructure Renewal Scheme (LIRS) is available to Local Government and aims to provide a 4% interest subsidy to assist those councils with legitimate infrastructure backlogs to cover the cost of borrowing. The subsidy aims to provide an incentive to councils to make greater use of debt funding to accelerate investment in infrastructure backlogs and augment funding options already available to councils.

The LIRS is being administered by the Division of Local Government (DLG) of the NSW Department of Premier and Cabinet. The projects/programs for which a council proposes to incur borrowings to be subsidised under the LIRS should be identified as part of council's infrastructure backlog.

Therefore, the capital infrastructure projects identified under Chapter 6 would generally not satisfy the selection criteria. Furthermore, while councils do have some role in providing new infrastructure, it is generally constrained to recreation and social infrastructure. This may include libraries, art galleries, sports and recreation facilities and the like. Significant economic infrastructure such as new major roads is generally the domain of the State and Commonwealth Government.

Transport Access Program

The Transport Access Program is administered through Transport for NSW and is an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure where it is needed most. The 2012-13 budget allocated \$148M, with approximately \$770M over four years.

Regional Industries Investment Fund

The Regional Industries Investment Fund (RIIF) has been established to drive economic growth in regional NSW as well as enhancing the attractiveness of regional areas. The Fund is administered through NSW Trade and Investment to the amount of \$43.9M in the 2012-13 budget. Support is available for local infrastructure projects that are linked with employment generation investments and deliver industrial projects with potential to benefit more than one firm. The RIIF aims to address infrastructure barriers impeding business investment and job creation for specific projects in regional locations. Assistance is directed toward offsetting the costs of specific critical infrastructure required for business establishment, expansion or relocation in regional NSW. Eligible applicants include:

- councils;
- infrastructure providers; and
- the private sector.

Housing Acceleration Fund

The Housing Acceleration Fund (HAF) is a half billion dollar NSW Government commitment to housing delivery first introduced in 2012. The NSW Government has allocated more than \$300 million from the HAF in the 2013-14 NSW Budget to drive housing growth.

This includes:

- \$141 million toward eleven water, road or electricity projects in Sydney and the Lower Hunter which can accelerate 42,900 new housing lots.
- \$70 million toward an upgrade of Old Wallgrove Rd in the Western Sydney Employment Area to deliver jobs near major housing growth centres.
- \$99 million toward the Local Infrastructure Growth Scheme to assist councils fund local infrastructure needed to support growth above the developer contribution cap.

This builds on last year's announcement that \$181 million would be allocated to ten projects via the HAF. The early evidence is that work on these projects is building market confidence and helping deliver more homes. The delivery of key infrastructure such as roads and wastewater is one of the most critical factors in generating housing supply.

ii) Commonwealth Government Funding Programs

Regional Infrastructure Fund

In terms of special funding streams the Regional Infrastructure Fund would be likely to present the most viable funding option for projects outlined in Chapter 6. The Fund has been established by the Commonwealth Government to invest the proceeds of a resurgent resource boom to address urgent infrastructure needs while supporting the mining industry, boosting export capacity and developing and growing regional economies. The Regional Infrastructure Fund is worth \$6B over 2010/11 to 2020/21 with \$5.6B of the fund drawing on the proceeds of the Minerals Resource Rent Tax (MRRT).

The broad objectives of the Regional Infrastructure Fund are to:

- promote development and job-creation in mining communities, and communities which support the mining sector;
- provide a clear benefit to Australia's economic development, and to investment in Australia's resource or export capacity; and
- address potential capacity constraints arising from export production and resource projects.

The Regional Development Australia Fund is administered by the Department of Regional Australia, Local Government, Arts and Sport.

The Scone level crossing project is currently subject to a feasibility study funded to \$1.4 million under the Fund. The Hunter Economic Infrastructure Plan, currently being prepared by Regional Development Australia Hunter, is being funded through the Fund to the value of \$450,000.

The Regional Infrastructure Fund guidelines indicate:

- funding recipients and primary project proponents will be State Government but projects can also involve local government authorities and/or the private sector. Only State Government is eligible for Regional Infrastructure Planning project funding;
- projects are to be major, large-scale economic infrastructure projects including rail, road, ports, airports, energy, communications, water and other critical economic infrastructure, as well as planning, feasibility studies and development work; and
- projects must meet the program objectives.

The projects in Chapter 6 meet the program's objectives as outlined above and, therefore, may be eligible for funding according to the guidelines.

Regional Development Australia Fund

The Regional Development Australia Fund (RDAF) supports the infrastructure needs of regional Australia. Nearly \$1B has been allocated to the program. The program funds capital infrastructure projects identified as priorities by local communities. Round five will support larger strategic infrastructure projects in the regions (RDA Hunter).

The program is administered by the Department of Regional Australia, Local Government, Arts and Sport.

Nation Building 2 Program

The Australian Government is investing \$36 billion on road and rail infrastructure through the Nation Building Program over the six year period from 2008/09 to 2013/14.

The Department of Infrastructure and Transport is delivering this investment through a range of road and rail programs and projects across the National Land Transport Network. The network is based on national and inter-regional land transport corridors of critical importance to national and regional growth.

There are several components under the Nation Building Program including:

- National Network construction and maintenance – this component targets projects on the National Network that will deliver the highest benefits to the nation. When completed, these projects will significantly improve the efficiency and safety of the National Network.
- Roads to Recovery – from 2009/10 to 2013/14 the Commonwealth Government will provide \$1.75B (\$350M in 2012-13) under the Roads to Recovery program. The funds will be distributed to councils, state and territory governments responsible for local roads in the unincorporated areas (where there are no councils) and the Indian Ocean Territories.
- Black Spot – the Commonwealth Government will provide \$59.5M per annum to 2013/14 for road safety projects under the Black Spot Program. In the 2012/13 Budget, the government announced it will provide \$300M (\$60M per annum) to extend the Black Spot Program for a further five years from 2014/15 to 2018/19.
- Heavy Vehicle Safety and Productivity Program – Round Three of the HVSPP will be implemented over 2012/13 and 2013/14, with \$50M in total to be allocated to heavy vehicle safety and productivity related projects.
- Off-Network projects – the Australian Government's Nation Building Program also provides funds to state, territory and local councils for road, rail and intermodal projects not situated on the National Network.

