

Strategic Regional Land Use Plan

New England North West



New England North West Strategic Regional Land Use Plan

© State of New South Wales through the Department of Planning and Infrastructure

September 2012

ISBN 978-0-7313-3578-7

www.planning.nsw.gov.au

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Premier's Foreword



More than two million hectares of our State's most valuable agricultural land as well as the critical water sources that supply it are now subject to protections never before seen in NSW. Much of that land is located in the New England North West.

Since coming to office, my Government has worked to deliver a balanced land use policy for this State – a comprehensive package that acknowledges both the strong growth being experienced in the mining and coal seam gas industries and the need to ensure that our rich agricultural sector is protected.

The Government's Strategic Regional Land Use Policy does just that. This plan for the New England North West region forms a key part of the overall policy package. It follows one of the most extensive community consultation programs ever undertaken in NSW and strongly reflects the public and industry feedback.

Importantly, the plan also complements the extensive range of statewide initiatives put in place by this Government to better regulate exploration and coal seam gas activities such as the creation of a Land & Water Commissioner and strict industry codes of practice as well as an Aquifer Interference Policy that protects vital water sources.

The New England North West region is one of the State's most fertile and productive agricultural areas. The agricultural industry is worth around \$1.8 billion annually to the regional economy, with sheep and cattle grazing, broad acre cereal crops, irrigated cotton, intensive livestock and plant agriculture and poultry production being the main contributors.

For the first time, large-scale mining or coal seam gas projects proposed on the most valuable of these agricultural lands must be independently and scientifically assessed before a development application can even be lodged.

Importantly, the potential impacts on the agricultural value of the land and its water supplies will be the key focus of this expert, upfront assessment and must be thoroughly addressed by any mining or coal seam gas company wanting to operate in these areas.

At the same time, the plan supports sustainable growth and certainty for the mining industry in the right places and subject to a rigorous planning process.

It also recognises that the region's most valuable asset is its people and the strong communities they form. The plan outlines a comprehensive set of actions aimed at minimising the impacts of mining and coal seam gas development, including issues such as air quality, noise and community health.

This policy also ensures there's a sound platform in place to provide the infrastructure, housing and community services needed to support the region's expected growth.

I thank the many Government agencies and industry groups who have worked so closely and tirelessly to produce this landmark document that will ensure strong protection for our most valuable agricultural assets.

Barry O'Farrell
Premier

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Executive Summary

Introduction

The NSW Government is committed to balancing strong economic growth in regional NSW with the protection of our most valuable agricultural land and sustainable management of our natural resources. In the New England North West region, it is particularly important to minimise land use conflicts arising from the rapid growth of coal mining activities and the recent emergence of the coal seam gas industry.

The New England North West Strategic Regional Land Use Plan represents one component of the Government's broader Strategic Regional Land Use Policy which comprises multiple initiatives being staged over time to address land use conflict in regional areas, particularly focused on managing coal and coal seam gas issues. The plan provides a clear strategic framework for the New England North West region, delivering the necessary context for Government investment priorities, servicing strategies and local environmental plan making.

The plan is a whole of Government plan which has been developed in consultation with a range of stakeholders, including local government and the Strategic Regional Land Use Policy Stakeholder Reference Group. The Stakeholder Reference Group includes representatives of the Association of Mining Related Councils, Total Environment Centre, NSW Minerals Council, Australian Petroleum Production and Exploration Association, NSW Farmers Association, Nature Conservation Council of NSW, NSW Irrigators Council, Hunter Valley Wine Industry Association, and Thoroughbred Breeders of the Hunter Valley.

The draft Strategic Regional Land Use Plans for the New England North West and the Upper Hunter were exhibited for public comment from 8 March to 14 May 2012. During this time approximately 1,600 written submissions were received. A public forum and four drop-in sessions were held across the New England North West.

In addition, online forums were set up on the Department of Planning and Infrastructure's website which received more than 5,700 page views.

Submissions and feedback received during the public exhibition period were comprehensively reviewed as part of the finalisation of this plan. The finalised plan and broader Strategic Regional Land Use Policy incorporates a number of key revisions and additional initiatives in response to issues raised during consultation, including:

- The creation of a Land and Water Commissioner position with an advisory role in relation to exploration activity across the state.
- Agricultural impacts must now be assessed at the exploration stage through an Agricultural Impact Statement.
- The amount of mapped strategic agricultural land in the New England North West region has increased by 569,000 hectares to over 1.5 million hectares.
- The Gateway process has been revised to focus on the scientific assessment of the agricultural land and water impacts of mining and coal seam gas projects located on strategic agricultural land. Other matters such as the socio-economic impacts and benefits of the proposal will be considered at the development application stage.
- The Gateway process has also been revised to focus on new greenfield projects and brownfield projects involving expansion beyond their lease area - the projects likely to have the most significant impact on strategic agricultural land.
- The Aquifer Interference Policy has been introduced Statewide to protect the state's crucial water resources, including impacts associated with mining and CSG activities. The Policy sets out the assessment requirements to ensure that impacts on groundwater systems are minimised.

- The 'exceptional circumstances' provision that would have allowed certain mining or coal seam gas projects to bypass the Gateway has been scrapped.

The plan is to be comprehensively reviewed every five years so it can adjust to new information as it becomes available.

Key Challenges and Actions

This plan outlines a range of key challenges facing the New England North West region and lists clear actions to address these challenges.

Balancing Agriculture and Resource Development

While the region is a highly productive agricultural region, it also has rapidly developing coal and coal seam gas industries. The plan includes maps of the region's mineral resources and areas of strategic agricultural land. Strategic agricultural land includes both land with unique natural resource characteristics, known as biophysical strategic agricultural land, and clusters of significant agricultural industries that are potentially impacted by coal seam gas or mining development, known as critical industry clusters. While there are a number of important agricultural industries in the region, they do not meet all the critical industry cluster criteria. Accordingly, there are no critical industry clusters in the New England North West.

The key policy response for resolving land use conflict between mining and coal seam gas proposals and agricultural land is the Gateway process. Under the Gateway process, mining and coal seam gas proposals that are located on strategic agricultural land will have their impacts on agricultural land and water resources rigorously assessed by a panel of independent experts before a development application can be lodged. This will include an assessment of potential aquifer impacts based on the advice of the Minister for Primary Industries and the Commonwealth Independent Expert Scientific Committee.

If the panel considers that the proposal does not meet the Gateway criteria relating to agricultural and/or water impacts, it can issue a conditional Gateway Certificate. Any such conditions will be tailored to address the panel's issues in relation to the potential impacts of

the proposal on agricultural land and water. Conditions could include, for example, the requirement for additional environmental studies or physical amendments to the project to avoid or minimise impacts. These conditions must then be comprehensively addressed through the assessment and determination of the relevant development application. This process will deliver greater balance and rigour to the assessment process and ensure that the impacts of mining and coal seam gas proposals on agriculture and water resources are assessed at a much earlier stage.

Infrastructure

Key infrastructure issues are identified, particularly those relating to the growth of the mining industry. These issues include road and rail capacity and increased demand for health and social services. A key action is the delivery of a fully costed infrastructure plan for the region.

Economic Development and Employment

The economic benefits and impacts associated with the growth of the mining industry are addressed. Issues include the uneven distribution of economic growth and impacts on other industries in terms of access to labour supply, land and infrastructure. A key action is the preparation of Regional Workforce Plans that will set out skills and workforce development strategies, including apprenticeship programs, to address labour shortages.

Housing and Settlement

Land supply and housing issues are highlighted, particularly associated with growth of the mining industry. New and more varied housing will be needed to cater for the expected population growth. Housing affordability across the region varies. There is likely to be ongoing demand for short-term accommodation and temporary housing. The plan commits the Government to working with the housing and development industry on models for delivering more housing for the region and a more diverse range of housing types.

Community Health and Amenity

The plan outlines a comprehensive suite of actions aimed at minimising the impacts of mining and coal seam gas, including air quality and noise, on community health and amenity. These actions include the establishment of an air quality monitoring network in the region, development of a cumulative impact assessment methodology for mining and coal seam gas development, and the preparation of a development assessment guideline on the health risks associated with dust.

Natural Environment

The plan describes the region's natural environment, with a focus on the Southern Gunnedah Basin where most mining and coal seam gas activity is proposed. A database of existing biodiversity offsets which have been achieved in the region will be completed.

Natural Hazards and Climate Change

The plan identifies likely future weather patterns and challenges for the region, including increased flooding and bushfire events. The actions commit Government to working with local councils and industry to avoid flood and bushfire prone development and to encourage low emission energy development.

Cultural Heritage

The region is rich in both Aboriginal and historic cultural heritage, however urban and mining growth have the potential to further impact on known and yet to be identified cultural heritage places, objects and landscapes. Actions include the completion of Aboriginal cultural heritage landform mapping and the compilation of a database of lands currently identified for cultural heritage conservation in the region.

Chapter One

Introduction

Purpose of this Plan

The NSW Government is committed to strong economic growth in regional NSW and, whilst increased investment and development in regional areas are key priorities, these must be balanced with the protection of agricultural land and the sustainable management of natural resources.

In the New England North West region, it is particularly important to minimise land use conflicts arising from the rapid growth of mining activities and the recent emergence of the coal seam gas industry.

This plan represents the Government's proposed framework to support growth, protect the environment and respond to competing land uses, whilst preserving key regional values over the next 20 years.

An integral component of the plan is the introduction of a new decision making framework, known as the Gateway process. This process involves an early stringent assessment of the potential impacts of mining and coal seam gas development on agricultural land and water resources. The Gateway process is explained in detail in Chapter 11.

Background

NSW 2021, the Government's 10-year strategic business plan, supports an increase of 30 per cent in the value of both primary industries and mining production by 2020, an increase in the share of jobs in regional NSW, an increase in the population of regional NSW, the protection of strategic agricultural land and improved agricultural productivity. The preparation of strategic regional land use plans by 2014 is also identified as a priority action. This plan covering the New England North West region is one of the first two plans to be delivered.

Strategic regional land use plans are one component of the Government's broader Strategic Regional Land Use Policy which comprises multiple initiatives being staged over time to address land use conflict in regional areas, particularly focused on managing issues associated with coal and coal seam gas activity.

This policy covers the entire process from exploration through land access to planning application and finally extraction, as shown in Figure 1 over the page.

In developing this plan, the Government has been committed to consulting and engaging with a range of stakeholders on the issues affecting the region. This included an extensive public consultation process, a number of local government forums conducted by the Department of Planning and Infrastructure and meetings of the Strategic Regional Land Use Policy Stakeholder Reference Group. The reference group was established to provide advice to Government on the implementation of the Strategic Regional Land Use Policy and is chaired by the Director-General of the Department of Planning and Infrastructure.

Stakeholder reference group

The Stakeholder Reference Group is an advisory body made up of representatives of the following stakeholder groups: Association of Mining Related Councils; Total Environment Centre; NSW Aboriginal Lands Council; NSW Farmers Association; NSW Minerals Council; NSW Irrigators Council; Australian Petroleum Production and Exploration Association; Nature Conservation Council; Hunter Valley Wine Industry Association; and Thoroughbred Breeders of the Hunter Valley.

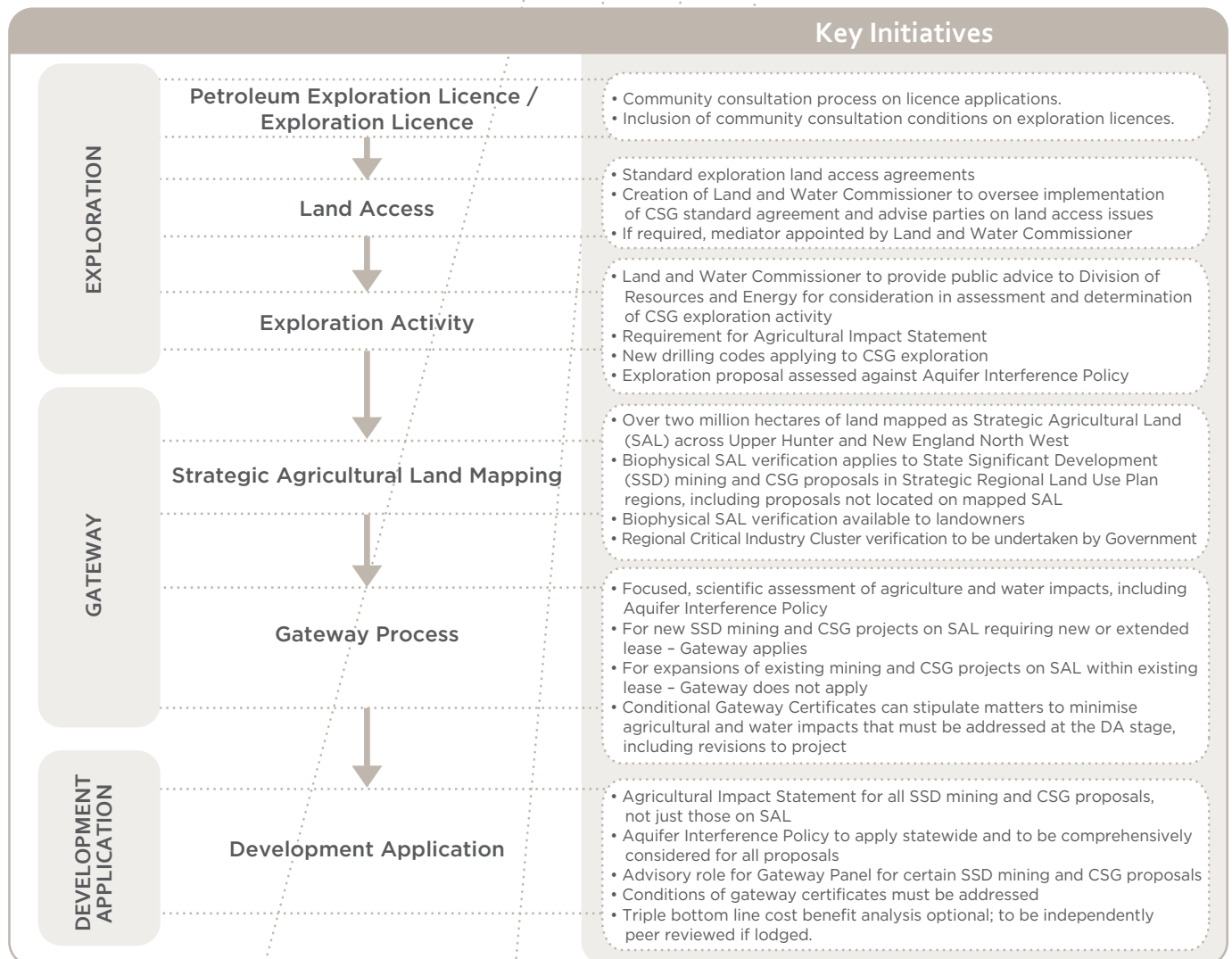


Figure 1 - Key policy initiatives

Public Consultation

NSW Coal and Gas Strategy Scoping Paper

Submissions received on the exhibition of the NSW Coal and Gas Strategy scoping paper, which was exhibited between February and April 2011, were carefully considered in the preparation of the draft New England North West Strategic Regional Land Use Plan. Further information, including access to the scoping paper and the submissions received, can be found on the Department of Planning and Infrastructure's website at: <http://www.planning.nsw.gov.au/tabid/205/ctl/View/mid/1081/ID/44/language/en-US/Default.aspx>

Draft New England North West Strategic Regional Land Use Plan

The draft Strategic Regional Land Use Plans for the New England North West and Upper Hunter Regions placed on public exhibition between 8 March and 14 May 2012. During this time approximately 1,600 written submissions were received. Online forums were set up on the Department of Planning and Infrastructure's website which received more than 5,700 page views. In addition, a public forum was held in Gunnedah, a local government forum was held in Tamworth, and drop-in sessions were held in Gunnedah, Narrabri, Moree, Tamworth and Armidale.

The Government commissioned an independent consultant to prepare an analysis of submissions received, which is available at www.planning.nsw.gov.au/srlup. The issues raised with most frequency during consultation were:

- regulation of mining and CSG exploration projects
- the "Gateway" process
- agricultural land mapping
- the proposed 'exceptional circumstances' provision
- aquifer impacts
- the natural environment

Chapter Two

Describing the Region



The New England North West region is an environmentally and culturally rich and diverse area in the central north of NSW. It comprises an area of 9.9 million hectares and includes the local government areas (LGAs) of Armidale Dumaresq, Glen Innes Severn, Gunnedah, Guyra, Gwydir, Inverell, Liverpool Plains, Moree Plains, Narrabri, Tamworth Regional, Tenterfield, Uralla and Walcha (see Map 1).

The region has a diverse range of climates and landscapes. The climate ranges from the cooler and more temperate Northern Tablelands in the east to the dryer and hotter North West Slopes and Plains in the west. Approximately one third of the region is covered by native vegetation and contains several World Heritage listed areas including Washpool, Gibraltar Range, Oxley Wild Rivers and the Werrikimbe National Parks. The region's environmental assets provide significant tourist attractions including Australia's highest waterfall at Wollomombi, one of Australia's largest and healthiest koala colonies at Gunnedah and the hot artesian mineral waters at Moree.

The majority of the region is located in the Murray-Darling Basin. The main west-flowing river systems are the Namoi, Gwydir and Macintyre rivers. The region also contains the upper reaches of many coastal river systems, including the Clarence, Macleay and Manning. The region has

a rich Aboriginal and European history including a number of culturally significant places and items.

The region is one of the richest agricultural production areas in the state. Agriculture and agribusiness is worth an annual \$1.8 billion to the regional economy (ABS 2006 Census), which represents approximately 20 per cent of the gross value of agriculture and agribusiness for the entire state. Sheep and cattle grazing, broad acre cereal crops, irrigated cotton, intensive livestock and plant agriculture and poultry production are the main contributors.

The region is a prime location for the future generation of renewable energy and has been identified as one of the key renewable energy precincts in NSW. The New England Tablelands is one of the state's best potential locations for the generation of renewable energy from wind power, while Moree has good potential for solar power generation. The region is also rich in a variety of other resources such as coal, coal seam gas, gemstones and gold deposits, with 12 per cent of the NSW coal resources located in the Gunnedah coal basin.

Development pressures are building rapidly in the Liverpool Plains, Gunnedah, Narrabri and Tamworth Regional LGAs, which are located in or adjacent to the coal basin. Pressure is now also expanding into the Moree Plains LGA with the exploration of coal seam gas. Exploration for other minerals such as bauxite in Guyra Shire, and gold in Armidale Dumaresq, Uralla, Walcha and Tamworth Regional LGAs is also occurring. Existing mineral activities include sapphires at Inverell, antimony at Armidale and limestone at Tamworth.



The region's population is approximately 183,200¹. Approximately 50 per cent of the community lives in the main urban areas of the region, including the two major regional centres of Armidale and Tamworth and the five major towns of Glen Innes, Inverell, Moree, Narrabri and Gunnedah. Armidale serves as the major regional centre for the Northern Tablelands while Tamworth is the major regional centre for the North West Slopes and Plains. The region is also served by a variety of smaller towns such as Uralla, Walcha, Tenterfield, Guyra, Quirindi, Warialda, Wee Waa, Boggabri, Barraba and Bingara, along with other smaller rural settlements and villages that serve their local areas.

The urban areas of the region contain a number of industries and services ranging from professional services to manufacturing that support and complement the traditional agriculture base of the local economy. The New England North West is also known for its world class facilities such as the University of New England, the British Aerospace Flight Training

Academy, the Australian Equine and Livestock Events Centre, the Australia Telescope Compact Array and annual events such as the Tamworth Country Music Festival and Australia's largest agricultural industry field days at Gunnedah.

Due to its rich environmental assets, the availability of high level services and facilities, the diversity of the area provided by the subregional differences in climate, landscapes and urban areas, the region is a highly valued place to live and is attractive to tourists. There is considerable opportunity for further population, economic and lifestyle growth.

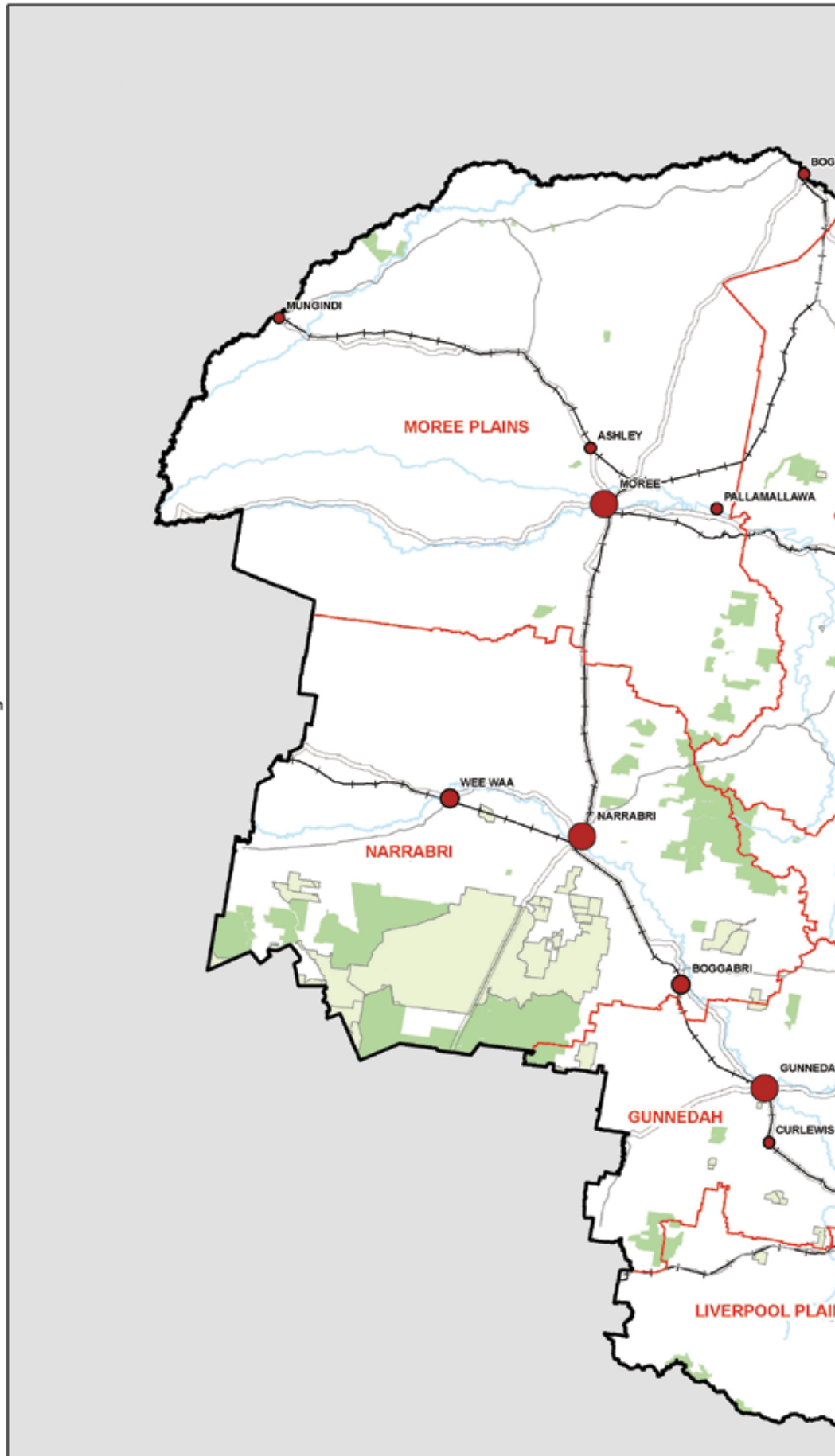
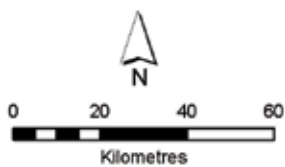
Map 1
Draft Strategic
Regional Land Use
Plan