- Liveable Cities Program – the Australian Government developed the Liveable Cities Program to support state, territory and local councils in meeting the challenges of improving the quality of life in our capitals and major regional cities. The Liveable Cities Program seeks to improve the capacity of the 18 eligible capital and major regional cities that are the subject of the National Urban Policy. The Program is providing \$20M over two years and comprises two funding streams:

- Planning and Design Projects with a maximum Australian Government funding contribution of up to \$500,000 per project; and
- Demonstration Projects with a maximum Australian Government funding contribution of up to \$4M per project.

The HSIP was part funded through a grant under the Liveable Cities Program. The projects identified in Chapter 6 may also be eligible for funding under this scheme.

E. Priority Project Summaries – Shovel Ready Projects (0 To 5 Years)

Duplication of Tourle Street Bridge and Approaches (0 to 5 year)

Background

Kooragang Island is a major industrial and employment centre. It is also home of the world's largest coal export port and a number of manufacturing industries.

The Tourle Street/Cormorant Road corridor (MR108) is the main access connecting the southern and northern sides of the port. The road also provides the primary access from Newcastle to the RAAF Base Williamtown, Newcastle Airport and a significant population base of Port Stephens, including Nelson Bay. This access corridor currently serves approximately 33,000 vehicles per day, including 3,000 heavy vehicles (TfNSW). This access corridor suffers from congestion, particularly during peak times. Demand is expected to increase in the future due to expansion of the Port, the RAAF Base, Newcastle Airport and regional population and employment growth, reaching approximately 40,000 vehicles per day by 2031 (TfNSW). A detailed assessment of this project is provided in the Hunter Economic Infrastructure Plan (HEIP).

Project

To address current and future problems created by this 'pinch point' duplication of the bridge and approaches is proposed. The project is consistent with Commonwealth and State initiatives, including:

- Productivity – improved traffic flows and reducing delays will, in turn, improve productivity for freight travelling to and from the port, major industrial lands and the Newcastle Airport. Specifically the increased capacity would benefit Australia's economic activity in relation to freight and the operation of the port.
- Sustainability – improved travel times would reduce greenhouse gas emissions and improve air quality.
- Liveability – increased accessibility and reduced travel times improve quality of life.
- Governance – such an upgrade supports both Commonwealth and State Government initiatives to increase economic productivity.

Project Timing

The project represents a relatively modest investment to address a critical 'pinch point'. Ideally the project would be completed within the next five years. The State Government (TfNSW) is currently seeking funding through the Commonwealth Nation Building 2 funding program, with the application still under consideration. If successful the state would need to match the Commonwealth funding.

Pennant Street Bridge, Glendale Stage 1 (0 to 5 years)

Background

The Glendale/Cardiff area is effectively at the geographic centre of the HMA. The Lower Hunter Regional Strategy (LHRS) has identified the area as an emerging major centre. The Glendale/Cardiff centre is already the Hunter Region's largest employment node with approximately 16,000 employees (Lake Macquarie City Council submission to Infrastructure Australia). The LHRS projects an additional 4,000 dwellings and 6,200 jobs in the centre by 2031.

While the main north-south rail line passes through the centre there is currently no railway station to serve the centre. Furthermore, the Cardiff Industrial area and Glendale Supercentre, while directly adjacent, are also separated by the main north-south rail line with no direct connectivity between them. Access to the Cardiff Industrial Area is constrained at the Munibung Road access, which often experiences congestion.

Project

In response to these issues, it has been identified by both Lake Macquarie City Council (LMCC) and the NSW Government that a Lake Macquarie Transport Interchange (LMTI) should be established to serve the Cardiff/Glendale centre. The selected site is adjacent to Cardiff Industrial area and Glendale Supercentre, thereby serving both employment nodes and providing connectivity between the two. The proposed interchange is considered of regional significance (Hunter Councils) and will have a positive impact on the economic activity of the Cardiff/Glendale employment precinct and also wider benefits to the HMA due to increased connectivity to other key destinations within the HMA. The NSW Long Term Transport Master Plan identifies this as a short term priority, indicating the NSW Government has already committed \$15M to the project. LMCC has committed \$10M toward stage 1 of the project. LMCC is also seeking funding of \$25M from the Commonwealth Government through the Regional Development Australia Fund. This fund operates on a matched funding basis against the combined \$25M commitment from the NSW Government and LMCC.

Stage 1 involves construction of a Pennant Street Flyover Bridge and associated roads (extend Stockland Drive and Glendale Drive). Stage 1 would significantly enhance connectivity between the Cardiff Industrial area and Glendale Supercentre and to the Cardiff Industrial area from the west, thereby easing congestion at the eastern Munibung Road access.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – the LMTI would encourage ongoing investment in the Glendale and Cardiff centre, already a significant employment node and expected to expand in the future.
- Sustainability – the project will result in reduced travel times and enhanced public transport patronage which will reduce greenhouse gas emissions.
- Liveability – reduced travel times to and from work. The project will encourage alternative transport modes including public transport and walking. It would provide significantly enhanced accessibility to services for employees within Cardiff Industrial Area.
- Governance – consistent with State and Commonwealth Government agendas to increase productivity and enhance liveability.

Project Timing

The project could have a significant impact on the Hunter economy and society.

Stage 1 is the responsibility of LMCC with a cost estimated at approximately \$50M. On 25 February 2013, LMCC awarded the tender for design services for Stage 1. Subject to funding availability, LMCC indicates works could be completed by June 2015.

Newcastle Urban Renewal (0 to 5 year)

Background

The Newcastle Urban Renewal Strategy (Strategy) was announced by the NSW Government in December 2012. The Strategy includes a range of initiatives and an implementation plan to drive urban renewal of the Newcastle city centre. The Strategy promotes the creation of three distinct and revitalised hubs across the city and additional residential development. The Strategy also includes some significant public domain upgrades and will cater for an additional 12,600 residents and 10,000 jobs by 2036.

The Strategy was publically exhibited from December 2012 until April 2013 inviting input. Included in the Strategy is the truncation of the inner city heavy rail line west of Stewart Avenue and the construction of a new transport interchange. A Coordination and Delivery Group (CDG) has been established to oversee the implementation process.