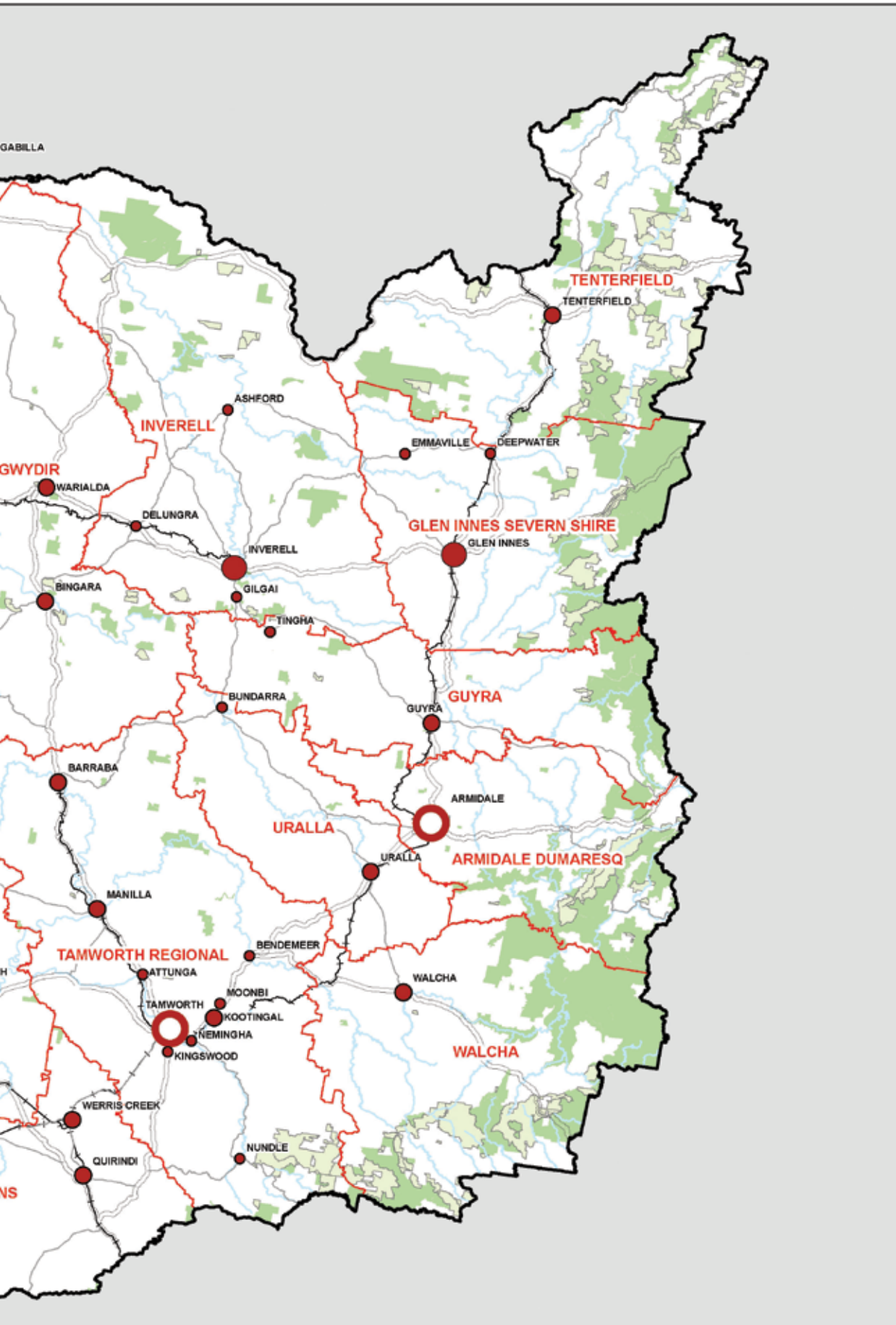
New England North
West

Map of the Region

Legend

-  Major Regional Centre
-  Major Town
-  Town
-  Village
-  New England North West Region
-  Local Government Area
-  Highways
-  Major Road
-  Major Rivers
-  Railways
-  State Forests
-  National Park Estate





Chapter Three

Balancing Agriculture and Resources Development



Background

Natural resources in the New England North West region include its soils, water, minerals, forests, solar energy and wind. Given increased community concerns regarding conflicts between mining and coal seam gas development and agricultural lands and resources, the main focus of this chapter is on the natural resources and rural landscapes that the agricultural and mining industries depend upon.

Agriculture

The New England North West region is a highly productive agricultural region with \$1.8 billion of agricultural commodities produced in 2006 despite the region being in drought at the time (ABS 2006).

The region can be split roughly into four agricultural-geographical regions:

1. Southern Plains (Liverpool Plains and Gunnedah local government areas (LGAs))
2. Northern Plains (Moree Plains and Narrabri LGAs)
3. Slopes (Tamworth, Gwydir and Inverell LGAs)
4. Tablelands (Walcha, Uralla, Armidale, Guyra, Glen Innes, Tenterfield LGAs)

Southern Plains (Liverpool Plains and Gunnedah LGAs)

The Southern Plains area has the highest agricultural productivity in NSW, with an exclusive combination of volcanic soils, rainfall reliability, climate (sunshine hours, moderate temperature and protection from hot westerly weather) and availability of surface and groundwater.

The black earth and chernozem soils found in the Liverpool Plains are classified as some of the most fertile in Australia. These fertile soil types are rare in Australia, making up less than 1 per cent of the nation's surface area (0.7%)². The major concentrations are found in the Liverpool Plains and the Darling Downs and central highlands of Queensland.

Northern Plains (Moree Plains and Narrabri LGAs)

The Northern Plains are dominated by irrigation on predominantly grey cracking clay soils along the Namoi, Gwydir, and Macintyre Rivers. Cotton is the major crop and irrigated agriculture is possible due to government investment through the construction of Pindari, Copeton, Keepit and Split Rock dams. Artesian bores support the beef cattle industry, supplying stock and domestic water in many areas.

The area known as the Golden Triangle (350,000 hectares between Bellata, North Star and Yallaroi) is particularly suited to growing high quality wheat.

Slopes (Tamworth, Gwydir and Inverell LGAs)

The Slopes area covers around 4 per cent of NSW and is suited for both summer and winter cropping and has moderate investment in irrigation water supply. Water security for both surface and groundwater is the major factor for

maintaining intensive livestock, irrigated crops and urban water supplies. The area is well situated to the markets of Sydney and Brisbane.

Tablelands (Walcha, Uralla, Armidale, Guyra, Glen Innes, Tenterfield)

The Tablelands consist of large areas of podzolic soils that are derived from weathered granite with scattered highly valued pockets of red basalt. It is ideally situated along the New England Highway, part of the National Land Transport Network, which provides good access to markets in Sydney and Brisbane. The Tablelands are valued for agricultural purposes due to higher and more reliable rainfall of over 700mm per annum.

Mineral resources

Coal

The coal industry is rapidly developing in the region and becoming a more prominent industry and driver of the local economy, particularly in the Liverpool Plains, Gunnedah and Narrabri Shires. Global demand for coal is reliably forecast to continue to increase significantly and this will further enhance the economic benefits to the region and to NSW.

The main black coal seam in the New England North West region, referred to as the Black Jack coals, are located west of the Kamilaroi Highway. Apart from a few locations of open cut potential, the seams in this area would be underground mining. On the other side of the highway, east of Boggabri, Maules Creek coals are mined by open cut and underground methods, however the existing mining/exploration footprint in that area is approaching its likely maximum limit. There is potential further north of the Maules Creek area that is largely untested.

Capacity expansions (underway and planned) at the Port of Newcastle will allow for increased volumes of coal exports to meet demand. Improvements to rail infrastructure will provide the seven operating mines within the region with the ability to increase production to meet export demand and would also provide increased transport capacity for the six currently proposed mining developments within the area. Coal resources within the region are shown on Map 2.

Coal seam gas

The coal seam gas industry in the region is still at a very early stage of development, however there are important reserves which are shown on Map 3.

There are large reserves of coal seam gas concentrated in Narrabri, Boggabri and much of the Liverpool Plains LGA. The region also contains substantial amounts of deeper conventional gas, particularly in the northern portion within the Bowen Basin between Moree and Boggabilla. Coal seam gas is currently being extracted in the Narrabri area and utilised locally for electricity production. At present, there is no gas pipeline infrastructure linking this area with large scale markets, although a proposed gas pipeline from Queensland to the Hunter Valley would traverse the area.

Development of a gas industry within the region would bring capital investment and economic benefits and has the potential to play a significant role in the delivery of reliable energy in a carbon constrained economy, provide security of supply for domestic gas and alleviate the state's reliance on imported gas. Any expansion of the coal seam gas industry within the region would, however, need to be done while protecting valuable agricultural and natural environments.

Other mineral resources

The region contains important deposits of minerals including gemstones, industrial minerals and extractive materials. These are shown on Map 4.

The New England Tablelands area has many mineral deposits and small scale mines. Metallic mineral deposits in the area include gold, silver, antimony, copper, lead-zinc, tin, tungsten, molybdenum and bismuth. The largest mine for such minerals is the gold-antimony mine at Hillgrove near Armidale. Recent increases in commodity prices have seen the resurgence of exploration in the region for gold, silver, tin, antimony, tungsten and bauxite.

Industrial minerals and gemstones in the region include limestone, diatomite, serpentine, kaolin, brick clays, zeolites, dimension stone, diamond, sapphires, ruby, zircon, emerald, jade and rhodonite. Most of these mines are currently small-scale operations with the exception of the large limestone resources and mines located north of Tamworth.

Quarries supply low value extractive materials such as rock and sand for road base or fill and are located throughout the region. Extractive material resources are an essential ingredient for local and regional development, being used for critical infrastructure construction and maintenance, and they must be locally available as transport cost can quickly dilute product value.

The region's coal, coal seam gas and other mineral resources have been mapped (see Maps 2, 3, and 4). Key features include:

- Coal resources (comprising existing and approved mines, areas subject to an existing exploration licence, and known areas of resource potential) cover an area of approximately 3,954,228 hectares or 39.7% of the region.
- Coal seam gas resources (comprising areas of high, medium and low potential) cover an area of approximately 3,434,124 hectares or 34.4% of the region.
- Other known mineral resources cover an area of approximately 468,335 hectares or 4.7% of the region.

Water

The region includes significant portions of the Border Rivers-Gwydir, Namoi and Northern Rivers Catchment Management Authority (CMA) areas and a smaller proportion of the Hunter-Central Rivers CMA area, as shown in Map 5. Natural resource management agendas for these areas are provided in the Catchment Action Plans (CAPs) prepared by each CMA which must be taken into consideration in any decisions regarding the future management of natural resources for the region, as will the NSW Government's Water Quality Flow Objectives for each catchment.

Water quality is an important factor influencing the ability of our waterways and aquifers to sustain a broad range of community needs, such as town water supply, irrigation, watering stock, drinking water, aquatic food production and recreation needs.

Dryland agriculture relies on rainfall without supplementary irrigation. For irrigated agriculture, the water needs to be of sufficient quantity, reliability and quality to service the purposes for which it is being used. Different crops

and livestock have varying requirements and differing levels of sensitivity to water quality and constituents, most notably salinity. Important water sources for irrigated agriculture include the water that is regulated by major storages and delivered to agriculture via rivers such as the Namoi, Gwydir and Macintyre rivers. Not all agricultural enterprises dependent on water have river frontage and, for these, access to groundwater is essential for viability.

The water sources in the region are managed under the Water Act 1912 where a water sharing plan is yet to commence, or the Water Management Act 2000 where a water sharing plan is in existence.

These water sharing plans establish important water access, trading and accounting rules and these will affect which type of licence is required, how much entitlement is required and from where this entitlement could be sourced. The water sharing plans also establish distance rules which are aimed at minimising third party impacts of any activity on existing water users and high priority groundwater dependent ecosystems.

Mining and coal seam gas extraction projects have the potential to impact on water quality in aquifers and surface water resources through their operation and the treatment and disposal of their waste water. In addition to affecting water quality, mining activities can remove water from surface systems and aquifers and can impact on water tables and water pressure.

The Aquifer Interference Policy has been introduced statewide to protect the state's crucial water resources, including impacts associated with mining and coal seam gas activities. The policy outlines how the volumes of water taken as part of an aquifer interference activity will be licensed and accounted for. It also sets out minimal impact considerations against which the NSW Office of Water will assess proposals to ensure that impacts on groundwater systems are minimised.

In June 2012, the Department of Trade and Investment, Regional Infrastructure and Services published the Namoi Catchment Water Study. The study, undertaken by an independent expert, involved a strategic assessment of the potential impacts from coal and coal seam gas development on the quality and quantity of



water resources in the Namoi catchment. Various scenarios of resource development were modelled and the study concluded that catchment-wide impacts from coal and coal seam gas development are likely to be low, noting that site-specific impacts may vary and should be thoroughly assessed on a project-by-project basis. The Study will be used to inform the assessment of mining and coal seam gas proposals in the Namoi catchment, as well as the preparation of a Cumulative Impact Assessment Methodology (see Action 7.1).

Challenges

Some of the richest agricultural land in the state occurs in the New England North West region and the future development of these lands needs to be carefully managed to avoid the loss of the best agricultural land. The emergence of resource industries in the region, including coal and coal seam gas, presents an economic opportunity for many local communities. However, there is also the potential for land use conflict, particularly between agriculture and the mining industry and the loss or alienation of strategic agricultural land.

Key regional challenges include:

- Ensuring an appropriate balance between competing land uses - particularly achieving co-existence where possible between mining, coal seam gas development and agriculture;
- Maintaining or enhancing future opportunities for environmentally responsible mining,

including developing strategies to manage the projected growth of the coal and coal seam gas industries to effectively deliver reliable energy in a carbon constrained economy.

- Maintaining or enhancing future opportunities for sustainable agriculture.
- Defining and protecting strategic agricultural land.

Policy Response

Mapping strategic agricultural land

To help address the challenge of achieving balanced land use outcomes in the region, areas with particularly high agricultural values have been identified and mapped in consultation with key industry representatives and industry experts. These areas are referred to as strategic agricultural land.

Strategic agricultural land is highly productive land that has both unique natural resource characteristics (such as soil and water resources) as well as socio-economic value (such as high productivity, infrastructure availability and access to markets). Based on this definition, two categories of strategic agricultural land have been identified: biophysical strategic agricultural land and critical industry clusters.

Biophysical strategic agricultural land is land with a rare combination of natural resources highly suitable for agriculture. These lands intrinsically

have the best quality landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality. As these lands are rare, the NSW Government is putting mechanisms in place to protect these strategic land assets.

Strategic agricultural land is identified according to the values and criteria in Table 1.

Value	Criteria
Biophysical Strategic Agricultural Land	<ul style="list-style-type: none"> • land that falls under soil fertility classes 'high' or 'moderately high' under the Draft Inherent General Fertility of NSW (OEH), and • land capability classes I, II or III under the Land and Soil Capability Mapping of NSW (OEH), and • reliable water of suitable quality, characterised by having rainfall of 350mm or more per annum (9 out of 10 years); or properties within 150m of a regulated river, or unregulated rivers where there are flows for at least 95% of the time (ie the 95th percentile flow of each month of the year is greater than zero) or 5th order and higher rivers; or groundwater aquifers (excluding miscellaneous alluvial aquifers, also known as small storage aquifers) which have a yield rate greater than 5L/s and total dissolved solids of less than 1,500mg/L. <p>OR</p> <ul style="list-style-type: none"> • land that falls under soil fertility classes 'moderate' under the Draft Inherent General Fertility of NSW (OEH), and • land capability classes I or II under the Land and Soil Capability Mapping of NSW (OEH), and • reliable water of suitable quality, characterised by having rainfall of 350mm or more per annum (9 out of 10 years); or properties within 150m of a regulated river, or unregulated rivers where there are flows for at least 95% of the time (ie the 95th percentile flow of each month of the year is greater than zero) or 5th order and higher rivers; or groundwater aquifers (excluding miscellaneous alluvial aquifers, also known as small storage aquifers) which have a yield rate greater than 5L/s and total dissolved solids of less than 1,500mg/L.
Critical Industry Cluster	<ul style="list-style-type: none"> • Industry clusters that meet the following criteria: <ul style="list-style-type: none"> - there is a concentration of enterprises that provides clear development and marketing advantages and is based on an agricultural product; - the productive industries are interrelated; - it consists of a unique combination of factors such as location, infrastructure, heritage and natural resources; - it is of national and/or international importance; - it is an iconic industry that contributes to the region's identity; and - it is potentially substantially impacted by coal seam gas or mining proposals.

Table 1 - Values and criteria used to identify strategic agricultural land

The critical industry cluster (CIC) criteria included in Table 1 ensure the socio-economic values are appropriately considered in the strategic agricultural land mapping. A CIC is a localised concentration of interrelated productive industries based on an agricultural product that provides significant employment opportunities and contributes to the identity of the region. The cluster also needs to be potentially substantially impacted by coal seam gas or mining proposals.

While a number of important industries including grazing, cotton, irrigated cropping, dryland cropping and specific clusters such as intensive animal industries (feedlots, poultry meat and eggs) exist in the region, they do not meet all of the CIC criteria. Accordingly, no CICs have been identified and mapped in the New England North West region. However, the area of land mapped as biophysical strategic agricultural land in the region increased significantly following public exhibition of the draft Strategic Regional Land Use Plan. This has meant that some areas used by these industries, such as cotton growing areas around Gunnedah, Moree and Narrabri, are now mapped as biophysical strategic agricultural land.

The mapping of strategic agricultural land (see Map 6) indicates broadly where it occurs throughout the region. As the mapping is at a

regional scale, it is not intended to be used for property-level interpretations but to provide a regional-level indication of areas with strategically significant agricultural value.

Due to the regional scale of the strategic agricultural land maps in this plan, it is important that appropriate processes are in place to provide for site-specific verification that particular sites do in fact meet the strategic agricultural land criteria. These processes are outlined in Chapter 11

The map shows that biophysical strategic agricultural land covers 1, 525, 462ha or 15.3% of the region. When considered with the coal and coal seam gas resource maps, these maps also show that 10.5% of the region comprises an available coal resource overlain by strategic agricultural land (0.6% open cut; 9.9% underground) while 8.8% of the region comprises a coal seam gas resource overlain by strategic agricultural land.

Application of strategic agricultural land mapping

The principal application of the strategic agricultural land mapping is a 'trigger' of the new Gateway process which is discussed in detail in Chapter 11 – Implementation (see breakout box).

The gateway process

The Gateway is an independent, scientific and upfront assessment of how a State significant mining or CSG proposal on strategic agricultural land will impact the agricultural values of the land on which it is proposed to be located. It will consider proposals at a very early stage before a development application is lodged.

To pass the Gateway unconditionally, a proposal must demonstrate that it meets the Gateway criteria relating to agricultural and water impacts.

If a proposal can't demonstrate that it meets these criteria, it will be subject to stringent requirements – included as conditions of a Gateway certificate – that must be addressed at the development application stage.

The Gateway assessment will be undertaken by an independent panel of experts in fields such as agricultural science, water, and mining against explicit, objective criteria.

The Gateway will be given statutory force through an amendment to State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

Agricultural Impact Statements

All state significant development and infrastructure proposals (including mining and coal seam gas proposals that have passed the Gateway) which would potentially impact on agricultural resources or industries are required to prepare an Agricultural Impact Statement (AIS) to demonstrate that impacts on agricultural land and resources are avoided or minimised to acceptable levels. In addition, an AIS is also required for exploration activities requiring approval under Part 5 of the Environmental Planning and Assessment Act 1979.

The new role of Land and Water Commissioner will provide advice to the Division of Resources and Energy during the assessment of exploration activity on mapped strategic agricultural land.

Within a broader land use context, the mapping may also be used by councils to assist with identifying appropriate zonings and planning provisions for inclusion in local environmental plans to reflect the high value of agricultural land

in the region. A cumulative impact assessment methodology to manage the cumulative impacts of mining and coal seam gas proposals, including impacts on agricultural lands and resources, is also being developed (see Chapter 7). This methodology will take into account the Namoi CMA's proposed methodology for calculating and managing the cumulative risks to environmental assets from mining.

Objectives

- Ensure protection of strategic agricultural land and the water resources it relies on.
- Ensure security and clarity for agriculture and mining and coal seam gas industries.
- Ensure a balanced use of land by competing industries.
- Provide enhanced future opportunities for sustainable mining and agricultural industries.

Actions

	Action	Lead Agencies	Timeframe
3.1.	Implement the Gateway process to provide an independent, scientific and upfront assessment of the impact of mining and coal seam gas proposals located on strategic agricultural land.	Department of Planning and Infrastructure Department of Primary Industry	November 2012 / Ongoing
3.2.	Require an Agricultural Impact Statement for: <ul style="list-style-type: none"> • All State significant mining and coal seam gas development applications that may impact agricultural resources - whether or not they are located on mapped strategic agricultural land. • Exploration activity requiring approval under Part 5 of the Environmental Planning and Assessment Act 1979. 	Department of Planning and Infrastructure Department of Primary Industries	Immediate
3.3	Include appropriate zonings and provisions in local environmental plans to protect agricultural land including, as a minimum, mapped strategic agricultural land.	Councils	Ongoing



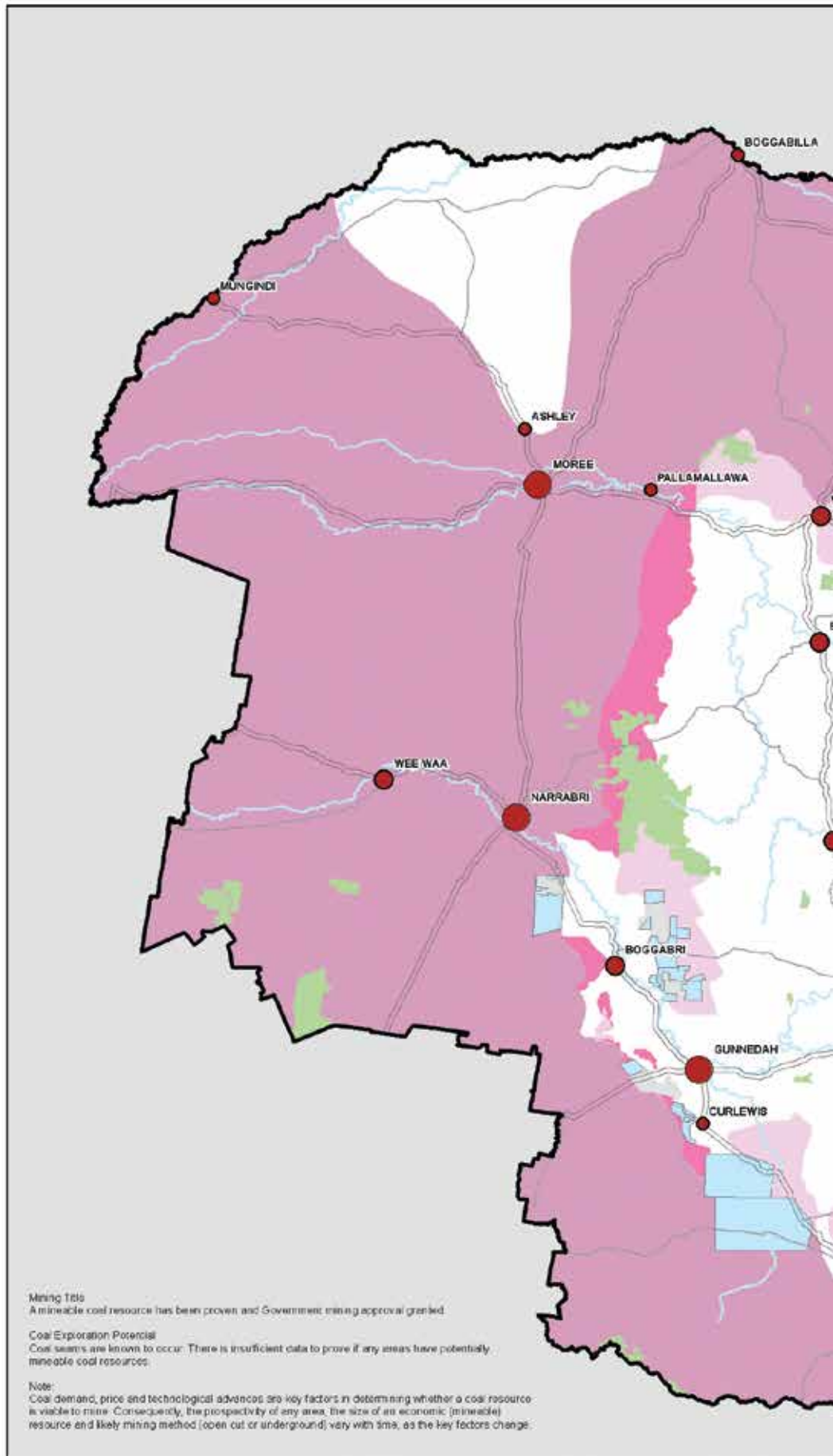
Map 2 Strategic Regional Land Use Plan

New England North West

Coal Resource

Legend

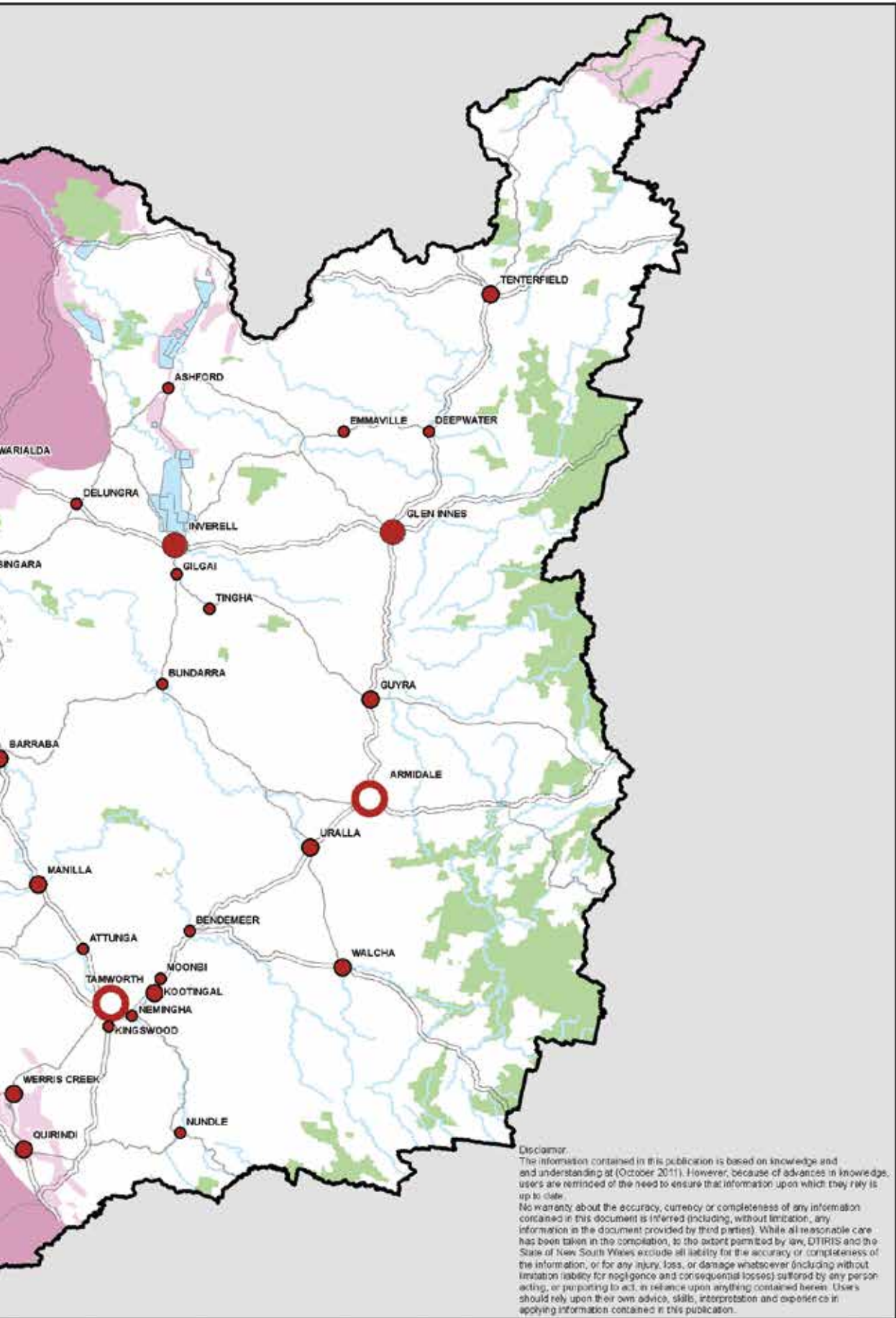
-  Major Regional Centre
-  Major Town
-  Town
-  Village
-  New England North West Region
-  Highways
-  Major Roads
-  Rivers
-  National Parks
-  Existing exploration licence:
potential for new open cut and/or
underground mine
-  Existing mining title: open
cut and/or underground
-  Coal resource exploration
potential: open cut and/or
underground
-  Coal resource exploration
potential: underground
(may include some open cut)
-  Coal resource exploration
potential: underground



Mining Title
A mineable coal resource has been proven and Government mining approval granted.

Coal Exploration Potential
Coal seams are known to occur. There is insufficient data to prove if any areas have potentially mineable coal resources.

Note:
Coal demand, price and technological advances are key factors in determining whether a coal resource is viable to mine. Consequently, the prospectivity of any area, the size of an economic (mineable) resource and likely mining method (open cut or underground) vary with time, as the key factors change.











Disclaimer.
 The information contained in this publication is based on knowledge and understanding at (October 2011). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date.
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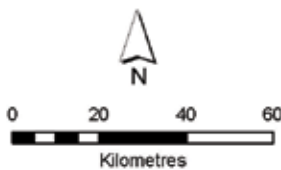
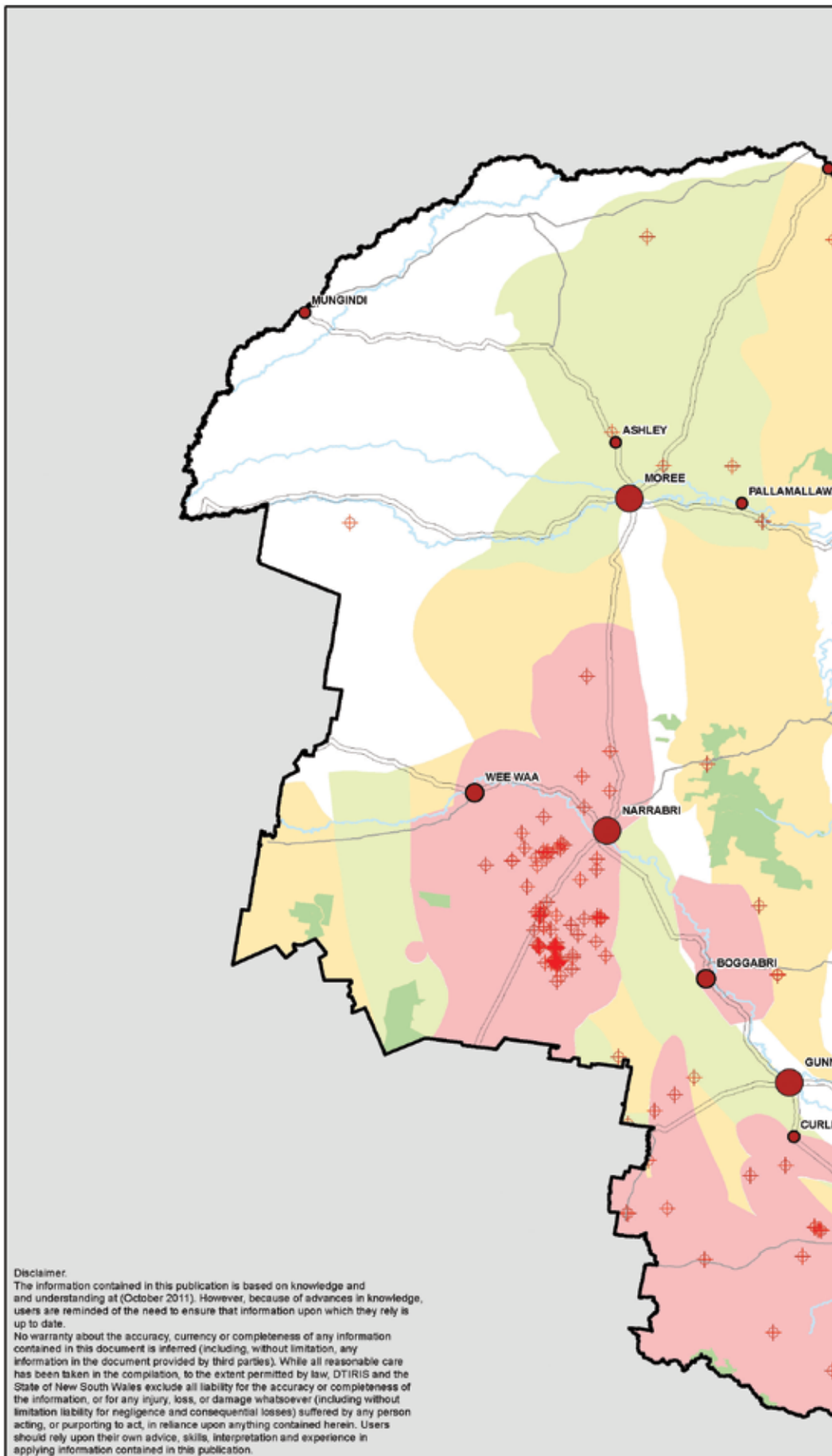
Map 3
Draft Strategic
Regional Land Use
Plan

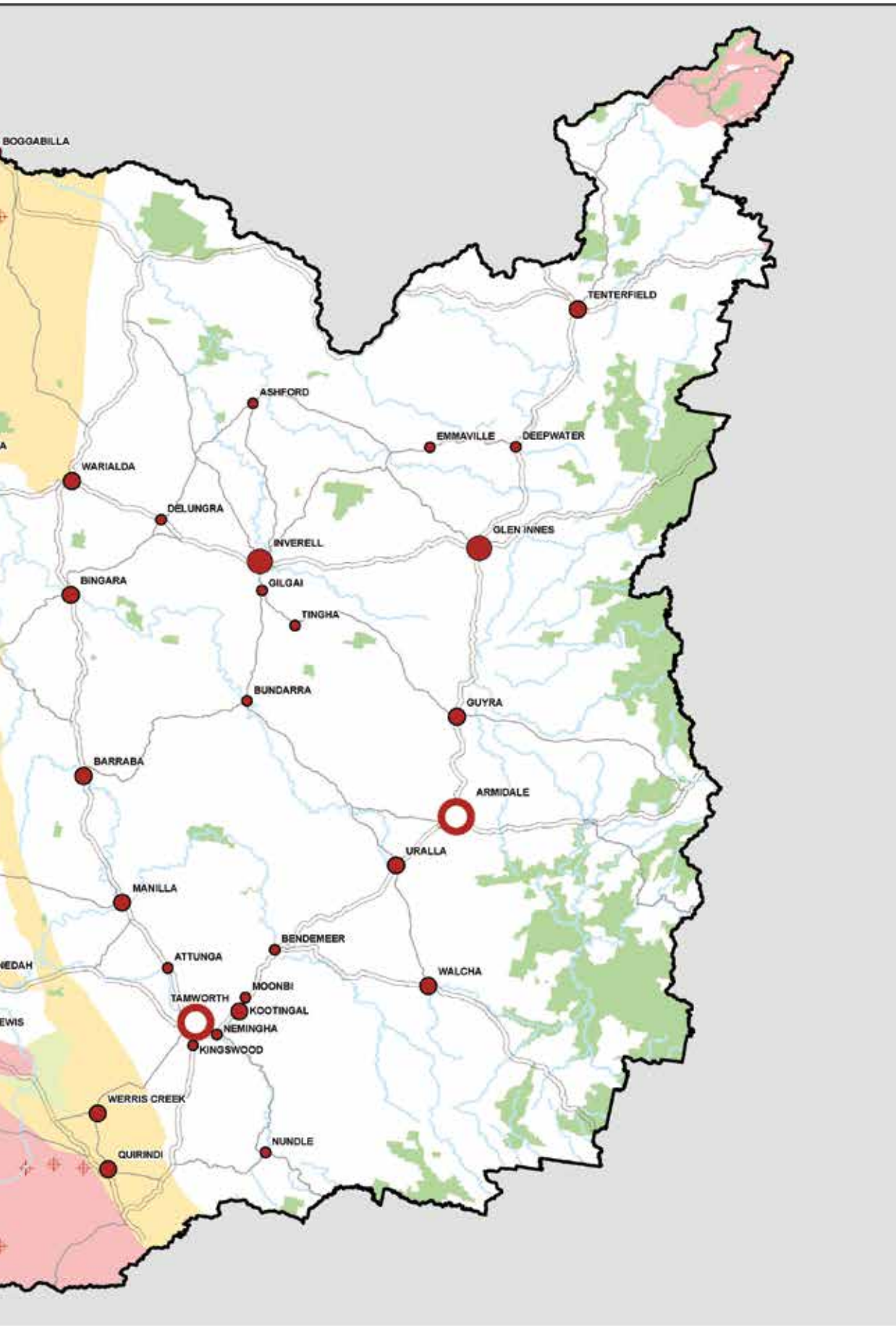
New England North
West

Coal Seam Gas
Resource

Legend

-  Major Regional Centre
-  Major Town
-  Town
-  Village
-  New England North West Region
-  Highways
-  Major Roads
-  Major Rivers
-  National Parks
-  Coal Seam Gas Wells
- Coal Seam Gas Potential**
-  High
-  Moderate
-  Low





Map 4

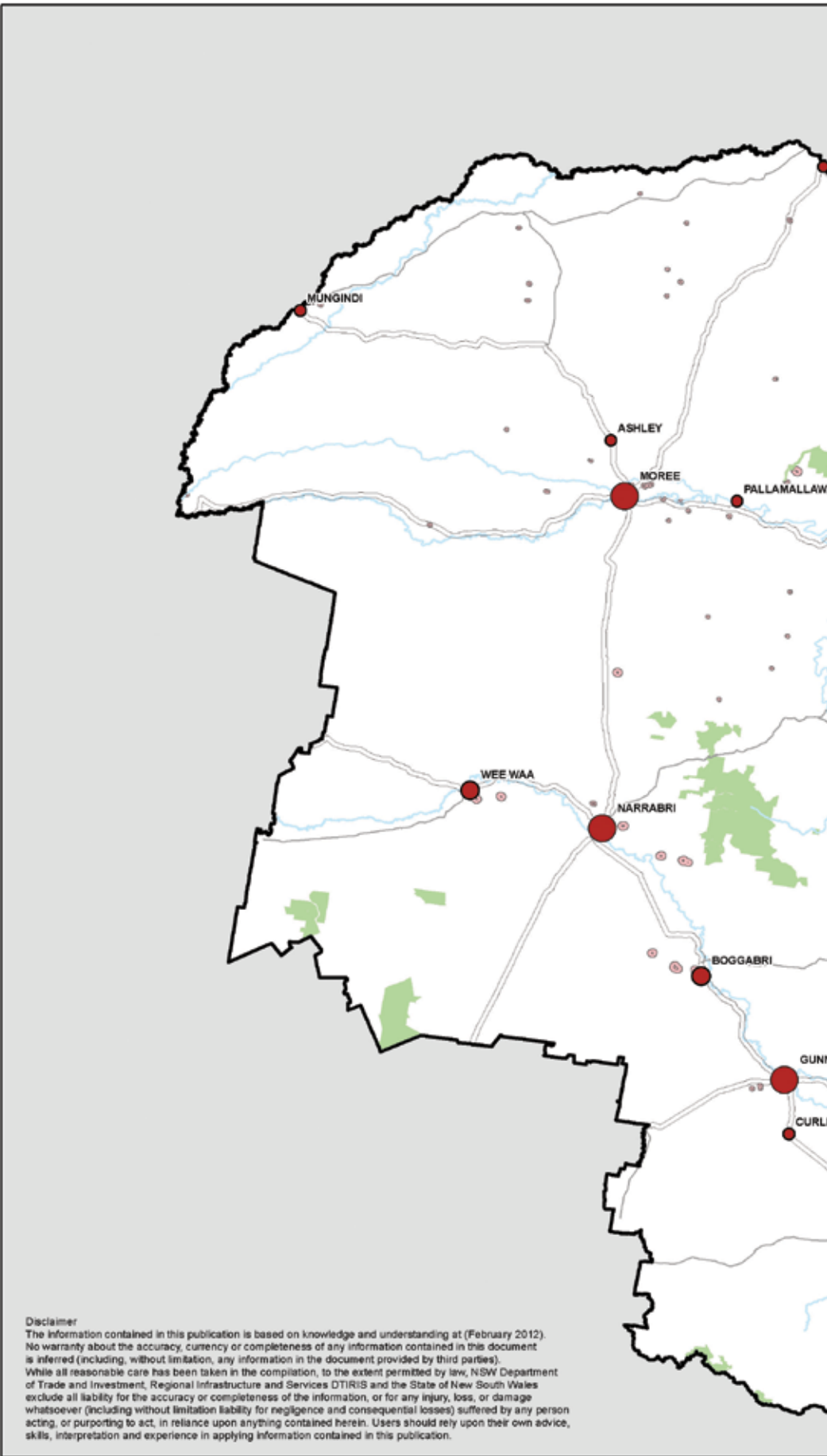
Draft Strategic Regional Land Use Plan

New England North West

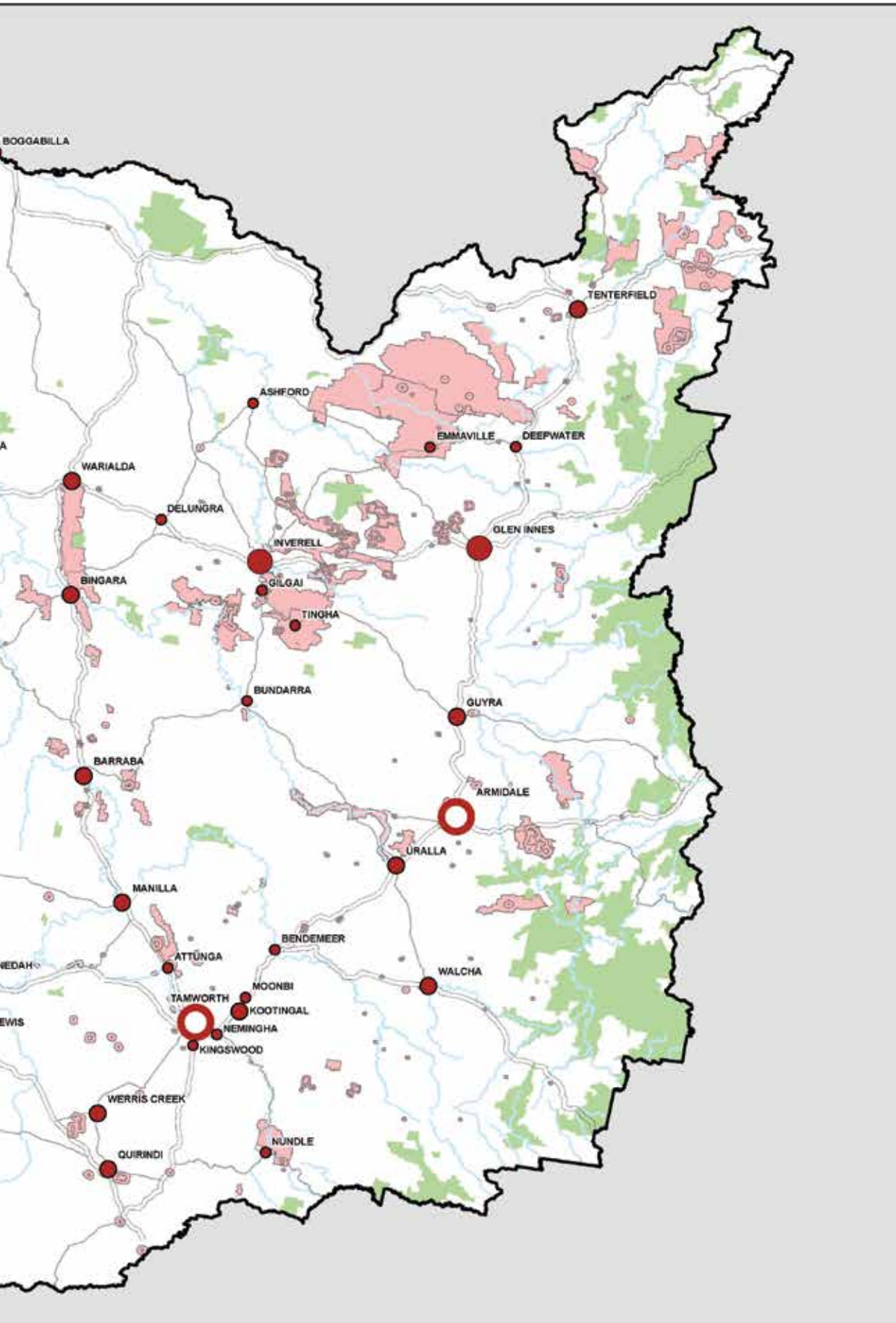
Other Mineral Resources

Legend

-  Major Regional Centre
-  Major Town
-  Town
-  Village
-  New England North West Region
-  Highways
-  Major Roads
-  Major Rivers
-  Other Mineral Resources
-  National Parks



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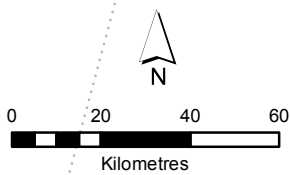
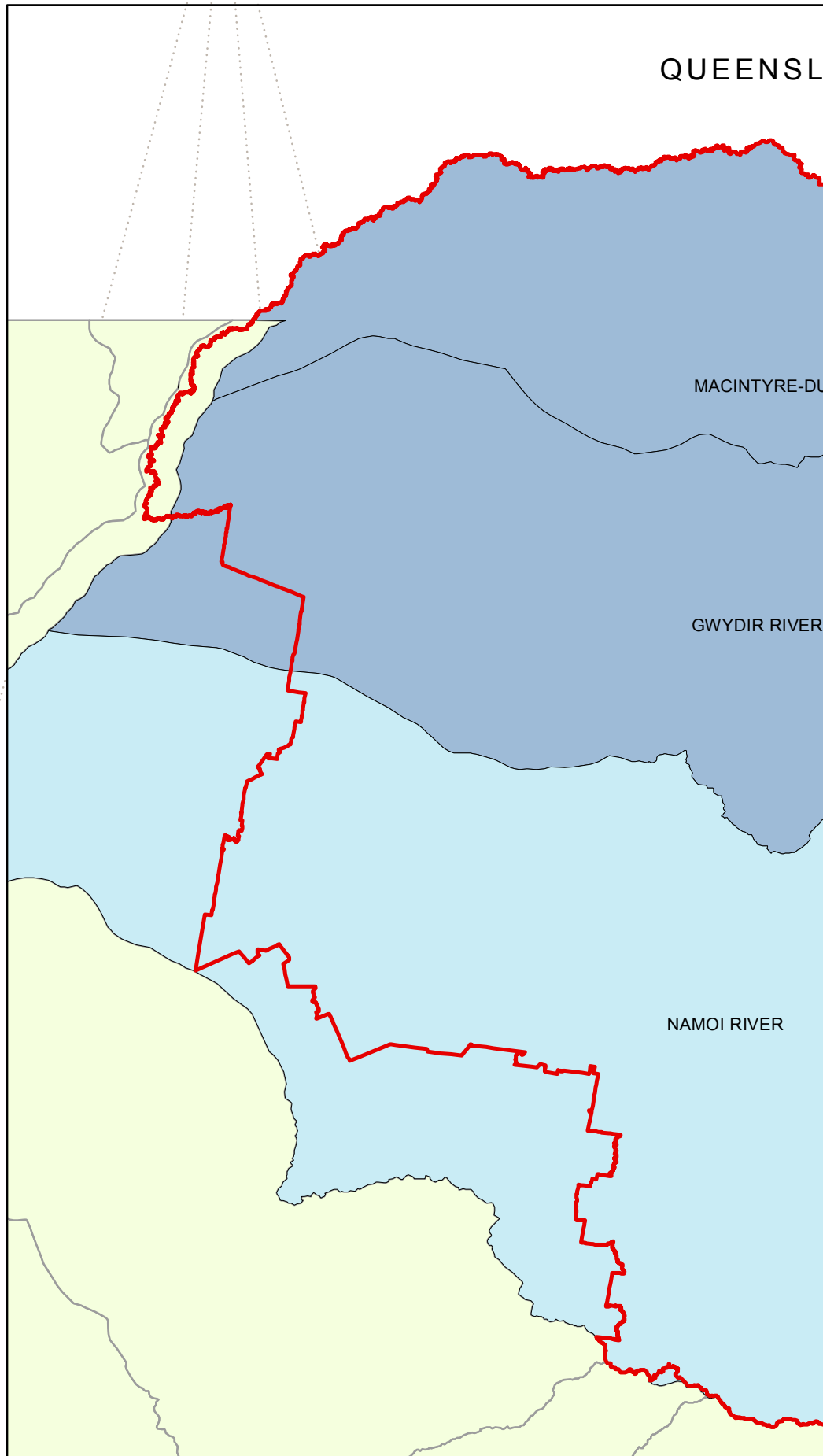
Map 5
Draft Strategic
Regional Land Use
Plan