An increase in the connectivity between the city centre and harbour is a key component of the Strategy. To this end, a number of connection points have been nominated that will cross the existing rail corridor.

Project – Integrated Transport System including Light Rail in Newcastle City Centre

The Newcastle Urban Renewal Project will involve the removal of the inner city heavy rail line and the construction of the Wickham Transport Interchange, including the proposed introduction of light rail between Wickham and Newcastle. This is considered one of the major catalyst projects associated with the revitalisation of the Newcastle city centre. The project has been extensively studied over decades but has only recently gained State Government endorsement and the necessary funding to proceed. It is subject to the proposed lease of Newcastle Port (refer NSW Treasury 2013).

The completion of the project will open a new era for the city centre as it reconnects the existing and emerging city centre areas with the harbour. The project is considered a catalyst to urban renewal and as evidence of this the GPT/UrbanGrowth NSW proposed redevelopment is in the planning stages.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – enhanced accessibility, including a new interchange, will provide increased productivity. In particular, it will enable the older areas of the city centre to leverage off the successful redevelopment within the Honeysuckle area.
- Sustainability – urban renewal and consolidation supports ESD principles.

- Liveability – poor connectivity between the older sections of the city centre and the Honeysuckle area has been seen as an impediment to liveability. The project will enhance accessibility, particularly for pedestrians within the city centre, making for a more liveable city environment.
- Governance – the project implements a NSW Cabinet resolution and supports productivity, consistent with Commonwealth Government initiatives.

Project Timing

It is anticipated the project will be well advanced within the next five years

Newcastle Airport Terminal Expansion (0 to 5 year)

Background

Newcastle Airport is the second largest airport in NSW and is a significant infrastructure asset serving the Hunter and surrounding regions. The number of passenger movements has been steadily increasing with approximately 1.2 million (M) passenger movements in 2011. The 2007 Newcastle Airport Master Plan prepared by Newcastle Airport Limited (NAL) indicates that to accommodate future growth at the airport, upgrades will be required to the fuel, maintenance and general aviation facilities including customs handling facilities.

Project

To address anticipated future demand at Newcastle Airport, it is recommended NAL's proposed terminal expansion be supported. The project is consistent with Commonwealth and State initiatives, including:

- Productivity – a functional regional airport with links to Australia's major cities and destinations will enhance the productivity of the regional economy and the wider Australian economy. In this regard, it is noted at present 56% of travel is already business related (NAL 2012). The airport provides a gateway to the Hunter and Central Coast regions for business and tourism. An expanded airport would also provide an alternative gateway to Sydney Airport.
- Sustainability – expanded airport operations will better serve the regional population thereby reducing travel demand to Sydney Airport.
- Liveability – an improved regional airport facility enhances liveability in the region.
- Governance – the Newcastle Airport extension supports both Commonwealth and State Government initiatives to increase economic productivity of regional areas.

Project Timing

The project represents an \$80M investment to lift the capacity of the airport and leverage off existing infrastructure investment. The terminal expansion was recently approved by Port Stephens Council and will have capacity to move up to five million passengers a year. NAL is undergoing a corporate restructure to raise capital for investment in the growth of its operations. NAL has made application to both the Commonwealth and State Governments including an application for \$10M through the HIF fund and the RDAF Round 4 for funding of the terminal expansion and apron upgrades. The applications are still under consideration. If funding were secured, it would be desirable for the expansion to be completed within the next five years.

Improving access to/from the airport is also a priority, particularly to Newcastle (including duplication of the Tourle Street Bridge and upgrading of Cormorant Road and Nelson Bay Road) and connections to the Pacific Highway via Tomago Road and Cabbage Tree Road.

Newcastle University CBD Campus (0 to 5 year)

Background

The University of Newcastle already has a presence in the Newcastle city centre and plans to develop a larger city campus which would assist in revitalising the city centre and provide an incentive to the construction of student accommodation in the city centre and surrounding suburbs. The NSW Government has committed \$25M for the project, the Commonwealth Government has also contributed \$30M through the Education Investment Fund and the University has allocated \$40M toward the development of the \$95M precinct.

Project

This project represents a significant infrastructure investment, a catalyst for urban renewal and an education legacy for the HMA.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – enhancing educational services facilitates a more highly-skilled population which, in turn, helps Australia's productivity.
- Sustainability – redeveloping a brownfield site within the city centre utilises existing infrastructure and services rather than consuming undeveloped land.
- Liveability – the project will support urban renewal and add vitality within the Newcastle city centre.
- Governance – the project supports State and Commonwealth Government agendas for a more skilled population and supports urban renewal principles.

Project Timing

The project would have a significant positive impact on the local and regional economy, create an education legacy for future generations and is seen as an important catalyst for the revitalisation of Newcastle city centre. The University has identified the following anticipated timeframe:

- 2013 – Acquire preferred site.
- 2014 – Commence construction
- 2017-2018 – Anticipated completion.

F. Priority Project Summaries

Planning Ready Projects (6 To 20 Years)

New England Highway - Belford to Golden Highway (Planning Phase) (6 to 20years)

Background

The New England Highway is part of the National Land Transport Network servicing the Sydney to Brisbane corridor. The Highway is effectively dual-carriageway from Hexham to Maitland/Telarah with single carriageway/3-lanes until the intersection with the Golden Highway. Freight vehicles servicing the coal mines in the Upper Hunter and grain producers in the Central West use this corridor extensively to access the port. The corridor is also used extensively by commuters travelling to and from work between the Lower and Upper Hunter.

The section of the Highway between Belford and the Golden Highway is 3.2km long and currently experiences severe congestion during peak periods (TfNSW). Furthermore the Hunter Expressway (due for completion in 2013) will connect between the F3 Freeway and New England Highway, west of Branxton and is expected to create a 'bottle-neck' in this location.

The intersection of the New England and Golden Highways is currently at-grade. This results in conflicts, particularly for vehicles turning right from the Golden Highway. This leads to increased accidents and travel times which impact productivity and liveability. A detailed assessment of this project is provided in the Hunter Economic Infrastructure Plan (HEIP).

Project

To address current and future problems associated with capacity constraints on the New England Highway it is proposed to:

- increase capacity between Belford and the Golden Highway from the current 3 lanes to dual carriageway, i.e., 4 lanes; and
- grade separate the intersection of the Golden and New England Highways and increase capacity of approaches.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – improved traffic flows and reducing delays will, in turn, improve productivity for freight travelling on the New England Highway. This will support efficiency of the National Highway network to the port and the Sydney to Brisbane corridor. Increasing the capacity of the New England Highway helps leverage off the significant infrastructure investment in the Hunter Expressway.

- Sustainability – improved travel times would reduce greenhouse gas emissions and improve air quality.
- Liveability – increased accessibility and reduced travel times – particularly to places of employment – improves quality of life. Improvements to the intersection will also reduce accidents.
- Governance – such an upgrade supports both Commonwealth and State Government initiatives to increase economic productivity, improve liveability and improve road safety.

Project Timing

The project represents a relatively modest investment to address a critical 'pinch point'. Ideally the project will be "shovel ready" within the next five years subject to funding.

Pacific Motorway (M1) - Weakleys Drive Intersection (Planning Phase) (6 to 20 years)

Background

The M1 Pacific Motorway/Weakleys Drive intersection connects the M1 Motorway, the Pacific Highway and the New England Highway. The intersection also services a major industrial employment zone. The intersection has emerged as a critical 'pinch point' between the M1 and the New England Highway and the Pacific Highway (which includes access to the port).

The capacity of the intersection cannot meet current demand in peak periods and often results in delays and queuing which reduce travel reliability and increased travel times. Congestion at the intersection will increase in the future due to expanded industrial development and population growth.

Project

To address current and future problems created by this 'pinch point' the capacity of the intersection needs to be increased. The project is consistent with Commonwealth and State initiatives, including:

- Productivity – improved traffic flows and reducing delays will, in turn, improve productivity for freight travelling on the Sydney to Brisbane corridor and also to the port. Specifically the intersection upgrade would benefit Australia's economic activity in relation to freight and the operation of the port.
- Sustainability – improved travel times would reduce greenhouse gas emissions and improve air quality.
- Liveability – increased accessibility and reduced travel times improve quality of life.
- Governance – such an upgrade supports both Commonwealth and State Government initiatives to increase economic productivity.

Project Timing

The project represents a relatively minor investment to address a critical 'pinch point'. Ideally the project would be "Shovel Ready" within the next 5 years. The 2013–14 Federal Budget has allocated funding for the planning of this project.

Consideration should be given in the planning phase to the relationship between the Weakleys Drive intersection upgrade and the M1 extension project. The M1 extension may alleviate future pressure on the intersection thereby influencing the nature and standard of the preferred upgrade.

Pacific Motorway (M1) extension to Raymond Terrace (Planning Phase) (6 to 20 years)

Background

The M1 Pacific Motorway extension to meet the Pacific Highway south of Raymond Terrace is an important missing link on the National Land Transport Network. At Beresfield/Hexham the M1 Motorway, New England Highway and Pacific Highway interlink. There is currently a 4km stretch of the New England Highway that links between the M1 and Pacific Highway with traffic volumes reaching over 56,000 vehicles per day (TfNSW). The interlinked section of the Pacific Highway and the New England Highway has insufficient capacity to accommodate this demand and consequently suffers congestion. Demand is expected to increase due to expansion of industry and population growth. This will negatively impact on travel reliability/time of freight movements between Sydney and Brisbane, to the port, Newcastle Airport and employment lands at Tomago and Kooragang Island.

Project

To address current and future problems created by this 'pinch point,' it is proposed to extend the M1 Pacific Motorway with a high standard dual carriageway to the Raymond Terrace by-pass (which is also dual carriageway). The route would preferably be to the east of the existing Pacific Highway to facilitate access to and from the port, Tomago Industrial area and Newcastle Airport. The project is consistent with Commonwealth and State initiatives, including:

- Productivity – improved traffic flows and reducing travel delays will, in turn, improve productivity for freight travelling on the Sydney to Brisbane corridor and to the port. The extension would also provide better access to Newcastle Airport and the State Significant designated Tomago Employment Lands. The project would provide a significant value add to the existing M1 Pacific Motorway.
- Sustainability – improved travel times would reduce greenhouse gas emissions and improve air quality.
- Liveability – this corridor is also extensively used by passenger vehicles. Increased accessibility and reduced travel times improve quality of life, provide better access to affordable housing and support tourism travel during peak demand times.
- Governance – the M1 extension supports both Commonwealth and State Government initiatives to increase economic productivity. This project has also been identified as a 5-10 year priority under the NSW Government State Infrastructure Strategy. It is identified as a medium-to-long term priority under the NSW Long Term Transport Master Plan.

Project Timing

The project will have a significant impact on the economy of the HMA as well as wider economic benefits to the state and national economies. Ideally the project would be shovel ready and completed within the next 10 years. The NSW Government Budget 2012-13 allocated \$2M toward planning for the project.

Consideration should be given to the relationship between the M1 extension and the Weakleys Drive intersection upgrade. The M1 extension may alleviate pressure on the Weakleys Drive intersection thereby influencing upgrade option selection. Given the relatively long delivery time for the M1 extension, some intermediate upgrading of the Weakleys Drive intersection will be required. However, there could be long-term savings if the M1 extension could be expedited.

Newcastle Inner City Bypass – Rankin Park Link (Planning Phase) (6 to 20 years)

Background

The Newcastle Inner City Bypass (SH23) between the Pacific Highway at Windale and the Pacific Highway at Sandgate will provide an orbital road linking Newcastle's radial network.

The bypass is being planned and constructed in five major sections. Sections completed to date are the West Charlestown Bypass (Bennetts Green to Kotara Heights), Kotara Heights to Rankin Park and Jesmond to Shortland. The two remaining sections are Rankin Park to Jesmond and Shortland to Sandgate (currently under construction).

Project

The NSW Long Term Transport Master Plan identifies the completion of this project as a priority in the short-to-medium term. The Shortland to Sandgate section is expected to be open to traffic in 2014. Planning for the remaining Rankin Park to Jesmond section has been completed with a preferred route selected.