New England North
West

Catchment Boundaries

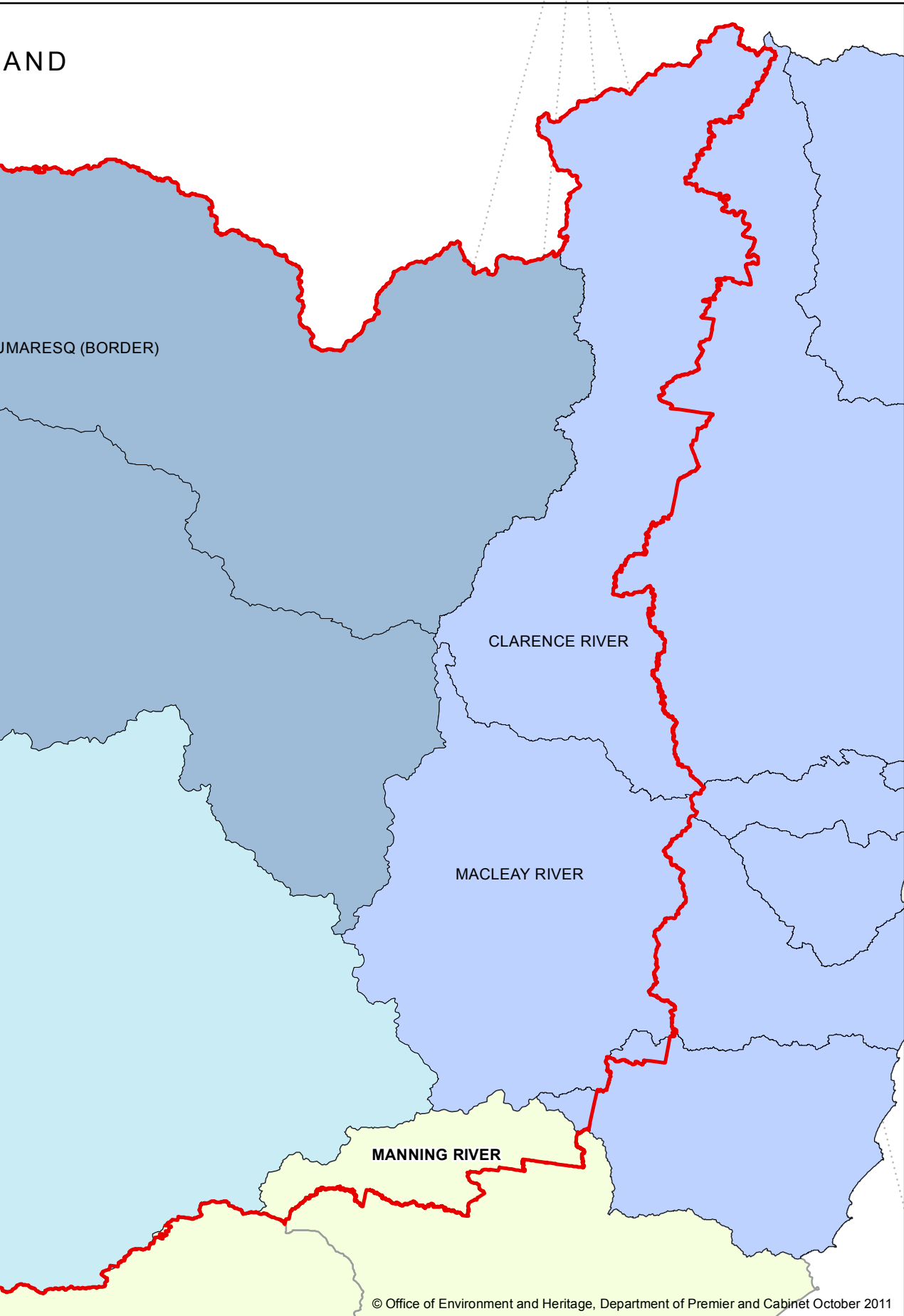
Legend

-  New England North West Region
-  Namoi Catchment Management Authority
-  Northern Rivers Catchment Management Authority
-  Border Rivers-Gwydir Catchment Management Authority
-  Other NSW Catchment Boundaries



AND

MARESQ (BORDER)











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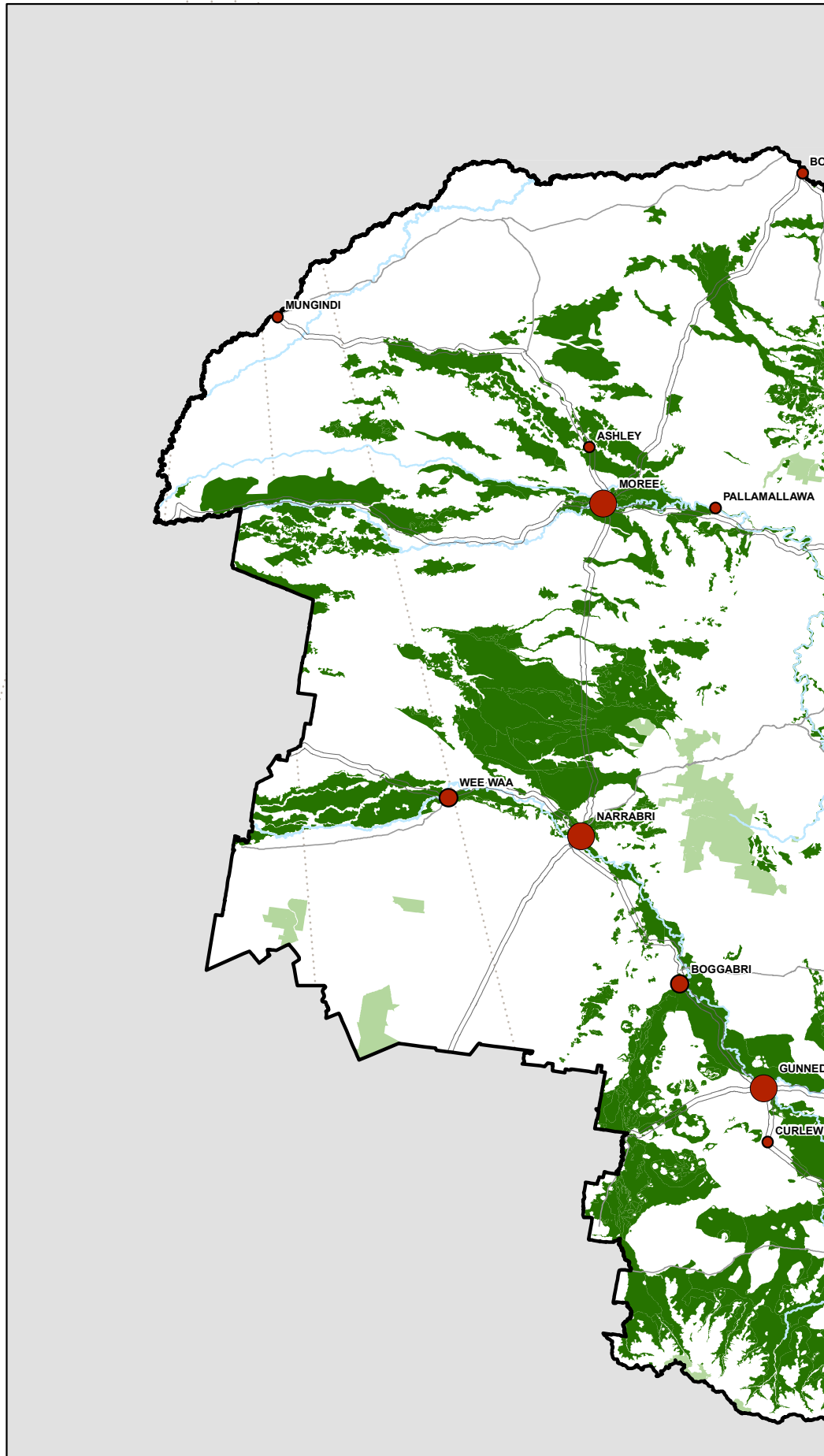
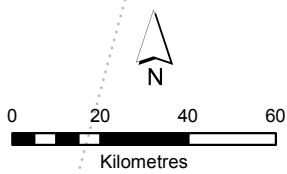
Map 6
Strategic
Regional Land Use
Plan

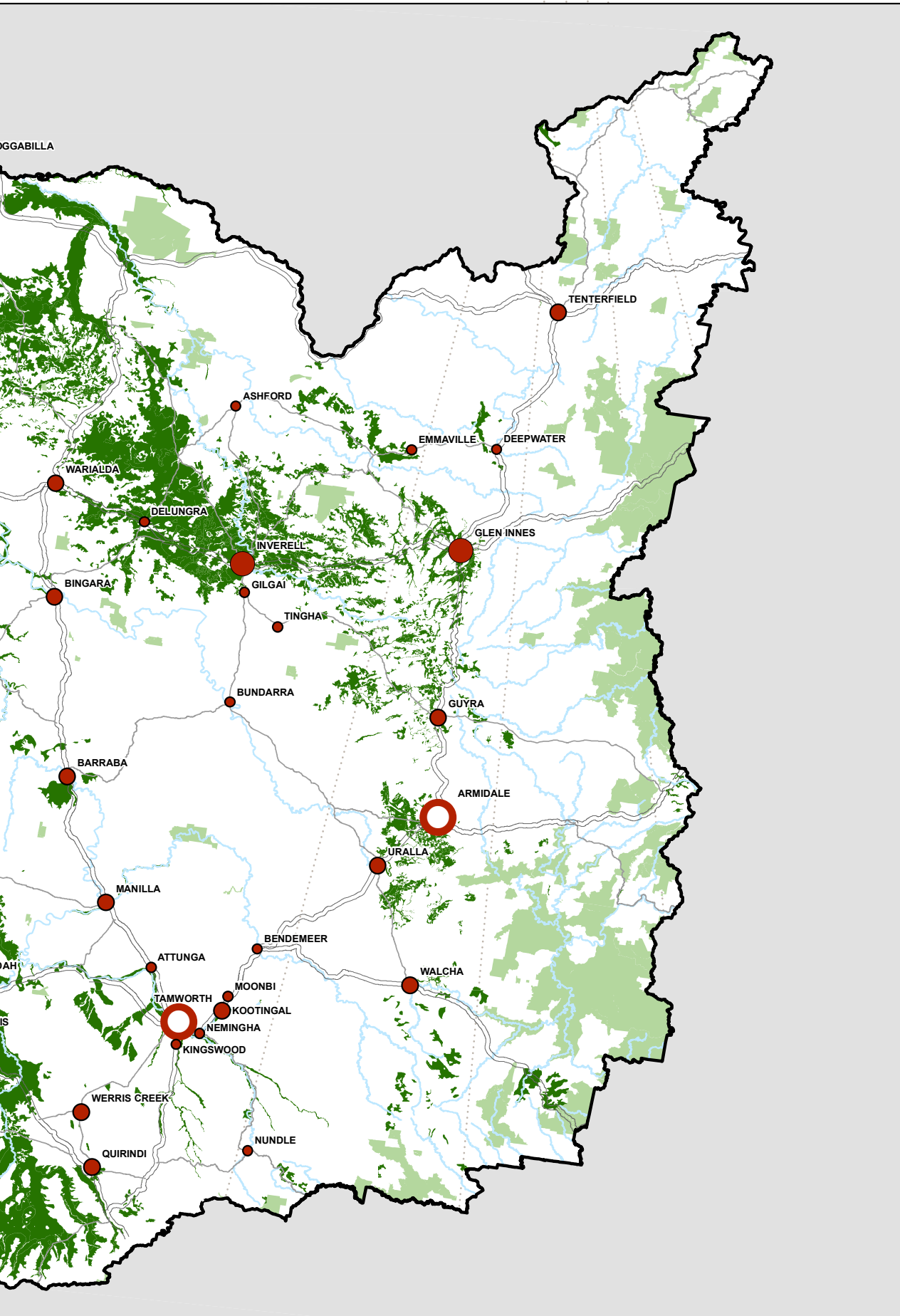
New England North West

Strategic Agricultural Land (SAL)

Legend

-  Major Regional Centre
-  Major Town
-  Town
-  Village
-  New England North West Region
-  Highways
-  Major Roads
-  Major Rivers
-  Biophysical SAL
-  National Parks





Infrastructure

Background

The size of the region, the often substantial distances between urban settlements and the large rural areas surrounding them, can make the cost effective delivery of infrastructure difficult. The provision of infrastructure is, however, vital in supporting economic growth and development while also maintaining liveability.

The expected growth of the coal and gas extraction industries in the region over the next few decades will require the provision and upgrading of a range of infrastructure types, for example rail infrastructure linking the mining areas to the Port of Newcastle and its coal loading capacity. The coal seam gas industry is likely to require upgrades to existing pipelines or new pipeline infrastructure.

Agriculture will remain a key industry requiring freight infrastructure, with some of the highest grain producing areas in NSW located within the region, along with cotton, wool and beef. The ongoing needs of the agricultural sector will also help to determine the region's future need for infrastructure.

Increased activity and population growth will also impact on infrastructure provision in local communities. Issues such as road safety and accessibility for motorists (including heavy vehicles) and pedestrians will also require infrastructure investment to meet the demands generated by industry. Demand will increase for social infrastructure such as health, education, emergency services and community and recreation facilities. Housing growth will require additional or augmented infrastructure such as water, sewer, drainage, energy and roads.

Current status of key infrastructure in the region

Key existing infrastructure and new infrastructure investments in the region are briefly outlined below.

The New England Highway is part of the National Land Transport Network. It performs a vital role in servicing the coal mines in the region, servicing key centres such as Tamworth and Armidale and provides a means of regional freight distribution and an important north-south spine which connects with other state roads.

The Newell Highway, which is also part of the National Land Transport Network, forms a major connection linking north western NSW regional centres to Melbourne and Brisbane and is heavily used by industry, with some sections having a 50 per cent freight heavy vehicle mix. Connecting the east coast from the Pacific Highway to the New England Highway are the Bruxner, Gwydir and Oxley Highways which, together with Waterfall Way, provide east-west connections across the Great Dividing Range, although they are not easily accessible for freight with sections that are narrow, winding and steep.

The 2011 NSW Freight Supply Chain Study identified a relationship between inbound mine road freight and mine production. As production grows, inbound road freight is anticipated to grow by approximately 3-5% per annum. These inbound flows are concentrated along the New England and the Golden Highways.

The railway network comprises track from Newcastle to Werris Creek and Ulan via Muswellbrook, including the Main Northern Railway line and is known as the Hunter Valley Coal Rail Network (HVCRN). The network connects with the main North Coast line from Sydney to Brisbane and carries coal, grain, intermodal freight, minerals

and some passenger traffic from the north-west region of NSW to the Port of Newcastle and Sydney (refer to Figure 2³).

The region also includes major water infrastructure (including Keepit, Split Rock, Pindari and Copeton dams and their associated power stations as well as Chaffey dam), major public hospitals (at Armidale, Tamworth and Narrabri) and education facilities (including the University of New England at Armidale and the British Aerospace Flight Training School at Tamworth).

Hunter Valley Coal Rail Network

Spread over more than 450 kilometres, the Hunter Valley Coal Rail Network (HVCRN) is the largest coal export operation in the world. It comprises a number of coal mines as well as related infrastructure including the rail network, coal loading terminals and Port of Newcastle.

At this time, the HVCRN consists of

- approximately 35 coal mines owned by 13 coal producer members of the Hunter Valley Coal Chain Council;
- a coal rail haulage distance up to 450 kilometres;
- more than 30 coal loading points;
- three coal terminals; and
- the movement and loading of approximately 1,000 coal vessels a year from the coal terminals to the Port of Newcastle.

Coal exported from the New England North West region is transported via the HVCRN, primarily to the Port of Newcastle (Port Waratah).

The HVCRN Coordinator provides the central planning and coordination for the HVCRN, including day to day planning and scheduling as well as long term capacity planning. The membership of the HVCRN has been expanded to include all current HVCRN producers and key service providers including Australian Rail Track Corporation (ARTC), Newcastle Port Corporation and 14 producers.

A significant portion of the railway network is leased to ARTC as identified in Figure 2 . ARTC has recently extended its lease to cover the Northern Rail Line from the Gap to Boggabilla, allowing this 370 kilometres of track to be included in future investment and capacity planning. As well as the railway leased by ARTC, a network of branch lines is managed by Transport for NSW (through the Country Regional Infrastructure Authority).

(Source: Hunter Valley Coal Rail Network)

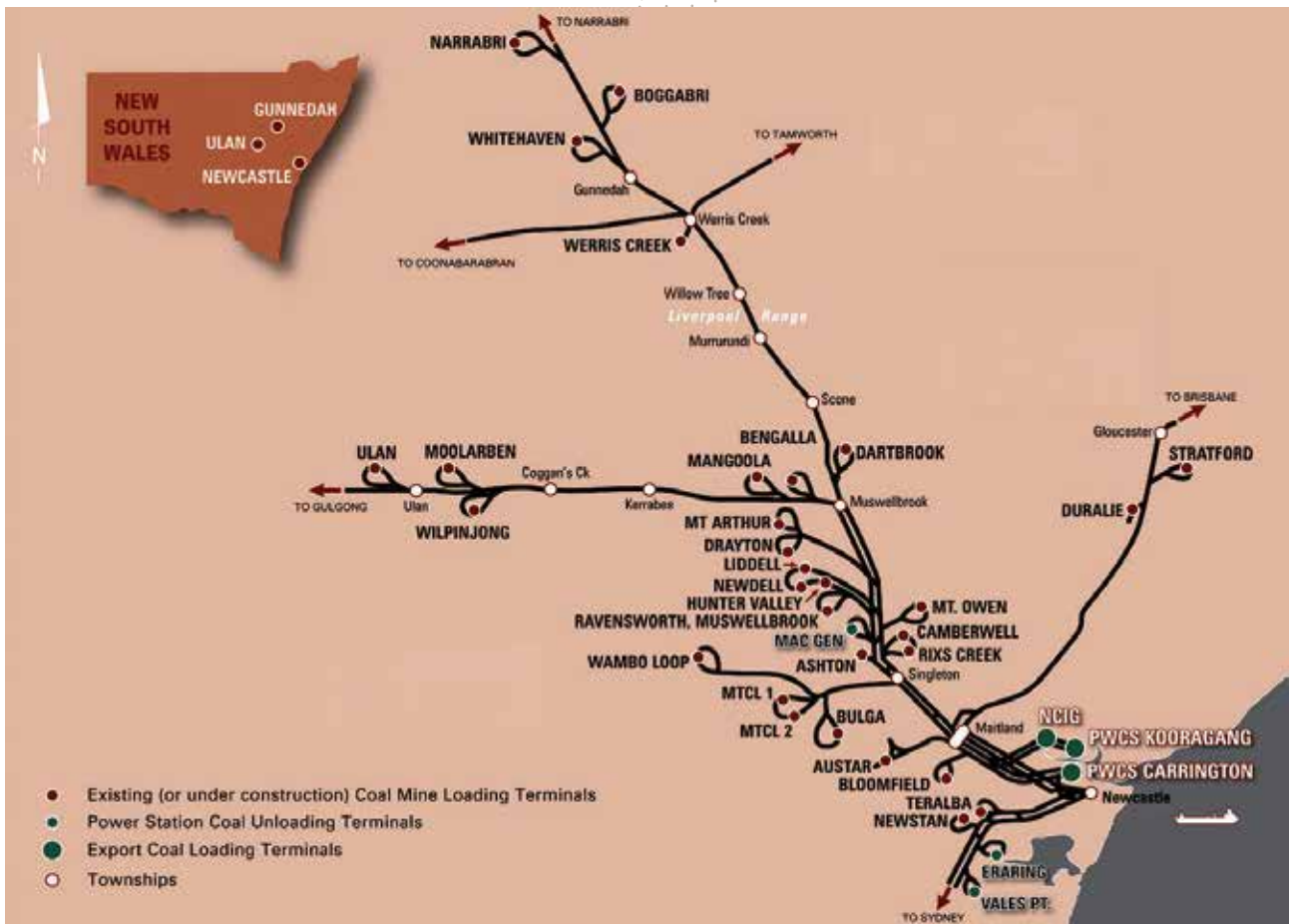


Figure 2 - Hunter Valley Coal Rail Network

To support development in the region, a number of major new infrastructure investments are planned or underway, financed from a range of funding sources:

- Upgrades on the HVCRN over the next five years to increase rail network capacity in line with production and port capacity.
- The \$43 million upgrade to the Chaffey Dam to increase capacity, assisting to secure Tamworth's long term water supply.
- A \$41.6 million New England North West Cancer Clinic is currently under construction at Tamworth Rural Referral Hospital.
- Redevelopment of Tamworth Hospital.
- National Broadband Network (NBN) to be delivered to Armidale initially and then to Tamworth rural surrounds.

The NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan will provide an overarching strategic framework to guide transport service and infrastructure delivery in NSW over the next 20 years, building on the NSW Government's current commitments. The Plan is being developed through a twelve month process of consultation and research.

The rail component of the draft NSW Long Term Transport Master Plan was released for public comment in mid 2012 and the final NSW Long Term Transport Master Plan is scheduled to be released in November 2012.

Challenges

Capacity issues in the HVCRN, including rail network and Port of Newcastle

It is estimated that export coal demand in 2011 was about 135 million tonnes per annum (mtpa). This is projected to increase to around 163 mtpa in 2012,

190 mtpa in 2013, 209 mtpa in 2014 and 216 mtpa in 2015 before stabilising at around this level.

The capacity needs of the Hunter Valley rail network are assessed in ARTC's 2011-2020 Hunter Valley Corridor Capacity Strategy, a draft 10-year program of works, which provides for a range of infrastructure projects to increase rail network capacity in line with production and port capacity.

To cater for the anticipated growth in the coal industry, including in the Gunnedah Basin, significant upgrades are required to the rail network into the Port of Newcastle and to the coal loading capacity of the port. Issues include:

- Coal demand on the rail line between Muswellbrook and Narrabri is expected to continue to increase. Capacity increases will need to be accommodated on the Muswellbrook - Werris Creek - Narrabri line.
- A significant constraint is the crossing of the Liverpool Ranges at Ardglenn. Due to the severe grades a banker, or extra locomotive, is used to assist loaded coal and grain trains up this steep section, affecting capacity through the network.
- The Port of Newcastle is forecast to reach capacity by 2014. The proposed construction of Terminal 4 would increase the capacity of the annual coal export throughput of the port by between 60 to 100 million tonnes per annum and ensure sufficient terminal capacity to meet the long term needs of coal producers.

Regional and cumulative impacts on infrastructure

The effects of mining projects on infrastructure can occur at, and beyond, a regional level. They can also result in cumulative and spill over effects into other local government areas and regions.

The impacts from the anticipated growth of the coal industry in the adjoining Upper Hunter and Central West regions is likely to have cumulative effects on infrastructure capacity in the New England North West region, with a subsequent flow on effect further south in the Lower Hunter region towards the Port of Newcastle. For example, an increase in coal mining activity in the Upper Hunter and Central West regions will require greater capacity on the HVCRN to transport coal from the mines to the port for export. There is a need to identify and predict the

direct and cumulative impact on infrastructure at a regional level and across different regions.

Rail infrastructure capacity

There is a perception in some sectors that agricultural freight from the region is being 'pushed' off the rail network and onto trucks. However, evidence suggests that there is sufficient capacity for non-coal freight on the rail network.

The ARTC Hunter Valley Corridor Strategy methodology makes an allowance for seven daily non-coal trains to Narrabri. At present, non-coal freight and passenger trains average 4.7 trips per day, well below the seven trips that could be accommodated. At this time, non-coal freight in this region is not expected to grow substantially beyond the allocation. Further, all of the non-coal freight trains are significantly shorter than the 1,328 metre train lengths permitted on the corridor. This gives scope for increased grain freight volumes through increased train lengths.

Clarification of the status of infrastructure capacities and gaps would assist with managing stakeholder perceptions and expectations.

Impacts on local communities from infrastructure for mining, coal seam gas and agriculture

A number of councils made submissions to the NSW Coal and Gas Strategy scoping paper and the draft New England North West Strategic Regional Land Use Plan raising concern about the implications of these industries on local infrastructure requirements and the capacity for local councils to fund upgrades and mitigation works.

Increased rail based coal haulage and train lengths can cause traffic delays for motorists and emergency service agencies at level crossings and can cause access and safety issues for motorists and pedestrians in towns that are divided by the existing railway line (e.g. Gunnedah and Quirindi).

To address these access and safety concerns, consideration needs to be given to improved traffic management and circulation through towns, crossings across the rail corridor, intersection safety works (e.g. at the junction of the New England and Kamilaroi Highways at Willow Tree south of Quirindi), pavement upgrades and corridor acquisitions.

Consideration also needs to be given to the issue of road quality and maintenance requirements. The Government monitors the condition of the road surfaces on state roads in the New England North West region to assist in identifying where improvements are required. The expansion of the mining industry will have an impact on the councils' local roads programs including additional maintenance, road upgrades and sealing of some rural roads.

The mining sector is a significant user of air passenger and freight services. Mining activity in the Gunnedah basin has already resulted in increased passenger and air freight loads, particularly at Narrabri and Tamworth airports. Demand for air services is likely to continue to increase as growth occurs.

Capacity of existing social infrastructure

Demand for social infrastructure, including health, community and social services and education and emergency facilities is likely to increase as a result of population and economic growth and any existing deficiencies are likely to be compounded.

In regions experiencing mining growth, health facilities, schools, pre-schools, early child care centres and tertiary education are experiencing increased waiting lists and enrolments. Further increases are likely to create demand to expand built infrastructure.

The provision of social housing is a major issue, with access to emergency accommodation already reaching a critical stage.

Infrastructure to support new housing and employment areas

Along with social infrastructure, new and augmented infrastructure will be required to support housing and employment areas including public transport, utilities and telecommunications infrastructure. For example, Armidale Dumaresq and Guyra councils' waste facilities are at capacity and in the Liverpool Plains local government area broadband is currently available only in Quirindi and Werris Creek.

Funding of infrastructure

Infrastructure can be provided in a number of ways as the planning and delivery of infrastructure is shared between many parties such as local, state and federal governments as well as developers through development contributions and private sector investors.

The NSW Government's new infrastructure governance processes will help ensure that state infrastructure is delivered in a timely way. The new governance framework will, under the guidance of Infrastructure NSW, include:

- preparation of a 20 year State Infrastructure Strategy;
- preparation of five year infrastructure plans;
- sector State Infrastructure Strategy statements (for example, water); and
- coordination of major infrastructure projects (exceeding \$100 million).

Together, Infrastructure NSW and the Department of Planning and Infrastructure will provide a robust set of structures and processes for the management of the state's infrastructure. This will allow planning, prioritising, funding and delivery of infrastructure in a coordinated, efficient manner across government for all levels of infrastructure leading to better economic and social results across NSW.

To facilitate infrastructure for regional growth, the NSW Government has announced funding for several new infrastructure programs including:

- **Resources for Regions:** a \$160 million program aimed at assisting communities to address local infrastructure issues and the local impact on mining affected communities. In the 2012-13 Budget the NSW Government allocated an initial \$9.9 million from the Resources for Regions program under Restart NSW to help meet the local infrastructure needs of Singleton and Muswellbrook. It could be expected that as mining and coal seam gas exploration become more developed in the New England North West Region, that over time, regional centres will also benefit from this program.

- **Restart NSW Fund:** announced in August 2011 for the delivery of essential infrastructure. Thirty per cent of funding from this program will be reserved for projects in regional areas.
- **Local Infrastructure Renewal Scheme:** a five year, \$70 million program, to assist councils pay for large local infrastructure projects by providing interest subsidies to help cover borrowing costs on significant loans to tackle infrastructure backlog.

Policy Response

As the New England North West region experiences the projected growth in the coal and coal seam gas industries and associated population growth, the demand for new or upgraded infrastructure will increase. In order to predict and manage this increased demand, an integrated and fully costed infrastructure plan for the region will be delivered.

This infrastructure plan will have a number of components:

1. Infrastructure identification: analysis is to include:
 - An audit of existing infrastructure and its capacity including gaps.
 - Review of relevant existing studies related to infrastructure within the region.
 - Infrastructure demand to support growth with a focus on the demands and requirements to support expansion of the coal and coal seam gas industries.
 - Consideration of infrastructure requirements identified in submissions to the NSW Coal and Gas Strategy and the draft New England North West Strategic Regional Land Use Plan.
 - Identification of regional infrastructure projects to include prioritisation, indicative costings, sequencing and responsible authority.
2. Cumulative impact: establishing a methodology for identifying and predicting the cumulative infrastructure impacts of coal mining and coal seam gas extraction at a local and regional level.
3. Funding sources: investigation of options for funding local and regional infrastructure and establishing a range of mechanisms for the equitable sharing of infrastructure funding between users and across jurisdictions. In addition to considering the range of local, state and federal infrastructure sources that are available, options to be considered will include:
 - standardised annual levies for recurrent infrastructure costs (eg road maintenance);
 - section 94 levies for coal and coal seam gas industries based on, for example, per tonne of extracted material (for roads) or per employee (for community facilities);
 - standardised voluntary planning agreement for local infrastructure with consistent levies formula; and
 - cross-boundary infrastructure.
4. Resource development monitoring program: establishing a resource development monitoring program, similar to the Urban Development Program run by the Department of Planning and Infrastructure to provide infrastructure providers and local government with an indicative timeline of resource development such as coal mining and coal seam gas projects in the region.

Objectives

- Ensure sufficient infrastructure provision to cater for sustainable economic and population growth in the region.
- Ensure a balanced approach to infrastructure provision across all key industries, in particular to ensure that infrastructure growth to support the coal and coal seam gas industries does not adversely impact upon agriculture.

Actions

	Action	Lead Agencies	Timeframe
4.1.	Prepare a fully costed Infrastructure Plan for the New England North West region, in liaison with state and federal governments, business and the community to address key regional and sub-regional infrastructure needs.	Department of Planning and Infrastructure / Infrastructure NSW NSW Trade and Investment Transport for NSW	June 2013
4.2.	Prepare a guideline to provide a consistent framework and methodology for voluntary planning agreements (VPAs) between mining and coal seam gas companies and local councils relating to local infrastructure provision, including consideration of a regional VPA approach.	Department of Planning and Infrastructure	December 2012
4.3.	Local environmental plans are to ensure housing and employment development occurs in areas which can be appropriately serviced.	Councils	Ongoing



Chapter Five

Economic Development and Employment



Background

The regional economy of the New England North West region has traditionally been dominated by agriculture. The region is one of the most productive agricultural areas in Australia and the large variety of agricultural commodities produced reflects the region's diversity. The region's excellent agricultural productivity is supported by significant infrastructure for transport, storage and irrigation.

Coal and coal seam gas extraction are also emerging as potential major industries for the region, concentrated in the local government areas (LGAs) of Liverpool Plains, Gunnedah, Moree Plains and Narrabri.

Other significant industries include education and health care, food processing and tourism as well as manufacturing, transport and logistics.

Agriculture

The agriculture and agribusiness sector is currently the most significant employer in the region, accounting for almost half of all the businesses (ABS 2006 Census). Agriculture and agribusinesses are worth an annual \$1.8 billion to the regional economy, which is approximately 20 per cent of the gross value of agriculture and agribusiness for the entire state (ABS 2006 Census).

Approximately 12,300 people or 16.8 per cent of employment in the region is directly related to agriculture (2005-06 ABS). Taking into account flow-on, or multiplier, effects from this sector into other parts of the regional economy, more than 30,000 people are either directly or indirectly employed as a result of agriculture in the New England North West region - meaning 42 percent of the region's employment is dependent on agriculture.

As described in Chapter 3, the region has four agricultural-geographical regions. The Southern Plains has the capacity to grow a wide variety of both winter and summer crops such as bread wheat, malt barley, sorghum, maize grain legumes and cotton and has the highest gross production per hectare in the region. The Liverpool Plains LGA alone produces 20 per cent of NSW sorghum from just 0.6% of the state. The area is reliant on maintaining groundwater access for irrigation and stock and domestic water supplies for continued high production.

In the Northern Plains, cotton is the most significant crop, while beef cattle and wheat production are the other main industries. Moree and Narrabri LGAs produce around 66% of NSW cotton from around 4% of the state's area. These same LGAs also produce 5% of the gross value of NSW beef cattle and the area known as the Golden Triangle (350,000 hectares between Bellata, North Star and Yallaroi) produces consistently high yields of prime hard (high protein) wheat.

The Slopes contains some highly productive dryland cropping land and is also well suited to lucerne and pasture for hay production and dairy enterprises. It also contributes 10% of the NSW beef production. Inverell LGA produces 84% of peanuts from 1% of the area of NSW. The area

also has the potential for growth of the intensive livestock industries especially beef cattle, chicken meat and egg production due to the ready supply of grain, the location of existing processors and the availability of land away from urban growth areas. Tamworth LGA is only 1% of the state in area yet produces 8% of NSW eggs and 12% of NSW chicken meat.

The Tablelands area is a consistent major producer of beef, wool and lamb for NSW. The Tablelands makes up around 4% of NSW by area and produces 9% of the state's wool, 9% of beef and 8% of lamb. These high production rates for meat (beef and lamb) and wool are predominantly due to the high rainfall and improved pastures. The Tablelands also produces a range of horticultural crops including nuts, grapes, apples, stone fruit and vegetable crops such as potatoes. The Tablelands is also experiencing an expansion of the dairy industry and is proving to be well suited to glasshouse horticulture.

Mining activities

In 2010-11 the region produced 5.7 million tonnes (Mt) of export quality coal – representing 4 per cent of the state's total coal production. In the same year, this level of coal production was worth almost \$585 million and provided over 550 direct jobs and an estimated 2,000 indirect jobs. There is potential for a significant expansion in coal production to around 20 Mt per annum in the short to medium term. This expansion would result in higher demand for construction workers and require investment in rail infrastructure. A number of new coal mining projects have been proposed, mostly in the Gunnedah and Narrabri LGAs. If developed, total coal production in the region could rise to 52 Mt per annum, supporting up to 5,000 direct jobs and 15,000 indirect jobs.

The mining industry adds diversity to the regional economy and has benefits in terms of boosting incomes and employment and sustains employment in a number of service industries such as engineering, construction, transport and logistics, training and human resources. The major regional centre of Tamworth and the centres of Quirindi, Gunnedah and Narrabri are expected to be the focus for economic activity associated

with mining and coal seam gas extraction. The scale of investment in mining requires certainty for investors and the community about where and how mining should occur.

Over the period to 2036, the region's workforce is expected to grow by between 3,500 and 4,700. Much of this growth in employment will be driven by the growth of the coal and coal seam gas industries and focused in the Liverpool Plains, Gunnedah and Narrabri LGAs. The major regional centres of Tamworth and Armidale can also expect continuing employment growth.

The growth of mining is likely to cause a substantial increase in the demand for labour, which could help to stimulate long-term population growth in certain parts of the region. The New England North West has a current estimated resident population of 183,200⁴ and is currently experiencing moderate population growth. This growth is mainly due to the strength of the major regional centres of Tamworth and Armidale which are helping to balance the stable or declining population in other parts of the region.

Other industries

The major regional centres of Armidale and Tamworth have diverse economies. Tamworth has regionally significant manufacturing, aviation, transport and logistics, food processing and tourism industries, while Armidale, with the University of New England and a number of private schools, is strongly associated with education. It is estimated that education comprises approximately 20 per cent of the gross regional product. Armidale was also the first centre in mainland Australia to be connected to the National Broadband Network (NBN) in May 2011. The NBN will help to provide the Armidale area with better and faster access to information and services, allowing the economy to develop and diversify further.

Tourism plays a significant role in growing and diversifying the regional economy with attractions ranging from an abundance of natural assets to events such as the Tamworth Country Music Festival and the Australian Celtic Festival held in Glen Innes. In 2008-09 approximately 3.1 million tourists visited the region injecting \$650 million in

to the economy. These figures are anticipated to rise in the future as the tourism sector continues to grow and expand. Tourism has an important and growing role in employment and economic development in the region and should be encouraged.

Other major economic development opportunities in the region include the growing sectors of value-added food processing and renewable energy. The New England and North West has been identified as one of six renewable energy precincts across NSW, given its significant wind and solar resources.

Federal and State Government economic development initiatives for the region are delivered through various departments and organisations, including Regional Development Australia Northern Inland NSW. The Regional Development Australia Northern Inland Regional Plan 2010-15 identifies a number of priorities for the development of the region, including industry diversification and job creation, integrated and improved health care and investment in regional infrastructure and education. Local councils also undertake a number of local economic development projects and initiatives.

Challenges

Land use conflicts

As the economy of the New England North West region grows and its industry structure changes there will be increased competition for access to key resources including land. The mining and coal seam gas industries are expecting significant growth which could displace some existing agricultural activities and place pressure on others. Significant and well established agricultural activities need to have confidence that their future in the region is secure and there are opportunities for their industry to develop and grow, particularly as these industries have the potential to continue sustainably well beyond the expected lifespan of most mines.

Good strategic planning, including the identification and mapping of strategic agricultural land, mineral resources and coal seam gas resources, and setting clear objectives for future land use, will allow both the mining

and agricultural industries to continue to grow, providing a range of economic opportunities for the communities of the New England North West.

One of the major objectives of this plan is to provide a strategic framework for decisions about the use and management of agricultural land and resources. The Gateway process is a key initiative that will help balance the needs of different industries and communities. Chapters 3 and 11 describe how important rural lands will be managed into the future, through the identification of strategic agricultural land and the Gateway process.

Areas of the region that are not affected by the growth of the mining and coal seam gas industries are less likely to experience the same level of land use conflict. However, important natural resources, particularly strategic agricultural land, will still need to be identified and protected for the future.

Demand and supply of employment land

Concurrent with the expansion of the mining industry, there has been substantial growth in mining related industries. As the mining sector grows, mining support activities are also expected to grow. Some of the demand for industrial land to support the mining industry might be located in neighbouring regions like the Upper Hunter. However, given the potential for significant increases in mining and construction activity over the next five years, there is a need to closely monitor demand and supply for employment land regularly, particularly in the Tamworth, Liverpool Plains, Gunnedah and Narrabri LGAs, and to take action to ensure the planning and delivery of additional employment land should the need arise.



Demand and supply of labour

The experience of the Upper Hunter region, which has a larger and more established mining sector than the New England North West, provides a valuable insight into the potential impacts of the rapid expansion of the mining sector. In the Upper Hunter, the demand for labour from mining has not been able to be met by the local labour supply. Many businesses have struggled to compete with the mining industry to attract or keep workers. Therefore, workforce and skills development is likely to become a more urgent challenge for the New England North West economy.

The New England North West, like many other areas of rural NSW, has an ageing population which has the potential to place pressure on the economy as fewer workers become available to support the retirees and young dependents in the region⁵.

Skilled labour is also currently in short supply. The key shortages are in the trade and professional sectors including motor mechanics, plumbers, construction workers, aged care and health care workers, architects, teachers and accountants. If the region's population grows significantly due to the development of new or expanding industries such as mining and mining related industries, the pressure on this undersupply of skilled labour will only be exacerbated. This, coupled with the ageing population, could result in a regional workforce that is less flexible in response to economic changes and is unable to promote and encourage the economic development of the region.

This will require solutions that involve innovative thinking and cooperation between government, business and communities. Balancing opportunities for growth between different industries will be vital to ensure the region's future productivity. Supporting existing programs and undertaking new initiatives that bring skilled professionals into the region and help to retrain the existing workforce are therefore crucial.

Fly-in/fly-out and drive-in/drive-out⁶ working patterns have become much more significant in many areas of regional Australia in recent years, often associated with the significant growth of the mining industry. Many communities are actively seeking to support these growing workforce

types and many communities are also working to encourage more permanent settlement of new workers. Given the potential for growth in mining in the New England North West region, growth in the fly-in/fly-out and drive-in/drive-out workforce can be expected. This will have implications for employment, local business growth and local housing markets and alter the demand for transport services, social services and facilities. These challenges will require a range of integrated solutions that operate together to balance the needs of industries and local communities.

Access to infrastructure

Infrastructure supports economic activity, as well as the liveability of the region. Economic growth can only occur if the necessary infrastructure is available. While all areas of the region will require some infrastructure development or improvement, demand is anticipated to be most acute in those areas undergoing the strongest growth, in particular those areas associated with mining and coal seam gas.

Access to water

Access to water is vital for economic activity and is an ongoing challenge in the region. Many sectors of the economy depend upon reliable and cost competitive access to water. This includes the irrigated agriculture, food processing and poultry industries as well as manufacturing and mining. The growth and economic strength of urban centres is also highly dependent upon a safe and reliable water supply.

Potential reforms to water access under the Murray Darling Basin Plan may have a significant social and economic impact on many parts of the region. The impacts will vary from community to community and from industry to industry. There may be less water for some users and more water for others. A draft Murray Darling Basin Plan was released in November 2011. The draft basin plan recommended that the health of the basin be improved by setting more sustainable levels of water use in the basin, and that approximately 12 gigalitres of water would need to be recovered by 2019 to meet environmental needs in the New England North West. The scale and pattern of changes to agriculture will depend on the final outcomes of the basin plan.



Following consultation with the Murray-Darling Basin Ministerial Council, a revised draft Plan was released in August 2012 for final comment by the Council before being made.

Economic diversification and resilience

Economic diversification is also an important challenge for the New England North West region – and many other parts of regional NSW. The growth of the mining and coal seam gas industries will help to diversify the current regional economy and potentially provide flow on benefits for industrial and service based industries particularly in Tamworth, Quirindi, Gunnedah and Narrabri. The region has many other emerging industries that are already developing and adding diversity to the economy, include greenhouse horticulture in Guyra, the poultry industry in Tamworth and potential renewable energy projects in Moree and the New England Tablelands.

While agriculture and mining will continue to be major industries for the region for several decades, it is important to identify opportunities that can, in the short and medium term, help to diversify the regional economy and make it more resilient to change in the longer term.

Economic diversification is vital to building the resilience and long term strength of regional communities. Economic diversification can be encouraged by growing and strengthening existing key industries and growing new industries

that have the potential to become significant. Identifying the comparative advantages of the New England North West region will help governments, businesses and communities target opportunities for long term economic development.

There are many ways existing and emerging industries can be supported. The identification and protection of valuable natural resources, including mineral resources and strategic agricultural land is one example. Other examples include ensuring an adequate supply of employment land and economic development programs such as Regional Development Australia Northern Inland's Skilled Migration project. Developing knowledge intensive industries and skills in the workforce are also important ways to improve productivity and economic diversification.

It should also be recognised that the growth of the mining industry can lead to issues with social polarisation and loss of community cohesion. This can be a result of different attitudes towards the mining industry, the disparity in incomes between workers in the mining and non-mining industries, and the often transient nature of the mining workforce. Communities that are liveable and cohesive are more likely to be attractive as places to live and, therefore, building community cohesion must be seen as a key element of building a resilient and diverse economy.

Policy Response

Objectives

- Ensure an adequate supply of land for the needs of industries in the New England North West region, including agriculture.
- Ensure an adequate supply of labour for the needs of all industries in the New England North West region.
- Diversify the New England North West regional economy and build economic resilience.
- Build cohesive and liveable communities by addressing conflicts in demand for resources and improving economic resilience.

Actions

	Action	Lead Agencies	Timeframe
5.1	Local councils will prepare local strategies to identify an adequate supply of appropriately located commercial and industrial land in order to meet local demand.	Councils	Ongoing
5.2	Local councils will zone land through their local environmental plans to ensure an adequate supply of employment land.	Councils	Ongoing
5.3	Work with local councils, infrastructure providers and the development industry to monitor the supply of employment lands.	Department of Planning and Infrastructure	Ongoing
5.4	Prepare a Regional Workforce Plan for the New England North West in cooperation with Regional Development Australia Northern Inland, local employers and industry groups, to address workforce and skills issues. The plan will clarify current and future demand and supply of skills in the region and devise skills and workforce development strategies, including apprenticeship programs, to address critical shortages.	Department of Education and Communities Department of Primary Industries	2013
5.5	Work with mining and coal seam gas companies to develop a regional apprenticeship program to be funded by these industries.	Department of Education and Communities	2013
5.6	Work with Regional Development Australia Northern Inland and local councils to identify specific initiatives to diversify the economy through the New England North West Regional Action Plan.	NSW Trade & Investment	2012

Chapter Six

Housing and Settlement

Background

The New England North West region with its scenic rural character, range of climates, natural attributes and diverse range of cities, towns and villages, is a distinctive and desirable place to live.

Approximately 30 per cent of the region's population is concentrated in Tamworth and Armidale. These two major regional centres are important focal points for services such as higher order health care, education, employment, entertainment and shopping for people across the whole region. A further 20 per cent of the region's population resides in the five major towns of Inverell, Glen Innes, Narrabri, Gunnedah and Moree. These major towns also provide a range of services to their own communities as well as to people in smaller towns and villages.

The region has a current population of approximately 183,200⁷ and is currently experiencing moderate population growth. More than half the region's population growth since 2001 has occurred in Tamworth, with Armidale, Inverell and Gunnedah also experiencing some growth.

This growth is expected to continue over the coming decades, based on assumptions of modest

increased demand for workers in the mining industry, as well as strong flow on effects from the mining industry to other industries in the region. These projections supersede those released by the NSW Government in 2008, which estimated a regional population of 168,000 in 2036. With this increase in population, as well as demographic changes, the region will need between 6,800 and 8,000 additional dwellings by 2036.