Completion of the Rankin Park to Jesmond section is consistent with Commonwealth and State initiatives, including:

- Productivity – the final section represents an incremental investment in infrastructure that will complete the Newcastle Inner City Bypass. It will provide for enhanced north-south traffic flow in the inner suburbs of Newcastle and better connectivity to key destinations including Bennetts Green, Charlestown, John Hunter Hospital, Jesmond, Newcastle University's Callahan Campus and the Pacific Highway. The remaining Rankin Park to Jesmond section would provide traffic relief for the surrounding road network, particularly Lookout Road, Croudace Street and Newcastle Road.
- Sustainability – relieving congestion and improved travel times reduces cost and pollution.
- Liveability – the remaining section of the bypass would relieve an existing 'pinch point' improving accessibility to key destinations, including the University of Newcastle and John Hunter Hospital.
- Governance – the completion of the bypass is also a recommendation of the NSW Long Term Transport Master Plan and is consistent with the Commonwealth Government's agenda to increase productivity and liveability.

Project Timing

The project would have a significant impact on the HMA economy and complete the remaining missing link in this bypass. While construction is dependent on further planning and funding, it would be ideal if the project was "Shovel Ready" within five years.

Regional Transport Enhancements (6 to 20 years)

Regional road connections to the port, airport, State significant strategic employment lands and major centres are critical arteries supporting the productivity and liveability of the HMA.

A. Investigate light rail extension

Investigate potential feasibility for light rail to link the Newcastle city centre with surrounding suburbs, beaches and the broader Hunter Region.

B. Port Link Concept (Planning)

The following example leverages off proposed Nation Building and NSW infrastructure investments within the HMA, specifically focussing on road connections to and from the port, the airport and the Tomago State Significant employment lands containing major enterprises such as Tomago Aluminium and Westrac.

- Investigate the future capacity of the existing north-south corridor (Industrial Drive/Pacific Highway route) and, if required, preserve an expanded road corridor connecting the port to the national highway network in the vicinity of Hexham. This is a relatively short link that would connect into the F3 Freeway.
- Investigate the capacity of the north-south corridor (Cormorant Road, Nelson Bay Road – MR108) between the port and Newcastle Airport and remove existing and emerging pinch points with duplication of the Tourle Street Bridge seen as a priority.
- Investigate future capacity of existing east-west corridor - Tomago Road/Cabbage Tree Road to Pacific Highway (MR302).

By connecting these ‘port links’, a road transport loop would be created which would enhance the capacity of this important existing and emerging economic hub of the HMA.

The above projects are consistent with Commonwealth and State initiatives, including:

- Productivity – improved traffic flows and reducing delays will in turn, improve productivity.
- Sustainability – improved travel times would reduce greenhouse gas emissions and improve air quality.
- Liveability – increased accessibility and reduced travel times improves quality of life.
- Governance – such an upgrade supports both Commonwealth and State Government initiatives to increase economic productivity and liveability.

Adamstown Rail Level Crossing (Planning Phase) (6 to 20 years)

Background

The Adamstown rail level crossing is situated where Glebe Road (MR188) crosses the main north/south rail line. It is currently used by approximately 11,000 vehicles per day. With around 90 passenger trains and 80 freight trains per day, the crossing represents a significant ‘at-grade’ conflict between motor vehicles and trains (TfNSW). The crossing currently experiences significant delays which are expected to worsen over time due to anticipated growth of rail freight and population in the area generally.

Project

To address current and future problems associated with capacity constraints of the rail crossing it is proposed to:

- Carry out a feasibility study of various options for improvement, including grade separation options, intersection improvements, and alternative crossings.
- Implement the preferred option.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – improved traffic flows and reducing delays will, in turn, improve productivity for passenger vehicles and freight utilising the Glebe/St James Road corridor.
- Sustainability – improved travel times and reduced queuing would reduce greenhouse gas emissions and improve air quality.
- Liveability – increased accessibility and reduced travel times improve quality of life. Improvements to the intersection will also reduce accidents.
- Governance – such an upgrade supports both Commonwealth and State Government initiatives to increase economic productivity, improve people’s lives including road safety.

Project Timing

Ideally the project would be “Shovel Ready” within the next five years, with a selected solution implemented responding to actual growth and subject to funding.

This project should also be considered in association with the Lower Hunter Freight Corridor project (also recommended under this plan) as the bypass has the potential to significantly improve performance of the crossing by eliminating the majority of freight train movements through the metropolitan area.

Lower Hunter Freight Corridor (6 to 20 years)

Background

Investigations by TfNSW have identified the regional rail capacity around the HMA as a constraint on future economic growth. In particular, if coal traffic from south of Fassifern or additional regional container traffic from the North West was to occur, then the rail capacity through the HMA would deteriorate further. Freight trains passing through the urban areas of the HMA also impact liveability in terms of noise and vibration in addition to traffic delays at railway crossings.

Project

The Newcastle Freight Rail Bypass is seen as a future long-term alternative for improving the existing Sydney-to-Brisbane rail freight network. A preferred route has not been determined, however, it is likely it would link to the rail network south of Fassifern (bypassing the urban localities of Lake Macquarie and Newcastle) and join the existing rail network in the vicinity of Hexham.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – the project would enhance productivity on a number of fronts:
 - enhance general freight movements on the Sydney-to-Brisbane corridor, with potential savings in travel time of 15 minutes between Sydney and Brisbane (TfNSW);
 - more reliable coal supply to power generators on the Central Coast;
 - enhance coal export capacity from the Central Coast through to the port; and
 - benefit passenger train services.
- Sustainability – a more efficient transport system ultimately reduces energy consumption.
- Liveability – a freight rail bypass has the potential to significantly enhance liveability within the urban areas of Lake Macquarie and Newcastle.
- Governance – such an upgrade supports both Commonwealth and State Government initiatives to increase economic productivity, improve quality of life and improve public transport.

Project Timing

This project is also identified as a medium-to-long term priority under the NSW Long Term Transport Master Plan. The project could have a significant impact on the local, state and national economies. Planning for the project should be undertaken within the next five years with a preferred route selected, detailed design completed and the corridor identified in relevant Local Environmental Plans (LEPs).

Future timing of construction would be subject to the outcomes of the feasibility and planning work. INSW (2012) report states the Newcastle Freight Rail Bypass has strategic merit. However, it notes more detailed route alignment work needs to be undertaken to identify a viable option given current cost constraints. The Adamstown Rail Crossing project (also recommended under the HSIP) should be considered in relation to this project. The freight bypass has the potential to significantly improve the long-term performance of the Adamstown Rail Crossing.

Lower Hunter Water Security (6-20 years)

Background

While water security is generally well managed in the HMA, water levels in water storage facilities can drop faster than most other major Australian urban centres during periods of low rainfall because storages are small or shallow and have high evaporation rates.

Project

The formulation of the Lower Hunter Water Plan (LHWP) will result in a coherent strategy to provide adequate water for the Lower Hunter, both in drought and for the longer term, to support predicted growth in population and industry. The LHWP is being prepared by the Metropolitan Water Directorate (Department of Finance and Services) in collaboration with Hunter Water Corporation, other government agencies and the community.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – securing reliable water supply is critical to the productivity of the HMA.
- Sustainability – the project has the potential to increase water security, a key component of a sustainable society.
- Liveability – a reliable water supply underpins liveability.
- Governance – a reliable water supply is consistent with State and Commonwealth Government initiatives for a more liveable and productive society.

Project Timing

INSW (2012) has identified that augmentation of water supply for the Lower Hunter is needed within the short-to-medium term (0 to 10 years). The planning for this project is being undertaken by the Metropolitan Water Directorate (under that agency's budget) and will include an assessment of options. Funding of recommendations arising from the LHWP would need to be secured from a range of sources including user charges and future government budgets.

New Lower Hunter (Maitland) Hospital (6 to 20 years)

Background

There is an emerging need for enhanced health care for the Lower and Upper Hunter, particularly within the Maitland, Cessnock and Singleton LGAs. Current population and anticipated growth in these LGAs are impacting local health service delivery with Maitland and other Upper Hunter hospitals seeing a significant increase in admissions in recent years.

Project

In response to these critical needs, planning by the NSW Government for the future development and delivery of health services across the Hunter Region has commenced. Early outcomes of the planning exercise have identified the need for a new rural referral hospital within the Maitland growth corridor.

The project is consistent with Commonwealth and State initiatives, including:

- Productivity – improved health care facilitates a healthier society which, in turn, enhances national productivity. An additional hospital will also alleviate demand on other regional hospitals, particularly John Hunter Hospital.
- Sustainability – improved accessibility reduces travel times and negative impacts such as cost and pollution.
- Liveability – a new hospital in the Maitland growth corridor would significantly enhance accessibility to health care for residents within and adjoining the growth corridor and the Upper Hunter.
- Governance – the National Health and Hospitals Network Agreement (NHHN) sets out the shared intention between State and Commonwealth Governments. The project is consistent with the objective of this agreement which is to improve health outcomes for all Australians and the sustainability of the Australian health system.

Project Timing

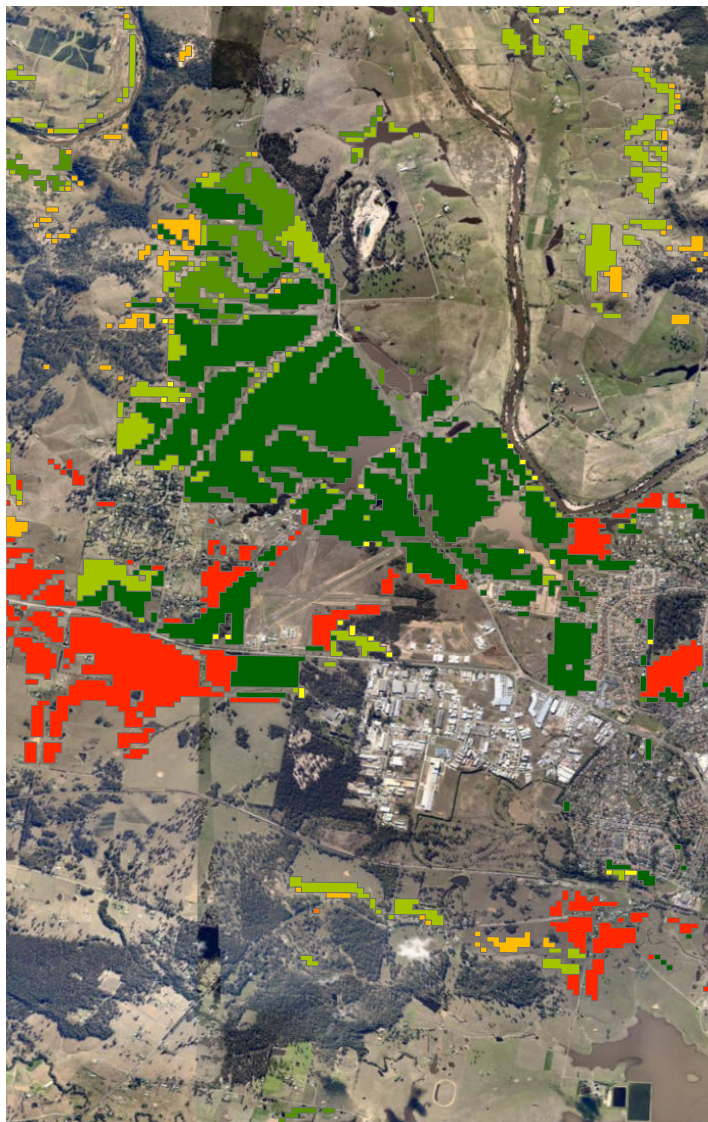
The project would have a significant positive impact on the economy of the HMA and create a health legacy for future generations. The project should be planned within the next five years with the preferred site acquired and detailed design/planning completed. Future timing of construction would be subject to the outcomes of the feasibility and planning work being undertaken and budgetary considerations. Ideally the facility will be delivered within the next 10 years or possibly accelerated via a Public Private Partnership (PPP) if feasible to do so.

The NSW Government, through the Hunter Infrastructure and Investment Fund, has allocated \$20M for investigation and planning for a proposed new hospital, potentially including land acquisition. The NSW Government has recently identified a potentially suitable site in Metford situated in the Maitland Growth Corridor.