The region has a larger than average young population (under 15) in comparison with NSW overall, but is below the average in terms of people between the ages of 24-44 years. There is also a significant ageing population, however the rate of ageing is not as high as other parts of the state such as the coastal regions and the Sydney metropolitan region. The loss of younger adults to other regions is contributing to the overall ageing of the population and has both short and long-term implications for population growth. Like most of regional NSW there is a large indigenous population, which is growing rapidly. On average, indigenous people make up 8.4 per cent of the region's population, but this is more concentrated in some communities, such as Moree Plains local government area (LGA), where indigenous people account for 19 per cent of the local population.

Understanding changing demography

Having an accurate picture of current population and demographic changes is a significant challenge for the New England North West. Rapid changes to the regional economy associated with the growth in the mining and coal seam gas industries makes the assessment of longer term population trends less predictable than in many other regions. Even in areas where the growth of mining is more certain, other factors such as the level of employment in each mine, the proportion of workers who will look to settle permanently in the region and the proportion of workers who will bring their families with them are often much less certain and difficult to forecast.

In turn it is difficult to accurately respond to changing demands on housing, employment, services and infrastructure. The Department of Planning and Infrastructure is working with local authorities to develop a stronger understanding of how housing growth and population change is impacting the region.

The majority of housing supply in the region (almost 90 per cent) is in the form of single detached houses. There are higher proportions of smaller dwellings including town houses and flats in the major regional centres, in particular Armidale, where there is a large student population. The average household size (people per dwelling) in 2011 was 2.4 persons. This has declined from 2.8 in 1991. Current projections suggest an increase in the numbers of households in parts of the region, such as Tamworth, of up to 19 per cent over the period to 2036. This in turn will fuel the demand for new housing. Additional demand is also expected to come from the emerging mining industries and migration.

In terms of the housing market, the region has seen housing prices increase since 2000, proportional to the majority of housing markets across the state. Housing affordability varies across the region depending on supply and demand in a particular area. Overall affordability is strongly linked to the economic strength of the local area, and affordability has become a significant issue in the LGAs of Gunnedah, Narrabri and Liverpool Plains where demand for housing is increasing as the coal and coal seam gas industries expand. Currently, the region's private rental market represents 15 per cent of all occupied dwellings, with the lowest provision being in Gwydir (10.3%) and highest being in Armidale (25.4%). Overall the amount of private rental stock has decreased since 2001. This is a key indicator of declining affordability in the market.

Challenges

Housing and residential land supply

New housing will be needed to cater for the expected population growth, as well as growing demand for a wider variety of housing. The greatest demand for new housing is in the Tamworth, Armidale, Liverpool Plains, Gunnedah and Narrabri LGAs. Even in areas with low population growth, there will be demand for new dwellings to provide greater housing choice.

Part of this challenge is to ensure there is sufficient capacity in the supply of housing to cope with peaks in the demand for housing that will occur during the development and construction of new coal mining and coal seam

gas projects. Planning will need to take place for new urban areas as well as for new development within existing urban areas.

Local councils in the region have actively sought to understand changing population and economic structures and the subsequent impacts on the housing market, through the development of growth management strategies or land use strategies. These inform the preparation of planning documents such as local environmental plans (LEPs).

Councils have generally identified an adequate supply of land zoned for different housing types to facilitate predicted growth in demand. For example, Tamworth and Armidale councils have both recently released significant quantities of residential land to support housing growth. Tamworth was one of the fastest growing population centres in regional NSW in the 2009-10 financial year with a growth rate of 1.7 per cent.

Other parts of the region are also experiencing strong demand for housing. Narrabri, Gunnedah and Liverpool Plains LGAs are all experiencing increased demand, largely owing to the emerging coal and coal seam gas industries. The draft Namoi 2030 Regional Resource Strategy has been prepared by these councils, in association with Tamworth Regional Council and the Namoi Catchment Management Authority, to consider the impact of mining in the area.

The Strategy identifies that sufficient zoned residential land already exists in the Narrabri and Liverpool Plains LGAs until 2026, even under a high growth projection scenario associated with the rapid expansion of the mining industry, while Tamworth and Gunnedah councils may need to rezone additional residential land by 2016 and 2018 respectively.

Other areas such as Guyra have also experienced increased demand, while centres like Glen Innes and Moree can also anticipate heightened demand, driven by demographic change and growth in the renewable energy industry (wind and solar respectively). Housing provision should therefore continue to be monitored by local authorities to ensure sufficient land zoned for housing is available.

Housing mix and affordability

In terms of housing affordability, most areas remain reasonably affordable in comparison to the rest of NSW. Despite this, signs of housing stress are evident across the region. Single people, particularly young single people, are often identified as experiencing the highest levels of housing stress, along with single parent families and the elderly. The New England North West – like many other regions in NSW – also has an ageing population, which will increase the demand for smaller and more accessible housing.

Most critical is the lack of housing choice due to the domination of single detached dwellings in the current housing stock. There is a shortage of more affordable, smaller housing options, such as smaller one or two bedroom dwellings. This is notable throughout the region, and needs to be addressed through appropriate zonings and planning controls, including the identification of appropriate higher and medium density infill areas within existing urban areas to help maximise the use of existing infrastructure.

Maintaining a supply of affordable housing must also include a supply of emergency social housing, which is particularly important for people dealing with problems such as financial stress or family breakdown. This needs to be considered in planning for the supply of housing and in the delivery of social services. Consideration also needs to be given to meeting the needs of people looking to rent. Some local councils, such as Narrabri, are already in the process of amending their planning controls to increase housing density within their existing residential areas to help cater for these issues.



Short term housing and temporary housing villages

As stated earlier, part of the challenge in meeting the region's housing needs is to ensure there is sufficient capacity in the supply of housing to cope with peaks in the demand for housing that will occur during the development and construction of new mining and coal seam gas projects.

The nature of the mining industry also requires various types of skill sets over the lifetime of the mine and therefore employees are required for different time periods. Changes in working hours, shifts or flight timetables mean that in fly-in/fly-out or drive-in/drive-out options may become more attractive for some employees. This can have immediate impacts on housing demand.

In areas across Australia affected by a mining boom, the introduction of temporary housing to provide short term accommodation during work roster periods for mining employees has been seen as an effective means to address what is likely to be a temporary peak demand for housing. Temporary housing can also help to address difficulties in expanding permanent housing stock quickly and to avoid a potential oversupply of permanent housing in the longer term.

There are already examples of temporary housing villages within the western parts of the region, including a large settlement on the outskirts of Narrabri, which has been built by a private company that specialises in developing temporary housing in mining communities. Another is proposed at Werris Creek, just north of Quirindi in the Liverpool Plains LGA.

Whilst temporary housing villages can relieve housing supply stress, the location and quantity of temporary housing can also have significant impacts on an established town. Therefore it is crucial that effective planning for temporary housing be undertaken holistically, and in partnership with the affected communities, and should avoid the duplication of services and facilities available within the existing townships.

In some circumstances locating temporary populations on the outskirts of established centres may be a preferred solution to enable these temporary residents to utilise and contribute positively to facilities that serve the entire community, and to better integrate and

become part of these communities. However, this decision must be informed by an understanding of likely changes to economic opportunities for the town over time.

In response to these challenges, the Department of Planning and Infrastructure is preparing planning guidelines for the temporary accommodation of mining employees. These guidelines are aimed at ensuring that such accommodation is appropriately located, designed and managed to maximise social integration and economic benefits and to minimise land use conflicts and amenity impacts.

Rural residential and lifestyle housing

Rural residential and lifestyle housing is a popular housing choice throughout the region. This type of housing normally occurs around urban settlements and, if located appropriately, can contribute to the character, economy and social fabric of communities. If inappropriately located it

can create land use conflict with other rural land uses, result in the loss or alienation of valuable agricultural lands and social isolation for residents, increase the demand for services and facilities and adversely impact on the environment. Rural residential and lifestyle housing growth should occur in close proximity to existing centres, towns and villages.

Maintaining local character

The local character and overall liveability of rural centres and townships is often one of the key features that make rural and regional settlements attractive to current and future residents. Throughout the region new development opportunities need to enhance, rather than detract from, the unique and distinct local character. Developments that satisfy a short term need but create long term problems by degrading the quality of the environment and overall liveability of a settlement should not be supported.

Settlement planning principles

When planning for housing growth, the following settlement planning principles must be considered:

- Development will contribute to the diversity of housing types available. Any medium or higher density housing should be located in central and accessible locations, to ensure access to a full range of services within a reasonable walking distance.
- Development will be located to maximise the efficiency of essential urban infrastructure, services and facilities, including transport, health and education.
- Development will respect and respond to the character of the area and the identified settlement hierarchy of the region.
- New residential areas will be planned with streets that make it easy for people to walk and cycle, and with recreational and open space.
- New residential and rural residential areas will respect environmental and cultural heritage and avoid areas most affected by natural hazards or having high cultural significance.
- New residential and rural residential areas should minimise the potential for land use conflict with land needed for valuable economic activities, such as valuable agricultural lands and natural resource lands. This includes avoiding locations where possible adverse impacts associated with industry (such as noise, dust, visual impacts or other amenity impacts) are likely to affect future residents.
- New rural residential areas should be located adjacent to, or in close proximity to, existing urban centres and be within easy access of relevant infrastructure and services.

Policy Response

Objectives

- Ensure an adequate supply of housing to meet community needs.
- Ensure a greater diversity of housing types, including smaller housing types, rental housing and temporary housing.
- Improve the supply and range of affordable housing.
- Build cohesive and liveable communities by ensuring towns and villages are well designed, liveable and provide a range of housing types.

Actions

	Action	Lead Agencies	Timeframe
6.1	Local councils will prepare land and housing supply strategies that identify sufficient land to facilitate an adequate supply of appropriately located housing to meet identified demand.	Councils	Ongoing
6.2	Local councils will zone land through their local environmental plans to ensure an adequate supply of land for residential development and to facilitate delivery of a range of housing types.	Councils	Ongoing
6.3	Local councils will ensure that new residential development makes a positive contribution to liveability and character by ensuring residential areas are planned in accordance with the settlement planning principles in this plan.	Councils	Ongoing
6.4	Work with Urbangrowth NSW and the housing and development industry to develop models for the delivery of more housing, and a more diverse range of housing types.	Department of Planning and Infrastructure Urbangrowth NSW	2013
6.5	Work with local councils, infrastructure providers and the housing and development industry to monitor the supply of residential land and the delivery of new housing.	Department of Planning and Infrastructure	First monitor report 2013/ ongoing
6.6	Prepare guidelines for temporary workers accommodation for mining projects.	Department of Planning and Infrastructure	2013

Community Health and Amenity

Background

Community health and amenity is a product of the physical and social environments. The impacts of mining on the physical environment are addressed in chapters 3 and 8. Social impacts relating to issues such as housing affordability and social infrastructure provision are addressed in chapters 4, 5 and 6. In addition, this plan aims to improve community welfare by providing greater certainty about where mining and coal seam gas development can occur in the region, thus reducing the potential for land use conflict and associated impacts.

Air, noise and visual pollution can cause cumulative impacts on communities – each new source of pollution adds to the overall impact on the region. Strategies for managing air, noise and visual pollution must address both individual sources and the cumulative situation. This chapter focuses on the health and amenity impacts relating to both mining and coal seam gas development.

Mining in the New England North West region at present is generally dispersed and less intense than other regions such as the Upper Hunter. The physical nature of the region and the relatively small number of existing mines means that the cumulative environmental impacts are generally not yet significant. Furthermore, some of the new mines in the region will be underground mines, which will produce less air, noise and visual pollution than open cut operations. However, it is important to ensure that growth of the mining and coal seam gas industries in the region is appropriately managed to avoid any unacceptable impacts arising.

Air pollution

The main air pollutant from mining is dust caused by vehicle activity, wind erosion from exposed surfaces, stockpiling, drilling, blasting, crushing

and screening. From time to time, chemical air pollutants associated with blasting may also be emitted.

Dust affects community amenity because it is visible for a short but intense period, and may also deposit on washing or roofs and be transported from these surfaces to domestic water tanks.

Air pollutants affect community health because they may be toxic and affect the heart and lungs. Exposure to particles smaller than 10 microns (μm) in diameter (PM_{10}) is associated with adverse health effects. This association may be stronger for particles below 2.5 μm diameter ($\text{PM}_{2.5}$). $\text{PM}_{2.5}$ particles are predominately generated by combustion processes and tend to be elevated in colder periods (due to woodheating and cold air layers). There is no safe level of exposure, but the health risk decreases with lower levels of exposure.

Any new coal mine proposal must not cause exceedances of the health-based goals in the National Environment Protection (Ambient Air Quality) Measure (Air NEPM) at large towns such as Gunnedah and Narrabri. Under the Air NEPM, the 24-hour average PM_{10} concentration may not exceed 50 micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) more than five days in a year. This standard is currently under review. NSW Health is preparing a development assessment guideline for the impacts on human health from particulate matter emissions. This guideline will identify maximum thresholds for both incremental and cumulative dust, including at small towns and individual rural residences, and is due for completion by June 2013.

Although mining is still an emerging industry in the New England North West, it will add to existing dust emissions from other activities, such as grazing and broad scale agriculture⁸.

The environmental assessments for mines that have been approved in the region generally show that both background and proposed levels of dust are well below applicable criteria at key receptors. Beyond this, there is little available data on air quality, although establishing a regional air quality monitoring network in conjunction with the mining industry is a key priority for Government. The NSW Government is also developing a cumulative impact assessment methodology to manage the cumulative impacts of mining and coal seam gas proposals. This methodology will take into account the Namoi Catchment Management Authority's proposed methodology for calculating and managing the cumulative risks to environmental assets from mining.

Mining and extractive industries must meet the air quality requirements of the Protection of the Environment Operations Act 1997 which requires that activities are carried out using practicable means necessary to prevent or minimise air pollution. Air pollution can be reduced on the mine site by rehabilitating mined land in a timely manner, reducing haulage vehicle speeds, watering stockpiles and ceasing activity during high winds. The health and amenity impacts of air pollution may be mitigated outside of the mine site by establishing buffer zones or buying properties affected by the pollution.

Conditions of development consent for mines in NSW typically require the mine operator to actively monitor and manage air emissions from the mine. These conditions include real time dust monitoring, meteorological forecasting and provision for modifying operations on site to ensure compliance with emission limits. These conditions also include a requirement that mine operators coordinate air quality management on their site with the air quality management at nearby mines to minimise the cumulative impacts of the mines.

Some mine operators in the New England North West have entered into legally binding pollution reduction programs (PRPs) with the Office of Environment and Heritage. The PRPs require the mine operators to assess their current operations against best management practice and ensure they are taking all reasonable and feasible measures to reduce their particle emissions. The Office of Environment and Heritage's (2011) NSW

Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining establishes current international best practice benchmarks and identifies those which could be practicably implemented in NSW at existing and proposed coal mines.

Coal seam gas exploration and production has the potential to generate dust emissions during construction, mainly due to vehicle movements and drilling activities. During production, methane is vented or flared to the atmosphere and some fugitive methane emissions from the wells may occur. The field compressors used to compress the coal seam gas emit oxides of nitrogen and sulphur. Exposure to nitrogen dioxide and sulphur dioxide is associated with adverse health effects. The Air NEPM also sets standards for these air pollutants.



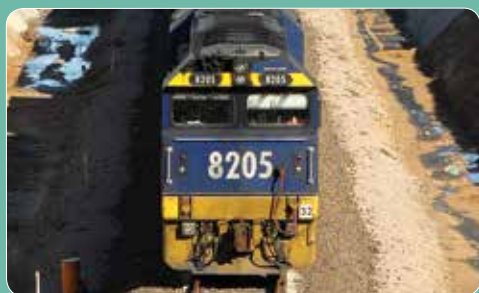
Noise pollution

Mines cause noise pollution by drilling and blasting, operating excavation equipment, handling and loading coal and transporting coal from the site. Low frequency noise pollution may be caused by stationary plant or poorly maintained mobile plant. To minimise noise pollution, the following measures are usually adopted:

- effectively maintaining the plant and equipment (e.g. equipment exhaust systems);
- restricting certain operations when meteorological conditions are not favourable;
- using noise abatement measures, such as construction of mounds or walls; and
- limiting the hours in which various mining operations may take place, and setting limits for general operational noise.

Existing monitoring data indicates that background noise levels in rural areas of NSW where there is no mining, other industry or road/rail traffic are generally less than 30 decibels (dB(A)), which is the lowest 'rating background level' (RBL) applied by the Industrial Noise Policy.

The conditions of consent for mines in NSW include noise limits in accordance with the NSW Industrial Noise Policy (INP). The INP applies the lesser of either intrusive criteria (5 dB(A) above RBL) or the maximum recommended amenity criteria (such as 40dB(A) at night for rural and suburban areas). Where the RBL is less than 30 dB(A), then it is set to 30dB(A). The amenity criteria put an absolute ceiling on noise levels to make sure cumulative noise levels in a region are acceptable. The conditions of consent may also provide for land acquisition if operational noise levels still exceed limits once all other mitigation options have been exhausted.



A review of the INP has commenced, and will include consultation with all key stakeholders. The INP review will consider a wide range of options for addressing noise impacts from emerging mining precincts within rural areas.

Coal seam gas activities can cause noise impacts during construction of the wells and pipelines, operation of the pumps and compressors and flaring at the well heads and process plant. Construction noise is generally managed by restricting hours of work near occupied dwellings and using low-noise equipment. Pumps and compressors may have acoustic treatments and flares may be shielded.

Visual Amenity

Mining operations can often impact on the visual landscape of rural areas. It is important, particularly for open cut operations that, during operation, the project should be screened from view using both on-site and off-site plantings and man-made and natural landforms. The overburden should be designed and planted in a naturalistic form and the mine site should be progressively rehabilitated as the active working face moves on. Nightlighting should conform to the relevant Australian Standards for reducing the impacts of outdoor lighting.

Following mine closure, proper rehabilitation is the key to reducing visual impacts. Rehabilitation at the mine scale is a complex and difficult task. The final landform should be naturalistic and revegetated with local flora. It is important to include the community in the design of the rehabilitation program so it has a sense of ownership over the final landform⁹.

Although above ground infrastructure associated with coal seam gas is not currently a significant visual element in the region, the expected growth of the industry means that it must be carefully managed to avoid adverse visual impacts which could arise with the development of surface infrastructure such as well heads, access roads and pipelines.

Water pollution

Mining and petroleum production have the potential to impact upon both water security and safety. Although mining accounts for approximately 1.4 per cent of the state's water consumption, this proportion may increase as mining expands. The risk of contamination of, or damage to, water sources is carefully considered during the development assessment process for each proposal.

In addition, the NSW Government has introduced a ban on the use of BTEX compounds in drilling and hydraulic fracturing and a ban on the use of evaporation ponds to protect groundwater and surface water resources. The Government has also introduced a new regulation requiring water licences where explorers take more than 3 megalitres of water per year from an exploration licence area.



The Aquifer Interference Policy has been introduced statewide to protect the state's crucial water resources, including impacts associated with mining and CSG activities. The policy outlines how the volumes of water taken as part of an aquifer interference activity will be licensed and accounted for. It also sets out the minimum impact considerations against which the NSW Office of Water will assess proposals to ensure that impacts on groundwater systems are minimised.

Challenges

Increased mining activity increases cumulative impacts

Greater volumes of coal production mean an increase in potential air, noise and water pollution. This will require increased use of monitoring and mitigation technology and, for dust, potentially greater use of water to manage impacts. As the health and/or amenity limits for air and noise pollution are reached, additional measures will be needed so that air quality and noise levels remain acceptable. Similarly, additional measures will be needed to manage water quality and quantity impacts from ongoing mining activity.

The need for a more strategic approach to managing the air, noise and water impacts of mining is recognised in the Planning Assessment Commission's recent approval of the Boggabri Coal Project and review of the Maules Creek Coal Project. Specifically, mines in the Leard Forest Mining Precinct will be required to prepare regional air, noise and water strategies to address the cumulative impacts of mining activity in the area.

The Government is developing a cumulative impact assessment methodology to address this challenge. The methodology will consider whether cumulative impact thresholds or tipping points for air, noise and water impacts can be adequately described, predicted and managed.

Expanded residential and mining activities increase land use conflicts

Continued population growth will drive demand for increased residential development, particularly in the Tamworth and Gunnedah LGAs (see chapter 6).

Most existing urban development areas in the New England North West are not close to known coal resources. However, in some cases the expansion of residential and rural residential development could mean new homes may be built in areas that are already exposed to air and noise pollution from mines.

The expansion of mining may also expose existing homes to air and noise pollution from more sources. More mines will make it more complex to locate the source of the emission.

Climate change may alter emission patterns

Climate change may alter local meteorological trends and lead to changes in air pollutant and noise emission patterns. Chapter 9 describes the climate projections for the New England North West. Higher temperatures may dry out mine surfaces and generate more dust. Prevailing winds, localised winds and temperature inversions may change, which will change the way air and noise pollution are distributed.

Emission standards must remain stringent and relevant

It is important that standards and limits for noise and air pollution remain relevant and appropriate into the future. Additional information may become available about the impact of noise and air pollution on community health and amenity. Community expectations for health and amenity may change. Altered emission patterns as a result of climate change may also require a different approach to regulation.

Maintaining visual amenity

The expansion of coal mining and coal seam gas need to be carefully managed to ensure that the visual impacts on the region are minimised in terms of both scale and duration.

Community consultation must continue to be relevant and appropriate as mining expands

It is important to ensure that communities are well informed about mining and coal seam gas development and their potential environmental impacts and how they will be minimised and managed as these industries expand in the region. The NSW Government guidelines for the establishment and operation of community consultative committees¹⁰ must remain relevant and reflect best practice.

Policy Response

Objectives

- Ensure that the growth of the mining and coal seam gas industries does not significantly impact on community health and amenity.

Actions

	Action	Lead Agencies	Timeframe
7.1	Develop a cumulative impact assessment methodology to manage the cumulative health and amenity impacts of mining and coal seam gas proposals. This methodology will consider whether cumulative impact thresholds or tipping points can be adequately described and predicted. It will also address cumulative impacts on agricultural lands and water resources.	Department of Planning and Infrastructure Office of Environment and Heritage Department of Primary	March 2013
7.2	Require all new coal mines and applications seeking to modify existing approvals to benchmark their proposals against best management practice defined in the <i>NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining</i> (2011) and ensure they incorporate all reasonable and feasible measures to reduce their dust emissions. Director-General's Requirements and development assessments will reflect these requirements.	Department of Planning and Infrastructure	Immediate / Ongoing

7.3	Continue to place legally binding pollution reduction programs on all existing coal mines requiring them to assess their current operations against best management practice and ensure they are using all reasonable and feasible measure to reduce their dust emissions.	Environment Protection Authority	Immediate / Ongoing
7.4	Progressively establish a regional air monitoring network in the New England North West as mining activity increases. The network will be established using the Upper Hunter Air Quality Monitoring Network model. Network design will be conducted in consultation with local communities, with an initial focus of obtaining baseline data in population centres.	Environment Protection Authority Office of Environment and Heritage	Consultation commenced April 2012
7.5	Review the Industrial Noise Policy, including consultation with all key stakeholders, and consider a wide range of options for addressing noise impacts from emerging mining precincts within rural areas.	Environment Protection Authority	2013 (has commenced)
7.6	Consider the expansion of the <i>Synoptic Plan: Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley of NSW</i> (1999) to include the New England North West region through the review of plan to be undertaken in conjunction with the development of the Upper Hunter Strategic Biodiversity Assessment.	Department of Planning and Infrastructure	Mid 2014
7.7	Review the Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects (2007) in consultation with government agencies, the NSW Minerals Council and community stakeholder to ensure that it remains relevant and reflects best practice.	Department of Planning and Infrastructure	June 2013
7.8	Prepare a development assessment guideline for impacts on human health from dust generated by mining and other activities. The guideline will include maximum thresholds for both incremental and cumulative dust emissions.	NSW Health Department of Planning and Infrastructure Office of Environment and Heritage	June 2013

Chapter Eight

Natural Environment

Background

The natural environment of New England, the Liverpool Plains and the Gunnedah Basin is remarkably diverse, from iconic extinct volcanoes and rugged high country to rolling slopes and fertile plains.