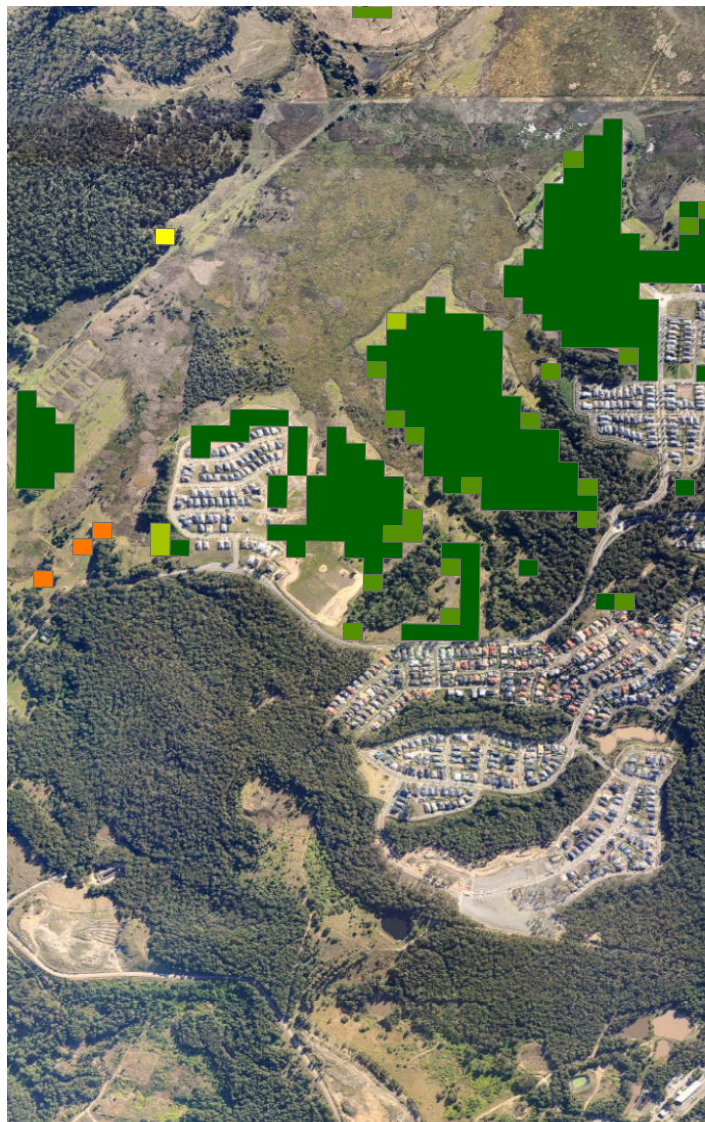
G. Integrated Infrastructure Planning Tool (IIPT)