Among the 'food bowl' of the Liverpool Plains, travelling stock routes contain some of the best examples of the grasslands and woodlands which once extended over wide areas and small pockets of lush vegetation stand as reminders of the rainforest which once blanketed inland Australia. The Pilliga Forest, the largest temperate forest in inland New South Wales, is home to babblers, whistlers and robins which have been lost elsewhere. Water birds migrate annually across from the Top End and Asia to take up residence in wetlands throughout the region. Rare and common native fish species inhabit the Namoi River and tributaries. For the vulnerable Black-striped Wallaby, the region is the southern limit of its distribution. Other creatures, like the Humble Sloane's Froglet, are also vulnerable to extinction in the region.

While some areas are protected in national parks, the natural environment in the region is under renewed pressure, particularly from mining and coal seam gas, and the roads, train lines, pipelines and other infrastructure to support these rapidly expanding enterprises.

Biodiversity values in the Brigalow and Nandewar regions

In relation to the Interim Bio-geographic Regions of Australia (IBRA), most of the area falls within the Brigalow Belt South and Nandewar bioregion. Topographically the area can be separated into the higher country on the boundary of the

planning area to the north east, east and south, the slopes and plains in the centre of the planning area draining to the plains to the west. A high proportion of the slopes and plains have been cleared, which means that many species are in decline or have already disappeared.

The Brigalow and Nandewar regions are a diverse and varied landscape with some of the most fertile soils in Australia being found in the Liverpool Plains. The Pilliga Forest is the largest remaining remnant temperate woodland/forest in the NSW wheat-sheep belt.

In 2005 the Government resolved to increase the reserved forested land in the Brigalow and Nandewar area by creating Community Conservation Areas that provide for permanent conservation of land, protection of areas of natural and cultural heritage significance to Aboriginal people, and sustainable forestry, mining and other appropriate uses. Overall, 6.9 per cent of the Southern Gunnedah Basin is within conservation reserves, including national parks, nature reserves and state conservation areas, and 7 per cent of the area is within state forests. State conservation areas (including Community Conservation Areas Zone 3 created through the Brigalow and Nandewar Community Conservation Area Act 2005) are areas that contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance and are available for uses permitted under Section 47J of the National Parks and Wildlife Act 1974, including exploration, mining and petroleum production.

The freshwater environment of the Namoi catchment is comprised of an extensive range of aquatic habitats including floodplains, wetlands, streams and rivers. Within these broad habitat

types, niche habitats such as pools and riffles, gravel beds, snags, aquatic and riparian vegetation are present, diversifying the habitat available to aquatic species. This extensive range of aquatic habitat supports a diverse assemblage of species, including over 20 freshwater finfish species. The pressures from introduced species, reduced water quality and altered hydrology, and habitat degradation, have resulted in the population densities of native fish being significantly lower than historical levels (Harris, 2004).

Water quality is an important factor influencing the ability of waterways and aquifers to sustain healthy aquatic ecosystems. Recent State of the Catchment Reporting (DECCW, 2010) indicates that some key water quality parameters currently exceed guideline values. It is important that effective land use planning in this region is undertaken to prevent further water quality degradation.

Challenges

The natural environment in the region is under increasing pressure from mining and coal seam gas developments, specifically around the Gunnedah Basin Coalfields.

Open-cut coal mining requires extensive removal and alteration to both terrestrial and aquatic ecosystems and large-scale excavation, with a surface area of between 4 and 15 hectares impacted per million tonnes extracted as a result of open-cut coal mining. This causes dramatic changes to the topography and ecology of these sites. While rehabilitation of mine sites is required to be undertaken, the reinstatement of complex ecosystems is challenging and has not yet been proven to be effective.

Approximately 47 threatened animals, 13 threatened plant and 6 threatened native fish species and the endangered ecological community (Lowland Darling River), listed under NSW legislation, are known to occur in mining areas and as such are likely to be impacted. There are also seven communities which are “Matters of National Environmental Significance” under the EPBC Act which are likely to be impacted by mining operations.

Aquatic biodiversity is also impacted by mining and coal seam gas extraction because of the potential of these activities to directly impact key fish habitats (e.g. rivers and wetlands), water quality in aquifers and surface water resources through their operations and treatment and disposal of waste water.

Further, the development of supporting infrastructure lines across the landscape add to the fragmentation of habitats affecting landscape connectivity, altering fauna movement, isolating populations and altering both the longitudinal and lateral connectivity of waterways.

Post mining rehabilitation has the potential to contribute to biodiversity conservation in the longer term. Although outcomes from rehabilitation are uncertain, the location and design of rehabilitation can be used to maximise its value in the future landscape. Effective planning is required to design a post-mining landscape that will optimise multiple land uses, including conservation.

Key regional challenges include:

- Identifying and protecting strategic regional conservation priorities and maximising the retention of areas of high value terrestrial and aquatic biodiversity.
- Developing and applying appropriate measures to control, mitigate and regulate the impacts of mining activities (including cumulative impacts) on the environment.
- Identifying opportunities to preserve and, where possible, reconnect both terrestrial and aquatic habitats and corridors.



Policy Response

Protecting biodiversity through strategic regional land use planning

The NSW Government supports a three stage approach to assessing development impacts on the natural environment:

- avoiding impact on areas that possess high natural environmental values;
- mitigating where impacts to the natural environment cannot be avoided; and
- offsetting unavoidable impacts on terrestrial habitats in strategic locations and appropriate offsetting or compensation for impacted aquatic habitats.

Legislation

In NSW, the conservation of threatened species, populations and ecological communities is covered by the Threatened Species Conservation Act 1995, which focuses on the conservation of biodiversity (excluding fish and marine vegetation), and the NSW Fisheries Management Act 1994, which establishes provisions for the identification, conservation and recovery of threatened fish, aquatic invertebrates and marine vegetation. Both Acts cover the identification and management of key threatening processes which affect threatened species or could cause other species to become threatened.

Across Australia, “Matters of National Environmental Significance” are protected under the Environment Protection and Biodiversity Conservation Act 1999.

Conservation priorities in the Southern Gunnedah Basin

A number of conservation planning products can assist proponents, communities and decision makers in state significant development assessments.

The Biodiversity Certification Assessment Methodology can be used to guide land use planning by applying the criteria that indicate high terrestrial biodiversity values. This methodology is designed to allow assessment at a regional scale and includes criteria for determining the highest value terrestrial biodiversity assets, along with a range of secure options for offsetting impacts on terrestrial biodiversity. It identifies areas of high conservation value at a landscape scale, and protects them, as well as identifying areas suitable for development.

At a site scale, the Biobanking Assessment Methodology can be used to provide guidance on avoiding areas of high terrestrial conservation value and offsetting impacts on other areas by establishing an ‘improve or maintain’ test for biodiversity values.

Priority offset landscapes.

Ideally offsets would be located in landscapes which contain high biodiversity values where locations can be selected to offset loss from developments in a manner where landscape design criteria such as patch size and connectivity can be addressed to provide viable long term landscapes. Environmental offsets are a regular component of development approvals where impacts cannot be avoided or mitigated. Priority offsets can be mapped and used to guide developers and agencies in identifying preferred areas for investments in terrestrial biodiversity offsets through the assessment

process. The appropriateness of a particular site as an offset will depend upon the actual impacts of development and will need to be assessed in further detail at the project stage.

Offsets may potentially contain vegetation in a range of condition states. Vegetation in lower condition classes may be suitable as an offset, provided there is a positive prognosis for recovery of the animals and plants typical of the vegetation type once an appropriate management regime has been established.

Whilst it is possible for biodiversity offsets to be provided on, and coexist with, strategic agricultural land, the agricultural value of potential offset sites, including the areas of overlap, should be assessed in detail in the identification of an appropriate biodiversity offset. Offsets may require negotiated agreements with individual landholders, and these agreements can support continued agricultural production on the land in many instances. Land set aside for biodiversity offsets should not result in the significant loss or destruction of agricultural resources or industries.

It is envisaged that priority offset landscapes mapping will be conducted as opportunities arise through strategic assessments, any regional offset strategies and individual assessments.

The need for a regional approach to the strategic conservation of biodiversity values is recognised in the recommendations of the Planning Assessment Commission's recent approval of the Boggabri Coal Project and review of the Maules Creek Coal Project. Specifically, the PAC recommended the preparation of a Leard Forest Mining Precinct Regional Biodiversity Strategy to address the cumulative biodiversity impacts of coal mining activity in the Precinct. Both the regional conservation assessment and the priority offset mapping for terrestrial biodiversity could be used to inform such a strategy.

Offsets database

The Department of Planning and Infrastructure is currently developing a state-wide offsets database to identify terrestrial biodiversity offsets associated with major project approvals. This mapping process will be used to inform future assessments so that these areas are not compromised by further development. It will include a spatial database to identify what terrestrial biodiversity values are being offset.

Aquatic habitat compensation provisions

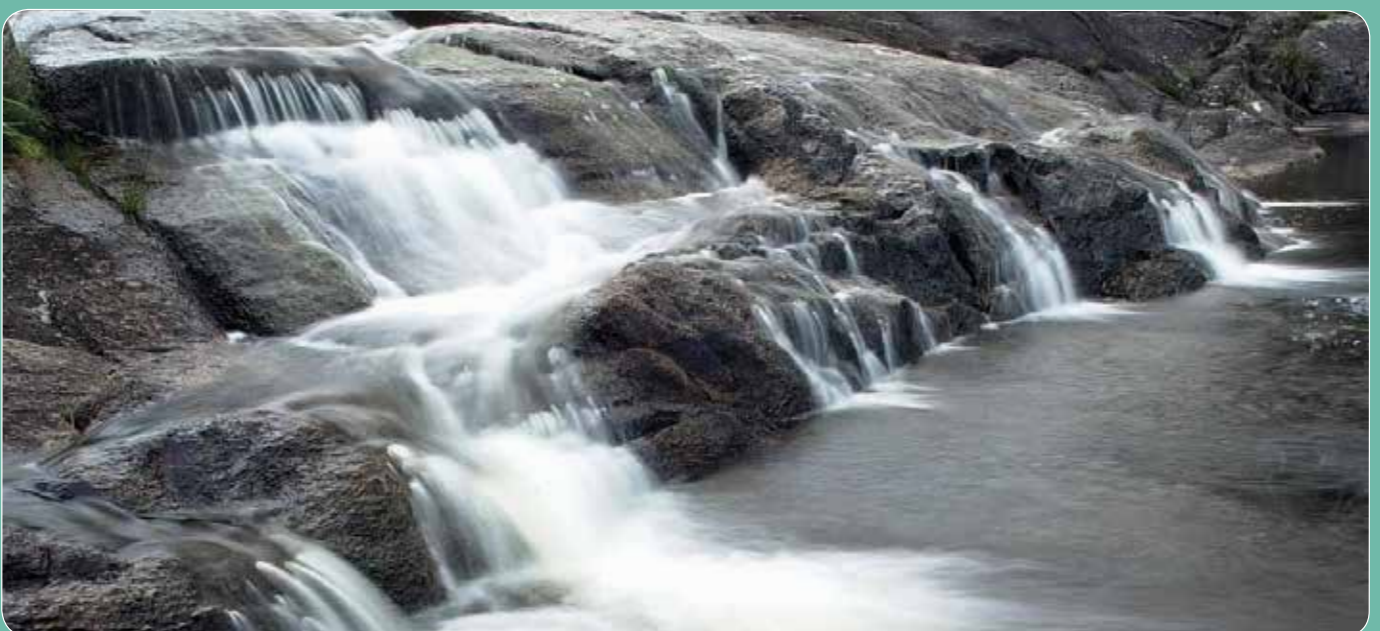
Before aquatic biodiversity offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts. If impacts can not be avoided, and unavoidable impacts minimised through mitigation measures, then offsets and/or compensation measures will be considered for the impact or loss of key fish habitats. Measures may include re-establishing habitat that has been removed or otherwise damaged, re-instating fish passage along waterways (removing barriers or building fishways or fish friendly waterway crossings) and improving water quality, amongst other options. Rehabilitation of degraded key fish habitat is recommended over fish habitat creation as it is very difficult to replicate aquatic ecological functions in a created habitat environment. Offset and compensation options for key fish habitats must meet the "no net loss" test (minimum 2:1 habitat replacement) and will need to be negotiated on a case by case basis with Department of Primary Industries (Fisheries NSW) as part of the environmental impact assessment process.

Objective

- Ensure that ongoing development in the region improves or maintains terrestrial and aquatic biodiversity values in the region.

Actions

	Action	Lead Agencies	Timeframe
8.1	Compile a biodiversity offsets database of lands currently held in conservation as a result of development consents.	Department of Planning and Infrastructure	December 2012/ongoing
8.2	Identify areas of high terrestrial and aquatic biodiversity value and identify priority offset landscapes for investment.	Office of Environment and Heritage Department of Primary Industries (Fisheries NSW) Department of Planning and Infrastructure	Ongoing
8.3	Prepare a Leard Forest Mining Precinct Regional Biodiversity Strategy to address the cumulative biodiversity impacts of coal mining activity in the Precinct.	Department of Planning and Infrastructure Office of Environment and Heritage	March 2014



Natural Hazards and Climate Change

Background

Due to the size and the diversity of landscapes and climatic conditions in the New England North West region, the likelihood and type of natural hazards and the potential impact of climate change varies greatly across the region. Better understanding and planning for natural hazards and climate change impacts will assist in mitigating risks and assist the region to developing to its full potential.

The region experiences recurring, costly and significant natural hazards impacting on public safety, private property, infrastructure integrity and the insurance sector.

For example, flood events in the vicinity of Moree and Narrabri in 2004 and 2012 caused millions of dollars of damage, as well as the loss of three lives in the 2004 event.

Appropriate policy responses are already in place to address many of the issues relating to natural hazards. At the state government level, these include the State and District Disaster Management Plans (Displans), the NSW Floodplain Development Manual 2005 and Planning for Bushfire Protection 2006. State Government statements are also in place in regard to climate change with the NSW Climate Impact Profile 2010 and Impacts of Climate Change on Natural Hazards Profile for the New England North West Region 2010.

At the local level, natural hazard planning is well advanced with bushfire prone land mapping having been completed for the entire region and a number of flood studies having been developed for various parts of the region. To help facilitate development in the region these local level

plans will continue to develop and evolve. Local government authorities have also prepared local Displans to respond to emergencies associated with natural hazards.

The NSW Climate Impact Profile (Department of Environment, Climate Change and Water, 2010) anticipates that by 2050 the natural, man-made, social and economic systems of the region will all be affected in some degree by climate change. Broadly, average daily temperatures in the region are likely to increase in all seasons¹¹. Increases in rainfall are likely in all seasons except winter, but drier conditions overall are anticipated due to higher evaporation rates. The New England North West, however, offers significant potential to help mitigate climate change impacts by leading the transition for NSW towards cleaner, renewable sources of energy that emit lower greenhouse emissions due to its natural and physical attributes for wind power on the Northern Tablelands and for solar power on the North West Slopes and Plains which provide an opportunity to contribute toward the 20% renewable energy target set in NSW 2021.

Climate change adaptation planning at the local level has also commenced in parts of the region. In November 2009, the New England Strategic Alliance of Councils prepared a Climate Change Adaptation Action Plan. This plan covers Armidale Dumaresq, Guyra Shire, Uralla Shire and Walcha councils and the New England Weeds Authority. This provides a strong starting point for local and regional action on climate change, based on the current state of knowledge, but there are still significant gaps in local climate change adaptation planning.

Challenges

Impacts on the environment and biodiversity

Climate change is expected to impact on some biological communities more than others. Environmental stress as a result of climate change that is placed on specialised biological communities could cause degradation and reductions in vegetation cover because of poorer growing conditions, leaving some soils vulnerable to wind and water erosion. These changes are also likely to increase the risk of dryland salinity in the region.

For instance, montane wetlands in the New England Tablelands are at particular risk due to their restricted distribution and may be affected by increases in temperature and altered fire regimes. Tablelands riverine forests are often the only native vegetation in an agricultural landscape and provide important refuges and movement corridors for many bird and mammal species. Consequently, losses or reduction of these forests could result in declines of local populations, particularly of mammals.

Finally, the impact of climate change on grassy woodlands across the region will vary markedly among communities but is likely to have a major impact overall, as these already highly fragmented and degraded communities will come under increasing pressure.

Water availability

Major industries and communities that are vulnerable to changes in temperature or access to water will also be impacted by climate change. Existing agricultural land practices in particular may be affected due to changes in temperature and seasonal rainfall making some areas more marginal for certain cropping and grazing activities. Residential and employment users may also be affected if urban water supply security declines due to changes in seasonal rainfall and increased evaporation rates from longer, hotter dry periods.

Climate change impacts and natural hazards

As the risk and severity of many hazards are likely to become higher in the future due to climate change, it is important that natural hazard

planning responds to this issue. Many of the areas within the region that are subject to natural hazards are also experiencing development pressures. Natural hazard planning should consider any potential changes in the areas affected by hazards due to climate change, such as altered flood planning areas or bushfire prone lands due to potential changes in rainfall or temperature and vegetation.

The potential impact from changing natural hazards should also be determined on sensitive land uses (such as aged care facilities) that are vulnerable to emergency response, and on critical infrastructure and its ability to serve the local community and fulfil any necessary emergency response or recovery functions. Communities that may grow rapidly due to expanding or new industries such as mining can result in lower overall community knowledge of natural hazards and how to respond in times of emergency. Updating disaster plans and increasing community awareness and preparedness is important in addressing this issue.

Mitigating climate change impacts

Based on data provided under the National Greenhouse and Energy Reporting Act, the region currently has lower than average greenhouse gas emissions and significant carbon stores, particularly in the national parks and state forests along the eastern border of the region.

High value terrestrial carbon stores need to be protected with the promotion of revegetation and improved farming practices and new opportunities encouraged in addressing greenhouse gas emissions.

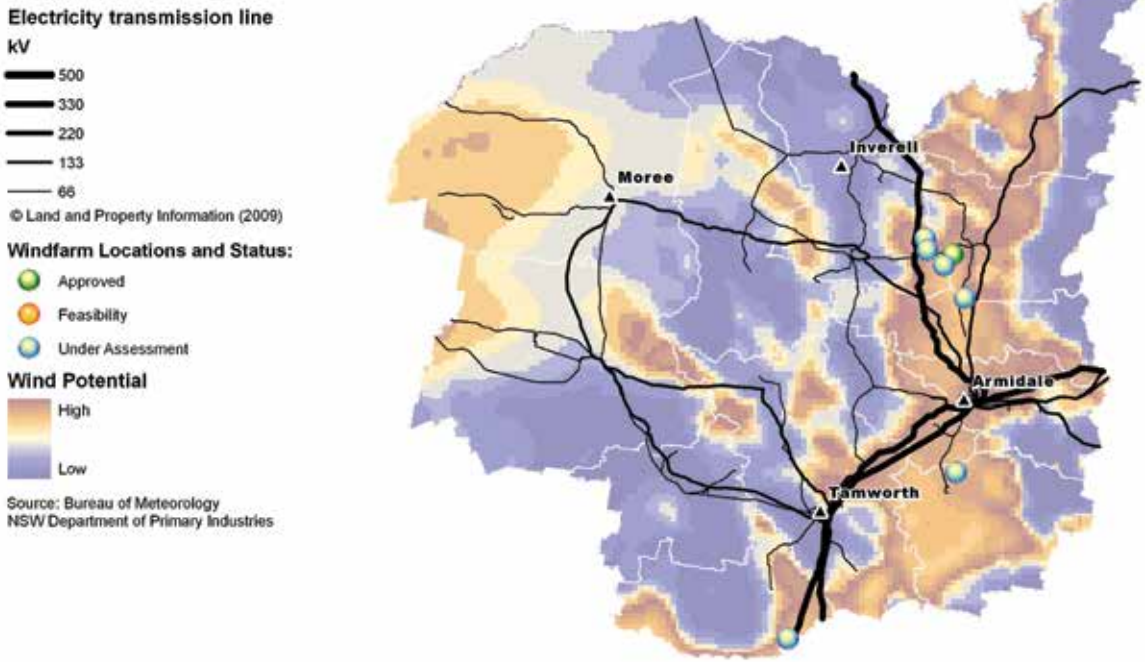
The region also includes resources that could be used to generate lower emissions energy that contributes to the mitigation of climate change. For example, the New England Tablelands has areas with conditions suitable for electricity generation from wind farms, while the North West Slopes and Plains has excellent conditions for solar power farms due to high solar radiation levels and a suitable average temperature range for photovoltaic systems (see Figures 3 and 4). There are also coal seam gas reserves in the Gunnedah coal basin that are suitable for power generation. Fugitive methane emissions from the production of coal and coal seam gas also offer

a potential opportunity as an alternate clean energy source while also lowering greenhouse gas emissions.

The areas where these resources are located in the region also have proximity to electricity markets and existing regional infrastructure

needed to support the renewable energy industry. Land uses that are incompatible with the development of renewable energy resources should avoid these areas.

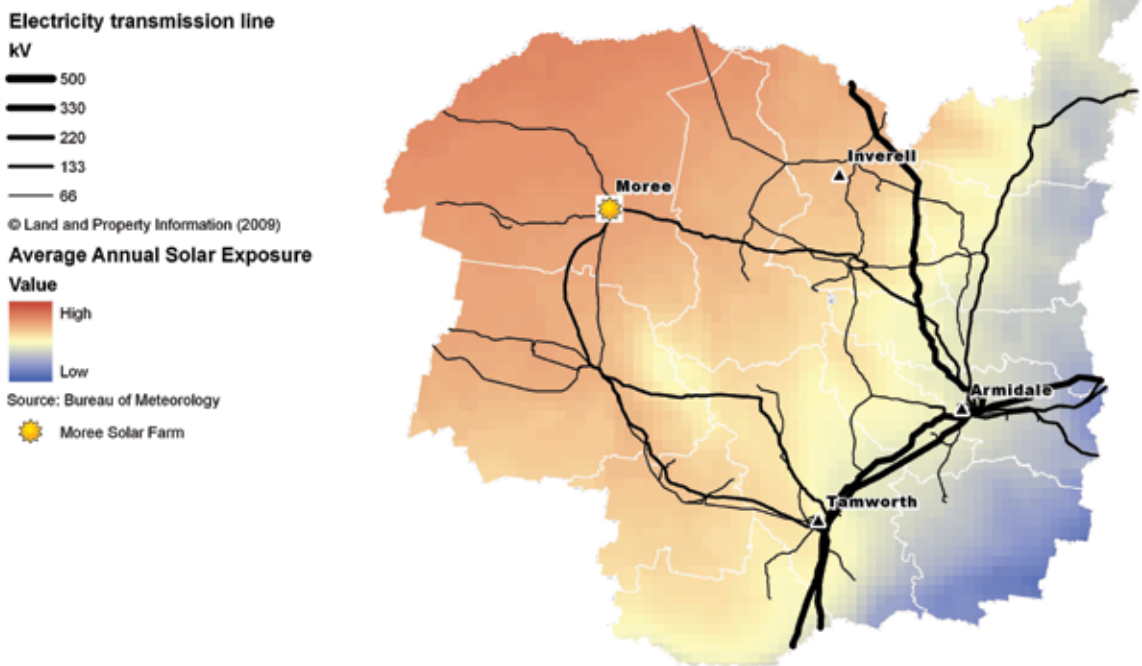
Wind potential for New England Tablelands



Office of Environment and Heritage, August 2011

Figure 3: Wind energy resources - New England North West. Source NSW Office of Environment and Heritage.

Solar potential for New England Tablelands



Office of Environment and Heritage, August 2011

Figure 4: Solar energy resources - New England North West. Source NSW Office of Environment and Heritage.

Policy Response

Objectives

- Ensure future development in the region is not located in areas of high risk from natural hazards.
- Ensure the potential impacts to the natural and built environment of the region associated with climate change are considered and managed.
- Develop opportunities for renewable energy sources to assist in mitigating greenhouse gas production.