EXAMPLE OUTPUTS

Case Study 1 – Maitland Growth Corridor



Case Study 2 – Metropolitan Core Fringe



Notes: Comparison of infrastructure capacity costs #

Green = Relatively low cost

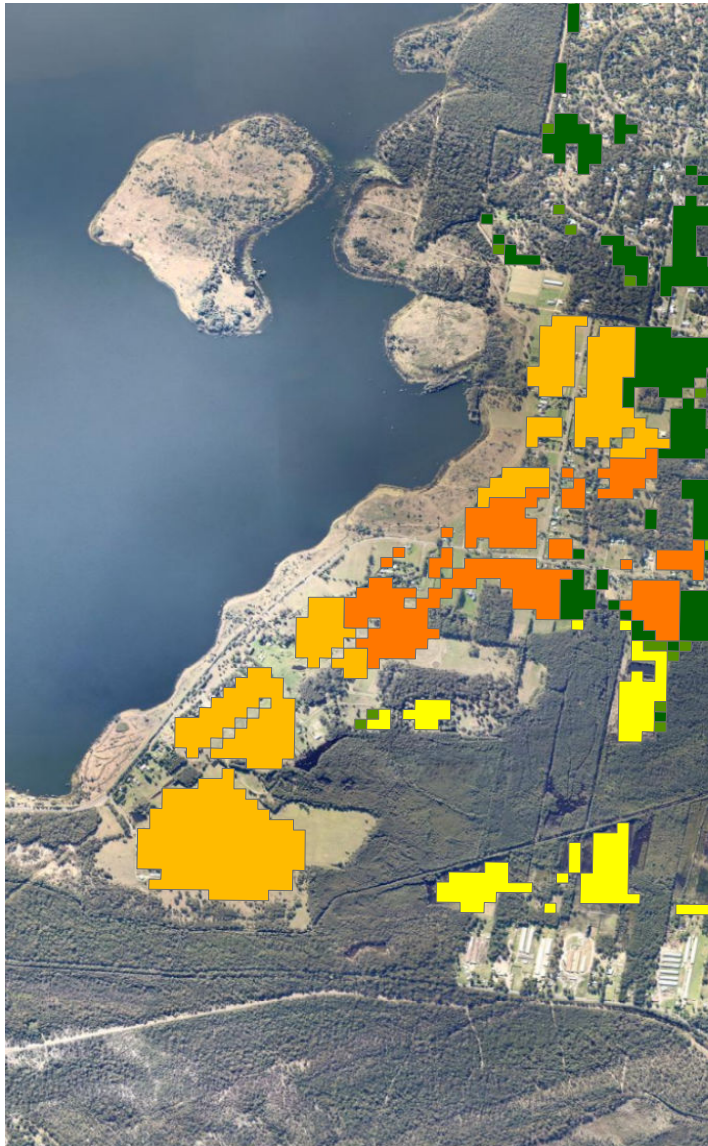
Yellow = Relatively moderate cost

Red = Relatively moderate-to-high cost

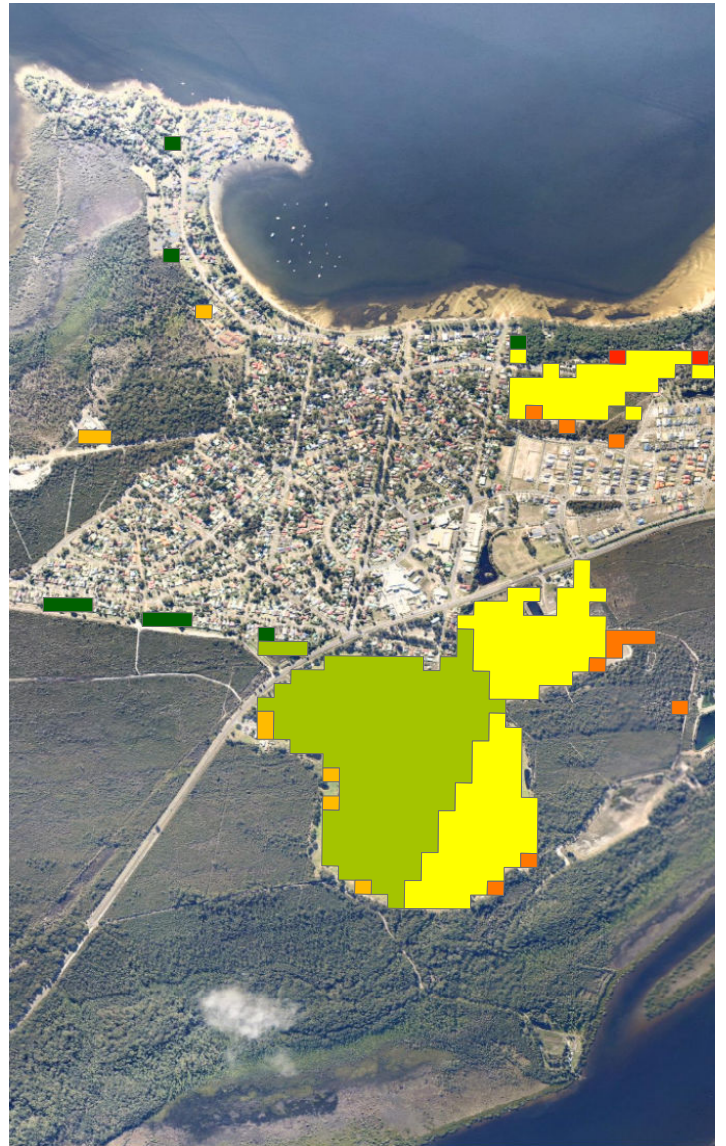
Not identified = Outside infrastructure cost priorities

Considers lead infrastructure costs and environmental sensitivity

Case Study 3 – Proximity to Port-Airport Corridor



Case Study 4 – Lifestyle Location



Notes: Comparison of infrastructure capacity costs #

Green = Relatively low cost

Yellow = Relatively moderate cost

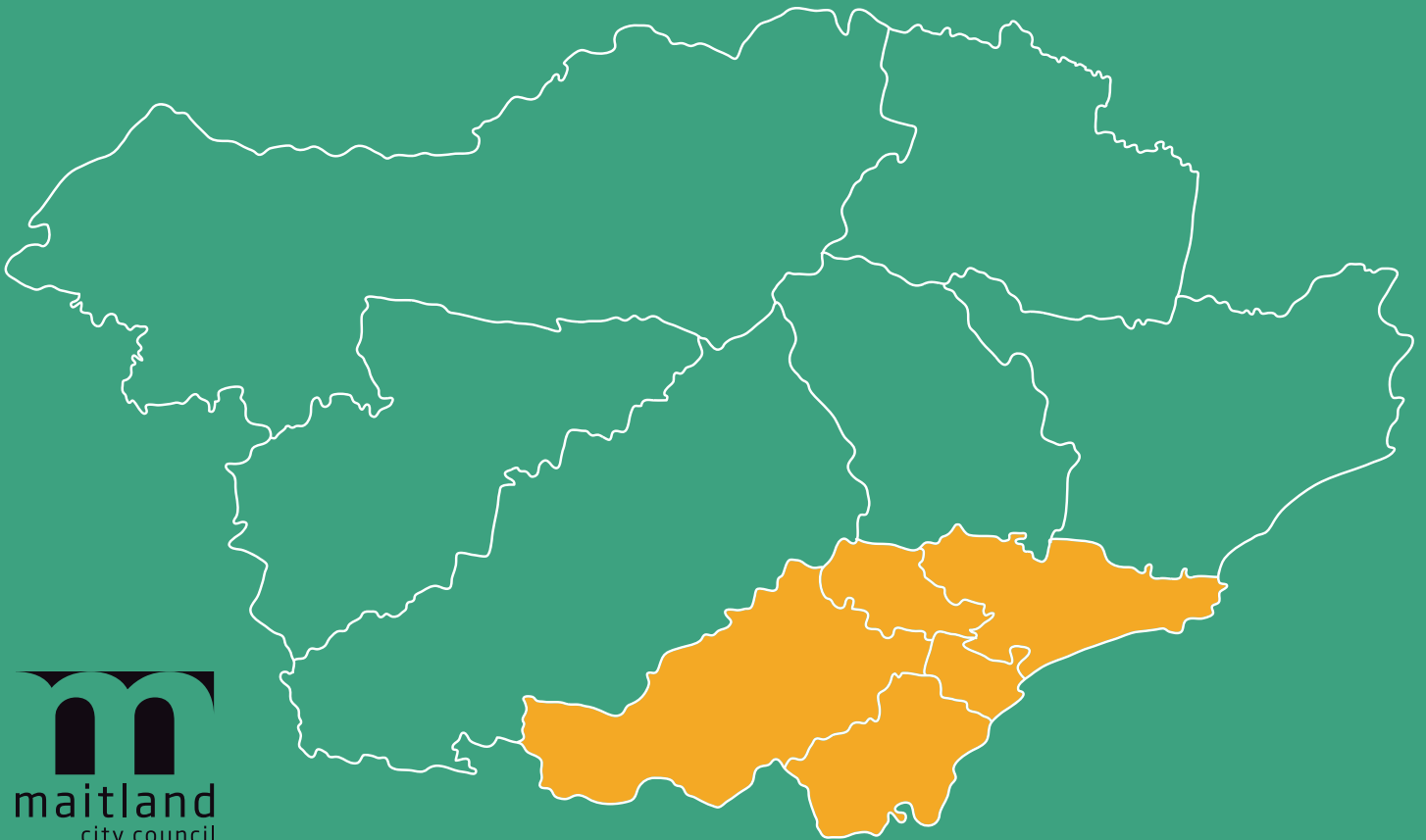
Red = Relatively moderate-to-high cost

Not identified = Outside infrastructure cost priorities

Considers lead infrastructure costs and environmental sensitivity

HUNTER STRATEGIC 2013 INFRASTRUCTURE PLAN

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