Actions

	Action	Lead Agencies	Timeframe
9.1	Ensure that local environmental plans zone areas subject to natural hazards appropriately to reflect the risks associated with the hazard and the limitations of the land.	Councils	Ongoing
9.2	Work with local councils and industry to develop opportunities to use waste coal mine methane to provide low emissions and potentially low cost energy for regional development.	Office of Environment and Heritage Environment Protection Authority	Ongoing
9.3	Work with local councils to identify significant renewable energy resources within local strategies and ensure compatible land-uses.	Office of Environment and Heritage	Ongoing

Chapter Ten

Cultural Heritage

Background

Cultural heritage consists of places, objects and landscapes that connect us to the past that we value today and wish to pass onto the next generation. These places, objects and landscapes give us a sense of the past and form part of our cultural identity. Cultural heritage provides links between the past and present – it is an essential part of people’s cultural identity, wellbeing, connection and sense of belonging, and provides a sense of history and local and regional visual character.

As the New England North West region is rich in both Aboriginal and historic cultural heritage, urban, regional and mining growth has the potential to further impact on known and yet to be identified cultural heritage.

Aboriginal cultural heritage

The region consists of multiple language groups and incorporates all or part of 30 Local Aboriginal Land Councils (LALCs). Based on 2010 Census data, the Indigenous population of the region is estimated to be 15,241 people or 8.4 per cent of the total population.

The last 150 years has witnessed periods of intensive land clearing, cropping, pest introduction, urban expansion, infrastructure development and mining. This has resulted in significant impacts on Aboriginal cultural heritage. Limited access to lands and loss of vegetation has reduced the opportunities for Aboriginal people to continue some cultural practices.

Government owned or controlled land tenure across this region amounts to approximately 21 per cent which is accessible to Aboriginal people to undertake cultural or educational activities. Therefore Aboriginal people in the region are predominantly reliant on partnership



arrangements with public authorities for access to land, such as a Memorandum of Understanding (MoU) between the Minister for Environment and an Aboriginal Joint Management Committee. The purpose of a MoU is to support Aboriginal people in determining how cultural activities are pursued and to participate in land management decision making on reserved lands. In addition, Indigenous Land Use Agreements (ILUA) may be negotiated between native title groups and other parties (such as governments, pastoralists and utility companies) to set the terms of use and management for the area.

Over the last 30 years, Aboriginal cultural heritage studies have identified over 3,000 sites (objects) within the region which are registered under the National Parks and Wildlife Act 1974 (NPW Act). Of these, over 600 are considered to be highly significant and include sites used for burials, ceremony and dreaming, and places that have social and contemporary usage for Aboriginal people today. Additionally, 11 Aboriginal Places and six Aboriginal Areas have been identified within the region and listed under the NPW Act.

Historic cultural heritage

European exploration of the New England North West region was carried out at the beginning of the 19th century with early activities including timber harvesting quickly followed by the discovery of suitable pastoral lands and the opening of the broad lands for extensive livestock runs. These pastoral activities led to the development of many regional town centres including Tenterfield, Armidale and Gunnedah. The region also has several significant colonial-period homesteads, including Armidale's 1888 Saumarez Homestead which is listed on the state heritage register.

Gold was discovered in 1851 at Rocky River, two kilometers west of Uralla which started a rush to the area. In 1873 the railway arrived in Tamworth and by 1889 railway lines reached Wallangarra on the Queensland border. Fourteen railway stations in this region are listed on the state heritage register demonstrating the importance of the railway in the development of the northwest of the state.

These patterns of development have left a lasting legacy in the natural and built environment of the region. Major towns have retained their significant 19th century character and are known for their key original government and commercial buildings such as the state heritage-listed Armidale Post Office and the former Telegraph Office/ Commercial Bank of Australia (CBA) building.

The region's World War II heritage is represented by the Yooroonah tank barrier system built from 1942, with the concrete tetrahedrons stretching across the landscape.

Currently, 54 sites are listed on the state heritage register (under the NSW Heritage Act 1977) and represent major classes of heritage types in the study area including early colonial landscapes (encompassing landholdings and homestead complexes), government infrastructure (such as timber bridges and railway stations), grand municipal buildings and remnant native landscapes. Almost 25 per cent of these are in the Armidale Dumaresq local government area.

The district also has connections with well known Australian poet, Dorothea Mackellar, who worked the local landscape and setting into many of her poems.

Challenges

- The current identification and protection of both Aboriginal and historic cultural heritage within the region is not comprehensive, being reliant on statutory listings, baseline local and regional heritage studies, and other incomplete data sets.
- Identifying, recording, assessing and protecting cultural heritage throughout the region. It is acknowledged that a greater level of baseline information regarding cultural heritage will greatly assist in the planning and development decision making process.
- Facilitating access to areas that are important to Aboriginal people so that they can use those places to undertake cultural or educational activities.
- Establishing a balance between development pressures, including the growth of the coal and coal seam gas industries in the Region, the consideration of cumulative impacts and the need to conserve significant cultural heritage

Policy Response

Assessment Process

During the state significant assessment processes, cultural heritage is assessed in accordance with the following guiding principles:

- Impacts to cultural heritage, particularly significant cultural heritage should be avoided as a first priority.
- Where impacts cannot be avoided, they must be appropriately mitigated and managed.
- Cumulative impacts/loss and intergenerational equity should be considered.
- Risks, consequences, costs and benefits of proposed actions should be considered.

Aboriginal Cultural Heritage

The Department of Planning and Infrastructure is currently developing, in consultation with the Office of Environment and Heritage (OEH), guidelines for state significant projects to ensure the early and thorough consideration of Aboriginal cultural heritage in the assessment

process. These guidelines will highlight the importance of undertaking an appropriate level of assessment and consulting with Aboriginal people in determining the significance of cultural heritage, including the significance of proposed impacts.

These guidelines can be complemented with the range of resources and policies OEH has already developed to support their heritage statutory functions, which encourage early consultation with Aboriginal people in planning processes to ensure their cultural values and concerns are taken fully into account in decisions to conserve, avoid or mitigate when avoidance is not possible.

OEH has commenced landform mapping and a desktop assessment of the region, which will build on the Aboriginal Cultural Heritage Regional Assessment undertaken in 2002 for the Brigalow State Forest. . This regional assessment is aimed at providing a baseline of information that supports sustainable economic and environmental planning decisions. The new stage of the regional assessment is to understand how Aboriginal sites are linked to various parts of the landscape within this region.

The outputs from this stage of this regional assessment will include:

- landform mapping at a scale appropriate for cultural heritage purposes;
- identification of information gaps for the region;
- uniform and consistent landscape information for the region; and
- descriptive evidence based data-sets that highlight the relationships between Aboriginal cultural heritage and landform categories within the region.

OEH intends to use the results of the regional assessment as the basis of an investigation with Aboriginal people to incorporate the historical and contemporary values of Aboriginal culture and heritage in the region and identify and measure cumulative impacts on Aboriginal cultural heritage across the landscape. The outputs of these assessments can provide heritage information to assist proponents in planning developments and consent authorities in determination decisions regarding conservation planning, environmental impact assessments and associated processes arising from this strategic regional land use plan.



The Department of Planning and Infrastructure is currently compiling a statewide database of lands currently identified for Aboriginal cultural heritage conservation as a result of previous development consents. This database will be used to inform future assessments and ensure that these areas are not compromised by further development.

Historic Cultural Heritage

The Office of Environment and Heritage is currently undertake a thematic survey of rural heritage of the historic Central Lands Division

(of which this region is a part) to identify and list items of state heritage significance not currently on the state heritage register.

Objectives

Protect and conserve significant cultural heritage now and for future generations (beyond the 20 year life of this plan), through managing the ongoing impacts from development, including local and regional development and mining activities.

Actions

	Action	Lead Agencies	Timeframe
10.1	Prepare Aboriginal cultural heritage assessment guidelines for state significant projects to ensure early and thorough consideration of Aboriginal cultural heritage in the assessment process.	Department of Planning and Infrastructure Office of Environment and Heritage	December 2012
10.2	Compile a database of lands currently identified for cultural heritage conservation as a result of development consents, established heritage studies, ongoing assessment and statutory heritage registers. The database will be used to inform future assessments and ensure that these areas are not compromised by further development.	Department of Planning and Infrastructure Office of Environment and Heritage	March 2013/ ongoing
10.3	Undertake a thematic survey of rural heritage of the historic Central Lands Division (of which this region is a part) to identify and list items of state heritage significance not currently on the state heritage register.	Heritage Council of NSW Office of Environment and Heritage	2014
10.4	Complete the Aboriginal heritage thematic program to identify and list items of state heritage significance not currently on the state heritage register	Heritage Council of NSW Office of Environment and Heritage	2014
10.5	Continue and complete landform mapping and a desktop assessment of the region, to understand how Aboriginal sites, objects and places are linked to various parts of the landscape. It will be used as the basis for ongoing engagement and investigation with Aboriginal people about those values in regional planning and environmental impact assessment processes.	Office of Environment and Heritage	March 2013

Chapter Eleven

Implementation

The sustainable management of land uses in the New England North West region, and in particular the balancing of agricultural and mining activities, is complex. A successful implementation program will therefore require a suite of approaches to ensure that the various outcomes from this plan are delivered.

The Gateway Process

The key policy response for resolving land use conflict between mining and coal seam gas proposals and strategic agricultural land is the proposed Gateway process.

Under the Gateway process, a development application (DA) for State significant mining and coal seam gas development that requires a new or extended mining lease cannot be lodged and considered unless:

- the proposed development has been issued a gateway certificate or
- the land has been verified as not containing strategic agricultural land.

The criteria for State significant mining and coal seam gas proposals are listed under clauses 5 and 6 of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011. The Gateway process applies to State significant mining and coal seam gas proposals that extend beyond an existing mining lease or petroleum production lease area and are located on strategic agricultural land. The process applies to both greenfield proposals (new standalone projects) and brownfield projects that involve an extension beyond the existing mining or petroleum production lease area. The application of the Gateway process is illustrated in Figure 5.



Application of the Gateway	
<p>Gateway will apply to:</p> <p>Greenfield mines</p> <p>New stand alone mines or GSG projects or project extensions beyond existing lease area (advisory only at DA stage if DGRs already issued)</p>	
<p>Gateway will apply to:</p> <p>Brownfield mine expansion beyond lease area</p> <p>Expansions of an existing mine or CSG project partially within and partially outside of the existing lease area (advisory only at DA stage if DGRs already issued)</p>	
<p>Gateway will NOT apply to:</p> <p>Brownfield mine expansion within lease area</p> <p>Expansions of an existing mine or CSG project within existing lease area (with such proposals still subject to the usual environmental assessment process under the Planning Act, including the requirement for an Agricultural Impact Statement and comprehensive assessment against the provisions of the Aquifer Interference Policy).</p>	
<p>Key:</p> <p> Existing Project Project Extension or New Project Existing Lease Area</p>	

Figure 5 - Application of the gateway process to greenfield and brownfield proposals

The Gateway assessment will be undertaken by an independent Mining and Coal Seam Gas Gateway Panel, comprised of experts in fields such as agricultural science, water and mining. The Gateway process provides for a focused, scientific assessment of the impacts of a proposal on agricultural land and water resources. This will require a consideration of whether the proposal meets certain criteria, such as those listed in Table 2. These criteria will be further developed and will form part of the amendment of the Mining SEPP which will give legal effect to the Gateway.

Having considered the Gateway certificate application against the above criteria, the panel will then either issue:

- an unconditional certificate, where the panel considers that the proposal meets the Gateway criteria, or
- a certificate subject to conditions, where the panel considers that the proposal has not demonstrated that it meets some or all of the Gateway criteria. The conditions of the certificate

will comprise stringent requirements that must be addressed by the applicant in its DA and by the Planning Assessment Commission in its determination of the DA.

Figure 6 illustrates the proposed gateway process.

Through an early and targeted assessment of agricultural and water impacts, the Gateway will ensure that by the time a proposal reaches the DA stage, these impacts have been clearly identified and comprehensively addressed.

The Commonwealth Government has introduced measures aimed at strengthening regulation of coal seam gas and coal mining, including the establishment of an Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC). The IESC's advice is a key input at the gateway stage. Specifically, the IESC's advice will be considered by both the Minister for Primary Industries in providing advice to the gateway panel and by the gateway panel itself.

Value	Criteria
Biophysical Strategic Agricultural Land	<p>Whether the proposal would significantly reduce the agricultural productivity of the land based on a consideration of:</p> <ul style="list-style-type: none"> (a) Impacts on the land through surface area disturbance and subsidence; (b) Impacts on: <ul style="list-style-type: none"> (i) soil fertility (ii) rooting depth, or (iii) soil profile materials and thicknesses; (c) Increases in land surface microrelief or soil salinity, or significant changes to soil pH, and (d) Impacts on Highly Productive Groundwater, including the provisions of the Aquifer Interference Policy and the advice of the Minister for Primary Industries (note that the Minister for Primary Industries must take into account the advice of the Commonwealth Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development in providing advice at this stage).
Critical Industry Cluster	<p>Whether the proposal would lead to significant impacts on the critical industry cluster through:</p> <ul style="list-style-type: none"> (a) surface area disturbance, (b) subsidence, (c) reduced access to agricultural resources, (d) reduced access to support services and infrastructure, (e) reduced access to transport routes, or (f) loss of scenic and landscape values.
Consultation	Any advice on water impacts received from the Commonwealth Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development.

Table 2 - Indicative Gateway criteria

Independent Expert Scientific Committee

The Commonwealth Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) will provide advice at the gateway stage to both the Minister for Primary Industries and the Mining and Coal Seam Gas Gateway Panel.

In addition, the IESC is preparing Bioregional Assessments in areas where coal seam gas and/or large coal mining development are underway or planned. These assessments will undertake a scientific analysis of the ecology, hydrology and geology of an area for the purpose of assessing the potential risks to water resources in the area as a result of the direct and indirect impacts of coal seam gas development or large coal mining development. One of the initial regions announced for Bioregional Assessment is the Northern Inland Catchment, part of which lies within the New England North West Strategic Regional Land Use Plan boundary. Any outcomes from this assessment will inform, as relevant, the assessment of mining and coal seam gas proposals at both the Gateway and DA stages, as well as future reviews of the Strategic Regional Land Use Plans.

Strategic Agricultural Land Verification Processes

Due to the regional scale of the strategic agricultural land maps in this plan, it is important that appropriate processes are in place to provide for site-specific verification that particular sites do in fact meet the strategic agricultural land criteria.

It is proposed that the verification process for biophysical strategic agricultural land includes:

- If the site is mapped as biophysical strategic agricultural land, an applicant for a State significant mining or coal seam gas proposal can either accept that the land is strategic agricultural land or may choose to verify whether or not the land meets the criteria for biophysical strategic agricultural land. If a proposal is verified as meeting the criteria, then it will be subject to the Gateway process. If it is not, the proposal can proceed directly to the DA stage.
- If the site is not mapped as biophysical strategic agricultural land, an applicant for a State significant mining or coal seam gas proposal must verify whether or not the land meets the criteria for biophysical strategic agricultural land. If it does, then the proposal will be subject to the Gateway process. If it does not, the proposal can proceed directly to the DA stage.
- Landholders can also apply for a site verification certificate to verify whether or not their property contains biophysical strategic agricultural land. If it does, the land will be verified as biophysical strategic agricultural land.

The gateway and site verification processes, as well as the maps of strategic agricultural land, will be given statutory force through an amendment to *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

Strategic Planning

This plan provides a clear land use framework for the region, providing a context for whole of government decision making around investment priorities, servicing strategies, consolidating strategic centres and local environmental plan making.

This plan will also inform the development of the New England North West Regional Action Plan under the Government's NSW 2021 plan and Councils' integrated planning and reporting frameworks. There are opportunities for issues discussed in this plan, such as the availability of a skilled regional workforce, housing affordability and infrastructure requirements to be considered in these and other government policies and processes.

New and Revised Policies

Mapping and data

Strategic agricultural land has been mapped within this plan to indicate agricultural land that, due to its unique values and/or location, is considered to have a higher level of sensitivity to the impacts of mining and coal seam gas development. The strategic agricultural land mapping will continue to be reviewed and refined, through the biophysical strategic agricultural land verification process outlined above.

The Office of Environment and Heritage will also complete landform mapping for the region to better understand how Aboriginal sites are linked to various parts of the landscape.

The Department of Planning and Infrastructure is completing a regional database, including a spatial database, to identify biodiversity offsets and Aboriginal heritage conservation areas associated with major project approvals. This mapping process will be used to inform future assessments.

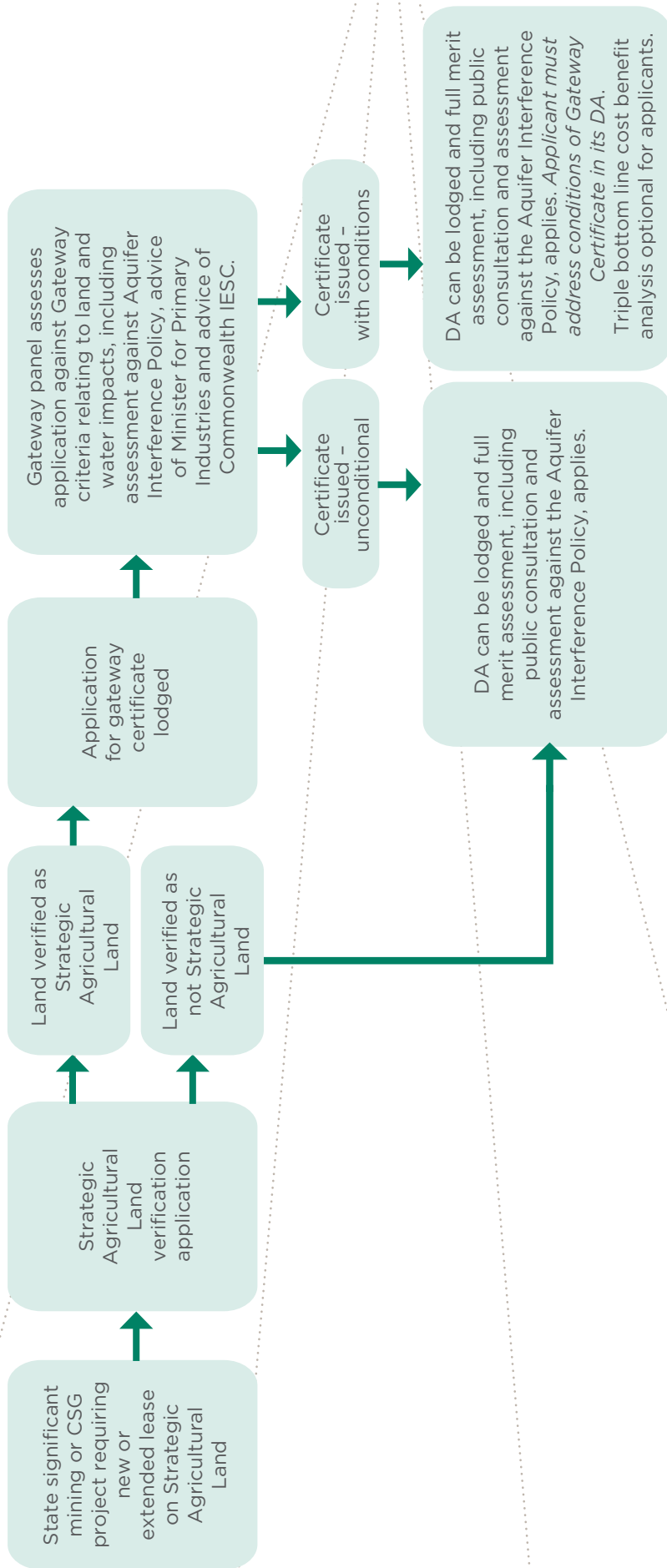


Figure 6 - Proposed Gateway Process

Cost benefit analysis

As the Gateway assessment will be limited to a scientific assessment of the agricultural and water impacts of proposals, triple bottom line cost benefit analysis will not be considered at the Gateway stage.

Instead, cost benefit analysis will be available to applicants at the DA stage for consideration through the comprehensive merit assessment process. This will assist in the consideration of the potential economic, social and other benefits of a proposal against its possible impacts. It will be particularly relevant to projects for which the Gateway has issued a conditional certificate. If a cost benefit analysis is prepared by the proponent it will be independently peer reviewed and considered by the Planning Assessment Commission in its determination of the DA.

Cumulative impact assessment methodology

The cumulative impacts of mining, in particular noise and dust impacts and loss of agricultural land and water resources, are acknowledged in this plan as important issues. The NSW Government is developing a specific cumulative impact assessment methodology for mining and coal seam gas applications to help in identifying thresholds and mitigation measures to manage these impacts. This methodology will take into account the Namoi CMA's proposed methodology for calculating and managing the cumulative risks to environmental assets from mining and is scheduled to be completed in early 2013.

Infrastructure Planning and Delivery

The Department of Planning and Infrastructure and Infrastructure NSW will lead the preparation of a fully costed New England North West Regional Infrastructure Plan. This infrastructure plan will review the infrastructure requirements of the region and develop a package of local and regional infrastructure to include prioritisation, staging, timing and funding. The infrastructure plan will also include a methodology to predict the impacts of coal and coal seam gas industries on local and regional infrastructure as well as a program to monitor resource development.

Housing

The government will work in partnership with councils and the development industry to develop policies and mechanisms that may improve the amount, type and affordability of housing in the region and will include consideration of permanent, short term, temporary and rental housing options.

Economic development and employment

Actions to address economic development and employment issues associated with the on-going growth of the mining industry include the preparation of a Regional Workforce Plan and the development of a regional apprenticeship program in partnership with mining and coal seam gas companies.

Climate change

The NSW Government will work with a range of stakeholders including local councils and industry on a number of climate change initiatives including identifying renewable energy resources, water security for new settlements and climate change adaptation and mitigation strategies.

Community health and amenity policies

The NSW Government will work to deliver a number of policies that will support improved management of impacts from mining including the cumulative impact assessment methodology, the establishment of a regional air quality monitoring network, the preparation of a development assessment guideline for impacts on human health from dust generated by mining and other activities, and review of the Industrial Noise Policy.

Statutory Processes

Local environmental plans and development control plans

Actions within this plan, including ensuring the adequate supply of employment and residential land, supporting delivery of housing choice, application of settlement planning principles and hazard management, will be delivered in part through councils' local environmental plans and development control plans.

Assessment, Regulation and Enforcement

The NSW Government commits to a range of new, revised or continuing initiatives that will improve the assessment, regulation and enforcement of mining related land uses including:

- the creation of a Land and Water Commissioner position with an unfettered oversight and community advisory role with respect to exploration across the State.
- continuing with pollution reduction programs on coal mines requiring them to assess current operations against best management practice;
- the benchmarking of new and modified coal mines against best management practice to minimise emissions;
- the establishment of an air quality monitoring network across the region as mining activity increases; and
- an industry levy to fund additional enforcement resources within the Division of Resources and Energy.

Governance and Consultation

The NSW Government is committed to the implementation of the strategic outcomes contained in this plan. To this end, the government will consider an ongoing role for the stakeholder reference group that was established to guide the development of this plan in the monitoring and review of the plan. In addition, a cross-agency implementation group, to include local government representatives, will be established to oversee the implementation of actions under this plan.

To ensure that engagement processes relating to mining development are productive, the Department of Planning and Infrastructure will review the Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects (2007).

Monitoring and Review

The Department of Planning and Infrastructure will work with councils, industry and infrastructure providers to monitor the supply of residential and employment land and the delivery of new housing.

Progress on actions established in this plan will be monitored annually through cross-agency implementation groups and on-going consultation with key stakeholders.

This New England North West Strategic Regional Land Use Plan will be comprehensively reviewed every five years, so it can adjust to any demographic and economic changes and environmental impact information. This will assist local councils in reviewing their local environmental plans and community strategic plans.



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